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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	090611-0370991
First Inventor	ROBERT A. KENNEWICK
Title	See 1 in Addendum
Express Mail Label No.	

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☐ **Fee Transmittal Form** (e.g., PTO/SB/17)
   (Submit an original and a duplicate for fee processing)
2. ☒ **Applicant claims small entity status.**
   See 37 CFR 1.27.
3. ☒ **Specification** [*Total Pages* 58]
   Both the claims and abstract must start on a new page
   (For information on the preferred arrangement, see MPEP 608.01(a))
4. ☒ **Drawing(s)** (*35 U.S.C. 113*) [*Total Sheets* 7]
5. **Oath or Declaration** [*Total Sheets* 3]
   a. ☐ Newly executed (original or copy)
   b. ☒ A copy from a prior application (37 CFR 1.63(d))
   (for continuation/divisional with Box 18 completed)
   i. ☐ DELETION OF INVENTOR(S)
   Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☒ **Application Data Sheet.** See 37 CFR 1.76
7. ☐ **CD-ROM or CD-R** in duplicate, large table or Computer Program *(Appendix)*
   ☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
   (if applicable, items a. – c. are required)
   a. ☐ Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

ADDRESS TO: **Commissioner for Patents**
P.O. Box 1450
Alexandria VA 22313-1450

ACCOMPANYING APPLICATION PARTS

9. ☐ **Assignment Papers** (cover sheet (PTO-1595) & document(s))
   Name of Assignee _____
10. ☐ **37 CFR 3.73(b) Statement** *(when there is an assignee)* ☒ **Power of Attorney**
11. ☐ **English Translation Document** *(if applicable)*
12. ☐ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☐ Copies of foreign patent documents, publications, & other information
13. ☐ **Preliminary Amendment**
14. ☐ **Return Receipt Postcard** (MPEP 503)
    (Should be specifically itemized)
15. ☐ **Certified Copy of Priority Document(s)**
    (if foreign priority is claimed)
16. ☐ **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
17. ☐ Other: _____

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:*

☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: 10/452,147

Prior application information: *Examiner* Martin Lerner *Art Unit:* 2626

19. CORRESPONDENCE ADDRESS

☒ The address associated with Customer Number: 00909 ***OR*** ☐ Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature		Date	May 30, 2008
Name (Print/Type)	S. Jafar Ali	Registration No. (Attorney/Agent)	58780

This collection of information is required by 37 CFR 1.53(b). 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 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.

Addendum

1. SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Attorney Docket No. 090611-0370991 *PATENT*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: ROBERT A. KENNEWICK *et al.*

Application No.: TBD

Filed: May 30, 2008

For: SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPLICATION DATA SHEET
37 C.F.R. § 1.76

BIBLIOGRAPHIC DATA

1. Applicant information

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2. Correspondence information

Correspondence for this application should be addressed as follows:

Customer No.: 00909

3. Application information

Title of Invention: SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Docket number assigned to this application: 090611-0370991
Total number of drawing sheets: 7
Type of application: Utility
Application is to be published.

Secrecy order under § 5.2:

This application does not disclose subject matter of an application which is under a secrecy order pursuant to § 5.2.

4. Representative information

The following have a power of attorney or authorization of agent in this application:

Customer No.: 00909

5. Domestic Priority information

Domestic priority for this application is claimed as follows:

35 U.S.C. § 119(e):
Application No.: 60/384,388
Filed: June 3, 2002
Status: Expired
Relationship: Priority

35 U.S.C. § 120:
Application No.: 10/452,147
Filed: June 3, 2003
Status: Granted
Relationship: Priority

Date: May 30, 2008

Customer No. 00909

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE PATENT APPLICATION OF:	Robert A. KENNEWICK *et al.*
SERIAL NO.:	10/452,147
FILING DATE:	June 3, 2003
FOR:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL LETTER

Sir:

Transmitted herewith for filing in the present application are the following documents:

1. Revocation and New Power of Attorney with Schedule A; and
2. Associate Power of Attorney with Schedule A.

If the enclosed papers are considered incomplete, the Mail Room is respectfully requested to contact the undersigned at (703) 905-2120.

Respectfully submitted,

Rick A. Toering
Registration No. 43,195
PILLSBURY WINTHROP SHAW PITTMAN LLP
P.O. Box 10500
McLean, Virginia 22102
703-905-2000

Customer No.
00909

Dated: July 14, 2005

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Assignee : VoiceBox Technologies, Inc.

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REVOCATION AND NEW POWER OF ATTORNEY

VoiceBox Technologies, Inc., owner of the entire right, title and interest in, to and under the listed patent applications attached hereto under Schedule A, by virtue of assignments, hereby revokes any and all former powers of attorney and appoints the attorneys

James G. Gatto	Registration No. 32,694
Rick A. Toering	Registration No. 43,195
Bradford C. Blaise	Registration No. 47,429
Sean L. Ingram	Registration No. 48,283

as Assignee's attorneys with full power of substitution and revocation to take any and all action necessary with regard to the patent applications listed on the attached Schedule A.

Address all telephone calls to James G. Gatto at telephone number 703-905-2054.

Address all correspondence to Customer Number

00909

The undersigned hereby declares that all statements made herein of his/her 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 18 U.S.C. § 1001 and

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that such willful false statements may jeopardize the validity of the patent applications or any patents issuing therefrom.

VOICEBOX TECHNOLOGIES, INC.

By: _____

Name: Mike Kennewick

Title: CEO

Date: July 11, 2005

30495027v1

SCHEDULE A

Serial No.	Filing Date	Title
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
10/452,147	06/03/2003	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
[redacted]	[redacted]	[redacted]

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Assignee : VoiceBox Technologies, Inc.

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ASSOCIATE POWER OF ATTORNEY

The undersigned holder of a Power of Attorney for the listed patent applications attached hereto under Schedule A, grants an Associate Power of Attorney to the attorneys and agents associated with Customer Number:

00909

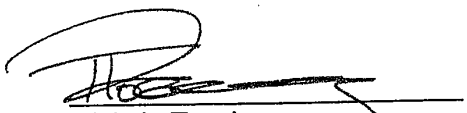
to take any and all action necessary with regard to the patent applications listed on the attached Schedule A.

Address all telephone calls to James G. Gatto at telephone number 703-905-2054.

Address all correspondence to Customer Number:

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Respectfully submitted,



Rick A. Toering
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00909

Dated: July 14, 2005

30539742v1

SCHEDULE A

Serial No.	Filing Date	Title
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
10/452,147	06/03/2003	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
[redacted]	[redacted]	[redacted]

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SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

This application claims priority from U.S. Patent Application Serial No. 10/452,147 filed June 3, 2003, which claims priority from U.S. Provisional Patent Application Serial No. 60/384,388 filed June 3, 2002, the disclosures of which are hereby incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

Field of the Invention

[01] The present invention relates to the retrieval of online information or processing of commands through a speech interface. More specifically, the invention is a fully integrated environment allowing users to submit natural language speech questions and commands. Information that is sought may be obtained from a wide range of disciplines, making local and network queries to obtain the information, and presenting results in a natural manner even in cases where the question asked or the responses received are incomplete, ambiguous or subjective. The invention may further allow users to control devices and systems either locally or remotely using natural language speech commands.

Background of the Related Art

[02] A machine's ability to communicate with humans in a natural manner remains a difficult problem. Cognitive research on human interaction shows that a person asking a question or giving a command typically relies heavily on context and the domain knowledge of the person answering. On the other hand, machine-based queries (a query may be a question, a command, a request and/or other types of communications)may be highly structured and are not inherently natural to the human user. Thus, human questions

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and machine processing of queries may be fundamentally incompatible. Yet the ability to allow a person to make natural language speech-based queries remains a desirable goal.

[03] Much work covering multiple methods has been done in the fields of natural language processing and speech recognition. Speech recognition has steadily improved in accuracy and today is successfully used in a wide range of applications. Natural language processing has previously been applied to the parsing of speech queries. Yet, current systems are generally unable to provide a complete environment for users to make natural language speech queries and receive natural sounding responses. There remains a number of significant barriers to creation of a complete natural language speech-based query and response environment.

SUMMARY OF THE INVENTION

[04] According to an aspect of the invention, one object of the invention is to overcome these and other drawbacks of prior systems.

[05] According to one aspect of the invention, in order for machines (e.g., computer devices) to properly respond to a question and/or a command that is in a natural language form, machine processable queries and commands may be formulated after the natural language question and/or command has been parsed and interpreted.

[06] In another aspect of the invention, systems are provided which may overcome the deficiencies of prior systems through the application of a complete speech-based information query, retrieval, presentation and command environment. This environment makes maximum use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains. Through this integrated approach, a complete speech-

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based natural language query and response environment may be created. Further, at each step in the process, accommodation may be made for full or partial failure and graceful recovery. The robustness to partial failure is achieved through the use of probabilistic and fuzzy reasoning at several stages of the process. This robustness to partial failure promotes the feeling of a natural response to questions and commands.

[07] According to another aspect of the invention, the system comprises a speech unit interface device that receives spoken natural language queries, commands and/or other utterances from a user, and a computer device or system that receives input from the speech unit and processes the input (e.g., retrieves information responsive to the query, takes action consistent with the command and performs other functions as detailed herein). The system may further generate a natural language speech response in response to the user and/or generate a natural language speech message without any prompting from a user such as an alert message.

[08] According to another aspect of the invention, the speech unit may be incorporated into the computer device or system, or may be a separate structure. If a separate structure, the speech unit may be connected to the computer device via a wired or wireless connection. If a wireless connection, a base unit may be connected to the computer, internally or externally, to communicate with the speech unit.

[09] According to another aspect of the invention, the computer device or system may comprise a stand alone or networked PC, a PDA or other portable computer device, or other computer device or system. For convenience, these and other computer alternatives shall be simple referred to as a computer. One aspect of the invention comprises software that is installed onto the computer, where the software comprises one or more of the

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following modules: a speech recognition module for capturing the user input; a parser for parsing the input, a text to speech engine module for converting text to speech; a network interface for enabling the computer to interface with one or more networks; a graphical user interface module and an event manager for managing events. Preferably the event manager is in communication with a dictionary and phrases module, a user profile module that enables user profiles to be created, modified and accessed, a personality module that enables various personalities to be created and used, an agent module, an update manager and one or more databases.

[10] According to another aspect of the invention domain specific behavior and information is organized into agents. Agents are autonomous executables that receive, process and respond to user questions, queries and commands. The agents provide a complete, convenient and re-distributable packages or modules of functionality, typically for a specific domain of application. Agents can be complete packages of executable code, scripts, links to information, and other forms of communication data, required to provide a specific package of functionality, usually in a specific domain. In other words, an agent includes everything that is needed to extend the functionality of the invention to a new domain. Further, agents and their associated data can be updated remotely over a network as new behavior is added or new information becomes available. Agents can use system resources and the services of other, typically more specialized, agents. Agents can be distributed and redistributed in a number of ways including on removable storage media, transfer over networks or attached to emails and other messages. An update manger is used to add new agents to the system or update existing agents.

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[11] According to another aspect of the invention, license management capabilities allowing the sale of agents by third parties to one or more users on a one time or subscription basis may be provided. In addition, users with particular expertise may create agents, update existing agents by adding new behaviors and information, and making these agents for other users.

[12] In order to enhance the natural query and response environment, the system may format results in a manner enhancing the understandability to the user. The optimal formatting and presentation depends on the context of the questions, the contents of the response being presented, the history of the interaction with the user, the user's preferences and interests and the nature of the domain. Information presented in a rigid, highly formatted, or structured manner seems unnatural to most people. Thus a system simulates some aspects of human "personality". In some cases, the presentation of the response and the terms used are randomized so they do not appear rigidly formatted or mechanical. The use of other simulated personality characteristics is also desirable. For example, a response that may be upsetting to the user is best presented in a sympathetic manner. Finally, the results of many queries are long text strings, lists, tables or other lengthy sets of data. Natural presentation of this type of information presents particular challenges. Simply reading the long response is generally not preferred. Therefore the system parses the most important sections from the response and, at least initially, only reports these. Determining what parts of a long response are presented depends on the context of the questions, the contents of the response being presented, the history of the interaction with the user, the user's preferences and interests and the nature of the domain. At the same time the system gives the user interactive control over what

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information and how much information is being presented, to stop the response all together, or to take other actions.

[13] According to another aspect of the invention, the system may process and respond to both questions or queries and commands. Keywords or context are used to determine if the user's utterance is a command or query. Some utterances can include both aspects of a command and a query or question. For example, a user may say, "record my favorite TV program". A query is required to determine the name, the channel, and time for the users favorite TV program. A command must be executed to set a video recorder to capture this program.

[14] For each user utterance including a question or query or set of questions or queries, the system may perform multiple steps possibly including:

- capture of the user's question or query through accurate speech recognition operating in a variety of real-world environments;
- parse and interpret the question or query;
- determine the domain of expertise required and context, invoking the proper resources, including agents;
- formulate one or more queries to one or more local and/or network data sources or sending appropriate commands to local or remote devices or the system itself;
- perform required formatting, variable substitutions and transformations to modify the queries to a form most likely to yield desired results from the available sources;

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- execute the multiple queries or commands in an asynchronous manner and dealing gracefully with failures;
- extract or scrape the desired information from the one or more results, which may be returned in any one of a number of different formats;
- evaluate and interpret the results, including processing of errors, gathered and combine them into a single best result judged to be "best" even if the results are ambiguous, incomplete, or conflicting;
- perform required formatting, variable substitutions and transformations to modify the results to a form most easily understood by the user; and
- present the compound result, through a text to speech engine, to the user in a useful and expected manner.

[15] The above steps preferably are performed while accounting for the domain of expertise required, the context for the question or command, domain specific information, the history of the user's interaction, user preferences, information sources or commands available, and responses obtained from the sources. At each stage probabilistic or fuzzy set decision and matching methods can be applied to deal with inconsistent, ambiguous, conflicting and incomplete information or responses. In addition, the use of asynchronous queries that may result in rapid and graceful failure of some queries or commands may allow the system to robustly return results quickly and in a manner that seems natural to the user.

[16] Many everyday questions are inherently subjective and result in answers that are a matter of option or consensus as much as fact. Such questions are often ad hoc in their nature, as well. The system, according to another aspect of the invention, may use

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probabilistic and fuzzy set decision and matching methods to first identify the subjective nature of the question and to evaluate a range of possible answers, selecting the one answer or few answers that best represent the type of result desired by the user.

The context and expected results from a particular question may be highly dependent on the individual asking the question. Therefore, the system may create, store and use extensive personal profile information for each user. Information in the profile may be added and updated automatically as the user uses the system or may be manually added or updated by the user or by others. Domain specific agents may collect, store and use specific profile information, as may be required for optimal operations. Users can create commands for regularly used reports, automatically generated alerts, and other queries and for the formatting and presentation of results. The system may use profile data in interpreting questions, formulating queries, interpreting results of queries and presenting answers to the user. Examples of information in a user profile includes, history of questions asked, session histories, formatting and presentation preferences, special word spelling, terms of interest, special data sources of interest, age, sex, education, location or address, place of business, type of business, investments, hobbies, sports interests, news interests and other profile data.

[17] To create a natural question and response environment, the system according to one aspect of the invention, may attempt to provide rapid responses without requiring any additional information. The system may determine the mostly likely context or domain for a user's question or command, for example, by using a real-time scoring system or other technique. Based on this determination, the system may invoke the correct agent. The agent makes one or more queries and rapidly returns a formatted response. Thus, a

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user can receive a direct response to a set of questions, each with a different response or context. In some cases, the available information, including the query results, may not adequately answer the question. In such a situation, the user may be asked one or more questions to resolve the ambiguity. Additional queries may then be made before an adequate response is made. In these cases, the system may use context information, user profile information and domain specific information to minimize the interaction with the user required to deliver a response.

[18] If the confidence level of the domain or context score is not high enough to ensure a reliable response, the system can request that the user verify the question or command is correctly understood. In general, the question may be phrased to indicate the context of the question including all criteria or parameters. If the user confirms that the question is correct the system may proceed to produce a response. Otherwise, either the user can rephrase the original question, perhaps adding additional information to remove ambiguity, or the system may ask one or more questions to attempt to resolve the ambiguity or other actions may taken.

[19] Although the system, according to another aspect of the invention, is intended to be able to accept most any natural language question or command, ambiguity can still be a problem. To assist users formulate concise questions and commands the system may support a voice query language. The language may help users clearly specify the keywords or contexts of the question or command along with the parameters or criteria. The system may provide built in training capabilities to help the user learn the best methods to formulate their questions and commands.

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[20] In order to make the responses to user's questions and commands seem more natural, the system may employ one or more dynamically invokeable personalities. Personalities have specific characteristics, which simulate the behavioral characteristics of real humans. Examples of these characteristics include, sympathy, irritation, and helpfulness. The personality also randomizes aspects of responses, just as a real human would do. This behavior includes randomization of terms used and the order of presentation of information. Characteristics of the personality are invoked using probabilistic or fuzzy set decision and matching methods, and using criteria including the context for the question, the history of the user's interaction, user preferences, information sources available, responses obtained from the sources.

[21] According to another aspect of the invention, special procedures to present information that is in the form of long text strings, tables, lists or other long response sets may be employed. Simply presenting a long set of information in an ordered manner is not natural nor what most users have in mind. The system, using for example, probabilistic or fuzzy set matching methods, may extract the most relevant information to the user and presents these subsets first. Further the system may provide commands allowing the user to skip through the list, find keywords or key information in the list or stop processing the list altogether.

[22] In addition to the ability to process user questions and commands, the invention may provide local or remote control functions for the system or for other devices. Users may initiate commands locally or remotely. Several techniques for executing remote operations are possible, for example, the use of a telephone or other audio connection. Other remote command techniques may be used. The processing of these commands is

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performed in a nearly identical manner to a question. One difference being that the result of the command is generally an action rather than a response. Examples of control operations supported by the invention include, finding and playing music, film, games or other entertainment media, control of the appliances or other electronic or electro-mechanical devices, security systems control, audio, text and video conferencing (including Voice over IP conferencing), operating integrated messaging environments and other control operations. By using an optional analog or digital telephone interface or a data network interface, the invention can provide remote control capability of the computer or and auxiliary devices connected to the computer. For example, if the computer is connected via an interface to one or more auxiliary devices, a remote user can use this capability to remotely control or program the operation of the auxiliary device. For example, this enables recording of a television program, checking the status of a home security system, checking voice mail messages, hearing and responding to email messages, and much more. For each user command utterance the system may execute a number of steps possibly including:

- capture the user's command through accurate speech recognition operating in a variety of real-world environments;
- parse and interpret the command;
- determine the domain for the command and context, invoking the proper resources, including agents;
- formulate device specific commands for the system or external devices;
- route command to system, or external devices, including external devices connected to data networks;

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- receive and process results of command, including errors; and
- optionally, provide response to user indicating the success or failure of the command, and possibly including state information.

[23] The system may be used in conjunction with a wide range of platform environments. These environments include, as a peripheral to a PC, a portable or wearable computer or other computer, embedded in a PC or other computer, on a personal digital assistant (e.g., a PDA with wireless networking capability, in a specialized device such as a bar code scanner or payment terminal, on a wireless telephone, or other platforms. If the invention is used with a mobile or portable device that has position location capability, the location data can be used by the invention as part of the context for user questions. A user may use the system on one or more devices. In this case history and profile information for the user may be synchronized between the multiple devices on a periodic basis or other basis.

[24] According to another aspect of the invention, the system may be deployed in a network of devices using common base of agents, data, information, user profiles and histories. Each user can then interact with, and receive the same services and applications at any location equipped with the required device on the network. For example, multiple devices on which the invention is deployed, and connected to a network, can be placed at different locations throughout a home, place of business or other location. In such a case, the system may use the location of the particular device addressed by the user as part of the context for the questions asked.

[25] Multiple users may use the system at different times or during interleaved or overlapping sessions. The system recognizes the user either by name or voice. Once the

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user is recognized, the system invokes the correct profile. If multiple users are addressing the system in overlapping or interleaved sessions, the system determines which user is stating each question or command and applies the correct profile and context. For applications requiring security, the user is verified, typically by using voiceprint matching or requesting a password or pass-phrase from the user. When multiple users are engaged in interleaved sessions, the system gracefully resolves conflicts using a probabilistic or fuzzy set decision method. This process simulates the manner in which a human would address multiple questions. For example, the system may answer short questions first at times, while answering questions in the order received at other times.

[26] Given the desire for domain specific behavior, user specific behavior and domain specific information, the system, according to another aspect of the invention, may allow both users and content providers to extend the system capabilities, add data to local data sources, and add references to network data sources. To allow coverage of the widest possible range of topics, the system allows third party content developers to develop, distribute and sell specialized or domain specific system programs and information. Content is created though creation of new agents, scripting existing agents, adding new data to agents or databases and adding or modifying links to information sources. Distribution of this information is sensitive to the users interests and use history and to their willingness to pay or not.

[27] According to another aspect of the invention, the system may allow users to disseminate their knowledge without programming. The system may include mechanisms that allow users to post and distribute agents and information in their particular areas of

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expertise, to improved system capability. Further, users can extend the system and configure it to their own preferences, add information to their profile to define new questions or queries, extend and modify existing questions and queries, add new data sources, update data sources, set preferences and specify presentation parameters for results.

[28] Since the invention may operate in many environments, including environments with background noise, point noise sources and people holding conversations, filtering of speech input may be performed. The invention may use, for example, either one-dimensional or two-dimensional array microphones to receive human speech. The array microphones can be use fixed or employ dynamic beam forming techniques. The array pattern may be adjusted to maximize gain in the direction of the user and to null point noise sources. Speech received at the microphones may then be processed with analog or digital filters to optimize the bandwidth, cancel echoes, and notch-out narrow band noise sources. Following filtering, the system may use variable rate sampling to maximize the fidelity of the encoded speech, while minimizing required bandwidth. This procedure may be particularly useful in cases where the encoded speech is transmitted over a wireless network or link.

[29] Some example applications for the invention includes but are not limited to the following:

- white pages and yellow pages lookups to find, email addresses, telephone numbers, street addresses and other information for businesses and individuals;
- personal address book, calendars and reminders for each user;

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- automatic telephone dialing, reading and sending emails and pages by voice and other communications control functions;
- map, location and direction applications;
- movie or other entertainment locator, review information and ticket purchasing;
- television, radio or other home entertainment schedule, review information and device control from a local or remote user;
- weather information for the local area or other locations;
- stock and other investment information including, prices, company reports, profiles, company information, business news stories, company reports, analysis, price alerts, news alerts, portfolio reports, portfolio plans, etc.;
- flight or other scheduled transportation information and ticketing;
- reservations for hotels, rental cars and other travel services;
- local, national and international news information including headlines of interest by subject or location, story summaries, full stories, audio and video retrieval and play for stories.;
- sports scores, news stories, schedules, alerts, statistics, back ground and history information, etc.;
- ability to subscribe interactively to multimedia information channels, including sports, news, business, different types of music and entertainment, applying user specific preferences for extracting and presenting information;

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- rights management for information or content used or published;
- horoscopes, daily jokes and comics, crossword puzzle retrieval and display and related entertainment or diversions;
- recipes, meal planning, nutrition information and planning, shopping lists and other home organization related activities;
- as an interface to auctions and online shopping, and where the system can manage payment or an electronic wallet;
- management of network communications and conferencing, including telecommunications, email, instant messaging, Voice over IP communications and conferencing, local and wide area video and audio conferencing, pages and alerts;
- location, selection, management of play lists and play control of interactive entertainment from local or network sources including, video on demand, digital audio, such as MP3 format material, interactive games, web radio and video broadcasts;
- organization and calendar management for families, businesses and other groups of users including the management of, meetings, appointments, and events; and
- interactive educational programs using local and network material, with lesson material level set based on user's profile, and including, interactive multimedia lessons, religious instruction, calculator, dictionary and spelling, language training, foreign language translation and encyclopedias and other reference material.

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[30] It will be appreciated that the foregoing statements of the features of the invention are not intended as exhaustive or limiting, the proper scope thereof being appreciated by reference to this entire disclosure and reasonably apparent variations and extensions thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[31] The invention will be described by reference to the preferred and alternative embodiments thereof in conjunction with the drawings in which:

[32] **FIG. 1** is an overall diagrammatic view according to one embodiment of the invention;

[33] **FIG. 2** is a schematic block diagram showing the agent architecture according to one embodiment of the invention;

[34] **FIG. 3** is a high level process for receiving natural language speech-based queries and/or commands and generating a response according to one embodiment of the invention;

[35] **FIG. 4A** is a process for receiving natural language speech-based queries and/or commands and generating a response according to one embodiment of the invention;

[36] **FIG. 4B** is a process for receiving natural language speech-based commands in order to locally or remotely control functions of devices according to one embodiment of the invention;

[37] **FIG. 5** is a process for correctly interpreting a user's utterance according to one embodiment of the invention; and

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[38] FIG. 6 is a process for determining the proper domain agents to invoke and the properly formatted queries and/or commands that is to be submitted to the agents according to one embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[39] The fact that most natural language queries are incomplete in their definition is a significant barrier to natural human query-response interaction between humans and machines. Further, some questions can only be interpreted in the context of previous questions, knowledge of the domain, or the user's history of interests and preferences. Thus, some natural language questions may not be easily transformed to machine processable form. Compounding this problem, many natural language questions are ambiguous or subjective. In these cases, the formation of a machine processable query and returning of a natural language response is difficult at best.

[40] In order for machines (e.g., computer devices) to properly respond to a question or a command that is in a natural language form, machine processable queries and commands may be formulated after the natural form question or command has been parsed and interpreted. Depending on the nature of the question or command, there may not be a simple set of queries and commands that will return an adequate response. Several queries and commands may need to be initiated and even these queries and commands may need to be chained or concatenated to achieve a complete result. Further, no single available source may contain the entire set of results required. Thus multiple queries and/or commands, perhaps with several parts, may be needed for multiple data sources, which can be both local or on a network. Not all of these sources, queries and/or commands will return useful results or any results at all. Useful results that are returned

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are often embedded in other information, and from which they may need to be extracted. For example, a few key words or numbers often need to be "scraped" from a larger amount of other information in a text string, table, list, page or other information. At the same time, other extraneous information such as graphics or pictures needs to be removed to process the response. In any case, the multiple results must be evaluated and combined to form the best possible answer, even in the case where some queries do not return useful results or fail entirely. In cases where the question is ambiguous or the result inherently subjective, determining the best result to present is a complex process. Finally, to maintain a natural interaction, responses need to be returned rapidly to the user. Managing and evaluating complex and uncertain queries while maintaining real-time performance is a significant challenge.

[41] The following detailed description refers to the accompanying drawings, and describes exemplary embodiments of the present invention. Other embodiments are possible and modifications may be made to the exemplary embodiments without departing from the spirit, functionality and scope of the invention. Therefore, the following detailed descriptions are not meant to limit the invention.

[42] The present invention provides a complete speech-based information query, retrieval, processing and presentation environment. In addition, the invention may be useful for control of the system itself and/or external devices. This integrated environment makes maximum use of context, prior information and domain and user specific profile data to achieve a natural environment for one or more users making queries or stating commands in multiple domains. Through this integrated approach, a complete speech-based natural language query, command and response environment may

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be created. **FIG. 1** shows a schematic diagram view of a system **90** according to an embodiment of the invention.

[43] The system **90** may include a main unit **98** and a speech unit **128**. Alternatively, the system **98** may only comprise of the main unit **98**, the speech unit **128** being a completely separate system. The event manager **100** may mediate interactions between other components of the main unit **98**. The event manager **100** provides a multi-threaded environment allowing the system **98** to operate on multiple commands or questions from multiple user sessions without conflict and in an efficient manner, maintaining real-time response capabilities.

[44] Agents **106** contain packages of both generic and domain specific behavior for the system **98**. Agents **106** may use nonvolatile storage for data, parameters, history information, and locally stored content provided in the system databases **102** or other local sources. User specific data, parameters, and session and history information that may determine the behavior of agents **106** are stored in one or more user profiles **110**. Data determining system personality characteristics for agents are stored in the one or more personality module **108**. The update manager **104** manages the automatic and manual loading and updating of agents **106** and their associated data from the Internet **136** or other network through the network interface **116**.

[45] The main user interface for the system **90**, according to an embodiment of the invention, is through one or more speech units **128**. The speech unit **128** includes one or more microphones, for example array microphone **134,** to receive the utterances of the user. The speech received at the microphone **134** may be processed by filter **132** and passed to the speech coder **138** for encoding and compression. In one embodiment, a

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transceiver module **130** transmits the coded speech to the main unit **98**. Coded speech received from the main unit **98** is detected by the transceiver **130**, then decoded and decompressed by the speech coder **138** and annunciated by the speaker **136**.

[46] The one or more speech units **128** and the main unit **98** may communicate over a communication link. The communication link can include a wired or wireless link. According to one embodiment, the communication link comprises an RF link. The transceiver **130** on the speech unit communicates coded speech data bi-directionally over the communication link with the transceiver **126** on the main unit **98**. According to another embodiment, RF link may use any standard local area wireless data protocols including the IEEE 802.11, Bluetooth or other standards. Alternatively, an infrared data link conforming to any suitable standard such as IrDA or other infrared standards can be used. In an alternative embodiment, wires connect the speech unit **128** and the main unit **98**, eliminating the need for one speech coder **138**. Other wired or wireless analog or digital transmission techniques can be used.

[47] Coded speech received at the transceiver **126** on the main unit **98** is passed to the speech coder **122** for decoding and decompression. The decoded speech is processed by the speech recognition engine **120** using data in the dictionary and phrases module **112** and received from the agents **106**. The recognized words and phrases are processed by the parser **118**, which transforms them into complete commands and questions using data supplied by an agent[s] **106**. The agent[s] **106** then process the commands or questions. The agent[s] **106** create queries to local databases **102** or though the network interface **116** to data sources on the Internet **136** or other networks. Commands typically result in actions taken by the system **90** itself (i.e., pause or stop), or to a remote device or data

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source (i.e., download data or program, or control a remote device), through the network interface to the Internet or other data interface.

[48] The agents **106** return results of questions as responses to users. The response may be created using the results of information queries, the system personality **108** and the user preferences or other data in the user profile **110**. The agents **106** generally present these results using the speech unit **128**. The agents **106** creates a response string, which is sent to the text to speech engine **124**. The text to speech engine **124** creates the required utterances, which may be encoded and compressed by the speech coder **122**. Once coded, the utterances are transmitted from the main unit **98** by the transceiver **126** to the transceiver **130** on the speech unit **128**. The utterance is then decoded and decompressed by the speech coder **138** and output by the speaker **136**.

[49] The graphical user interface **114** can be used as a substitute or complement to the speech interface. For example, the graphical user interface 114 can be used to view and interact with graphical or tabular information in a manner more easily digested by the user. The graphical user interface can show system state and history in a more concise manner than the speech interface. Users can use the graphical user interface to create or extend agents **106**. These operations can include scripting of agents, adding data to the agent or databases **102** used by the agent, adding links to information sources.

[50] The system **90** may comprise of different types of agents. In one embodiment of the invention, generic and domain specific behavior and information may be organized into domain agents. A system agent, on the other hand, provides default functionality and basic services. The domain specific agents provide complete, convenient and re-distributable packages or modules for each application area. In other words, a domain

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agent includes everything needed to extend or modify the functionality of the system **90** in a current or new domain. Further, domain agents and their associated data can be updated remotely over a network as new behavior is added or new information becomes available. Domain agents may use the services of other, typically more specialized, agents and the system agent. Agents are distributed and redistributed in a number of ways including on removable storage media, transfer over networks or attached to emails and other messages. The invention may provide license management capability allowing the sale of agents by third parties to one or more users on a one time or subscription basis. In addition, users with particular expertise may create agents, update existing agents by adding new behaviors and information and making these agents to other users. A block diagram of an agent architecture according to an embodiment of the invention is shown in **FIG. 2.**

[51] Agents **106** receive and return events to the event manager **100**. Both system agents **150** and domain agents **156** receive questions and commands from the parser **118**. Based on keywords in the questions and commands and the structures of the questions and commands, the parser invokes the required agent[s]. Agents use the nonvolatile storage for data, parameters, history information and local content provided in the system databases **102**. When the system starts-up or boots-up the agent manager **154** may load and initialize the system agent **150** and the one or more domain agents **156**. At shutdown the agent manager unloads the agents. The agent manager **154** also performs license management functions for the domain agents **156** and content in the databases **102**.

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[52] The system agent **150** manages the criteria handlers **152**, which handle specific parameters or values (criteria) used to determine context for questions and commands. Both the system agent **150** and the domain agents **156** use the criteria handlers **152**. The various domain agents **156** can use the services of the system agent **150** and of other, typically more specialized, domain agents **156**. The system agent **150** and the domain agents **156** use the services of the agent library **158**, which contains utilities for commonly used functions. The library may include utilities for text and string handling, network communications, database lookup and management, fuzzy and probabilistic evaluation, text to speech formats, and other utilities.

[53] Domain agents **156** can be data-driven, scripted or created with compiled code. A base of generic agent is used as the starting point for data-driven or scripted agents. Agents created with compiled code are typically built into dynamically linkable or loadable libraries. Developers of agents can add new functionality to the agent library **158** as required. Details of agent distribution and update, and agent creation or modification are discussed in sections below.

[54] The invention, according to another embodiment of the invention, may provide capabilities to distribute and update system agents **150**, domain agents **156**, agent library components **158**, databases **102**, and dictionary and phrase entries **112** over wireless or wired networks **136**, including dial-up networks using the update manager **104**. The network interface **116** may provide connections to one or more networks. The update manager **104** may also manages the downloading and installation of core system updates. The agent manager **154** may perform license management functions for the domain agents and the databases. The update manager **104** and agent manager **154** may perform

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these functions for all agents and database content including, agents and content available to all users or agents and content only available to certain users. Examples of agent and database components added or updated on a periodic basis include:

- agents for new domains;
- additional domain knowledge for agents;
- new keywords for a domain, which can include names of politicians, athletes, entertainers, names of new movies or songs, etc. who have achieved recent prominence;
- links to a preferred set of information sources for the domains covered including links for, entertainment, news, sports, weather, etc.;
- updates to domain information based on, for example, changes to tax laws, company mergers, changing political boundaries; and
- updates to content, including dictionaries, encyclopedias and almanacs; and
- other content and database components.

[55] When a user requires or selects a new domain agent **156** or database element **102,** the update manager **104** may connect to their source on the network **136** though the network interface **116**, download and install the agent or data. To save system resources and to comply with any license conditions, the update manger **104** may uninstall agents that are no longer in use. In one embodiment of the invention, the update manager **104** periodically queries one or more sources of the licensed agents and database components to locate and down load updates to agent executables, scripts or data as they become

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available. Alternatively, the agent sources may initiate the downloading of agent updates of the registered or licensed agents to the update manager as they become available.

[56] The agent manager **154** may provide a license management client capable of executing most any license terms and conditions. When a particular agent **106** and/or database element **102** is required by a command, the agent manger **154** verifies that the use of the agent or data element is within the allowed terms and conditions, and if so, invokes the agent or allows access to the data element. License management schemes that can be implemented through the agent manager **154** include outright purchase, subscription for updates, one time or limited time use. Use of shared agents and data elements (such as those down-loaded from web sites maintained by groups of domain experts) may also be managed by the agent manager **154**.

[57] If a question or command requires an agent, currently not loaded on the system, the agent manager **154** may search the network **136** through the network interface **116** to find a source for a suitable agent. Once located, the agent can be loaded under the control of the update manager **104**, within the terms and conditions of the license agreement as enforced by the agent manger.

[58] New commands, keywords, information, or information sources can be added to any domain agent **156** by changing agent data or scripting. These configuration capabilities may allow users and content developers to extend and modify the behavior of existing domain agents **156** or to create new domain agents **156** from a generic agent without the need to create new compiled code. Thus, the modification of the domain agents **156** may range from minor data-driven updates by even the most casual users, such as specifying the spelling of words, to development of complex behavior using the

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scripting language as would typically be done by a domain expert. The user can create and manage modifications to domain agents **156** through speech interface commands or using a graphical user interface **114**. User-specific modifications of domain agents **156** are stored in conjunction with the user's profile **110** and accessed by the domain agent **156** at run-time.

[59] The data used to configure data driven agents **156** are structured in a manner to facilitate efficient evaluation and to help developers with organization. These data are used not only by the agents **156**, but also by the speech recognition engine **120**, the text to speech engine **124**, and the parser **118**. Examples of some major categories of data include:

1. Content packages include questions or commands. Each command or question or group of commands or questions includes contexts used for creation of one or more queries. The agent **156** passes a regular grammar expression to the parser **118** for evaluation of a context or question. An initial or default context is typically supplied for each command or question. The command or question includes a grammar for the management and evaluation of the context stack.

2. Page lists or pointers to other local or network content sources. For each page or content source there is a pointer (e.g. URL, URI, or other pointer) to the page or source. Each page has specific scraping information used to extract the data of interest. The scraping information includes matching patterns, HTML or other format parsing information.

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3. A response list, determining the response of the agent 156 to a particular command or question given the context, the user profile and the information retrieved. Responses can include diagnostic error messages or requests for more information if the question or command cannot yet be resolved from the known information. Responses can be based on or dependent on thresholds or probabilistic or fuzzy weights for the variables.

4. Substitution lists containing variable substitutions and transformations, often applied by the agents **150, 156** in the formatting of queries and results. For example, a stock domain specific agent **156** would use a substitution list of company trading symbols, company names and commonly used abbreviations. Substitutions and transformations can be performed on commands and questions to create precise queries, which can be applied against one or more information sources or to results for creating more meaningful output to the user. Substitution lists also include information for optimally dealing with structured information, such as HTTP formatted page parsing and evaluation.

5. Personalities used for responses. Personalities are constructed by combining multiple traits in a weighted manner. Weights can be specified for each agent's domain area to create one or more specific personalities. Examples of personality traits include, sarcasm, humor, irritation, and sympathy, and other traits.

6. Public and user specific parameters for sources, substitutions, transformations, variables or criteria. The public parameter lists are part of the

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agent package **156**. The user specific parameters are contained in the user profile **110**.

[60] Commands and questions are interpreted, queries formulated, responses created and results presented based on the users personal or user profile **110** values. Personal profiles may include information specific to the individual, their interests, their special use of terminology, the history of their interactions with the system, and domains of interest. The personal profile data may be used by the agents **106**, the speech recognition engine **120**, the text to speech engine **124**, and the parser **118**. Preferences can include, special (modified) commands, past behavior or history, questions, information sources, formats, reports, and alerts. User profile data can be manually entered by the user and/or can be learned by the system **90** based on user behavior. User profile values may include:

- spelling preferences;
- date of birth for user, family and friends;
- income level;
- gender;
- occupation;
- location information such as, home address, neighborhood, and business address;
- car type;
- telecommunications and other service providers and services;
- financial and investment information;
- synonyms (i.e., a nick name for someone);

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- special spelling;
- keywords;
- transformation or substitution variables;
- domains of interest; and
- other values.

[61] End users may use the data driven agent **156** extension and modification facilities and values stored in user profiles **110** to create special reports, packages of queries, alerts and output formats. A single alert or report can be configured to use multiple data sources and other variables (i.e., time, location) value to condition to determine when alert should be sent. For example, an alert can be generated by sampling a stock price every 15 min and sending an alert if the price drops below some value. To create a report, the user first specifies a set of commands or questions. Next, the user creates or selects a format for the report. Finally the user may name the report. A report can have variable parameters. For example, a user may create a company stock report, and execute the report by stating its name and the company name, which gives the user selected information and in a specified format for that company. In another example, a user can create a "morning" report, which presents selected multimedia information from different sources (news, sports, traffic, weather) in the order and formats desired. Alerts and reports can be created using only voice commands and responses, commands and responses through the graphical user interface **114**, or a combination of the two. To create a report, alert, or other specialized behavior, the user performs a number of steps including:

- specify the command to run a report or alert;

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- specify the question or questions, including keywords, used for a query;
- set the criteria for running the report such as on command or when a particular condition is met;
- define preferred information sources;
- define preferences for order of result evaluation by source, value, etc.;
- specify the presentation medium for a report or alert, such as an email, the text to speech engine, a message to a pager, or a text and graphics display; and
- specify the preferred format for the report, such as information to be presented, order of information to be presented, preferred abbreviations or other variable substitutions.

[62] Filtering and noise elimination may be important in facilitating the various functionalities of the system **90**. The accurate recognition and parsing of the user's speech requires the best possible signal to noise ratio at the input to the speech recognition engine **120**. To accomplish the required improvements an array microphone **134** and a filter **132** are employed. According to an embodiment of the invention, the microphone array, filters and speech coder **138** are physically separated from the main unit **98** into a speech unit **128**, and connected using a wireless link. Since bandwidth on a wireless connection is at a premium, the speech coder dynamically adapts the digitization rate and compression of the captured speech.

[63] The speech unit **128** may use an array of microphones **134** to provide better directional signal capture and noise elimination than can be achieved with a single microphone. The microphone array can be one-dimensional (a linear array) or two-

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dimensional (a circle, square, triangle or other suitable shape). The beam pattern of the array can be fixed or made adaptive though use of analog or digital phase shifting circuitry. The pattern of the active array is steered to point in the direction of the one or more users speaking. At the same time nulls can be added to the pattern to notch out point or limited area noise sources. The use of the array microphone also helps reduce the cross talk between output from the text to speech engine **124** through the speaker **136** and detection of the user's speech.

[64] The microphone can be complemented with an analog or digital (i.e., Voice over IP) speech interface. This interface allows a remote user to connect to the system and interact with it in the same manner possible if they were physically present.

[65] The speech unit **128**, according to an embodiment of the invention, may use an analog or digital filter **132** between the array microphone **134** and the speech coder **138**. The pass band of the filter is set to optimize the signal to noise ratio at the input to the speech recognition engine **120**. In some embodiments, the filter is adaptive, using band shaping combined with notch filtering to reject narrow-band noise. In one embodiment of the invention, the system **90** may employ adaptive echo cancellation in the filter. The echo cancellation helps prevent cross talk between output from the text to speech engine and detection of the user's speech as well as suppression of environmentally caused echoes. Algorithms comparing the background noise to the signal received from the users speech are used to optimize the band-shaping parameters of the adaptive filter. Those skilled in the art will be familiar with multiple techniques used to construct suitable digital and analog filters.

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[66] The speech received by the array microphone **134** and passed through the filter **132** may be sent to the speech digitizer or coder **138**. The speech coder 138 may use adaptive lossy audio compression to optimize bandwidth requirements for the transmission of the coded speech to the speech recognition engine **120** over a wireless link. The lossy coding may be optimized to preserve only the components of the speech signal required for optimal recognition. Further, the lossy compression algorithms that may be used may be designed to prevent even momentary gaps in the signal stream, which can cause severe errors in the speech recognition engine. The digitized speech may be buffered in the coder and the coder may adapt the output data rate to optimize the use of the available bandwidth. The use of the adaptive speech coder is particularly advantageous when a band-limited wireless link is used between the coder and the speech recognition engine.

[67] In an alternative embodiment, the array microphone can be replaced by a set of physically distributed microphones or a headset worn by the user. The distributed microphones can be placed in different parts of a room or in different rooms. The distributed microphones can create a three-dimensional array to improve signal to noise ration. The headset may use a wireless or wired connection.

[68] While the invention is intended to be able to accept most any natural language question or command, ambiguity can still be a problem. To assist users formulate concise questions and commands the system **90** may support a voice query language. The language is structured to allow a variety of queries with minimal ambiguity. Thus, the voice query language helps users clearly specify the keywords or contexts of the question or command along with the parameters or criteria. The language provides a grammar to

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clearly specify the keyword used to determine the context and a set of one or criteria or parameters. A user asking a question or stating a command in the voice query language is nearly always guaranteed to receive a response.

[69] The voice query language may be sensitive to the contents of the context stack. Thus, a following-on question can be asked using an abbreviated grammar, since key words and criteria can be inherited from the stack. For example, the user can simply asked about another keyword if the criteria of the question remain constant.

[70] The system **90**, may provide built in training capabilities to help the user learn the best methods to formulate their questions and commands. The interactive training allows the user to audibly or visibly see the machine interpretation of their queries and provides suggestions on how to better structure a query. Using the interactive training a user can quickly become comfortable with the voice query language and at the same time learn how to optimize the amount of information required with each step of a dialog.

[71] The output of the speech coder **122** may be fed to the speech recognition engine **120**. The speech recognition engine **120** recognizes words and phrases, using information in the dictionary and phrase tables **112**, and passes these to the parser **118** for interpretation. The speech recognition engine **120** may determine the user's identity by voice and name for each utterance. Recognized words and phrases may be tagged with this identity in all further processing. Thus, as multiple users engage in overlapping sessions, the tags added by the speech recognition engine **120** to each utterance allows other components of the system **90** to tie that utterance to the correct user and dialog. The user recognition capability may further be used as a security measure for

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applications, such as auctions or online shopping, where this is required. Voice characteristics of each user may be contained in the user profile **110**.

[72] A user may start a dialog with the system **90** when they first address it. This can be done by speaking a generic word ("computer") or addressing a specific name ("Fred"), which may be generally tied to a system personality **108**. Once the user starts the dialog, it may be recognized by the speech recognition engine **120**, using unique characteristics of the user's speech. At the end of a dialog or to interrupt a dialog, the user may utter a dismissal word ("good by").

[73] According to another embodiment of the invention, the system **90** may employ a speech recognition engine **124** seeding for improved word recognition accuracy, using data from the dictionary and phrase tables **112,** user profiles **110,** and the agents **106**. At the same time, the fuzzy set possibilities or prior probabilities for the words in the dictionary and phrase tables may be dynamically updated to maximize the probability of correct recognition at each stage of the dialog. The probabilities or possibilities may be dynamically updated based on a number of criteria including the application domain, the questions or commands, contexts, the user profile and preferences, user dialog history, the recognizer dictionary and phrase tables, and word spellings.

[74] For uncommon words or new vocabulary words, a user may be given the option to spell the words. The spelling may be done by saying the names or the letters or using a phonetic alphabet. The phonetic alphabet can be a default one or one of the user's choosing.

[75] Alternatively, when a user uses a word that is not recognized at all or is not correctly recognized by the speech recognition engine **120** then the user may be asked to

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spell the word. The speech recognition engine **120** determines this condition based on confidence level for the scoring process. The word is looked up in the dictionary **112** and the pronunciation for the word is added to either the dictionary, the agent **106**, or the user's profile **110**. The word pronunciation can then be associated with the domain, the question, the context and the user. Though this process the speech recognition engine learns with time and improves accuracy. To assist users in spelling words an individualized phonetic alphabet can be used. Each user can modify the standard phonetic alphabets with words, which they can remember more easily.

[76] Once the words and phrases have been recognized by the speech recognition engine **120,** the tokens and user identification is passed to the parser **118**. The parser **118** examines the tokens for the questions or commands, context and criteria. The parser **118** determines a context for an utterance by applying prior probabilities or fuzzy possibilities to keyword matching, user profile **110**, and dialog history. The context of a question or command determines the domain and thereby, the domain agent **156**, if any, to be evoked. For example, a question with the keywords "temperature" implies a context value of weather for the question. The parser dynamically receives keyword and associated prior probability or fuzzy possibility updates from the system agent **150** or an already active domain agent **156**. Based on these probabilities or possibilities the possible contexts are scored and the top one or few are used for further processing.

[77] The parser **118** uses a scoring system to determine the mostly likely context or domain for a user's question and/or command. The score is determined from weighting a number of factors including, the user profile **110**, the domain agent's data content and previous context. Based on this scoring, the system **90** invokes the correct agent. If the

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confidence level of the score is not high enough to ensure a reliable response, the system 90 may ask the user to verify whether the question and/or command is correctly understood. In general, the question that is asked by the system **90** may be phrased to indicate the context of the question including all criteria or parameters. For example, the question can be in the form of: "Did I understand that you want such-and-such" If the user confirms that the question is correct the system proceeds to produce a response. Otherwise, the user can rephrase the original question, perhaps adding additional information to remove ambiguity, or the system can ask one or more questions to attempt to resolve the ambiguity.

[78] Once the context for the question or command has been determined, the parser **118** can invoke the correct agent **156, 150**. To formulate a question or command in the regular grammar used by agents, the parser **118** may determine required and optional values for the criteria or parameters. These criteria may have been explicitly supplied by the user or may need to be inferred. The parser **118** makes use of the criteria handlers **152** supplied by the system agent **150**. The criteria handlers **152** provide context sensitive procedures for extracting the criteria or parameters from the user's question or command. Some criteria are determined by executing algorithms in the agent, while others may be determined by applying probabilistic of fuzzy reasoning to tables of possible values. Prior probabilities or fuzzy possibilities and associated values are received from a number of sources including the history of the dialog, the user profile **110**, and the agent. Based on user responses, the prior probabilities or fuzzy possibilities are updated as the system learns the desired behavior. For a weather context, examples of criteria include, location, date and time. Other criteria can include command criteria (i.e., yes/no, on/off,

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pause, stop), and spelling. Special criteria handlers are available from the system agent for processing lists, tables, barge-in commands, long strings of text and system commands.

[79] The criteria handlers **152** operate iteratively or recursively on the criteria extracted to eliminate ambiguity. This processing helps reduce the ambiguity in the user's question or command. For example, if the user has a place name (or other proper noun) in their utterance the parser **118** can use services of the domain agent **156** to look up tables in the databases **102** for place names or can attempt to determine which word is the proper noun from the syntax of the utterance. In another example, the user asks "what about flight one hundred and twenty too?". The parser and domain agent use flight information in the database and network information along with context to determine the most plausible interpretation among; flight 100 and flight 20 also, flight 100 and flight 22, flight 122, and the like.

[80] Once the context and the criteria are determined, the parser **118** may form the question or command in a standard format or hierarchical data structure used for processing by the agents **150, 156**. The parser 118 may fill in all required and some optional tokens for the grammar of the context. Often the tokens must be transformed to values and forms acceptable to the agents. The parser obtains the required transformations from the agents, dialog history or user profile **110**. Examples of transformations or substitutions performed by the parser on tokens include:

- substituting a stock symbol for a company name or abbreviation;
- substituting a numerical value for a word or words;
- adding a zip code to an address; and

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- changing a place or other name to a commonly used standard abbreviation.

[81] The agents **150, 156** may receive a command or question once the parser **118** has placed it in the required standard format. Based on the context, the parser **118** evokes the correct agent to process the question or command.

[82] Commands can be directed to the system **90** or to an external entity. System commands are generally directed to the system agent **150**. Commands for external entities are generally processed by a domain agent **156**, which includes the command context and behavior for the external entity.

[83] Specific questions are generally directed to one of the domain agents **156**. Based on the question or context and the parameters or criteria, the domain agent creates one or more queries to one or more local or external information sources. Questions can be objective or subjective in nature. Results for objective questions can often be obtained by structured queries to one or more local or network information sources. Even for objective questions, the system 90 may need to apply probabilistic or fuzzy set analysis to deal with cases of conflicting information or incomplete information. Information to answer subjective questions is generally obtained by one or more ad-hoc queries to local or network data sources, followed by probabilistic or fuzzy set evaluation of the one results to determine a best answer.

[84] Once the domain agent **156** has formulated the one or more queries, they may be sent to local and/or network information sources. The queries are performed in an asynchronous manner to account for the fact that sources respond at different speeds or may fail to respond at all. Duplicate queries are sent to different information sources to ensure that at least one source responds with a useful result in a timely manner. Further,

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if multiple results are received in a timely manner, they can be scored by the system to determine which data is most reliable or appropriate. Examples of data sources accommodated include, HTTP data sources, sources with meta-data in various formats including XML, entertainment audio, video and game files including MP3, databases using query languages and structured responses such as SQL, and other data sources.

[85] The local information sources can be stored in one or more system databases **102** or can be on any local data storage such as a set of CDs or DVDs in a player or other local data storage. Network information sources can be connected to the Internet **136** or other network and accessed through a series of plug-ins or adaptors, known a pluggable sources, in the network interface **116**. The pluggable sources in the network interface 116 may be capable of executing the protocols and interpreting the data formats for the data sources of interest. The pluggable sources may provide information scrapping data and procedures for each source to the domain agents **156**. If a new type of data source is to be used, a new plug-in or adaptor can be added to the network interface 116.

[86] The domain agent **156** evaluates the results of the one or more queries as they arrive. The domain agent 156 scores the relevance of the results based on results already received, the context, the criteria, the history of the dialog, the user profile **110** and domain specific information using probabilistic or fuzzy scoring techniques. Part of the dialog history is maintained in a context stack. The weight of each context for the scoring is based on the relevance of one context to another and the age of the contexts. Other scoring variables can be associated through the context stack. Contexts can also be exclusive, so that previous contexts have no weight in the scoring.

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[87] Based on the continuous scoring processes, the domain agent **156** may determine if a single best answer can be extracted. For most questions the desired result has a set of tokens that must be found to formulate an answer. Once a value has been found for each of these tokens the results is ready for presentation to the user. For example, for a question on weather, the tokens can include the date, day of week, predicted high temperature, predicted low temperature, chance of precipitation, expected cloud cover, expected type of precipitation and other tokens. Results processed in this manner include error messages. For subjective questions this determination is made by determining a most likely answer or answers, extracted by matching of the results received. If no satisfactory answer can be inferred from the results of the query the agent can do one of the following:

1. Ask the user for more information, typically through the speech interface, and based on the results obtained formulate new queries. This approach is applied when an irresolvable ambiguity arises in the formulation of a response.
2. Formulate new queries based on the results received from the first set of queries. This approach is typically applied in cases where the responses received do not contain all the required information. Information sources to query can inferred from the results already obtained (i.e., links in an HTML document) or from other sources. Using this approach one or more sets of queries and responses can be chained without the need for action by the user.
3. Wait for additional queries to return results.

[88] In any case, the domain agent **156** may continue to make queries and evaluate results until a satisfactory response is constructed. In doing so, the agent can start several

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overlapping query paths or threads of inquiry, typically mediated by the event manager **100**. This technique, combined with the use of asynchronous queries from multiple data sources provides the real-time response performance required for a natural interaction with the user.

[89] The domain agent **156** may apply conditional scraping operations to each query response as it is received. The conditional scraping actions depend on the context, the criteria, user profile **110,** and domain agent coding and data. For each token to be extracted, a scraping criteria **152** may be created using the services of the system agent **150**. The scraping criteria use format specific scraping methods including, tables, lists, text, and other scrapping methods. One or more scraping criteria can be applied to a page or results set. Once additional results are received, the domain agent 156 can create new scraping criteria to apply to results already acquired. The conditional scarping process removes extraneous information, such as graphics, which need not be further processed or stored, improving system performance.

[90] The domain agent **156** may strongly influence how the results are presented. For instance, once the domain agent **156** has created a satisfactory response to a question, the agent 156 may format that response for presentation. Typically, the domain agent **156** formats the response into the markup format used by the text to speech engine **124**. The domain agent **156** may also format the result presentation using available format templates and based on the context, the criteria, and the user profile **110**. Variable substitutions and transformations may be performed by the agent **156** to produce a response best understood and most natural to the user. Further, the order of presentation of tokens and the exact terminology used to create a more natural response to the user

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may be varied by the agent **156**. The domain agent **156** may also select the presentation personality **108** to be used.

[91] The domain agent **156**, may select the presentation template, determine order of presentation for tokens and determine variable substitutions and transformations using probabilistic or fuzzy set decision methods. The template used to form the presentation can be from the domain agent itself or from the user profile **110**. The user profile **110** can completely specify the presentation format or can be used to select and then modify an existing presentation format. Selection and formatting of presentation template can also depend on the presentation personality modules **108**. At the same time, the characteristics of the personality used for the response are dynamically determined using probabilities or fuzzy possibilities derived from the context, the criteria, the domain agent itself and the user profile **110**.

[92] The domain agent **156** may apply a number of transformations to the tokens before presentation to the user. These variable substitutions and transformations are derived from a number of sources including, domain information carried by the agent, the context, the token values, the criteria, the personality module **108** to be used, and the user profile **110**. Examples of variable substitutions and transformations include:

- substitution of words for numbers;
- substitution of names for acronyms or symbols (i.e., trading symbols);
- use of formatting information derived from the information sources (i.e., HTML tags);
- nature of the response including, text, long text, list, table;
- possible missing information or errors;

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- units for measurement (i.e., English or metric); and
- preferred terminology from the user profile 110 or presentation personality **108**.

[93] The system **90**, according to another embodiment of the invention, may provide special purpose presentation capabilities for long text strings, tables, lists and other large results sets. Domain agents **156** may use special formatting templates for such results. The system agent **150** may provide special criteria handlers **152** for presentation and user commands for large results sets. The presentation templates used by the domain agents 156 for large results sets typically include methods for summarizing the results and then allowing the user to query the result in more detail. For example, initially only short summaries, such as headlines or key numbers, are presented. The user can then query the results set further. The criteria handlers **152** provide users with the capability to browse large results sets. Commands provided by the criteria handlers **152** for large results sets include, stop, pause, skip, rewind, start, and forward.

[94] Some information, in formats such as video, pictures and graphics, may be best presented in a displayed format. The domain agents **156** may apply suitable presentation templates in these cases and present the information through the graphical user interface **114**. The system agent **150** provides special criteria handlers **152** for presentation and user commands for display presentation and control.

[95] **FIG. 3** is a high level process **300** for receiving natural language speech-based queries and/or commands and generating a response according to an embodiment of the invention. The process **300** comprises of individual steps, several of which may be repetitive in order to accommodate partial failures. The process **300** may begin when a

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user's utterance is received and processed at **302**. The user utterance may be a query and/or a command and may be of a natural language speech-based form. After receiving the natural language query and/or command, the query and/or command may be processed so that the data is in a more machine understandable format such as in a digital format. Once the utterance has been converted into an understandable format, the utterance may be processed so that at least an approximate meaning of the utterance can be determined at **304**. This may be accomplished by, for example, the use of stored dictionaries, phrases, user profiles, domain agent data, and other data. Based on the approximate meaning of the utterance, one or more correctly formatted queries and/or commands may be generated. A user created query and/or command may require that multiple queries and/or commands may be needed in order to generate the desired response or action. Further, depending upon the context (e.g., who is the user, what is the subject the query and/or command directed to, at what time or location is the query and/or command being directed to, and other parameters used in defining the query and/or command) in which the query and/or command has been submitted, a specific format for the query and/or command may be required. For instance, each of the domain agents 156 may require that queries and/or commands be formatted in a specific manner. Thus at 306, one or more properly formatted queries and/or commands may be generated. Steps **304** and **306** may be operations which may have to be repeated in order to obtain the correct interpretation of the user utterance and result in the desired response and/or action. Once, the properly formatted queries and/or commands are generated, the appropriate action may be taken at **308**. This may require that the properly formatted queries and/or commands be sent to specific domain agent[s], information source[s],

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device[s], or other appropriate destination[s] that can fulfill the requirements of the query and/or command. Once the appropriate action[s] have been executed, this event may be recorded to, for example, the user's profile, database and/or one or more agents at **310**. Such data may be useful for future user inquires and commands. After the action[s] have been performed, a response, if need be, may be generated and forwarded to the user and/or third parties at **312**. In the case of a query for retrieving data, the response would contain the requested information. In the case of a command, the response may be a confirmation that a specific action[s] has been executed. The response may be in the form of a natural language format. The response may also be formatted to reflect a particular personality or tone to the response in order to make the response more "human." The response may relayed to the user and/or third parties as an audio message and/or a visual message displayed on a user interface.

[96] **FIG. 4A** is a process **400** for receiving natural language speech-based queries and/or commands and generating a response using the system **90** according to another embodiment of the invention. The process **400** may begin when a user's utterance (i.e., user query and/or command) is captured through accurate speech recognition operating in a variety of real-world environments at **402**. Once the utterance is captured, it is parse and interpret to determine the query and/or command that is contained in the utterance at **404**. Next, review the query and/or command and determine the domain of expertise required and the context of the query, invoking the proper resources including, for example, agents at **406**. The original query and/or command submitted by the user will often require that multiple queries and/or commands be generated. For instance, suppose a user is interested in retrieving the value of her stock portfolio. The user may utter

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"please get the value of my stock portfolio." The system **90** may review this request together with stored data such as the user's profile and determine keywords such as "get the value" and "my stock portfolio." The system **90** may then generate queries to determine the stocks in the user's portfolio, the number of shares and the source for current pricing information. These queries may then be sent to one or more agent domains, such as a domain which may access a database containing the user's profile and a domain which accesses stock pricing sources to determine the answers to these questions. Queries may be sent to these domain agents or sources in order to obtain the desired data. Thus, at **408** formulate one or more queries that are sent to one or more local and/or network data sources and/or send appropriate commands to local or remote devices or the system itself. The queries are then sent to the designated agent[s]. The agents may then, in turn, generate their own queries and/or commands to be sent to, for example, local or remote information sources to retrieve needed data. The agent generated queries and/or commands may be formatted according to the requirements of the target sources and variable substitutions and transformations are performed to modify the queries to a form most likely to yield desired results from the available sources at **410**. Once the queries are formatted correctly, they may be executed in an asynchronous manner and dealing gracefully with failures at **412**. As a result of the execution of the queries, results may be returned by the domain agents and/or sources. The system **90** may then extract or scrape the desired information from the one or more results, which may be returned in any one of a number of different formats at **414**. That is, the results sought by a user may be the summary or the results of further processing of information obtained from several sources for example. Next, the results may be evaluated and

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interpreted including processing of errors, and gathering and combining them into a single best result judged to be "best" even if the results are ambiguous, incomplete, or conflicting at **416**. Once the best results are determined, perform any required formatting, variable substitutions and transformations to modify the results to a form most easily understood by the user at **418**. Finally, the compound results may be presented through the text to speech engine **124**, to the user in a useful and expected manner at **420**. The process **400** may be performed while accounting for the domain of expertise required, the context in which the question or command is presented, the domain specific information available, the history of the user's interaction, the user preferences, the information sources or commands that are available, and responses obtained from the sources. At each stage of the process **400**, probabilistic or fuzzy set decision and matching methods may be applied to deal with inconsistent, ambiguous, conflicting and incomplete information or responses. In addition, the use of asynchronous queries that may result in rapid and graceful failure of some queries or commands may allow the system **90** to robustly return results quickly and in a manner that seems natural to the user.

[97] **FIG. 4B** is a process **450** for receiving natural language speech-based commands in order to locally or remotely control functions of the system **90** or for other devices according to another embodiment of the invention. The process **450** may begin when a user's utterance (i.e., user query and/or command) is captured through accurate speech recognition operating in a variety of real-world environments at **452**. Once the utterance is captured, it is parse and interpret to determine the command that is contained in the utterance at **454**. Next, review the command and determine the domain for the command

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and context, invoking the proper resources including agents at **456**. The original command submitted by the user will often require that multiple queries and/or commands be generated. For instance, suppose a user is interested in recorded his favorite television program. The user may utter "please record my favorite TV program." The system **90** may review this request together with stored data such as the user's profile and determine keywords such as "record" and "my favorite TV program." The system **90** may then generate queries to determine the name, the channel, and time for the user's favorite TV program. These queries may then be sent to a agent domain, which may access a database containing the user's profile and determine the answers to these questions. A command may then be sent to a video recorder ordering the video recorder to record the selected TV program. Thus, at **458** formulate one or more queries that are to be sent to one or more local and/or network data sources and/or send appropriate commands to local or remote devices or the system itself. Next, route the generated commands to the appropriate system[s] and/or external devices at **460**. Once the commands have been executed, results including errors may be received and processed at **462**. The results of the executed commands may be optionally presented to the user at **464**.

[98] Some of the steps depicting in **FIG. 4A** may actually require multiple steps that may also be repetitive. For instance, in step **404**, the user's utterance is parsed and interpreted in order to determine the meaning of the utterance. The system **90** may make an initial interpretation of the utterance based the data stored in, for example, the dictionary and phrases module **124**, user profiles, **110**, agents **106** and the databases **104**. A real-time scoring system or other techniques may be applied to the interpretation results in order to generate a domain or a context score. If the confidence level of the

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domain or context score is not high enough to ensure a reliable response, the system **90** can request that the user verify the question or command is correctly understood. In general, the question may be phrased to indicate the context of the question including all criteria or parameters. If the user confirms that the question is correct, the system **90** may proceed to produce a response. Otherwise, either the user can rephrase the original question, perhaps adding additional information to remove ambiguity, or the system may ask one or more questions to attempt to resolve the ambiguity or other actions may taken. **FIG. 5** is a process **500** for correctly interpreting a user's utterance according to one embodiment of the invention. The process **500** generally represents steps **402** and **404** of process **400**. Initially the user's utterance is inputted into the system **90** at **502**. The input is then interpreted using, for example, various stored data such as user profiles, agent data, dictionary and phrases, and other relevant data. The interpretation is then scored using, for instance, a weighted scoring system as described previously at **506**. Once a score is obtained, determine whether the confidence level of the interpretation is satisfactory at **508**. In other words, whether the score given to the interpretation exceeds a certain value. If the confidence level is determined to be unsatisfactory then a request may be submitted to the user requesting that the user verify the interpretation at **510** and **512**. If the user is unsatisfied with the interpretation, he/she may be asked to rephrase the utterance and/or provide additional information at **514**. Once the user provides the rephrased utterance and/or additional information, the process **500** returns to the beginning at **502**. If, on the other hand, the user is satisfied with the interpretation, then the process **400** for receiving a natural language speech-based queries and/or commands and generating a response may continue at **516**.

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[99] Once the meaning of the utterance has been determined, the appropriate domain agent[s] and the query and/or commands properly formatted for the agent[s] may be determined. Referring to **FIG. 6**, which is a process **600** for determining the proper domain agent[s] to invoke and the properly formatted queries and/or commands that is to be submitted to the agents **106** as generally depicted in steps **406-408** of **FIG. 4A** according to one embodiment of the invention. In order to formulate a question or command in the regular grammar used by agents **106**, a determination may be made as to the required and optional values for the criteria or parameters of the queries and/or commands. These criteria may have been explicitly supplied by the user or may need to be inferred. Thus, the properly interpreted query and/or command that is generated by, for example, steps **404** and **454** of **FIGS. 4A** and **4B**, is parsed at **602**. The content of the properly interpreted query and/or command is then analyzed to determine the criteria and/or parameters of the properly interpreted query and/or command at **604**. A context sensitive procedure for extracting the criteria or parameters from the properly interpreted query and/or command may be used. Some criteria are determined by executing algorithms in the agent, while others may be determined by applying probabilistic of fuzzy reasoning to tables of possible values. Prior probabilities or fuzzy possibilities and associated values are received from a number of sources including the history of the dialog, the user profile **110**, and the agent. Based on user responses, the prior probabilities or fuzzy possibilities are updated as the system **90** learns the desired behavior. For a weather context, examples of criteria include, location, date and time. Other criteria can include command criteria (i.e., yes/no, on/off, pause, stop), and spelling. The process for determining criteria may be iterative or recursive in order to

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eliminate ambiguity in the user's question or command. For example, if the user has a place name (or other proper noun) in their utterance, tables in the databases **102** may be reviewed for place names or an attempt may be made to determine which word is the proper noun from the syntax of the utterance. In another example, the user asks "what about flight one hundred and twenty too?" In such a situation, flight information in the database and network information along with context may be used to determine the most plausible interpretation among; flight 100 and flight 20 also, flight 100 and flight 22, flight 122, and the like. Once the parameters and criteria for the query and/or command have been established, the proper agents **106** may be selected at **606**. After selecting the agents **106**, a properly formatted query and/or command that will be submitted to the agents **106** may be determined at **608**. The query and/or command may be in a standard format or may be a hierarchical data structure used for processing by the agent **106**. In order to submit the properly formatted query and/or command to the agent **106**, all of the required and some optional tokens for the grammar of the context may be filled in. Often the tokens must be transformed to values and forms acceptable to the agents. The required transformations may be obtained from the agents, dialog history or user profile **110**. Examples of transformations or substitutions that may be performed were provided above. Once the properly formatted queries and/or commands are generated, the process (e.g., process **400**) may continue at **610**.

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We Claim:

1. A method responsive to a user generated natural language speech utterance, comprising:

receiving the user generated natural language speech utterance, the received user utterance containing at least one request;

determining a meaning of the received user utterance, wherein determining the meaning includes determining a context for the at least one request contained in the user utterance;

selecting at least one domain agent based on the determined meaning, the selected domain agent being an autonomous executable that receives, processes, and responds to requests associated with the determined context;

formulating the at least one request contained in the utterance in accordance with a grammar used by the selected domain agent to process requests associated with the determined context; and

invoking the selected domain agent to process the formulated request.

2. The method according to claim 1, wherein determining the context includes applying prior probabilities or fuzzy possibilities to keywords contained in the utterance, a profile of the user, and a dialog history relating to one or more prior utterances.

3. The method according to claim 1, wherein the selected domain agent processes requests associated with the determined context by submitting one or more queries to local or network information sources.

4. The method according to claim 1, wherein the selected domain agent processes requests associated with the determined context by directing one or more commands to local or remote processing devices.

5. A method responsive to a user generated natural language speech utterance, comprising:

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receiving the user generated natural language speech utterance, the received user utterance containing at least one question;

determining a meaning of the received user utterance, wherein determining the meaning includes determining a context for the at least one question contained in the user utterance;

selecting at least one domain agent based on the determined meaning, the selected domain agent being an autonomous executable that receives, processes, and responds to questions associated with the determined context;

formulating the at least one question contained in the utterance in accordance with a grammar used by the selected domain agent to process requests associated with the determined context; and

invoking the selected domain agent to process the formulated question, wherein the invoked domain agent processes the formulated question by:

submitting a plurality of asynchronous queries to a plurality of information sources;

asynchronously receiving a plurality of results of the queries from the plurality of information sources; and

scoring the asynchronously received results to determine one or more best responses to the at least one question contained in the utterance.

6. The method according to claim 5, wherein the invoked domain agent formats the one or more best responses using a format template associated with the determined context, criteria identified from the user utterance, and a profile of the user.

7. The method according to claim 6, wherein the invoked domain agent formats the one or more best responses by performing variable substitutions and transformations to produce a response best understood and most natural to the user.

8. A system responsive to a user generated natural language speech utterance, the system comprising one or more processing units collectively operable to:

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receive the user generated natural language speech utterance, the received user utterance containing at least one request;

determine a meaning of the received user utterance, wherein determining the meaning includes determining a context for the at least one request contained in the user utterance;

select at least one domain agent based on the determined meaning, the selected domain agent being an autonomous executable that receives, processes, and responds to requests associated with the determined context;

formulate the at least one request contained in the utterance in accordance with a grammar used by the selected domain agent to process requests associated with the determined context; and

invoke the select domain agent to process the formulated request.

9. The system according to claim 8, the processing units operable to determine the context by applying prior probabilities or fuzzy possibilities to keywords contained in the utterance, a profile of the user, and a dialog history relating to one or more prior utterances.

10. The system according to claim 8, wherein the selected domain agent processes requests associated with the determined context by:

submitting a plurality of asynchronous queries to a plurality of local or network information sources;

asynchronously receiving a plurality of results of the queries from the plurality of information sources; and

scoring the asynchronously received results to determine one or more best responses to the at least one request contained in the utterance.

11. The system according to claim 8, wherein the selected domain agent processes requests associated with the determined context by directing one or more commands to local or ~~a~~ remote processing devices.

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12. The system according to claim 10, wherein the selected domain agent scores the asynchronously received results by applying probabilistic or fuzzy scoring techniques based on previously received asynchronous results, the determined context, criteria identified from the user utterance, tokens associated with a desired response, a dialog history relating to one or more prior utterances, a profile of the user, and information specific to the selected domain agent.

13. The system according to claim 10, wherein the selected domain agent formats the one or more best responses using a format template associated with the determined context, criteria identified from the user utterance, and a profile of the user.

14. The system according to claim 13, wherein the selected domain agent formats the one or more best responses by performing variable substitutions and transformations to produce a response best understood and most natural to the user.

15. The method according to claim 5, wherein the invoked domain agent scores the asynchronously received results by applying probabilistic or fuzzy scoring techniques based on previously received asynchronous results, the determined context, criteria identified from the user utterance, tokens associated with a desired response, a dialog history relating to one or more prior utterances, a profile of the user, and information specific to the invoked domain agent.

16. The method according to claim 7, wherein the invoked domain agent produces the response best understood and most natural to the user using probabilistic or fuzzy set decision methods to vary one or more of a personality for presenting the response, an order for presenting tokens contained in the response, or a terminology for presenting the tokens contained in the response.

17. The system according to claim 14, wherein the selected domain agent produces the response best understood and most natural to the user using probabilistic or fuzzy set decision methods to vary one or more of a personality for presenting the response, an

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order for presenting tokens contained in the response, or a terminology for presenting the tokens contained in the response.

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ABSTRACT

Systems and methods for receiving natural language queries and/or commands and execute the queries and/or commands. The systems and methods overcomes the deficiencies of prior art speech query and response systems through the application of a complete speech-based information query, retrieval, presentation and command environment. This environment makes significant use of context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users making queries or commands in multiple domains. Through this integrated approach, a complete speech-based natural language query and response environment can be created. The systems and methods creates, stores and uses extensive personal profile information for each user, thereby improving the reliability of determining the context and presenting the expected results for a particular question or command.

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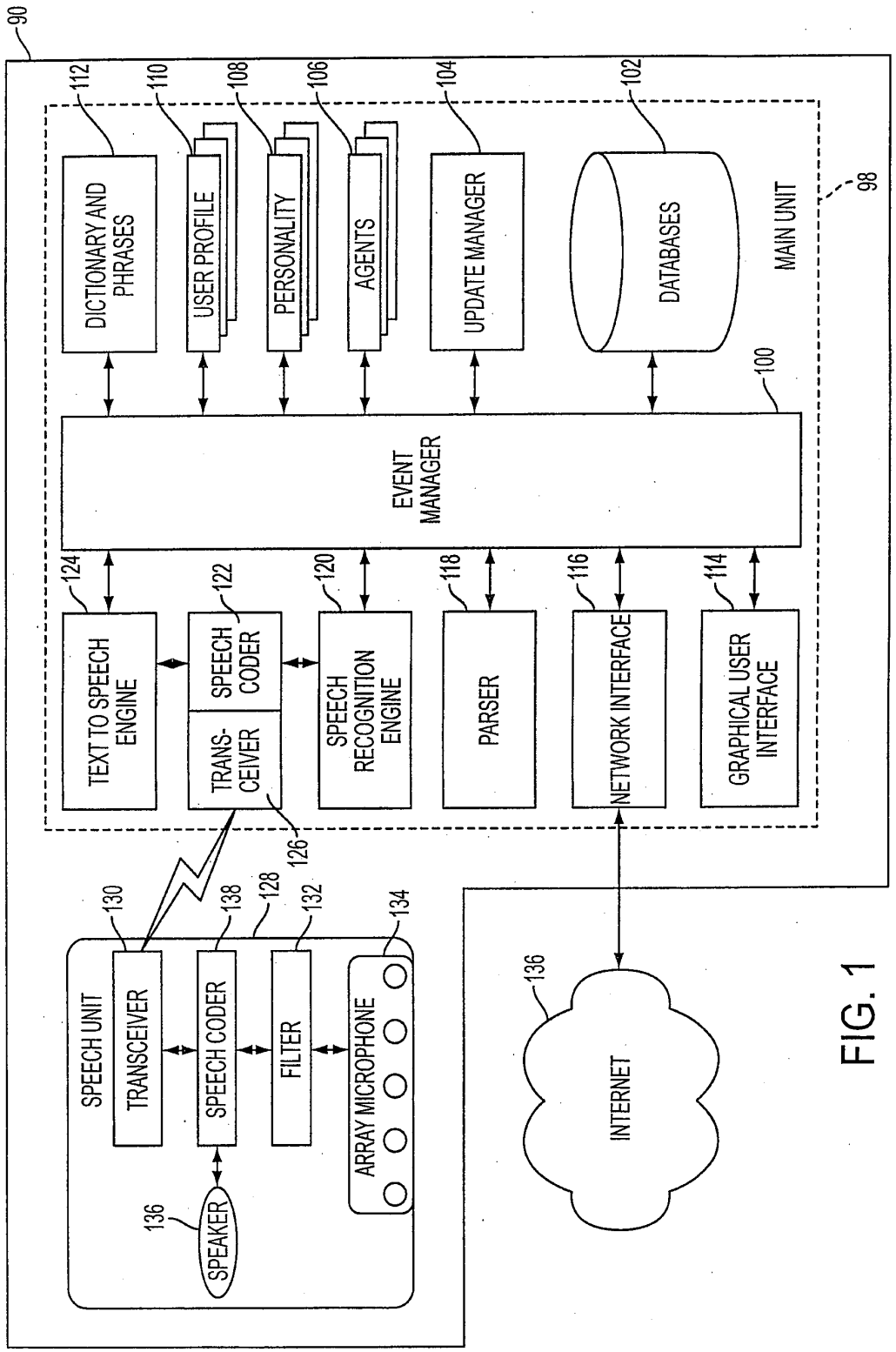

90
112
110
108
106
104
102
DICTIONARY AND PHRASES
USER PROFILE
PERSONALITY
AGENTS
UPDATE MANAGER
DATABASES
MAIN UNIT
98
100
EVENT MANAGER
124
122
120
118
116
114
TEXT TO SPEECH ENGINE
SPEECH CODER
TRANS-CEIVER
SPEECH RECOGNITION ENGINE
PARSER
NETWORK INTERFACE
GRAPHICAL USER INTERFACE
126
130
138
128
132
134
SPEECH UNIT
TRANSCEIVER
SPEECH CODER
FILTER
ARRAY MICROPHONE
136
SPEAKER
136
INTERNET

FIG. 1

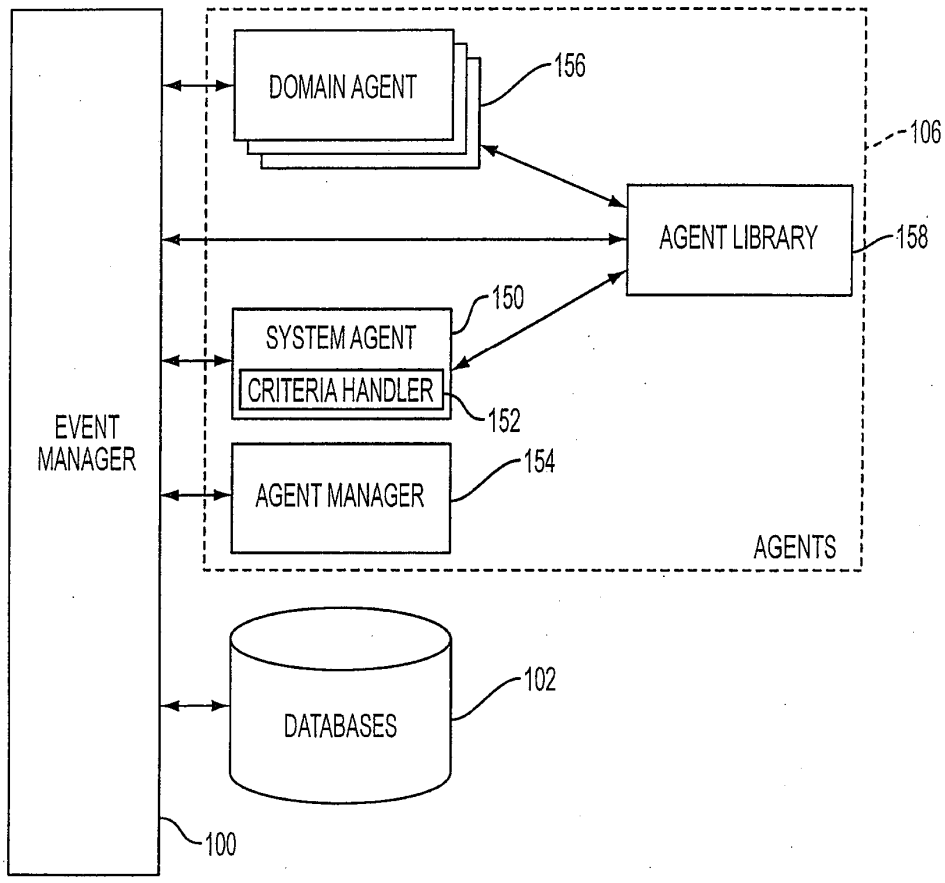

DOMAIN AGENT
156
106
AGENT LIBRARY
158
150
SYSTEM AGENT
CRITERIA HANDLER
152
EVENT MANAGER
AGENT MANAGER
154
AGENTS
DATABASES
102
100

FIG. 2

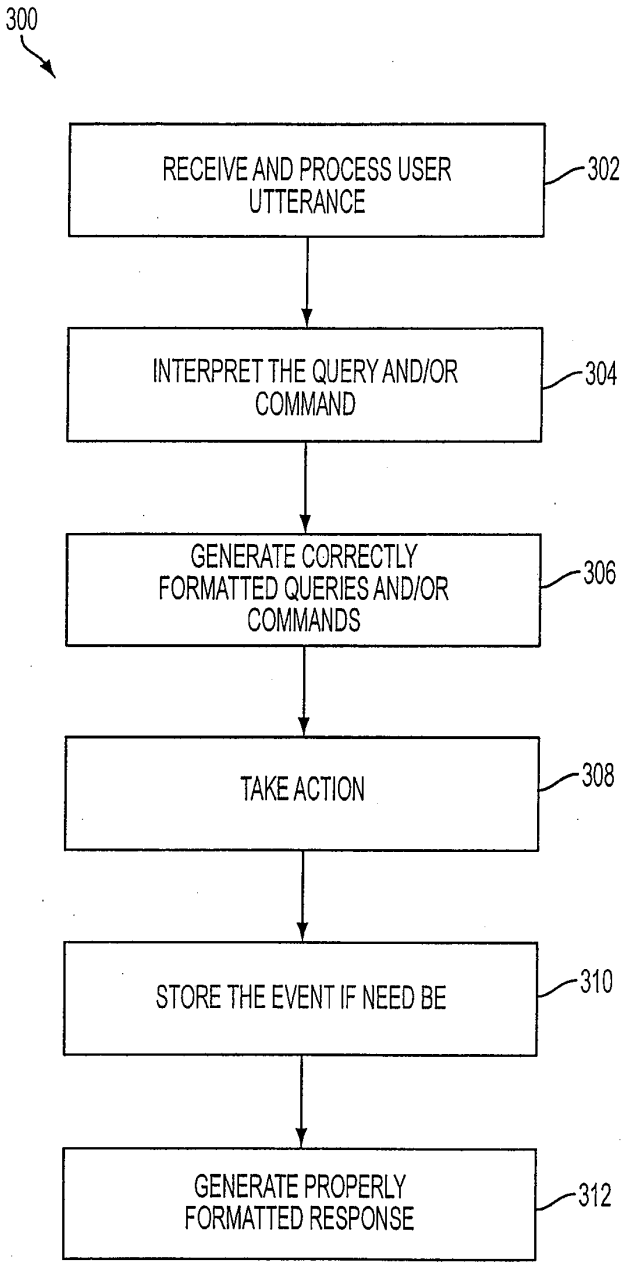

300
RECEIVE AND PROCESS USER UTTERANCE
302
INTERPRET THE QUERY AND/OR COMMAND
304
GENERATE CORRECTLY FORMATTED QUERIES AND/OR COMMANDS
306
TAKE ACTION
308
STORE THE EVENT IF NEED BE
310
GENERATE PROPERLY FORMATTED RESPONSE
312

FIG. 3

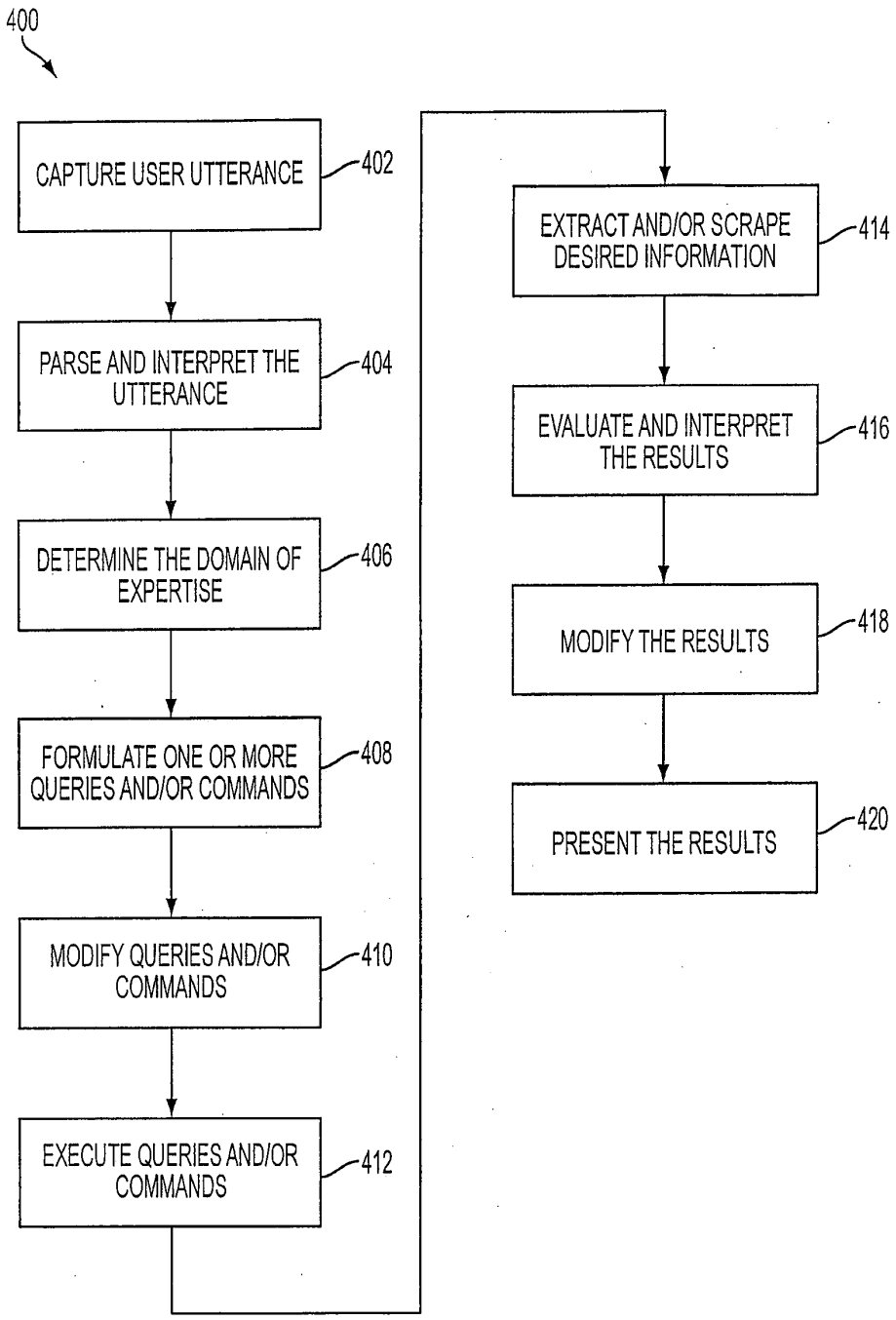

400
CAPTURE USER UTTERANCE
402
PARSE AND INTERPRET THE UTTERANCE
404
DETERMINE THE DOMAIN OF EXPERTISE
406
FORMULATE ONE OR MORE QUERIES AND/OR COMMANDS
408
MODIFY QUERIES AND/OR COMMANDS
410
EXECUTE QUERIES AND/OR COMMANDS
412
EXTRACT AND/OR SCRAPE DESIRED INFORMATION
414
EVALUATE AND INTERPRET THE RESULTS
416
MODIFY THE RESULTS
418
PRESENT THE RESULTS
420

FIG. 4A

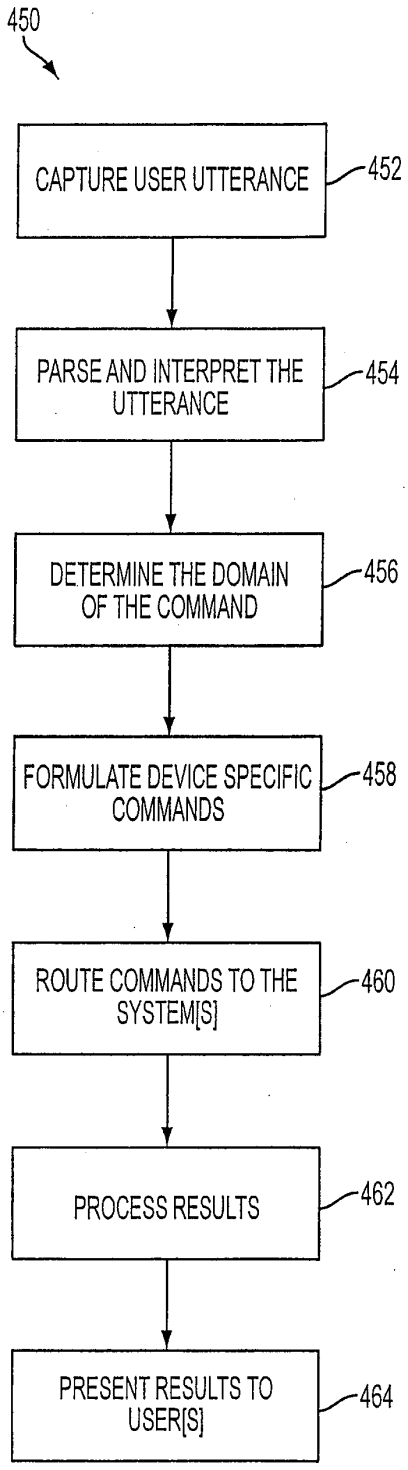

450
CAPTURE USER UTTERANCE
452
PARSE AND INTERPRET THE UTTERANCE
454
DETERMINE THE DOMAIN OF THE COMMAND
456
FORMULATE DEVICE SPECIFIC COMMANDS
458
ROUTE COMMANDS TO THE SYSTEM[S]
460
PROCESS RESULTS
462
PRESENT RESULTS TO USER[S]
464

FIG. 4B

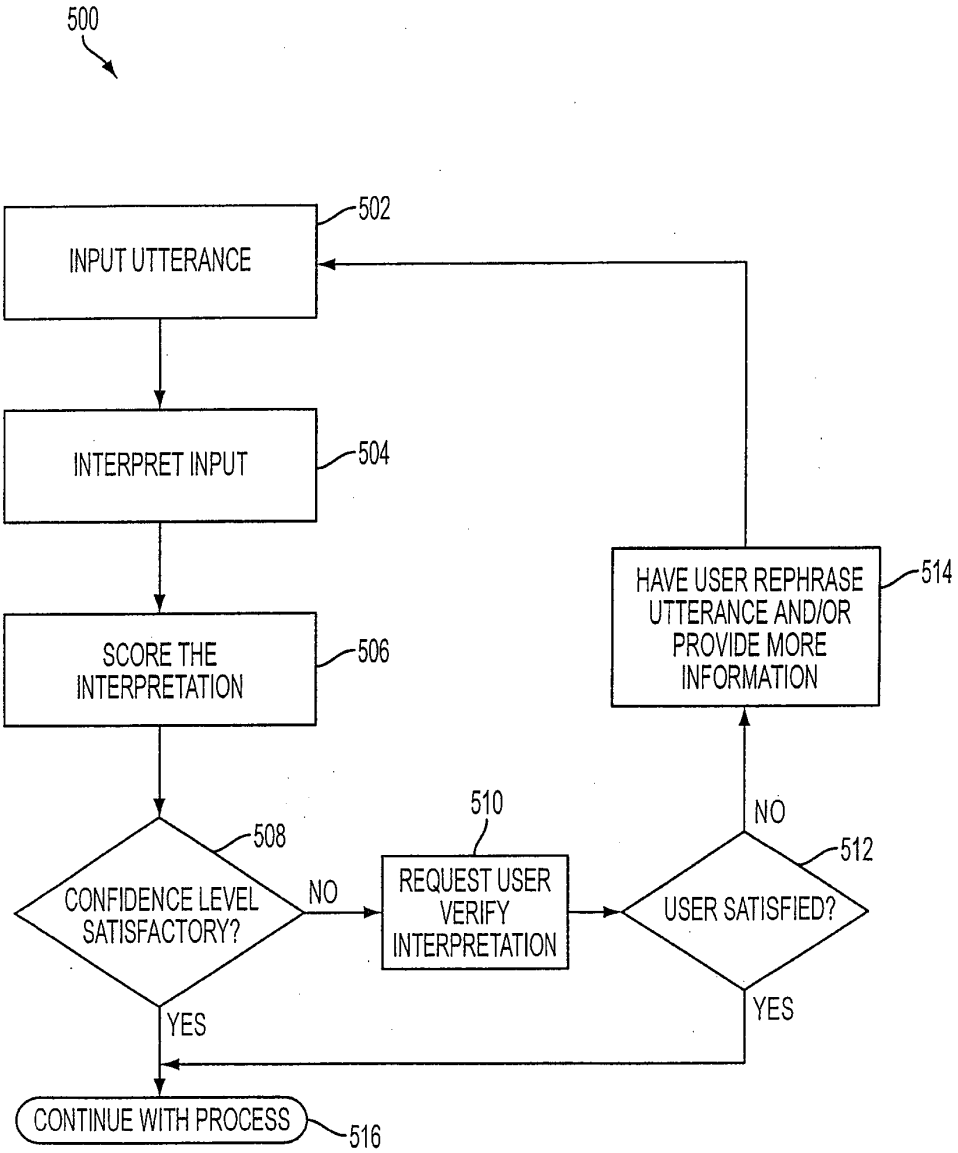

500
INPUT UTTERANCE
502
INTERPRET INPUT
504
SCORE THE INTERPRETATION
506
CONFIDENCE LEVEL SATISFACTORY?
508
NO
REQUEST USER VERIFY INTERPRETATION
510
USER SATISFIED?
512
NO
HAVE USER REPHRASE UTTERANCE AND/OR PROVIDE MORE INFORMATION
514
YES
YES
CONTINUE WITH PROCESS
516

FIG. 5

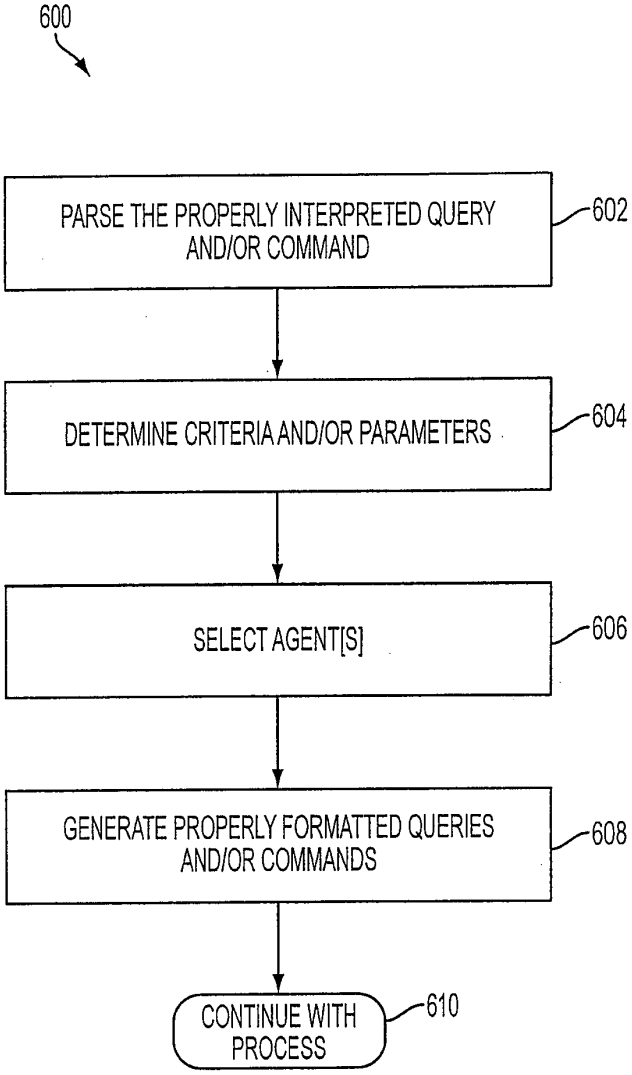

600
PARSE THE PROPERLY INTERPRETED QUERY AND/OR COMMAND
602
DETERMINE CRITERIA AND/OR PARAMETERS
604
SELECT AGENT[S]
606
GENERATE PROPERLY FORMATTED QUERIES AND/OR COMMANDS
608
CONTINUE WITH PROCESS
610

FIG. 6

COMBINED DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As below named inventors, we hereby declare that:

Our residences, post office addresses and citizenships are as stated below next to our names.

We believe we are the original, first and joint inventors which is claimed and for which a utility patent is sought on the invention entitled:

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

the specification of which was filed on June 3, 2003, with the U.S. Patent and Trademark Office and assigned U.S. Patent Application Serial No. 10/452,147.

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims.

We acknowledge the duty to disclose information that is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

We hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application designating at least one country other than the United States listed below and have also identified below any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Appln. Number	**Country** *(if PCT, so indicate)*	**Filing Date** *(dd/mm/yy)*	**Priority Claimed**	
			Yes	**No**
			☐	☐
			☐	☐

We hereby claim the benefit under Title 35, United States Code, § 119(e) or §120 of any United States application(s), or §365(c) of any PCT International application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56 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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Application No. *(U.S.S.N.)*	Filing Date *(dd/mm/yy)*
60/384,388	06/03/2002

We hereby appoint the attorneys and/or agents associated with Mintz Levin Cohn Ferris Glovsky & Popeo, Customer Number

29315

to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

Please address all telephone calls to James G. Gatto at telephone number 703-464-8182, and address all correspondence to:

Customer No. 29315

We hereby declare that all statements made herein of 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 patent issued thereon.

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Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 77

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10-13-03

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Citizenship: U.S.A. U.S.A.

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Mercer Island 98040

RES 94585v1

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Robert A. Kennewick
Filer:	Syed Jafar Ali/Kathy Oliver
Attorney Docket Number:	090611-0370991
Filed as Small Entity	

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	75	75
Utility Search Fee	2111	1	255	255
Utility Examination Fee	2311	1	105	105
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**435**

Electronic Acknowledgement Receipt

EFS ID:	3382696
Application Number:	12130397
International Application Number:	
Confirmation Number:	3889
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Robert A. Kennewick
Customer Number:	00909
Filer:	Syed Jafar Ali/Kathy Oliver
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0370991
Receipt Date:	30-MAY-2008
Filing Date:	
Time Stamp:	16:16:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$435
RAM confirmation Number	1713
Deposit Account	033975
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 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		0370991Appln.pdf	2924204 aa2655fb381ce8bb6ae8af068383c5cd80650783	yes	78

Multipart Description/PDF files in .zip description

Document Description	Start	End
Transmittal of New Application	1	2
Application Data Sheet	3	4
Power of Attorney	5	10
Specification	11	62
Claims	63	67
Abstract	68	68
Drawings-only black and white line drawings	69	75
Oath or Declaration filed	76	78

Warnings:

Information:

2	Fee Worksheet (PTO-06)	fee-info.pdf	8420 744145892f204f4510991968 1e568cf6f28127a9	no	2

Warnings:

Information:

Total Files Size (in bytes):	2932624

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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.

PTO/SB/06 (12-04)

Filing Date: **05/30/08**

Approved for use through 7/31/2006. 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 12/130,397

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	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	255		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	105		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	17 minus 20 =	0	X$ 25	0	OR	X$50	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	* 0	X$105	0		X$210	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $260 ($130 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))			185			370	
			TOTAL	435		TOTAL	0

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

AMENDMENT A		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDI-TIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDI-TIONAL FEE ($)
	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))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

AMENDMENT B		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDI-TIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDI-TIONAL FEE ($)
	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))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T 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.

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.

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Alexandria, Virginia 22313-1450
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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
12/130,397	05/30/2008	2626	435	090611-0370991	17	3

CONFIRMATION NO. 3889

909
PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

FILING RECEIPT

OC000000030370670

Date Mailed: 06/18/2008

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)

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Michael R. Kennewick JR., Bellevue, WA;
Richard Kennewick, Woodinville, WA;
Tom Freeman, Mercer Island, WA;

Power of Attorney:
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Rick Toering--43195
Bradford Blaise--47429
Sean Ingram--48283

Domestic Priority data as claimed by applicant

This application is a CON of 10/452,147 06/03/2003
which claims benefit of 60/384,388 06/03/2002

Foreign Applications

If Required, Foreign Filing License Granted: 06/06/2008
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 12/130,397**
Projected Publication Date: 09/25/2008
Non-Publication Request: No
Early Publication Request: No

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 85

**** SMALL ENTITY ****

Title

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Preliminary Class

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PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Robert A. KENNEWICK et al.	CONFIRMATION NO.:	3889
SERIAL NUMBER :	12/130,397	EXAMINER:	TBD
FILING DATE :	May 30, 2008	ART UNIT:	TBD
FOR :	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE		

PRELIMINARY AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Prior to examination on the merits, please amend the above-identified application as follows:

Amendments to the Specification begin on page **2** of this paper.

Amendments to the Claims begin on page **19** of this paper.

Remarks/Arguments begin on page **24** of this paper.

It is not believed that extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 033975 (**Ref. No. 090611-0370991**).

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AMENDMENT

Amendments to the Specification: (identifying insertions and ~~deletions~~).

Please amend paragraph **[02]**, which begins on page 1, as follows:

[02] A machine's ability to communicate with humans in a natural manner remains a difficult problem. Cognitive research on human interaction shows that a person asking a question or giving a command typically relies heavily on context and the domain knowledge of the person answering. On the other hand, machine-based queries (e.g., questions, commands, requests, ~~a query may be a question, a command, a request~~ and/or other types of communications) may be highly structured and are not inherently natural to the human user. Thus, human questions and machine processing of queries may be fundamentally incompatible. Yet the ability to allow a person to make natural language speech-based queries remains a desirable goal.

Please amend paragraph **[09]**, which begins on page 3, as follows:

[09] According to another aspect of the invention, the computer device or system may comprise a stand alone or networked PC, a PDA or other portable computer device, or other computer device or system. For convenience, these and other computer alternatives shall be ~~simple~~ referred to simply as a computer. One aspect of the invention comprises software that is installed onto the computer, where the software comprises one or more of the following modules: a speech recognition module for capturing the user input; a parser for parsing the input, a text to speech engine module for converting text to speech; a network interface for enabling the computer to interface with one or more networks; a graphical user interface module; and an event manager for managing events. Preferably, the event manager is in communication with a dictionary and phrases module, a user profile module that enables user profiles to be created, modified, and accessed, a personality module that enables various personalities to be created and used, an agent module, an update manager, and one or more databases.

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Please amend paragraph **[10]**, which begins on page 4, as follows:

[10] According to another aspect of the invention domain specific behavior and information is organized into agents. Agents are autonomous executables that receive, process and respond to user questions, queries, and commands. The agents provide [[a]] complete, convenient and re-distributable packages or modules of functionality, typically for a specific domain [[of]] or application. Agents can be complete packages of executable code, scripts, links to information, and other forms of communication data, required to provide a specific package of functionality, usually in a specific domain. In other words, an agent includes everything that is needed to extend the functionality of the invention to a new domain. Further, agents and their associated data can be updated remotely over a network as new behavior is added or new information becomes available. Agents can use system resources and the services of other, typically more specialized, agents. Agents can be distributed and redistributed in a number of ways including on removable storage media, transfer over networks or attached to emails and other messages. An update ~~manger~~ manager is used to add new agents to the system or update existing agents.

Please amend paragraph **[23]**, which begins on page 12, as follows:

[23] The system may be used in conjunction with a wide range of platform environments. These environments include, as a peripheral to a PC, a portable or wearable computer or other computer, embedded in a PC or other computer, on a personal digital assistant (e.g., a PDA with wireless networking capability, in a specialized device such as a bar code scanner or payment terminal, on a wireless telephone, or other platforms). If the invention is used with a mobile or portable device that has position location capability, the location data can be used by the invention as part of the context for user questions. A user may use the system on one or more devices. In this case history and profile information for the user may be synchronized between the multiple devices on a periodic basis or other basis.

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Please amend paragraph **[27]**, which begins on page 13, as follows:

[27] According to another aspect of the invention, the system may allow users to disseminate their knowledge without programming. The system may include mechanisms that allow users to post and distribute agents and information in their particular areas of expertise, to improve ~~improved~~ system capability. Further, users can extend the system and configure it to their own preferences, add information to their profile to define new questions or queries, extend and modify existing questions and queries, add new data sources, update data sources, set preferences and specify presentation parameters for results.

Please amend paragraph **[29]**, which begins on page 14, as follows:

[29] Some example applications for the invention ~~includes~~ include, but are not limited to, the following:

- white pages and yellow pages lookups to find[[,]] email addresses, telephone numbers, street addresses and other information for businesses and individuals;
- personal address book, calendars and reminders for each user;
- automatic telephone dialing, reading and sending emails and pages by voice and other communications control functions;
- map, location and direction applications;
- movie or other entertainment locator, review information and ticket purchasing;
- television, radio or other home entertainment schedule, review information and device control from a local or remote user;
- weather information for the local area or other locations;
- stock and other investment information including, prices, company reports, profiles, company information, business news stories, company reports, analysis, price alerts, news alerts, portfolio reports, portfolio plans, etc.;
- flight or other scheduled transportation information and ticketing;
- reservations for hotels, rental cars and other travel services;

- local, national and international news information including headlines of interest by subject or location, story summaries, full stories, audio and video retrieval and play for stories[[.]];
- sports scores, news stories, schedules, alerts, statistics, back ground and history information, etc.;
- ability to subscribe interactively to multimedia information channels, including sports, news, business, different types of music and entertainment, applying user specific preferences for extracting and presenting information;
- rights management for information or content used or published;
- horoscopes, daily jokes and comics, crossword puzzle retrieval and display and related entertainment or diversions;
- recipes, meal planning, nutrition information and planning, shopping lists and other home organization related activities;
- as an interface to auctions and online shopping, and where the system can manage payment or an electronic wallet;
- management of network communications and conferencing, including telecommunications, email, instant messaging, Voice over IP communications and conferencing, local and wide area video and audio conferencing, pages and alerts;
- location, selection, management of play lists and play control of interactive entertainment from local or network sources including, video on demand, digital audio, such as MP3 format material, interactive games, web radio and video broadcasts;
- organization and calendar management for families, businesses and other groups of users including the management of, meetings, appointments, and events; and
- interactive educational programs using local and network material, with lesson material level set based on user's profile, and including, interactive multimedia lessons, religious instruction, calculator, dictionary and spelling, language training, foreign language translation and encyclopedias and other reference material.

Please amend paragraph **[48]**, which begins on page 22, as follows:

[61] The agents **106** return results of questions as responses to users. The response may be created using the results of information queries, the system personality **108** and the user preferences or other data in the user profile **110**. The agents **106** generally present these results using the speech unit **128**. The agents **106** ~~creates~~ create a response string, which is sent to the text to speech engine **124**. The text to speech engine **124** creates the required utterances, which may be encoded and compressed by the speech coder **122**. Once coded, the utterances are transmitted from the main unit **98** by the transceiver **126** to the transceiver **130** on the speech unit **128**. The utterance is then decoded and decompressed by the speech coder **138** and output by the speaker **136**.

Please amend paragraph **[55]**, which begins on page 25, as follows:

[55] When a user requires or selects a new domain agent **156** or database element **102**, the update manager **104** may connect to their source on the network **136** though the network interface **116**, download and install the agent or data. To save system resources and to comply with any license conditions, the update ~~manger~~ manager **104** may uninstall agents that are no longer in use. In one embodiment of the invention, the update manager **104** periodically queries one or more sources of the licensed agents and database components to locate and ~~down-load~~ download updates to agent executables, scripts or data as they become available. Alternatively, the agent sources may initiate the downloading of agent updates of the registered or licensed agents to the update manager as they become available.

Please amend paragraph **[56]**, which begins on page 26, as follows:

[56] The agent manager **154** may provide a license management client capable of executing most any license terms and conditions. When a particular agent **106** and/or database element **102** is required by a command, the agent ~~manger~~ manager **154** verifies that the use of the agent or data element is within the allowed terms and conditions, and if so, invokes the agent or allows access to the data element. License management schemes that can be implemented through the agent manager **154** include outright purchase, subscription for updates, one time

or limited time use. Use of shared agents and data elements (such as those ~~down-loaded~~ downloaded from web sites maintained by groups of domain experts) may also be managed by the agent manager **154**.

Please amend paragraph **[61]**, which begins on page 30, as follows:

[61] End users may use the data driven agent **156** extension and modification facilities and values stored in user profiles **110** to create special reports, packages of queries, alerts and output formats. A single alert or report can be configured to use multiple data sources, values, and other variables (i.e., time, location, etc.) ~~value~~ to condition ~~to~~ or otherwise determine when an alert should be sent. For example, an alert can be generated by sampling a stock price every fifteen minutes ~~15 min~~ and sending an alert if the price drops below some value. To create a report, the user first specifies a set of commands or questions. Next, the user creates or selects a format for the report. Finally the user may name the report. A report can have variable parameters. For example, a user may create a company stock report, and execute the report by stating its name and the company name, which gives the user selected information and in a specified format for that company. In another example, a user can create a "morning" report, which presents selected multimedia information from different sources (news, sports, traffic, weather) in the order and formats desired. Alerts and reports can be created using only voice commands and responses, commands and responses through the graphical user interface **114**, or a combination of the two. To create a report, alert, or other specialized behavior, the user performs a number of steps including:

- specify the command to run a report or alert;
- specify the question or questions, including keywords, used for a query;
- set the criteria for running the report such as on command or when a particular condition is met;
- define preferred information sources;
- define preferences for order of result evaluation by source, value, etc.;
- specify the presentation medium for a report or alert, such as an email, the text to speech engine, a message to a pager, or a text and graphics display; and

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- specify the preferred format for the report, such as information to be presented, order of information to be presented, preferred abbreviations or other variable substitutions.

Please amend paragraph **[65]**, which begins on page 32, as follows:

[65] The speech unit **128**, according to an embodiment of the invention, may use an analog or digital filter **132** between the array microphone **134** and the speech coder **138**. The pass band of the filter is set to optimize the signal to noise ratio at the input to the speech recognition engine **120**. In some embodiments, the filter is adaptive, using band shaping combined with notch filtering to reject narrow-band noise. In one embodiment of the invention, the system **90** may employ adaptive echo cancellation in the filter. The echo cancellation helps prevent cross talk between output from the text to speech engine and detection of the user's speech as well as suppression of environmentally caused echoes. Algorithms comparing the background noise to the signal received from the ~~users~~ user's speech are used to optimize the band-shaping parameters of the adaptive filter. Those skilled in the art will be familiar with multiple techniques used to construct suitable digital and analog filters.

Please amend paragraph **[67]**, which begins on page 33, as follows:

[67] In an alternative embodiment, the array microphone can be replaced by a set of physically distributed microphones or a headset worn by the user. The distributed microphones can be placed in different parts of a room or in different rooms. The distributed microphones can create a three-dimensional array to improve signal to noise ~~ration~~ ratio. The headset may use a wireless or wired connection.

Please amend paragraph **[69]**, which begins on page 34, as follows:

[69] The voice query language may be sensitive to the contents of the context stack. Thus, a following-on question can be asked using an abbreviated grammar, since ~~key words~~ keywords and criteria can be inherited from the stack. For example, the user can simply ask ~~asked~~ about another keyword if the criteria of the question remain constant.

Please amend paragraph **[72]**, which begins on page 35, as follows:

[72] A user may start a dialog with the system **90** when they first address it. This can be done by speaking a generic word ("computer") or addressing a specific name ("Fred"), which may be generally tied to a system personality **108**. Once the user starts the dialog, it may be recognized by the speech recognition engine **120**, using unique characteristics of the user's speech. At the end of a dialog or to interrupt a dialog, the user may utter a dismissal word ("good [[by]] bye").

Please amend paragraph **[73]**, which begins on page 35, as follows:

[73] According to another embodiment of the invention, the system **90** may employ a speech recognition engine **120** ~~124~~ seeding for improved word recognition accuracy, using data from the dictionary and phrase tables **112**, user profiles **110**, and the agents **106**. At the same time, the fuzzy set possibilities or prior probabilities for the words in the dictionary and phrase tables may be dynamically updated to maximize the probability of correct recognition at each stage of the dialog. The probabilities or possibilities may be dynamically updated based on a number of criteria including the application domain, the questions or commands, contexts, the user profile and preferences, user dialog history, the recognizer dictionary and phrase tables, and word spellings.

Please amend paragraph **[77]**, which begins on page 36, as follows:

[77] The parser **118** uses a scoring system to determine the mostly likely context or domain for a user's question and/or command. The score is determined from weighting a number of factors, including[[,]] the user profile **110**, the domain agent's data content, and previous context. Based on this scoring, the system **90** invokes the correct agent. If the confidence level of the score is not high enough to ensure a reliable response, the system **90** may ask the user to verify whether the question and/or command is correctly understood. In general, the question that is asked by the system **90** may be phrased to indicate the context of the question including all criteria or parameters. For example, the question can be in the form of: "Did I understand that you want such-and-such?" If the user confirms that the question is correct the

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system proceeds to produce a response. Otherwise, the user can rephrase the original question, perhaps adding additional information to remove ambiguity, or the system can ask one or more questions to attempt to resolve the ambiguity.

Please amend paragraph **[85]**, which begins on page 40, as follows:

[85] The local information sources can be stored in one or more system databases **102** or can be on any local data storage such as a set of CDs or DVDs in a player or other local data storage. Network information sources can be connected to the Internet **136** or other network and accessed through a series of plug-ins or adaptors, known [[a]] as pluggable sources, in the network interface **116**. The pluggable sources in the network interface **116** may be capable of executing the protocols and interpreting the data formats for the data sources of interest. The pluggable sources may provide information ~~scrapping~~ scraping data and procedures for each source to the domain agents **156**. If a new type of data source is to be used, a new plug-in or adaptor can be added to the network interface **116**.

Please amend paragraph **[87]**, which begins on page 41, as follows:

[87] Based on the continuous scoring processes, the domain agent **156** may determine if a single best answer can be extracted. For most questions the desired result has a set of tokens that must be found to formulate an answer. Once a value has been found for each of these tokens the results [[is]] are ready for presentation to the user. For example, for a question on weather, the tokens can include the date, day of week, predicted high temperature, predicted low temperature, chance of precipitation, expected cloud cover, expected type of precipitation and other tokens. Results processed in this manner include error messages. For subjective questions this determination is made by determining a most likely answer or answers, extracted by matching of the results received. If no satisfactory answer can be inferred from the results of the query the agent can do one of the following:

1. Ask the user for more information, typically through the speech interface, and based on the results obtained formulate new queries. This approach is applied when an irresolvable ambiguity arises in the formulation of a response.

2. Formulate new queries based on the results received from the first set of queries. This approach is typically applied in cases where the responses received do not contain all the required information. Information sources to query can be inferred from the results already obtained (i.e., links in an HTML document) or from other sources. Using this approach one or more sets of queries and responses can be chained without the need for action by the user.
3. Wait for additional queries to return results.

Please amend paragraph **[89]**, which begins on page 42, as follows:

[89] The domain agent **156** may apply conditional scraping operations to each query response as it is received. The conditional scraping actions depend on the context, the criteria, user profile **110**, and domain agent coding and data. For each token to be extracted, a scraping criteria **152** may be created using the services of the system agent **150**. The scraping criteria use format specific scraping methods including, tables, lists, text, and other ~~scrapping~~ scraping methods. One or more scraping criteria can be applied to a page or results set. Once additional results are received, the domain agent **156** can create new scraping criteria to apply to results already acquired. The conditional ~~scarping~~ scraping process removes extraneous information, such as graphics, which need not be further processed or stored, improving system performance.

Please amend paragraph **[95]**, which begins on page 44, as follows:

[95] **FIG. 3** is a high level process **300** for receiving natural language speech-based queries and/or commands and generating a response according to an embodiment of the invention. The process **300** comprises of individual steps, several of which may be repetitive in order to accommodate partial failures. The process **300** may begin when a user's utterance is received and processed at **302**. The user utterance may be a query and/or a command and may be of a natural language speech-based form. After receiving the natural language query and/or command, the query and/or command may be processed so that the data is in a more machine understandable format such as in a digital format. Once the utterance has been converted into

an understandable format, the utterance may be processed so that at least an approximate meaning of the utterance can be determined at **304**. This may be accomplished by, for example, the use of stored dictionaries, phrases, user profiles, domain agent data, and other data. Based on the approximate meaning of the utterance, one or more correctly formatted queries and/or commands may be generated. A user created query and/or command may require that multiple queries and/or commands may be needed in order to generate the desired response or action. Further, depending upon the context (e.g., who is the user, what is the subject of the query and/or command directed to, at what time or location is the query and/or command being directed to, and other parameters used in defining the query and/or command) in which the query and/or command has been submitted, a specific format for the query and/or command may be required. For instance, each of the domain agents **156** may require that queries and/or commands be formatted in a specific manner. Thus at **306**, one or more properly formatted queries and/or commands may be generated. Steps **304** and **306** may be operations which may have to be repeated in order to obtain the correct interpretation of the user utterance and result in the desired response and/or action. Once[[,]] the properly formatted queries and/or commands are generated, the appropriate action may be taken at **308**. This may require that the properly formatted queries and/or commands be sent to specific domain agent[s], information source[s], device[s], or other appropriate destination[s] that can fulfill the requirements of the query and/or command. Once the appropriate action[s] have been executed, this event may be recorded to, for example, the user's profile, database and/or one or more agents at **310**. Such data may be useful for future user inquires and commands. After the action[s] have been performed, a response, if need be, may be generated and forwarded to the user and/or third parties at **312**. In the case of a query for retrieving data, the response would contain the requested information. In the case of a command, the response may be a confirmation that a specific action[s] has been executed. The response may be in the form of a natural language format. The response may also be formatted to reflect a particular personality or tone to the response in order to make the response more "human." The response may be relayed to the user and/or third parties as an audio message and/or a visual message displayed on a user interface.

Please amend paragraph **[96]**, which begins on page 46, as follows:

[96] **FIG. 4A** is a process **400** for receiving natural language speech-based queries and/or commands and generating a response using the system **90** according to another embodiment of the invention. The process **400** may begin when a user's utterance (i.e., user query and/or command) is captured through accurate speech recognition operating in a variety of real-world environments at **402**. Once the utterance is captured, it is ~~parse~~ parsed and ~~interpret~~ interpreted to determine the query and/or command that is contained in the utterance at **404**. Next, review of the query and/or command and determine the domain of expertise required and the context of the query, invoking the proper resources including, for example, agents at **406**. The original query and/or command submitted by the user will often require that multiple queries and/or commands be generated. For instance, suppose a user is interested in retrieving the value of her stock portfolio. The user may utter "please get the value of my stock portfolio." The system **90** may review this request together with stored data such as the user's profile and determine keywords such as "get the value" and "my stock portfolio." The system **90** may then generate queries to determine the stocks in the user's portfolio, the number of shares and the source for current pricing information. These queries may then be sent to one or more agent domains, such as a domain which may access a database containing the user's profile and a domain which accesses stock pricing sources to determine the answers to these questions. Queries may be sent to these domain agents or sources in order to obtain the desired data. Thus, at **408** formulate one or more queries that are sent to one or more local and/or network data sources and/or send appropriate commands to local or remote devices or the system itself. The queries are then sent to the designated agent[s]. The agents may then, in turn, generate their own queries and/or commands to be sent to, for example, local or remote information sources to retrieve needed data. The agent generated queries and/or commands may be formatted according to the requirements of the target sources and variable substitutions and transformations are performed to modify the queries to a form most likely to yield desired results from the available sources at **410**. Once the queries are formatted correctly, they may be executed in an asynchronous manner and dealing gracefully with failures at **412**. As a result of the execution of the queries, results may be returned by the

domain agents and/or sources. The system **90** may then extract or scrape the desired information from the one or more results, which may be returned in any one of a number of different formats at **414**. That is, the results sought by a user may be the summary or the results of further processing of information obtained from several sources for example. Next, the results may be evaluated and interpreted including processing of errors, and gathering and combining them into a single best result judged to be "best" even if the results are ambiguous, incomplete, or conflicting at **416**. Once the best results are determined, perform any required formatting, variable substitutions and transformations to modify the results to a form most easily understood by the user at **418**. Finally, the compound results may be presented through the text to speech engine **124**, to the user in a useful and expected manner at **420**. The process **400** may be performed while accounting for the domain of expertise required, the context in which the question or command is presented, the domain specific information available, the history of the user's interaction, the user preferences, the information sources or commands that are available, and responses obtained from the sources. At each stage of the process **400**, probabilistic or fuzzy set decision and matching methods may be applied to deal with inconsistent, ambiguous, conflicting and incomplete information or responses. In addition, the use of asynchronous queries that may result in rapid and graceful failure of some queries or commands may allow the system **90** to robustly return results quickly and in a manner that seems natural to the user.

Please amend paragraph **[97]**, which begins on page 48, as follows:

[97] **FIG. 4B** is a process **450** for receiving natural language speech-based commands in order to locally or remotely control functions of the system **90** or for other devices according to another embodiment of the invention. The process **450** may begin when a user's utterance (i.e., user query and/or command) is captured through accurate speech recognition operating in a variety of real-world environments at **452**. Once the utterance is captured, it is ~~parse~~ parsed and interpreted ~~interpret~~ to determine the command that is contained in the utterance at **454**. Next, ~~review~~ the command is reviewed and ~~determine~~ the domain determined for the command and context, invoking the proper resources, including selecting of agents at **456**. The

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original command submitted by the user will often require that multiple queries and/or commands be generated. For instance, suppose a user is interested in recorded his favorite television program. The user may utter "please record my favorite TV program." The system **90** may review this request together with stored data such as the user's profile and determine keywords such as "record" and "my favorite TV program." The system **90** may then generate queries to determine the name, the channel, and time for the user's favorite TV program. These queries may then be sent to a domain agent ~~domain~~, which may access a database containing the user's profile and determine the answers to these questions. A command may then be sent to a video recorder ordering the video recorder to record the selected TV program. Thus, at **458** formulate one or more queries that are to be sent to one or more local and/or network data sources and/or send appropriate commands to local or remote devices or the system itself. Next, route the generated commands to the appropriate system[s] and/or external devices at **460**. Once the commands have been executed, results including errors may be received and processed at **462**. The results of the executed commands may be optionally presented to the user at **464**.

Please amend paragraph **[98]**, which begins on page 49, as follows:

[98] Some of the steps depicting in **FIG. 4A** may actually require multiple steps that may also be repetitive. For instance, in step **404**, the user's utterance is parsed and interpreted in order to determine the meaning of the utterance. The system **90** may make an initial interpretation of the utterance based on the data stored in, for example, the dictionary and phrases module ~~124~~ **112**, user profiles[[,]] **110**, agents **106** and the databases ~~104~~ **102**. A real-time scoring system or other techniques may be applied to the interpretation results in order to generate a domain or a context score. If the confidence level of the domain or context score is not high enough to ensure a reliable response, the system **90** can request that the user verify the question or command is correctly understood. In general, the question may be phrased to indicate the context of the question including all criteria or parameters. If the user confirms that the question is correct, the system **90** may proceed to produce a response. Otherwise, either the user can rephrase the original question, perhaps adding additional information to

remove ambiguity, or the system may ask one or more questions to attempt to resolve the ambiguity or other actions may taken. **FIG. 5** is a process **500** for correctly interpreting a user's utterance according to one embodiment of the invention. The process **500** generally represents steps **402** and **404** of process **400**. Initially the user's utterance is inputted into the system **90** at **502**. The input is then interpreted at **504** using, for example, various sources of stored data such as user profiles, agent data, dictionary and phrases, and other relevant data. The interpretation is then scored using, for instance, a weighted scoring system as described previously at **506**. Once a score is obtained, a determination is made as to ~~determine~~ whether the confidence level of the interpretation is satisfactory at **508**. In other words, the determination relates to whether the score or confidence level given to the interpretation exceeds a certain value. If the confidence level is determined to be unsatisfactory then a request may be submitted to the user requesting that the user verify the interpretation at **510** and **512**. If the user is unsatisfied with the interpretation, he/she may be asked to rephrase the utterance and/or provide additional information at **514**. Once the user provides the rephrased utterance and/or additional information, the process **500** returns to the beginning at **502**. If, on the other hand, the user is satisfied with the interpretation, then the process **400** for receiving a natural language speech-based queries and/or commands and generating a response may continue at **516**.

Please amend paragraph **[99]**, which begins on page 51, as follows:

[99] Once the meaning of the utterance has been determined, the appropriate domain agent[s] and the query and/or commands properly formatted for the agent[s] may be determined. Referring to **FIG. 6**, ~~which is~~ a process **600** is illustrated for determining the proper domain agent[s] to invoke and the ~~properly formatted~~ proper formatting of queries and/or commands that [[is]] are to be submitted to the agents **106**, as generally depicted in steps **406**-**408** of **FIG. 4A** according to one embodiment of the invention. In order to formulate a question or command in the regular grammar used by agents **106**, a determination may be made as to the required and optional values for the criteria or parameters of the queries and/or commands. These criteria may have been explicitly supplied by the user or may need to

be inferred. Thus, the properly interpreted query and/or command that is generated by, for example, steps **404** and **454** of **FIGS. 4A** and **4B**, is parsed at **602**. The content of the properly interpreted query and/or command is then analyzed to determine the criteria and/or parameters of the properly interpreted query and/or command at **604**. A context sensitive procedure for extracting the criteria or parameters from the properly interpreted query and/or command may be used. Some criteria are determined by executing algorithms in the agent, while others may be determined by applying probabilistic of fuzzy reasoning to tables of possible values. Prior probabilities or fuzzy possibilities and associated values are received from a number of sources including the history of the dialog, the user profile **110**, and the agent. Based on user responses, the prior probabilities or fuzzy possibilities are updated as the system **90** learns the desired behavior. For a weather context, examples of criteria include, location, date and time. Other criteria can include command criteria (i.e., yes/no, on/off, pause, stop), and spelling. The process for determining criteria may be iterative or recursive in order to eliminate ambiguity in the user's question or command. For example, if the user has a place name (or other proper noun) in their utterance, tables in the databases **102** may be reviewed for place names or an attempt may be made to determine which word is the proper noun from the syntax of the utterance. In another example, the user asks "what about flight one hundred and twenty too?" In such a situation, flight information in the database and network information along with context may be used to determine the most plausible interpretation among[[;]]: flight ~~100~~ one-hundred and flight ~~20~~ twenty also, flight ~~100~~ one-hundred and flight ~~22~~ twenty-two, flight ~~122~~ one hundred twenty-two, and the like. Once the parameters and criteria for the query and/or command have been established, the proper agents **106** may be selected at **606**. After selecting the agents **106**, a properly formatted query and/or command that will be submitted to the agents **106** may be determined at **608**. The query and/or command may be in a standard format or may be a hierarchical data structure used for processing by the agent **106**. In order to submit the properly formatted query and/or command to the agent **106**, all of the required and some optional tokens for the grammar of the context may be filled in. Often the tokens must be transformed to values and forms acceptable to the agents. The required transformations may be obtained from the agents,

dialog history or user profile **110**. Examples of transformations or substitutions that may be performed were provided above. Once the properly formatted queries and/or commands are generated, the process (e.g., process **400**) may continue at **610**.

Amendments to the Claims: Please replace all prior versions and listings of claims with the following listing of claims.

LISTING OF CLAIMS:

1-17. (**Cancelled**)

18. (**New**) A method responsive to a user generated natural language speech utterance, comprising:

receiving the user generated natural language speech utterance, the received user utterance containing at least one request;

determining a meaning of the utterance, wherein determining the meaning includes parsing information relating to the utterance to determine a context for the at least one request contained in the utterance;

formulating the at least one request contained in the utterance in accordance with a grammar used by a domain agent that receives, processes, and responds to requests associated with the determined context; and

presenting results of the processed request to the user, the presented results generated as a result of the domain agent processing the formulated request.

19. (**New**) The method according to claim 18, further comprising recognizing words and phrases contained in the received utterance using information in one or more dictionary and phrase tables, wherein determining the meaning of the utterance further includes parsing the recognized words and phrases to determine the context for the at least one request.

20. (**New**) The method according to claim 19, wherein recognizing the words and phrases contained in the received utterance includes:

dynamically updating the information in the dictionary and phrase tables based on a dynamic set of prior probabilities or fuzzy possibilities;

determining an identity of the user based on voice characteristics of the utterance; and

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associating the recognized words and phrases and a pronunciation of the recognized words and phrases with the identity of the user, the determined context, and the at least one request when the recognized words and phrases satisfy a predetermined confidence level.

21. (**New**) The method according to claim 19, wherein recognizing the words and phrases contained in the received utterance further includes:

requesting the user to spell one or more of the words and phrases when the recognized words and phrases fail to satisfy a predetermined confidence level; and

updating the information in the dictionary and phrase tables based on a phonetic alphabet spelling of the requested words and phrases, the phonetic alphabet spelling provided by the user in one or more subsequent natural language speech utterances.

22. (**New**) The method according to claim 19, wherein determining the context for the at least one request contained in the utterance includes:

matching the recognized words and phrases to a set of keywords associated with a dynamic set of prior probabilities or fuzzy possibilities;

scoring one or more possible contexts for the matched keywords using one or more of a profile of the user, data content associated with the domain agent, or a context stack of one or more recent contexts; and

determining the context by selecting one or more of the possible contexts having a score satisfying a predetermined confidence level.

23. (**New**) The method according to claim 22, wherein determining the context for the at least one request contained in the utterance further includes:

requesting the user to verify the recognized words and phrases when none of the possible contexts have a score satisfying the predetermined confidence level; and

determining the context based on information provided by the user in one or more subsequent natural language speech utterances.

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24. (**New**) The method according to claim 19, wherein formulating the at least one request in accordance with the grammar used by the domain agent includes:

determining one or more required values and one or more optional values for a request in the grammar used by the domain agent;

extracting one or more criteria and one or more parameters from one or more keywords contained in the recognized words and phrases, the criteria and parameters extracted using procedures sensitive to the determined context;

inferring one or more criteria and one or more parameters using a dynamic set of prior probabilities or fuzzy possibilities; and

transforming the extracted and inferred criteria and parameters into a format compatible with the grammar used by the domain agent, the transformed criteria and parameters including all of the required values and one or more of the optional values for the request.

25. (**New**) The method according to claim 18, wherein the at least one request contained in the utterance includes at least one question and at least one command, wherein the domain agent processes the formulated request by:

directing the at least one command to local or remote processing devices; and

querying local or network information sources to resolve information requested in the at least one question.

26. (**New**) The method according to claim 25, wherein querying the local or network information sources to resolve the information requested in the at least one question includes:

submitting a plurality of asynchronous queries to the information sources, the plurality of queries including a plurality of duplicate queries submitted to distinct information sources;

asynchronously receiving a plurality of results of the queries from the information sources; and

scoring a relevance of each of the asynchronously received results using a dynamic set of prior probabilities or fuzzy possibilities to determine one or more best responses to the at least one question.

27. (**New**) The method according to claim 26, wherein determining the one or more best responses to the at least one question includes:

determining one or more tokens required to formulate a response to the question;

extracting one or more values for the determined tokens from the asynchronously received results, the one or more values extracted by applying one or more scraping criteria to the asynchronously received results;

evaluating the extracted values using the dynamic set of prior probabilities or fuzzy possibilities, wherein evaluating the extracted values includes resolving ambiguous, incomplete, or conflicting information; and

selecting one or more best values for the determined tokens from the evaluated values, wherein the one or more best responses include the one or more selected best values.

28. (**New**) The method according to claim 27, wherein determining the one or more best responses to the at least one question further includes:

determining that the dynamic set of prior probabilities or fuzzy possibilities has failed to resolve the ambiguous, incomplete, or conflicting information; and

resolving the ambiguous, incomplete, or conflicting information using subsequently received results of one or more the plurality of asynchronous queries that remain pending.

29. (**New**) The method according to claim 27, wherein determining the one or more best responses to the at least one question further includes:

determining that the dynamic set of prior probabilities or fuzzy possibilities has failed to resolve the ambiguous, incomplete, or conflicting information; and

resolving the ambiguous, incomplete, or conflicting information by submitting one or more additional queries to the information sources, wherein submitting the additional queries

includes inferring the information sources to be queried based on results of one or more of the plurality of asynchronous queries that have already been received.

30. (**New**) The method according to claim 27, wherein determining the one or more best responses to the at least one question further includes:

determining that the dynamic set of prior probabilities or fuzzy possibilities has failed to resolve the ambiguous, incomplete, or conflicting information; and

resolving the ambiguous, incomplete, or conflicting information by requesting the user to provide additional information for resolving the ambiguous, incomplete, or conflicting information.

31. (**New**) The method according to claim 18, wherein presenting the results of the processed request to the user includes:

selecting a format template for presenting the results;

selecting a personality for presenting the results;

determining an order for presenting one or more tokens contained in the results; and

performing one or more variable substitutions and transformations on the tokens to vary a terminology of the results.

32. (**New**) The method according to claim 31, wherein presenting the results of the processed request to the user further includes:

formatting the results in accordance with the selected format template, wherein a text to speech engine reads the formatted results in accordance with the selected personality to create a system generated speech utterance that presents the results to the user.

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REMARKS

Upon entry of the foregoing Amendment, claims 18-32 are pending in the application. Claims 1-17 have been cancelled. Claims 18-32 have been newly added. The Specification has been amended to address various informalities. Applicants believe that this Amendment does not add new matter.

In view of the foregoing Amendment, prompt and favorable examination on the merits is respectfully requested. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Date: **July 7, 2008**

Respectfully submitted,

By: _____

Syed Jafar Ali
Registration No. 58,780

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Electronic Acknowledgement Receipt

EFS ID:	3574662
Application Number:	12130397
International Application Number:	
Confirmation Number:	3889
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Robert A. Kennewick
Customer Number:	909
Filer:	Syed Jafar Ali/Kathy Oliver
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0370991
Receipt Date:	07-JUL-2008
Filing Date:	30-MAY-2008
Time Stamp:	16:29:39
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		0370991PA.pdf	1042109 307d51d6b1def2976b5ca374afb98d3b2bb9ff57	yes	24

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	18
	Claims	19	23
	Applicant Arguments/Remarks Made in an Amendment	24	24
Warnings:			
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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.

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PATENT APPLICATION FEE DETERMINATION RECORD

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Application or Docket Number	Filing Date	☐ To be Mailed
12/130,397	05/30/2008	

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

AMENDMENT	07/07/2008	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 15	Minus	** 20	= 0	X $25 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $105 =	0	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	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	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	

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Legal Instrument Examiner:
/Kimberly Cooper/

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Application or Docket Number	Filing Date	☐ To be Mailed
12/130,397	05/30/2008	

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	
	07/07/2008	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 15	Minus	** 20	= 0	X $25 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $105 =	0	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	0	OR	TOTAL ADD'L FEE	

		(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	

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Legal Instrument Examiner:
/GAIL D. D. WOOTEN/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
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PILLSBURY WINTHROP SHAW PITTMAN, LLP
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Publication No.US-2008-0235023-A1
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	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	1A	4,430,669	02/07/1984	Cheung	358	122	
	1B	5,155,743	10/13/1992	Jacobs	375	28	
	1C	5,274,560	12/28/1993	LaRue	364	444	
	1D	5,377,350	12/27/1994	Skinner	395	600	
	1E	5,386,556	01/31/1995	Hedin et al.	395	600	
	1F	5,424,947	06/13/1995	Nagao et al.	364	419.08	
	1G	5,471,318	11/28/1995	Ahuja et al.	358	400	
	1H	5,475,733	12/12/1995	Eisdorfer et al.	379	52	
	1I	5,488,652	01/30/1996	Bielby *et al.*	379	88	
	1J	5,499,289	03/12/1996	Bruno et al.	379	220	
	1K	5,500,920	03/19/1996	Kupiec	395	2.79	
	1L	5,517,560	05/14/1996	Greenspan	379	114	
	1M	5,533,108	07/02/1996	Harris et al.	379	201	
	1N	5,537,436	07/16/1996	Bottoms et al.	375	222	
	1O	5,539,744	07/23/1996	Chu et al.	370	60	
	1P	5,557,667	09/17/1996	Bruno et al.	379	201	
	1Q	5,563,937	10/08/1996	Bruno et al.	379	201	
	1R	5,590,039	12/31/1996	Ikeda et al.	395	759	
	1S	5,617,407	04/01/1997	Bareis	369	275.3	
	1T	5,633,922	05/27/1997	August et al.	379	220	
	1U	5,675,629	10/07/1997	Raffel et al.	379	58	
	1V	5,696,965	12/09/1997	Dedrick	395	610	
	1W	5,708,422	01/13/1998	Blonder et al.	340	825.34	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	1X	WO 99/46763	09/16/1999	International				
	1Y	WO 00/21232	04/13/2000	International				
	1Z	WO 00/46792	08/10/2000	International				
	1AA	WO 01/78065	10/18/2001	International				
	1BB	WO 2004/072954	08/26/2001	International				

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	1CC	REUTERS, "IBM to Enable Honda Drivers to Talk to Cars", Charles Schwab & Co., Inc., July 28, 2002, 1 page.
	1DD	LIN, Bor-shen, *et al.*, "A Distributed Architecture for Cooperative Spoken Dialogue Agents with Coherent Dialogue State and History", ASRU'99, 1999, 4 pages.

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
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	2A	5,721,938	02/24/1998	Stuckey	395	754	
	2B	5,722,084	02/24/1998	Chakrin et al.	455	551	
	2C	5,742,763	04/21/1998	Jones	395	200.3	
	2D	5,748,841	05/05/1998	Morin *et al.*	395	2.66	
	2E	5,752,052	05/12/1998	Richardson et al.	395	759	
	2F	5,754,784	05/19/1998	Garland et al.	395	200.49	
	2G	5,761,631	06/02/1998	Nasukawa	704	9	
	2H	5,774,859	06/30/1998	Houser *et al.*	704	275	
	2I	5,794,050	08/11/1998	Dahlgren et al.	395	708	
	2J	5,794,196	08/11/1998	Yegnanarayanan *et al.*	704	255	
	2K	5,797,112	08/18/1998	Komatsu *et al.*	701	201	
	2L	5,799,276	08/25/1998	Komissarchik *et al.*	704	251	
	2M	5,802,510	09/01/1998	Jones	707	2	
	2N	5,832,221	11/03/1998	Jones	375	200.36	
	2O	5,867,817	02/02/1999	Catallo *et al.*	704	255	
	2P	5,878,385	03/02/1999	Bralich *et al.*	704	9	
	2Q	5,878,386	03/02/1999	Coughlin	704	10	
	2R	5,892,813	04/06/1999	Morin *et al.*	379	88.01	
	2S	5,895,464	04/20/1999	Bhandari *et al.*	707	3	
	2T	5,895,466	04/20/1999	Goldberg et al.	707	5	
	2U	5,902,347	05/11/1999	Backman *et al.*	701	200	
	2V	5,911,120	06/08/1999	Jarett et al.	455	417	
	2W	5,918,222	06/29/1999	Fukui *et al.*	707	1	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	2X	WO 2007/019318	02/15/2007	International				
	2Y	WO 2007/021587	02/22/2007	International				
	2Z	WO 2007/027546	03/08/2007	International				
	2AA	WO 2007/027989	03/08/2007	International				
	2BB	WO 2008/098039	08/14/2008	International				

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	2CC	KUHN, Thomas, *et al.*, "Hybrid In-Car Speech Recognition for Mobile Multimedia Applications", Vehicular Technology Conference, IEEE, July 1999, pages 2009-2013.
	2DD	BELVIN, Robert, *et al.*, "Development of the HRL Route Navigation Dialogue System", Proceedings of the First International Conference on Human Language Technology Research, San Diego, 2001, pages 1-5.

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	3A	5,926,784	07/20/1999	Richardson et al.	704	9	
	3B	5,933,822	08/03/1999	Braden-Harder et al.	707	5	
	3C	5,953,393	09/14/1999	Culbreth et al.	379	88.25	
	3D	5,963,894	10/05/1999	Richardson et al.	704	9	
	3E	5,963,940	10/05/1999	Liddy et al.	707	5	
	3F	5,987,404	11/16/1999	Della Pietra et al.	704	9	
	3G	5,991,721	11/23/1999	Asano et al.	704	257	
	3H	5,995,119	11/30/1999	Cosatto et al.	345	473	
	3I	6,009,382	12/28/1999	Martino et al.	704	1	
	3J	6,014,559	01/11/2000	Amin	455	413	
	3K	6,021,384	02/01/2000	Gorin et al.	704	1	
	3L	6,044,347	03/28/2000	Abella et al.	704	272	
	3M	6,049,602	04/11/2000	Foladare et al.	379	265	
	3N	6,058,187	05/02/2000	Chen	380	21	
	3O	6,078,886	06/20/2000	Dragosh et al.	704	270	
	3P	6,081,774	06/27/2000	De Hita et al.	704	9	
	3Q	6,101,241	08/08/2000	Boyce et al.	379	88.01	
	3R	6,119,087	09/12/2000	Kuhn et al.	704	270	
	3S	6,134,235	10/17/2000	Goldman et al.	370	352	
	3T	6,144,667	11/07/2000	Doshi et al.	370	401	
	3U	6,144,938	11/07/2000	Surace *et al.*	704	257	
	3V	6,154,526	11/28/2000	Dahlke *et al.*	379	88.03	
	3W	6,160,883	12/12/2000	Jackson et al.	379	230	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	3X	WO 2008/118195	10/02/2008	International				
	3Y	WO 2009/075912	06/18/2009	International				
	3Z	WO 2009/145796	12/03/2009	International				
	3AA	WO 2010/096752	08/26/2010	International				

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	3BB	LIND, R., *et al.*, "The Network Vehicle—A Glimpse into the Future of Mobile Multi-Media", IEEE Aerosp. Electron. Systems Magazine, Volume 14, No. 9, September 1999, pages 27-32.
	3CC	ZHAO, Yilin, "Telematics: Safe and Fun Driving", IEEE Intelligent Systems, Volume 17, Issue 1, 2002, pages 10-14.

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	4A	6,173,279	01/09/2001	Levin et al.	707	5	
	4B	6,175,858	01/16/2001	Bulfer et al.	709	206	
	4C	6,185,535	02/06/2001	Hedin *et al.*	704	270	
	4D	6,192,110	02/20/2001	Abella et al.	379	88.01	
	4E	6,192,338	02/20/2001	Haszto et al.	704	257	
	4F	6,195,634	02/27/2001	Dudemaine *et al.*	704	231	
	4G	6,195,651	02/27/2001	Handel *et al.*	707	2	
	4H	6,208,972	03/27/2001	Grant *et al.*	704	275	
	4I	6,219,346	04/17/2001	Maxemchuk	370	338	
	4J	6,219,643	04/17/2001	Cohen et al.	704	257	
	4K	6,226,612	05/01/2001	Srenger *et al.*	704	256	
	4L	6,233,556	05/15/2001	Teunen et al.	704	250	
	4M	6,233,559	05/15/2001	Balakrishnan	704	275	
	4N	6,246,981	06/12/2001	Papineni et al.	704	235	
	4O	6,272,455	08/07/2001	Hoshen et al.	704	1	
	4P	6,288,319	09/11/2001	Catona	84	609	
	4Q	6,292,767	09/18/2001	Jackson et al.	704	1	
	4R	6,308,151	10/23/2001	Smith	704	235	
	4S	6,314,402	11/06/2001	Monaco et al.	704	275	
	4T	6,366,886	04/02/2002	Dragosh et al.	704	270.1	
	4U	6,374,214	04/16/2002	Friedland *et al.*	704	235	
	4V	6,381,535	04/30/2002	Durocher *et al.*	701	202	
	4W	6,385,596	05/07/2002	Wiser *et al.*	705	51	

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	4X	CHAI *et al.*, "MIND: A Semantics-Based Multimodal Interpretation Framework for Conversational System", Proceedings of the International CLASS Workshop on Natural, Intelligent and Effective Interaction in Multimodal Dialogue Systems, June 2002, pages 37-46.
	4Y	CHEYER *et al.*, "Multimodal Maps: An Agent-Based Approach", International Conference on Cooperative Multimodal Communication (CMC/95), May 24-26, 1995, pages 111-121.

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5A	6,385,646	05/07/2002	Brown et al.	709	217	
	5B	6,393,428	05/21/2002	Miller et al.	707	102	
	5C	6,404,878	06/11/2002	Jackson et al.	379	221.01	
	5D	6,408,272	06/18/2002	White *et al.*	704	270.1	
	5E	6,411,810	06/25/2002	Maxemchuk	455	453	
	5F	6,415,257	07/02/2002	Junqua *et al.*	704	275	
	5G	6,418,210	07/09/2002	Sayko	379	142.15	
	5H	6,420,975	07/16/2002	DeLine *et al.*	340	815.4	
	5I	6,430,285	08/06/2002	Bauer et al.	379	265.01	
	5J	6,430,531	08/06/2002	Polish	704	257	
	5K	6,434,523	08/13/2002	Monaco	704	257	
	5L	6,434,524	08/13/2002	Weber	704	257	
	5M	6,442,522	08/27/2002	Carberry et al.	704	257	
	5N	6,446,114	09/03/2002	Bulfer et al.	709	206	
	5O	6,453,153	09/17/2002	Bowker et al.	455	67.4	
	5P	6,453,292	09/17/2002	Ramaswamy et al.	704	235	
	5Q	6,456,711	09/24/2002	Cheung et al.	379	265.09	
	5R	6,466,654	10/15/2002	Cooper *et al.*	379	88.01	
	5S	6,466,899	10/15/2002	Yano *et al.*	704	1	
	5T	6,470,315	10/22/2002	Netsch *et al.*	704	256	
	5U	6,498,797	12/24/2002	Anerousis et al.	370	522	
	5V	6,499,013	12/24/2002	Weber	704	257	
	5W	6,501,833	12/31/2002	Phillips *et al.*	379	88.07	

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	5X	ELIO *et al.*, "On Abstract Task Models and Conversation Policies" in Workshop on Specifying and Implementing Conversation Policies, Autonomous Agents '99, Seattle, 1999, 10 pages.
	5Y	TURUNEN, "Adaptive Interaction Methods in Speech User Interfaces", Conference on Human Factors in Computing Systems, Seattle, Washington, 2001, pages 91-92.

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	6A	6,501,834	12/31/2002	Milewski et al.	379	93.24	
	6B	6,513,006	01/28/2003	Howard *et al.*	704	257	
	6C	6,523,061	02/18/2003	Halverson et al.	709	202	
	6D	6,532,444	03/11/2003	Weber	704	257	
	6E	6,539,348	03/25/2003	Bond et al.	704	9	
	6F	6,553,372	04/22/2003	Brassell et al.	707	5	
	6G	6,556,970	04/29/2003	Sasaki *et al.*	704	257	
	6H	6,556,973	04/29/2003	Lewin	704	277	
	6I	6,560,576	05/06/2003	Cohen et al.	704	270	
	6J	6,567,778	05/20/2003	Chao Chang et al.	704	257	
	6K	6,567,797	05/20/2003	Schuetze *et al.*	707	2	
	6L	6,570,555	05/27/2003	Prevost *et al.*	345	156	
	6M	6,570,964	05/27/2003	Murveit et al.	379	67.1	
	6N	6,574,597	06/03/2003	Mohri *et al.*	704	251	
	6O	6,574,624	06/03/2003	Johnson et al.	707	5	
	6P	6,581,103	06/17/2003	Dengler	709	231	
	6Q	6,594,257	07/15/2003	Doshi et al.	370	352	
	6R	6,598,018	07/22/2003	Junqua	704	251	
	6S	6,604,075	08/05/2003	Brown *et al.*	704	270.1	
	6T	6,604,077	08/05/2003	Dragosh et al.	704	270.1	
	6U	6,611,692	08/26/2003	Raffel et al.	455	552	
	6V	6,614,773	09/02/2003	Maxemchuk	370	337	
	6W	6,615,172	09/02/2003	Bennett *et al.*	704	257	

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	6X	MAO, Mark Z., "Automatic Training Set Segmentation for Multi-Pass Speech Recognition", Department of Electrical Engineering, Stanford University, CA, copyright 2005, IEEE, pages I-685 to I-688.
	6Y	VANHOUCKE, Vincent, "Confidence Scoring and Rejection Using Multi-Pass Speech Recognition", Nuance Communications, Menlo Park, CA, 2005, 4 pages.

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	7A	6,629,066	09/30/2003	Jackson et al.	704	9	
	7B	6,631,346	10/07/2003	Karaorman *et al.*	704	9	
	7C	6,643,620	11/04/2003	Contolini *et al.*	704	270	
	7D	6,650,747	11/18/2003	Bala et al.	379	265.06	
	7E	6,658,388	12/02/2003	Kleindienst *et al.*	704	275	
	7F	6,678,680	01/13/2004	Woo	707	6	
	7G	6,691,151	02/10/2004	Cheyer et al.	709	202	
	7H	6,708,150	03/16/2004	Hirayama *et al.*	704	243	
	7I	6,721,001	04/13/2004	Berstis	348	231.3	
	7J	6,721,706	04/13/2004	Strubbe *et al.*	704	275	
	7K	6,735,592	05/11/2004	Neumann *et al.*	707	101	
	7L	6,741,931	05/25/2004	Kohut *et al.*	701	209	
	7M	6,742,021	05/25/2004	Halverson *et al.*	709	218	
	7N	6,751,591	06/15/2004	Gorin *et al.*	704	257	
	7O	6,757,718	06/29/2004	Halverson *et al.*	709	218	
	7P	6,795,808	09/21/2004	Strubbe *et al.*	704	275	
	7Q	6,801,604	10/05/2004	Maes *et al.*	379	88.17	
	7R	6,801,893	10/05/2004	Backfried *et al.*	704	257	
	7S	6,829,603	12/07/2004	Chai *et al.*	707	5	
	7T	6,833,848	12/21/2004	Wolff *et al.*	345	719	
	7U	6,856,990	02/15/2005	Barile *et al.*	707	10	
	7V	6,865,481	03/08/2005	Kawazoe *et al.*	701	211	
	7W	6,877,134	04/05/2005	Fuller *et al.*	715	500.1	

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	7X	WENG, Fuliang, *et al.*, "Efficient Lattice Representation and Generation", Speech Technology and Research Laboratory, SRI International, Menlo Park, CA, 1998, 4 pages.
	7Y	EL MELIANI *et al.*, "A Syllabic-Filler-Based Continuous Speech Recognizer for Unlimited Vocabulary", Canadian Conference on Electrical and Computer Engineering, Volume 2, September 5-8, 1995, pages 1007-1010.

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	8A	6,901,366	05/31/2005	Kuhn *et al.*	704	275	
	8B	6,937,977	08/30/2005	Gerson	704	201	
	8C	6,944,594	09/13/2005	Busayapongchai *et al.*	704	275	
	8D	6,950,821	09/27/2005	Faybishenko *et al.*	707	10	
	8E	6,973,387	12/06/2005	Masclet *et al.*	701	211	
	8F	6,980,092	12/27/2005	Turnbull *et al.*	340	425.5	
	8G	6,990,513	01/24/2006	Belfiore *et al.*	709	203	
	8H	6,996,531	02/07/2006	Korall *et al.*	704	270	
	8I	7,016,849	03/21/2006	Arnold *et al.*	704	275	
	8J	7,020,609	03/28/2006	Thrift *et al.*	704	270.1	
	8K	7,027,975	04/11/2006	Pazandak *et al.*	704	9	
	8L	7,062,488	06/13/2006	Reisman	707	8	
	8M	7,082,469	07/25/2006	Gold *et al.*	709	231	
	8N	7,092,928	08/15/2006	Elad *et al.*	706	60	
	8O	7,127,400	10/24/2006	Koch	704	270.1	
	8P	7,136,875	11/14/2006	Anderson *et al.*	707	104.1	
	8Q	7,137,126	11/14/2006	Coffman *et al.*	719	328	
	8R	7,146,319	12/05/2006	Hunt	704	254	
	8S	7,203,644	04/10/2007	Anderson *et al.*	704	246	
	8T	7,228,276	06/05/2007	Omote *et al.*	704	243	
	8U	7,231,343	06/12/2007	Treadgold *et al.*	704	9	
	8V	7,289,606	10/30/2007	Sibal *et al.*	379	52	
	8W	7,301,093	11/27/2007	Sater *et al.*	84	615	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	8X	ARRINGTON, Michael, "Google Redefines GPS Navigation Landscape: Google Maps Navigation for Android 2.0", TechCrunch, printed from the Internet <http://www.techcrunch.com/2009/10/28/google-redefines-car-gps-navigation-google-maps-navigation-android/>, October 28, 2009, 4 pages.
	8Y	BAZZI, Issam *et al.*, "Heterogeneous Lexical Units for Automatic Speech Recognition: Preliminary Investigations", Processing of the IEEE International Conference on Acoustics, Speech, and Signal Processing, Volume 3, June 5-9, 2000, XP010507574, pages 1257-1260.

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

402527163v1

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	9A	7,340,040	03/04/2008	Saylor *et al.*	379	67.1	
	9B	7,376,645	05/20/2008	Bernard	707	3	
	9C	7,386,443	06/10/2008	Parthasarathy *et al.*	704	201	
	9D	7,398,209	07/08/2008	Kennewick *et al.*	704	255	
	9E	7,424,431	09/09/2008	Greene *et al.*	704	270	
	9F	7,461,059	12/02/2008	Richardson *et al.*	707	5	
	9G	7,487,088	02/03/2009	Gorin *et al.*	704	240	
	9H	7,493,559	02/17/2009	Wolff *et al.*	715	727	
	9I	7,502,738	03/10/2009	Kennewick *et al.*	704	257	
	9J	7,620,549	11/17/2009	Di Cristo *et al.*	704	257	
	9K	7,634,409	12/15/2009	Kennewick *et al.*	704	257	
	9L	7,640,160	12/29/2009	Di Cristo *et al.*	704	257	
	9M	7,693,720	04/06/2010	Kennewick *et al.*	704	275	
	9N	7,809,570	10/05/2010	Kennewick *et al.*	704	257	
	9O	7,818,176	10/19/2010	Freeman *et al.*	704	270	
	9P	2001/0041980	11/15/2001	Howard *et al.*	704	270	
	9Q	2002/0049805	04/25/2002	Yamada *et al.*	709	202	
	9R	2002/0065568	05/30/2002	Silfvast *et al.*	700	94	
	9S	2002/0069059	06/06/2002	Smith	704	257	
	9T	2002/0082911	06/27/2002	Dunn *et al.*	705	14	
	9U	2002/0087525	07/04/2002	Abbott *et al.*	707	3	
	9V	2002/0120609	08/29/2002	Lang *et al.*	707	1	
	9W	2002/0124050	09/05/2002	Middeljans	709	203	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	9X	O'SHAUGHNESSY, Douglas, "Interacting with Computers by Voice: Automatic Speech Recognition and Synthesis", Proceedings of the IEEE, Volume 91, No. 9, September 1, 2003, XP011100665, pages 1272-1305.

EXAMINER	DATE CONSIDERED

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402527163v1

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	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	10A	2002/0138248	09/26/2002	Corston-Oliver *et al.*	704	1	
	10B	2002/0143535	10/03/2002	Kist *et al.*	704	251	
	10C	2002/0188602	12/12/2002	Stubler *et al.*	707	3	
	10D	2002/0198714	12/26/2002	Zhou	704	252	
	10E	2003/0014261	01/16/2003	Kageyama	704	275	
	10F	2003/0046346	03/06/2003	Mumick *et al.*	709	205	
	10G	2003/0064709	04/03/2003	Gailey *et al.*	455	412	
	10H	2003/0088421	05/08/2003	Maes *et al.*	704	270.1	
	10I	2003/0097249	05/22/2003	Walker *et al.*	704	1	
	10J	2003/0112267	06/19/2003	Belrose	345	728	
	10K	2003/0135488	07/17/2003	Amir *et al.*	707	3	
	10L	2003/0182132	09/25/2003	Niemoeller	704	275	
	10M	2003/0236664	12/25/2003	Sharma	704	251	
	10N	2004/0006475	01/08/2004	Ehlen *et al.*	704	270.1	
	10O	2004/0025115	02/05/2004	Sienel *et al.*	715	513	
	10P	2004/0044516	03/04/2004	Kennewick *et al.*	704	5	
	10Q	2004/0166832	08/26/2004	Portman *et al.*	455	412.1	
	10R	2004/0193408	09/30/2004	Hunt	704	209	
	10S	2004/0193420	09/30/2004	Kennewick *et al.*	704	257	
	10T	2004/0199375	10/07/2004	Ehsani *et al.*	704	4	
	10U	2004/0243417	12/02/2004	Pitts, III *et al.*	704	276	
	10V	2005/0015256	01/20/2005	Kargman	704	272	
	10W	2005/0021334	01/27/2005	Iwahashi	704	240	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 126

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	11A	2005/0021826	01/27/2005	Kumar	709	232	
	11B	2005/0033574	02/10/2005	Kim *et al.*	704	251	
	11C	2005/0043940	02/24/2005	Elder	704	9	
	11D	2005/0114116	05/26/2005	Fiedler	704	201	
	11E	2005/0137850	06/23/2005	Odell	704	4	
	11F	2005/0246174	11/03/2005	DeGolia	704	270	
	11G	2006/0206310	09/14/2006	Ravikumar *et al.*	704	9	
	11H	2007/0033005	02/08/2007	Cristo *et al.*	704	9	
	11I	2007/0038436	02/15/2007	Cristo *et al.*	704	9	
	11J	2007/0043574	02/22/2007	Coffman *et al.*	704	275	
	11K	2007/0050191	03/01/2007	Weider *et al.*	704	275	
	11L	2007/0055525	03/08/2007	Kennewick *et al.*	704	257	
	11M	2007/0179778	08/02/2007	Gong *et al.*	704	9	
	11N	2007/0186165	08/09/2007	Maislos *et al.*	715	728	
	11O	2007/0214182	09/13/2007	Rosenberg	707	104.1	
	11P	2007/0250901	10/25/2007	McIntire *et al.*	725	146	
	11Q	2007/0265850	11/15/2007	Kennewick *et al.*	704	257	
	11R	2007/0299824	12/27/2007	Pan *et al.*	707	3	
	11S	2008/0091406	04/17/2008	Baldwin *et al.*	704	4	
	11T	2008/0103761	05/01/2008	Printz *et al.*	704	9	
	11U	2008/0115163	05/15/2008	Gilboa *et al.*	725	34	
	11V	2008/0133215	06/05/2008	Sarukkai	704	2	
	11W	2008/0177530	07/24/2008	Cross *et al.*	704	4	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED

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Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 127

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	12A	2008/0189110	08/07/2008	Freeman *et al.*	704	251	
	12B	2008/0235027	09/25/2008	Cross	704	270.1	
	12C	2008/0319751	12/25/2008	Kennewick *et al.*	704	257	
	12D	2009/0117885	05/07/2009	Roth	455	414.3	
	12E	2009/0144271	06/04/2009	Richardson *et al.*	707	5	
	12F	2009/0150156	06/11/2009	Kennewick *et al.*	704	257	
	12G	2009/0171664	07/02/2009	Kennewick *et al.*	704	257	
	12H	2009/0299745	12/03/2009	Kennewick *et al.*	704	257	
	12I	2010/0023320	01/28/2010	Di Cristo *et al.*	704	9	
	12J	2010/0049501	02/25/2010	Kennewick *et al.*	704	9	
	12K	2010/0049514	02/25/2010	Kennewick *et al.*	704	233	
	12L	2010/0057443	03/04/2010	Di Cristo *et al.*	704	9	
	12M	2010/0063880	03/11/2010	Atsmon *et al.*	705	14.53	
	12N	2010/0145700	06/10/2010	Kennewick *et al.*	704	257	
	12O	2010/0204986	08/12/2010	Kennewick *et al.*	704	226	
	12P	2010/0204994	08/12/2010	Kennewick *et al.*	704	257	
	12Q	2010/0217604	08/26/2010	Baldwin *et al.*	704	275	
	12R	2010/0286985	11/11/2010	Kennewick *et al.*	704	257	
	12S	2010/0299142	11/25/2010	Freeman *et al.*	704	9	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

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EXAMINER	DATE CONSIDERED

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402527163v1

Electronic Acknowledgement Receipt

EFS ID:	8970780
Application Number:	12130397
International Application Number:	
Confirmation Number:	3889
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Robert A. Kennewick
Customer Number:	00909
Filer:	Syed Jafar Ali/Susan Trader
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0370991
Receipt Date:	06-DEC-2010
Filing Date:	30-MAY-2008
Time Stamp:	12:53:31
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		0370991_IDS.pdf	759917 c787ee79310f22ec92449a27a83651577411ffcc	yes	14

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	Transmittal Letter		1	2	
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Information:					
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Information:					
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4	Foreign Reference	WO2000046792.pdf	1259047 705348c0646506c1bc55d53c27f1ae60013291b1	no	34
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6	Foreign Reference	WO2004072954.pdf	1105346 c4acb3accfd8c87c21d4bf9b2cc1c8dfe629a50c	no	25
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9	Foreign Reference	WO2007027546.pdf	3873530 5cc6e95751b76c1f016b92415f2860dd2cc39298	no	74
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Information:					

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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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Robert A. KENNEWICK *et al.*	CONFIRMATION NO.:	3889
SERIAL NUMBER :	12/130,397	EXAMINER:	Martin Lerner
FILING DATE :	May 30, 2008	ART UNIT:	2626
FOR :	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE		

INFORMATION DISCLOSURE STATEMENT (IDS)

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicants hereby make of record in the above-identified application the documents listed on the attached Form PTO-1449.

Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the date indicated.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered.

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 135

This Information Disclosure Statement is being filed within three months of the filing date of a national application other than a continued prosecution application under 37 C.F.R. § 1.53(d), or within three months of the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, or before the mailing date of a first Office Action on the merits, or before the mailing date of a first Office Action after the filing of a request for continued examination under 37 C.F.R. § 1.114. No certification or fee is required. 37 C.F.R. § 1.97(b).

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

By_____
Syed Jafar Ali
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Dated: December 6, 2010

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 136

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

909 7590 01/26/2011

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
LERNER, MARTIN	
ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
01/26/2011	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_ip@pillsburylaw.com
margaret.drosos@pillsburylaw.com

Office Action Summary	Application No.	Applicant(s)	
	12/130,397	KENNEWICK ET AL.	
	Examiner	Art Unit	
	MARTIN LERNER	2626	

-- 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 *07 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ 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

4)☒ Claim(s) *18 to 32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18 to 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ 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).

11)☐ 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

12)☐ 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 *12/06/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

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DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Natural Language Processing of Speech Utterances by Context with a Domain Agent.

2. The disclosure is objected to because of the following informalities:

On Page 1, Lines 3 to 6, continuity data should be updated for U.S. Patent Application Serial No. 10/452,147 as "now U.S. Patent No. 7,398,209 issued 08 July 2008".

The Preliminary Amendment filed 07 July 2008 has an error on Page 6. ¶[061] should be ¶[048]. Applicants may wish to resubmit a corrected Preliminary Amendment of the Specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 18 to 32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 18 to 32 are rejected under 35 U.S.C. §101 as not falling within one of the four statutory categories of invention. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. §101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claims recite a series of steps or acts to be performed, the claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process.

Independent claim 18 is a method claim that fails to meet the 'machine or transformation test'. The USPTO continues to maintain that the 'machine or transformation test' is a useful tool for determining whether a claim is 'abstract' for purposes of statutory subject matter. Moreover, the USPTO takes the position that the recent decision of the Supreme Court in *Bilski* did not expressly overrule the validity of the 'machine or transformation test', but only held that the test should be non-exclusive for determining whether method claims are statutory. The independent claim does not have anything that corresponds to a 'machine'. The only element that could be a 'machine' is 'a domain agent', but 'a domain agent' can be embodied as software. Nor does the independent claim set forth any 'transformation' of a material or article. The only element that is being transformed is a 'natural language speech utterance', but a

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[1] Diamond v. Diehr, 450 U.S. 175, 184 (1981); Parker v. Flook, 437 U.S. 584, 588 n.9 (1978); Gottschalk v. Benson, 409 U.S. 63, 70 (1972); Cochrane v. Deener, 94 U.S. 780, 787-88 (1876).
[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

'natural language speech utterance' is not a material or article, but only an information signal. All of the remaining elements of the independent claim are 'abstract', *e.g.*, 'at least one request', 'a meaning', 'a context', 'a grammar', 'a domain agent', 'results'. Applicants can overcome the rejection for non-statutory subject matter by incorporating a non-preambular limitation into at least one of the method steps directed to "using a computing device" as set forth by the Specification. This is in accordance with fairly recent 'best practices' training of the USPTO that can be found at: http://www.uspto.gov/patents/law/exam/101_interim_training.pdf. See Process Example: Claim 4 and Process Example: Claim 5 on Pages 14 and 15.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 18, 19, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by *Halverson et al.* (U.S. Patent No. 6,757,718).

Regarding independent claim 18, *Halverson et al.* discloses a method of retrieving information by spoken language, comprising:

"receiving the user generated natural language speech utterance, the received user utterance containing at least one request" – a data navigation system is driven by spoken natural language input; a user's voice input data is captured by a voice input device (column 4, line 64 to column 5, line 1); a user's spoken request for information is initially received in the form of voice data by a suitable input device (column 7, lines 18 to 22: Figure 4: Step 402);

"determining a meaning of the utterance, wherein determining the meaning includes parsing information relating to the utterance to determine a context for the at least one request contained in the utterance" – natural language interpreter (or parser) 320 linguistically parses and interprets the textual output of a speech recognition engine, and attempts to determine both the meaning of spoken words as well as the grammar of the statement (column 7, line 64 to column 8, line 5: Figure 4: Step 404); a speech recognition engine has a lexicon that is dynamically adjusted to reflect a current user context (column 7, lines 42 to 47); 'context' includes a weather context and a video-on-demand context; if a statement "show me movies starring John Wayne" is spoken into the voice input device, facilitator 600 asks natural language (NL) agent 620 and speech recognition agent 610 to interpret the query and return a resulting ICL goal expression ("a context") that is then routed to appropriate agents – in this case, video-on-demand database agent 640 – to execute the request (column 14, lines 30 to 40: Figure 6); thus, an ICL goal establishes 'a context' from the voice input through speech recognition and natural language processing;

"formulating the at least one request contained in the utterance in accordance with a grammar used by a domain agent that receives, processes, and responds to requests associated with the determined context" – grammar rules are applied to a word string to generate a logical form, which is a structured representation of the parsing of the string (column 8, lines 14 to 17); a navigation query is constructed reflecting the natural language interpretation of the user's request (column 8, lines 62 to 64; column 9, lines 25 to 28: Figure 4: Step 406); an Open Agent Architecture maintains an agent library, where the functionality of each client agent is made available to the agent community through registration of the client agent's capabilities with a facilitator (column 13, lines 15 to 45: Figure 6); 'domain agents' correspond to 'the determined context' for at least weather and video-on-demand;

"presenting results of the processed request to the user, the presented results generated as a result of the domain agent processing the formulated request" – the data source uses the query and retrieves the desired film, which is electronically transmitted from network server 108 to client display device 112 via communications network 106 (column 12, lines 15 to 19: Figure 4: Step 408); desired information is retrieved from one or more electronic network data sources, which is transmitted to a mobile information appliance (Abstract).

Regarding claim 19, *Halverson et al.* discloses that a speech recognition engine is provided with a vocabulary lexicon ("dictionary") of likely words or phrases ("phrase tables") that the recognition engine can match against its analysis of acoustic signals

(column 7, lines 42 to 45); if a statement "show me movies starring John Wayne" is spoken into the voice input device, facilitator 600 asks natural language (NL) agent 620 and speech recognition agent 610 to interpret the query and return a resulting ICL goal expression ("a context") that is then routed to appropriate agents – in this case, video-on-demand database agent 640 – to execute the request (column 14, lines 30 to 40: Figure 6); thus, a 'context' is determined by speech recognition and natural language processing from a goal expression.

Regarding claim 25, *Halverson et al.* discloses that a resulting interpretation of a request is used to automatically construct a navigation query to retrieve desired information from one or more electronic network data sources ("directing the at least one command to local or remote processing devices" and "querying local or network information sources") (Abstract); the contents of data sources 110 are navigated – *i.e.*, the contents are accessed and searched, for retrieval of the particular information desired by the user ("to resolve information requested in the at least one question") (column 4, lines 30 to 34); broadly, information is 'resolved' when it is searched.

Claim Rejections - 35 USC § 103

7. 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.

8. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Halverson et al.* (U.S. Patent No. 6,757,718) in view of *Gorin et al.* (U.S. Patent No. 6,681,206).

Concerning claim 22, *Halverson et al.* discloses identifying goals or tasks for domain agents, but omits matching recognized words and phrase to keywords associated with a dynamic set of probabilities, scoring context for the matched keywords using data content associated with a domain agent, and determining a context by a score satisfying a confidence level. However, *Gorin et al.* teaches an analogous method of task classification that applies a confidence function based on a probabilistic relation between recognized acoustic morphemes and selected task objectives. The task cannot be classified if a low confidence level has been generated. (Column 5, Line 63 to Column 6, Line 12: Figure 5) *Gorin et al.* classifies a task by morphemes or phone-phrases that comprise words and phases, *e.g.*, “collect call”. (Column 4, Lines 27 to 30) These phone phrases are equivalent to “keywords”, and comparing phone phrases to task objectives by a probabilistic relationship is equivalent to “scoring”. Here, a “domain agent” relates to handling of a telephone call, and "data associated with the domain agent" broadly relates to whether a task objective can be determined. An advantage is to make a decision whether to implement a particular task objective or to make a determination that no decision is likely, in which case a user may be defaulted to a human or automated system for assistance. (Column 3, Lines 42 to 49) It would have been obvious to one having ordinary skill in the art to match recognized words to keywords and score contexts by a predetermined confidence level

as taught by *Gorin et al.* in a method of information retrieval by natural language of *Halverson et al.* for a purpose of determining whether a particular task objective can be implemented.

Concerning claim 23, *Gorin et al.* teaches that if a task cannot be classified because the confidence level is too low ("when none of the possible contexts have a score satisfying the predetermined confidence level"), then a dialog module conducts dialog with the user/customer to obtain clarification of the task objective. (Column 6, Lines 8 to 21: Figure 5) Further dialog to obtain clarification of a task objective is equivalent to "requesting the user to verify" and "determining the context based on . . . subsequent natural language speech utterances."

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Halverson et al.* (U.S. Patent No. 6,757,718) in view of *Schuetze et al.* (U.S. Patent No. 6,751,612).

Halverson et al. discloses that a navigation query can be submitted to more than one of the network data sources. (Abstract) However, *Halverson et al.* does not clearly disclose submitting a plurality of duplicate queries asynchronously, asynchronously receiving results, and scoring a relevance of the results using a dynamic set of prior probabilities to determine a best response. Still, submitting duplicate queries to a plurality of data sources simultaneously is fairly well known for Web crawlers. Moreover, the nature of information retrieval by Web crawlers would be generally "asynchronous" because of individual network and processing delays with respect to the

plurality of data sources. Specifically, *Schuetze et al.* teaches using a Web crawler in a search engine, where a user provides personal search information including a query, and a filtering program invokes a Web crawler to search selected servers based on a ranking selection. The filtering program directs the Web crawler to search a predetermined number of ranked servers based on a likelihood that the server has relevant content in comparison to the user query, and the likelihood that the server has content that is altered often. (Column 2, Lines 4 to 17) Thus, *Schuetze et al.* teaches a Web crawler that submits a plurality of duplicate queries to information sources and receiving a plurality of query results from the information sources, where ranking ("scoring") a relevance of received results is in accordance with a likelihood ("a set of probabilities"). The likelihoods ("probabilities") are "dynamic" because the content of some of the servers varies over time. An objective is to provide a method of obtaining current relevant information that was recently published or altered. (Column 1, Lines 56 to 64) It would have been obvious to one having ordinary skill in the art to include the method of scoring a relevance of results from duplicate queries as taught by *Schuetze et al.* in a method of information retrieval from natural language of *Halverson et al.* for a purpose of providing current relevant information.

Allowable Subject Matter

10. Claims 20 to 21, 24, and 27 to 32 would be allowable if rewritten to overcome the rejection under 35 U.S.C. §101 set forth in this Office Action, and to include all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Handel et al. ('501) and Reisman ('755) disclose related prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARTIN LERNER whose telephone number is (571)272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. 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.

/Martin Lerner/
Primary Examiner
Art Unit 2626
January 20, 2011

Notice of References Cited	Application/Control No. 12/130,397	Applicant(s)/Patent Under Reexamination KENNEWICK ET AL.	
	Examiner MARTIN LERNER	Art Unit 2626	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,681,206	01-2004	Gorin et al.	704/243
*	B	US-6,751,612	06-2004	Schuetze et al.	707/709
*	C	US-2002/0035501	03-2002	HANDEL et al.	705/10
*	D	US-6,954,755	10-2005	Reisman, Richard	707/10
	E	US-			
	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.

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12130397	KENNEWICK ET AL.
	Examiner	Art Unit
	MARTIN LERNER	2626

SEARCHED			
Class	Subclass	Date	Examiner
704	236, 246, 257, 270	1/20/2011	ML
707	709, 723, 728, 771	1/20/2011	ML

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search Attached	1/20/2011	ML

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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BIB DATA SHEET

CONFIRMATION NO. 3889

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/130,397	05/30/2008	704	2626	090611-0370991

APPLICANTS

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Michael R. Kennewick JR., Bellevue, WA;
Richard Kennewick, Woodinville, WA;
Tom Freeman, Mercer Island, WA;

**** CONTINUING DATA ***************************

This application is a CON of 10/452,147 06/03/2003 PAT 7,398,209
which claims benefit of 60/384,388 06/03/2002

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
06/06/2008

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /MARTIN LERNER/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		WA	7	17	3

ADDRESS

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UNITED STATES

TITLE

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

FILING FEE RECEIVED		
435	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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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	("7398209").PN.	US-PGPUB; USPAT	OR	OFF	2011/01/19 12:59
L2	26	kennewick.in. and robert.in.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:00
L3	2615	natural adj language adj speech utterance.clm.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:01
L4	13	natural adj language adj speech adj utterance.clm.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:01
L5	7	natural adj language adj speech adj utterance.clm. and meaning.clm. and domain adj agent.clm.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:02
L6	0	halvorson.in. and "704"/$.ccls.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:11
L7	3	halverson.in. and "704"/$.ccls.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:12
L8	3	handel.in. and "704"/$.ccls.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:43
L9	3	handel.in. and handheld and substitution	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:44
L10	11	reisman.in. and speech	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:49
L11	24	reisman.in. and task and domain	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:50
L12	1	("6246981").PN.	US-PGPUB; USPAT	OR	OFF	2011/01/19 13:59
L13	1	("6833848").PN.	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:01

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L14	123	("20020143535" | "20030182132" | "20040193420" | "20050021826" | "5799276" | "5878385" | "5918222" | "5155743" | "5386556" | "5424947" | "5471318" | "5475733" | "5499289" | "5517560" | "5533108" | "5537436" | "5539744" | "5557667" | "5563937" | "5590039" | "5633922" | "5675629" | "5708422" | "5721938" | "5722084" | "5742763" | "5752052" | "5754784" | "5761631" | "5794050" | "5802510" | "5832221" | "5878386" | "5895466" | "5911120" | "5926784" | "5933822" | "5953393" | "5963894" | "5963940" | "5987404" | "5991721" | "5995119" | "6195651" | "6208972" | "6233559" | "6408272" | "6415257" | "6420975" | "6466654" | "6501833" | "6556973" | "6567797" | "6615172" | "6691151" | "6721706" | "6741931" | "6785535" | "6901366" | "6937977" | "6980092" | "6996531" | "6009382" | "6014559" | "6021384" | "6044347" | "6049602" | "6058187" | "6078886" | "6081774" | "6101241" | "6119087" | "6134235" | "6144667" | "6160883" | "6173279" | "6175858" | "6192110" | "6192338" | "6219346" | "6219643" | "6233556" | "6246981" | "6272455" | "6292767" | "6314402" | "6366886" | "6385646" | "6393428" | "6404878" | "6411810" | "6418210" | "6430285" | "6434523" | "6434524" | "6442522" | "6446114" | "6453153" | "6453292" | "6456711" | "6498797" | "6499013" |	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:28

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L19	117	web adj crawler and @ad<"20020603" and scor$	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:37
L20	8	web adj crawler.ab. and @ad<"20020603" and scor$	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:37
L21	5	speech adj recognition.ab. and spell$.ab. and @ad<"20020603" and confidence	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:41
L22	14	speech adj recognition.ab. and @ad<"20020603" and dictionary near updat$	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:52
L23	118	speech adj recognition.ab. and @ad<"20020603" and dictionary and spell$	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:56
L24	7	speech adj recognition.ab. and @ad<"20020603" and dictionary near (updat$ or modif$) and spell$	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:56
L25	11	speech adj recognition.ab. and @ad<"20020603" and task same confidence	US-PGPUB; USPAT	OR	OFF	2011/01/19 14:59

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L28	1	27 and spell	US-PGPUB; USPAT	OR	OFF	2011/01/19 15:15
L29	8	handel.in. and substitution	US-PGPUB; USPAT	OR	OFF	2011/01/19 15:27

1/19/11 3:31:32 PM
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INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	1A	4,430,669	02/07/1984	Cheung	358	122	
	1B	5,155,743	10/13/1992	Jacobs	375	28	
	1C	5,274,560	12/28/1993	LaRue	364	444	
	1D	5,377,350	12/27/1994	Skinner	395	600	
	1E	5,386,556	01/31/1995	Hedin et al.	395	600	
	1F	5,424,947	06/13/1995	Nagao et al.	364	419.08	
	1G	5,471,318	11/28/1995	Ahuja et al.	358	400	
	1H	5,475,733	12/12/1995	Eisdorfer et al.	379	52	
	1I	5,488,652	01/30/1996	Bielby *et al.*	379	88	
	1J	5,499,289	03/12/1996	Bruno et al.	379	220	
	1K	5,500,920	03/19/1996	Kupiec	395	2.79	
	1L	5,517,560	05/14/1996	Greenspan	379	114	
	1M	5,533,108	07/02/1996	Harris et al.	379	201	
	1N	5,537,436	07/16/1996	Bottoms et al.	375	222	
	1O	5,539,744	07/23/1996	Chu et al.	370	60	
	1P	5,557,667	09/17/1996	Bruno et al.	379	201	
	1Q	5,563,937	10/08/1996	Bruno et al.	379	201	
	1R	5,590,039	12/31/1996	Ikeda et al.	395	759	
	1S	5,617,407	04/01/1997	Bareis	369	275.3	
	1T	5,633,922	05/27/1997	August et al.	379	220	
	1U	5,675,629	10/07/1997	Raffel et al.	379	58	
	1V	5,696,965	12/09/1997	Dedrick	395	610	
	1W	5,708,422	01/13/1998	Blonder et al.	340	825.34	

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	1X	WO 99/46763	09/16/1999	International				
	1Y	WO 00/21232	04/13/2000	International				
	1Z	WO 00/46792	08/10/2000	International				
	1AA	WO 01/78065	10/18/2001	International				
	1BB	WO 2004/072954	08/26/2001	International				

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	1CC	REUTERS, "IBM to Enable Honda Drivers to Talk to Cars", Charles Schwab & Co., Inc., July 28, 2002, 1 page.
	1DD	LIN, Bor-shen, *et al.*, "A Distributed Architecture for Cooperative Spoken Dialogue Agents with Coherent Dialogue State and History", ASRU'99, 1999, 4 pages.

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	2A	5,721,938	02/24/1998	Stuckey	395	754	
	2B	5,722,084	02/24/1998	Chakrin et al.	455	551	
	2C	5,742,763	04/21/1998	Jones	395	200.3	
	2D	5,748,841	05/05/1998	Morin *et al.*	395	2.66	
	2E	5,752,052	05/12/1998	Richardson et al.	395	759	
	2F	5,754,784	05/19/1998	Garland et al.	395	200.49	
	2G	5,761,631	06/02/1998	Nasukawa	704	9	
	2H	5,774,859	06/30/1998	Houser *et al.*	704	275	
	2I	5,794,050	08/11/1998	Dahlgren et al.	395	708	
	2J	5,794,196	08/11/1998	Yegnanarayanan *et al.*	704	255	
	2K	5,797,112	08/18/1998	Komatsu *et al.*	701	201	
	2L	5,799,276	08/25/1998	Komissarchik *et al.*	704	251	
	2M	5,802,510	09/01/1998	Jones	707	2	
	2N	5,832,221	11/03/1998	Jones	375	200.36	
	2O	5,867,817	02/02/1999	Catallo *et al.*	704	255	
	2P	5,878,385	03/02/1999	Bralich *et al.*	704	9	
	2Q	5,878,386	03/02/1999	Coughlin	704	10	
	2R	5,892,813	04/06/1999	Morin *et al.*	379	88.01	
	2S	5,895,464	04/20/1999	Bhandari *et al.*	707	3	
	2T	5,895,466	04/20/1999	Goldberg et al.	707	5	
	2U	5,902,347	05/11/1999	Backman *et al.*	701	200	
	2V	5,911,120	06/08/1999	Jarett et al.	455	417	
	2W	5,918,222	06/29/1999	Fukui *et al.*	707	1	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	2X	WO 2007/019318	02/15/2007	International				
	2Y	WO 2007/021587	02/22/2007	International				
	2Z	WO 2007/027546	03/08/2007	International				
	2AA	WO 2007/027989	03/08/2007	International				
	2BB	WO 2008/098039	08/14/2008	International				

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	2CC	KUHN, Thomas, *et al.*, "Hybrid In-Car Speech Recognition for Mobile Multimedia Applications", Vehicular Technology Conference, IEEE, July 1999, pages 2009-2013.
	2DD	BELVIN, Robert, *et al.*, "Development of the HRL Route Navigation Dialogue System", Proceedings of the First International Conference on Human Language Technology Research, San Diego, 2001, pages 1-5.

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	3A	5,926,784	07/20/1999	Richardson et al.	704	9	
	3B	5,933,822	08/03/1999	Braden-Harder et al.	707	5	
	3C	5,953,393	09/14/1999	Culbreth et al.	379	88.25	
	3D	5,963,894	10/05/1999	Richardson et al.	704	9	
	3E	5,963,940	10/05/1999	Liddy et al.	707	5	
	3F	5,987,404	11/16/1999	Della Pietra et al.	704	9	
	3G	5,991,721	11/23/1999	Asano et al.	704	257	
	3H	5,995,119	11/30/1999	Cosatto et al.	345	473	
	3I	6,009,382	12/28/1999	Martino et al.	704	1	
	3J	6,014,559	01/11/2000	Amin	455	413	
	3K	6,021,384	02/01/2000	Gorin et al.	704	1	
	3L	6,044,347	03/28/2000	Abella et al.	704	272	
	3M	6,049,602	04/11/2000	Foladare et al.	379	265	
	3N	6,058,187	05/02/2000	Chen	380	21	
	3O	6,078,886	06/20/2000	Dragosh et al.	704	270	
	3P	6,081,774	06/27/2000	De Hita et al.	704	9	
	3Q	6,101,241	08/08/2000	Boyce et al.	379	88.01	
	3R	6,119,087	09/12/2000	Kuhn et al.	704	270	
	3S	6,134,235	10/17/2000	Goldman et al.	370	352	
	3T	6,144,667	11/07/2000	Doshi et al.	370	401	
	3U	6,144,938	11/07/2000	Surace *et al.*	704	257	
	3V	6,154,526	11/28/2000	Dahlke *et al.*	379	88.03	
	3W	6,160,883	12/12/2000	Jackson et al.	379	230	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	3X	WO 2008/118195	10/02/2008	International				
	3Y	WO 2009/075912	06/18/2009	International				
	3Z	WO 2009/145796	12/03/2009	International				
	3AA	WO 2010/096752	08/26/2010	International				

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	3BB	LIND, R., *et al.*, "The Network Vehicle—A Glimpse into the Future of Mobile Multi-Media", IEEE Aerosp. Electron. Systems Magazine, Volume 14, No. 9, September 1999, pages 27-32.
	3CC	ZHAO, Yilin, "Telematics: Safe and Fun Driving", IEEE Intelligent Systems, Volume 17, Issue 1, 2002, pages 10-14.

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	4A	6,173,279	01/09/2001	Levin et al.	707	5	
	4B	6,175,858	01/16/2001	Bulfer et al.	709	206	
	4C	6,185,535	02/06/2001	Hedin *et al.*	704	270	
	4D	6,192,110	02/20/2001	Abella et al.	379	88.01	
	4E	6,192,338	02/20/2001	Haszto et al.	704	257	
	4F	6,195,634	02/27/2001	Dudemaine *et al.*	704	231	
	4G	6,195,651	02/27/2001	Handel *et al.*	707	2	
	4H	6,208,972	03/27/2001	Grant *et al.*	704	275	
	4I	6,219,346	04/17/2001	Maxemchuk	370	338	
	4J	6,219,643	04/17/2001	Cohen et al.	704	257	
	4K	6,226,612	05/01/2001	Srenger *et al.*	704	256	
	4L	6,233,556	05/15/2001	Teunen et al.	704	250	
	4M	6,233,559	05/15/2001	Balakrishnan	704	275	
	4N	6,246,981	06/12/2001	Papineni et al.	704	235	
	4O	6,272,455	08/07/2001	Hoshen et al.	704	1	
	4P	6,288,319	09/11/2001	Catona	84	609	
	4Q	6,292,767	09/18/2001	Jackson et al.	704	1	
	4R	6,308,151	10/23/2001	Smith	704	235	
	4S	6,314,402	11/06/2001	Monaco et al.	704	275	
	4T	6,366,886	04/02/2002	Dragosh et al.	704	270.1	
	4U	6,374,214	04/16/2002	Friedland *et al.*	704	235	
	4V	6,381,535	04/30/2002	Durocher *et al.*	701	202	
	4W	6,385,596	05/07/2002	Wiser *et al.*	705	51	

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	4X	CHAI *et al.*, "MIND: A Semantics-Based Multimodal Interpretation Framework for Conversational System", Proceedings of the International CLASS Workshop on Natural, Intelligent and Effective Interaction in Multimodal Dialogue Systems, June 2002, pages 37-46.
	4Y	CHEYER *et al.*, "Multimodal Maps: An Agent-Based Approach", International Conference on Cooperative Multimodal Communication (CMC/95), May 24-26, 1995, pages 111-121.

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	5A	6,385,646	05/07/2002	Brown et al.	709	217	
	5B	6,393,428	05/21/2002	Miller et al.	707	102	
	5C	6,404,878	06/11/2002	Jackson et al.	379	221.01	
	5D	6,408,272	06/18/2002	White *et al.*	704	270.1	
	5E	6,411,810	06/25/2002	Maxemchuk	455	453	
	5F	6,415,257	07/02/2002	Junqua *et al.*	704	275	
	5G	6,418,210	07/09/2002	Sayko	379	142.15	
	5H	6,420,975	07/16/2002	DeLine *et al.*	340	815.4	
	5I	6,430,285	08/06/2002	Bauer et al.	379	265.01	
	5J	6,430,531	08/06/2002	Polish	704	257	
	5K	6,434,523	08/13/2002	Monaco	704	257	
	5L	6,434,524	08/13/2002	Weber	704	257	
	5M	6,442,522	08/27/2002	Carberry et al.	704	257	
	5N	6,446,114	09/03/2002	Bulfer et al.	709	206	
	5O	6,453,153	09/17/2002	Bowker et al.	455	67.4	
	5P	6,453,292	09/17/2002	Ramaswamy et al.	704	235	
	5Q	6,456,711	09/24/2002	Cheung et al.	379	265.09	
	5R	6,466,654	10/15/2002	Cooper *et al.*	379	88.01	
	5S	6,466,899	10/15/2002	Yano *et al.*	704	1	
	5T	6,470,315	10/22/2002	Netsch *et al.*	704	256	
	5U	6,498,797	12/24/2002	Anerousis et al.	370	522	
	5V	6,499,013	12/24/2002	Weber	704	257	
	5W	6,501,833	12/31/2002	Phillips *et al.*	379	88.07	

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	5Y	TURUNEN, "Adaptive Interaction Methods in Speech User Interfaces", Conference on Human Factors in Computing Systems, Seattle, Washington, 2001, pages 91-92.

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	6A	6,501,834	12/31/2002	Milewski et al.	379	93.24	
	6B	6,513,006	01/28/2003	Howard *et al.*	704	257	
	6C	6,523,061	02/18/2003	Halverson et al.	709	202	
	6D	6,532,444	03/11/2003	Weber	704	257	
	6E	6,539,348	03/25/2003	Bond et al.	704	9	
	6F	6,553,372	04/22/2003	Brassell et al.	707	5	
	6G	6,556,970	04/29/2003	Sasaki *et al.*	704	257	
	6H	6,556,973	04/29/2003	Lewin	704	277	
	6I	6,560,576	05/06/2003	Cohen et al.	704	270	
	6J	6,567,778	05/20/2003	Chao Chang et al.	704	257	
	6K	6,567,797	05/20/2003	Schuetze *et al.*	707	2	
	6L	6,570,555	05/27/2003	Prevost *et al.*	345	156	
	6M	6,570,964	05/27/2003	Murveit et al.	379	67.1	
	6N	6,574,597	06/03/2003	Mohri *et al.*	704	251	
	6O	6,574,624	06/03/2003	Johnson et al.	707	5	
	6P	6,581,103	06/17/2003	Dengler	709	231	
	6Q	6,594,257	07/15/2003	Doshi et al.	370	352	
	6R	6,598,018	07/22/2003	Junqua	704	251	
	6S	6,604,075	08/05/2003	Brown *et al.*	704	270.1	
	6T	6,604,077	08/05/2003	Dragosh et al.	704	270.1	
	6U	6,611,692	08/26/2003	Raffel et al.	455	552	
	6V	6,614,773	09/02/2003	Maxemchuk	370	337	
	6W	6,615,172	09/02/2003	Bennett *et al.*	704	257	

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	6X	MAO, Mark Z., "Automatic Training Set Segmentation for Multi-Pass Speech Recognition", Department of Electrical Engineering, Stanford University, CA, copyright 2005, IEEE, pages I-685 to I-688.
	6Y	VANHOUCKE, Vincent, "Confidence Scoring and Rejection Using Multi-Pass Speech Recognition", Nuance Communications, Menlo Park, CA, 2005, 4 pages.

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	7A	6,629,066	09/30/2003	Jackson et al.	704	9	
	7B	6,631,346	10/07/2003	Karaorman *et al.*	704	9	
	7C	6,643,620	11/04/2003	Contolini *et al.*	704	270	
	7D	6,650,747	11/18/2003	Bala et al.	379	265.06	
	7E	6,658,388	12/02/2003	Kleindienst *et al.*	704	275	
	7F	6,678,680	01/13/2004	Woo	707	6	
	7G	6,691,151	02/10/2004	Cheyer et al.	709	202	
	7H	6,708,150	03/16/2004	Hirayama *et al.*	704	243	
	7I	6,721,001	04/13/2004	Berstis	348	231.3	
	7J	6,721,706	04/13/2004	Strubbe *et al.*	704	275	
	7K	6,735,592	05/11/2004	Neumann *et al.*	707	101	
	7L	6,741,931	05/25/2004	Kohut *et al.*	701	209	
	7M	6,742,021	05/25/2004	Halverson *et al.*	709	218	
	7N	6,751,591	06/15/2004	Gorin *et al.*	704	257	
	7O	6,757,718	06/29/2004	Halverson *et al.*	709	218	
	7P	6,795,808	09/21/2004	Strubbe *et al.*	704	275	
	7Q	6,801,604	10/05/2004	Maes *et al.*	379	88.17	
	7R	6,801,893	10/05/2004	Backfried *et al.*	704	257	
	7S	6,829,603	12/07/2004	Chai *et al.*	707	5	
	7T	6,833,848	12/21/2004	Wolff *et al.*	345	719	
	7U	6,856,990	02/15/2005	Barile *et al.*	707	10	
	7V	6,865,481	03/08/2005	Kawazoe *et al.*	701	211	
	7W	6,877,134	04/05/2005	Fuller *et al.*	715	500.1	

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	7X	WENG, Fuliang, *et al.*, "Efficient Lattice Representation and Generation", Speech Technology and Research Laboratory, SRI International, Menlo Park, CA, 1998, 4 pages.
	7Y	EL MELIANI *et al.*, "A Syllabic-Filler-Based Continuous Speech Recognizer for Unlimited Vocabulary", Canadian Conference on Electrical and Computer Engineering, Volume 2, September 5-8, 1995, pages 1007-1010.

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	8A	6,901,366	05/31/2005	Kuhn *et al.*	704	275	
	8B	6,937,977	08/30/2005	Gerson	704	201	
	8C	6,944,594	09/13/2005	Busayapongchai *et al.*	704	275	
	8D	6,950,821	09/27/2005	Faybishenko *et al.*	707	10	
	8E	6,973,387	12/06/2005	Masclet *et al.*	701	211	
	8F	6,980,092	12/27/2005	Turnbull *et al.*	340	425.5	
	8G	6,990,513	01/24/2006	Belfiore *et al.*	709	203	
	8H	6,996,531	02/07/2006	Korall *et al.*	704	270	
	8I	7,016,849	03/21/2006	Arnold *et al.*	704	275	
	8J	7,020,609	03/28/2006	Thrift *et al.*	704	270.1	
	8K	7,027,975	04/11/2006	Pazandak *et al.*	704	9	
	8L	7,062,488	06/13/2006	Reisman	707	8	
	8M	7,082,469	07/25/2006	Gold *et al.*	709	231	
	8N	7,092,928	08/15/2006	Elad *et al.*	706	60	
	8O	7,127,400	10/24/2006	Koch	704	270.1	
	8P	7,136,875	11/14/2006	Anderson *et al.*	707	104.1	
	8Q	7,137,126	11/14/2006	Coffman *et al.*	719	328	
	8R	7,146,319	12/05/2006	Hunt	704	254	
	8S	7,203,644	04/10/2007	Anderson *et al.*	704	246	
	8T	7,228,276	06/05/2007	Omote *et al.*	704	243	
	8U	7,231,343	06/12/2007	Treadgold *et al.*	704	9	
	8V	7,289,606	10/30/2007	Sibal *et al.*	379	52	
	8W	7,301,093	11/27/2007	Sater *et al.*	84	615	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	8X	ARRINGTON, Michael, "Google Redefines GPS Navigation Landscape: Google Maps Navigation for Android 2.0", TechCrunch, printed from the Internet <http://www.techcrunch.com/2009/10/28/google-redefines-car-gps-navigation-google-maps-navigation-android/>, October 28, 2009, 4 pages.
	8Y	BAZZI, Issam *et al.*, "Heterogeneous Lexical Units for Automatic Speech Recognition: Preliminary Investigations", Processing of the IEEE International Conference on Acoustics, Speech, and Signal Processing, Volume 3, June 5-9, 2000, XP010507574, pages 1257-1260.

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

402527163v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.L./

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	9A	7,340,040	03/04/2008	Saylor *et al.*	379	67.1	
	9B	7,376,645	05/20/2008	Bernard	707	3	
	9C	7,386,443	06/10/2008	Parthasarathy *et al.*	704	201	
	9D	7,398,209	07/08/2008	Kennewick *et al.*	704	255	
	9E	7,424,431	09/09/2008	Greene *et al.*	704	270	
	9F	7,461,059	12/02/2008	Richardson *et al.*	707	5	
	9G	7,487,088	02/03/2009	Gorin *et al.*	704	240	
	9H	7,493,559	02/17/2009	Wolff *et al.*	715	727	
	9I	7,502,738	03/10/2009	Kennewick *et al.*	704	257	
	9J	7,620,549	11/17/2009	Di Cristo *et al.*	704	257	
	9K	7,634,409	12/15/2009	Kennewick *et al.*	704	257	
	9L	7,640,160	12/29/2009	Di Cristo *et al.*	704	257	
	9M	7,693,720	04/06/2010	Kennewick *et al.*	704	275	
	9N	7,809,570	10/05/2010	Kennewick *et al.*	704	257	
	9O	7,818,176	10/19/2010	Freeman *et al.*	704	270	
	9P	2001/0041980	11/15/2001	Howard *et al.*	704	270	
	9Q	2002/0049805	04/25/2002	Yamada *et al.*	709	202	
	9R	2002/0065568	05/30/2002	Silfvast *et al.*	700	94	
	9S	2002/0069059	06/06/2002	Smith	704	257	
	9T	2002/0082911	06/27/2002	Dunn *et al.*	705	14	
	9U	2002/0087525	07/04/2002	Abbott *et al.*	707	3	
	9V	2002/0120609	08/29/2002	Lang *et al.*	707	1	
	9W	2002/0124050	09/05/2002	Middeljans	709	203	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	9X	O'SHAUGHNESSY, Douglas, "Interacting with Computers by Voice: Automatic Speech Recognition and Synthesis", Proceedings of the IEEE, Volume 91, No. 9, September 1, 2003, XP011100665, pages 1272-1305.

EXAMINER	DATE CONSIDERED

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	10A	2002/0138248	09/26/2002	Corston-Oliver *et al.*	704	1	
	10B	2002/0143535	10/03/2002	Kist *et al.*	704	251	
	10C	2002/0188602	12/12/2002	Stubler *et al.*	707	3	
	10D	2002/0198714	12/26/2002	Zhou	704	252	
	10E	2003/0014261	01/16/2003	Kageyama	704	275	
	10F	2003/0046346	03/06/2003	Mumick *et al.*	709	205	
	10G	2003/0064709	04/03/2003	Gailey *et al.*	455	412	
	10H	2003/0088421	05/08/2003	Maes *et al.*	704	270.1	
	10I	2003/0097249	05/22/2003	Walker *et al.*	704	1	
	10J	2003/0112267	06/19/2003	Belrose	345	728	
	10K	2003/0135488	07/17/2003	Amir *et al.*	707	3	
	10L	2003/0182132	09/25/2003	Niemoeller	704	275	
	10M	2003/0236664	12/25/2003	Sharma	704	251	
	10N	2004/0006475	01/08/2004	Ehlen *et al.*	704	270.1	
	10O	2004/0025115	02/05/2004	Sienel *et al.*	715	513	
	10P	2004/0044516	03/04/2004	Kennewick *et al.*	704	5	
	10Q	2004/0166832	08/26/2004	Portman *et al.*	455	412.1	
	10R	2004/0193408	09/30/2004	Hunt	704	209	
	10S	2004/0193420	09/30/2004	Kennewick *et al.*	704	257	
	10T	2004/0199375	10/07/2004	Ehsani *et al.*	704	4	
	10U	2004/0243417	12/02/2004	Pitts, III *et al.*	704	276	
	10V	2005/0015256	01/20/2005	Kargman	704	272	
	10W	2005/0021334	01/27/2005	Iwahashi	704	240	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	11A	2005/0021826	01/27/2005	Kumar	709	232	
	11B	2005/0033574	02/10/2005	Kim *et al.*	704	251	
	11C	2005/0043940	02/24/2005	Elder	704	9	
	11D	2005/0114116	05/26/2005	Fiedler	704	201	
	11E	2005/0137850	06/23/2005	Odell	704	4	
	11F	2005/0246174	11/03/2005	DeGolia	704	270	
	11G	2006/0206310	09/14/2006	Ravikumar *et al.*	704	9	
	11H	2007/0033005	02/08/2007	Cristo *et al.*	704	9	
	11I	2007/0038436	02/15/2007	Cristo *et al.*	704	9	
	11J	2007/0043574	02/22/2007	Coffman *et al.*	704	275	
	11K	2007/0050191	03/01/2007	Weider *et al.*	704	275	
	11L	2007/0055525	03/08/2007	Kennewick *et al.*	704	257	
	11M	2007/0179778	08/02/2007	Gong *et al.*	704	9	
	11N	2007/0186165	08/09/2007	Maislos *et al.*	715	728	
	11O	2007/0214182	09/13/2007	Rosenberg	707	104.1	
	11P	2007/0250901	10/25/2007	McIntire *et al.*	725	146	
	11Q	2007/0265850	11/15/2007	Kennewick *et al.*	704	257	
	11R	2007/0299824	12/27/2007	Pan *et al.*	707	3	
	11S	2008/0091406	04/17/2008	Baldwin *et al.*	704	4	
	11T	2008/0103761	05/01/2008	Printz *et al.*	704	9	
	11U	2008/0115163	05/15/2008	Gilboa *et al.*	725	34	
	11V	2008/0133215	06/05/2008	Sarukkai	704	2	
	11W	2008/0177530	07/24/2008	Cross *et al.*	704	4	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED

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402527163v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.L./

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	12A	2008/0189110	08/07/2008	Freeman *et al.*	704	251	
	12B	2008/0235027	09/25/2008	Cross	704	270.1	
	12C	2008/0319751	12/25/2008	Kennewick *et al.*	704	257	
	12D	2009/0117885	05/07/2009	Roth	455	414.3	
	12E	2009/0144271	06/04/2009	Richardson *et al.*	707	5	
	12F	2009/0150156	06/11/2009	Kennewick *et al.*	704	257	
	12G	2009/0171664	07/02/2009	Kennewick *et al.*	704	257	
	12H	2009/0299745	12/03/2009	Kennewick *et al.*	704	257	
	12I	2010/0023320	01/28/2010	Di Cristo *et al.*	704	9	
	12J	2010/0049501	02/25/2010	Kennewick *et al.*	704	9	
	12K	2010/0049514	02/25/2010	Kennewick *et al.*	704	233	
	12L	2010/0057443	03/04/2010	Di Cristo *et al.*	704	9	
	12M	2010/0063880	03/11/2010	Atsmon *et al.*	705	14.53	
	12N	2010/0145700	06/10/2010	Kennewick *et al.*	704	257	
	12O	2010/0204986	08/12/2010	Kennewick *et al.*	704	226	
	12P	2010/0204994	08/12/2010	Kennewick *et al.*	704	257	
	12Q	2010/0217604	08/26/2010	Baldwin *et al.*	704	275	
	12R	2010/0286985	11/11/2010	Kennewick *et al.*	704	257	
	12S	2010/0299142	11/25/2010	Freeman *et al.*	704	9	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED
/Martin Lerner/	01/19/2011

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402527163v1

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

909 7590 03/01/2011

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
LERNER, MARTIN	
ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
03/01/2011	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_ip@pillsburylaw.com
margaret.drosos@pillsburylaw.com

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 169

Interview Summary	Application No.	Applicant(s)	
	12/130,397	KENNEWICK ET AL.	
	Examiner	Art Unit	
	MARTIN LERNER	2626	

All participants (applicant, applicant's representative, PTO personnel):

(1) *MARTIN LERNER*. (3)_____.

(2) *JAFAR ALI*. (4)_____.

Date of Interview: *24 February 2011*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☒ Yes e)☐ No.
If Yes, brief description: *Proposed amendment to dependent claims*.

Claim(s) discussed: *18, 20 to 21, 24, 27, and 31*.

Identification of prior art discussed: *None Specifically*.

Agreement with respect to the claims f)☐ was reached. g)☐ was not reached. h)☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

/Martin Lerner/ Primary Examiner, Art Unit 2626	

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 170

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

———

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments:

Jafar Ali called to discuss an amendment to some of the dependent claims indicated as allowable that eliminated dependency on intermediate rejected claims. Martin Lerner reviewed the proposed amendments to the dependent claims, and stated that these dependent claims were still believed to be allowable, although it was expressly stated that this was subject to anything that would be found in a further search. Specifically, Martin Lerner attempted to go through the dependent claims one by one to say what was still believed to be allowable. Jafar Ali said that he intended to incorporate the allowable subject matter into new independent claims, but may be submitting arguments traversing the rejection of independent claim 18. Jafar Ali said that he intended to add a corresponding set of claims directed to a system. Martin Lerner alerted Jafar Ali to changes in PTO policy relating to statutory subject matter of system claims where the underlying elements are method steps.

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION

Form PTO-1449

Docket Number	Application Number
090611-0370991	12/130,397
Applicant(s)	
Robert A. KENNEWICK *et al.*	
Filing Date	Group Art Unit
May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	6,377,913	04/23/2002	Coffman *et al.*	704	8	
	B	6,622,119	09/16/2003	Ramaswamy *et al.*	704	9	
	C	6,701,294	03/02/2004	Ball *et al.*	704	257	
	D	6,704,708	03/09/2004	Pickering	704	235	
	E	6,832,230	12/14/2004	Zilliacus *et al.*	707	203	
	F	7,003,463	02/21/2006	Maes *et al.*	704	270.1	
	G	7,277,854	10/02/2007	Bennett *et al.*	704	257	
	H	7,415,414	08/19/2008	Azara *et al.*	704	270	
	I	7,472,060	12/30/2008	Gorin *et al.*	704	240	
	J	7,873,523	01/18/2011	Potter *et al.*	704	275	
	K	7,917,367	03/29/2011	Di Cristo *et al.*	704	270.1	
	L	2008/0140385	06/12/2008	Mahajan *et al.*	704	9	
	M	2009/0216540	08/27/2009	Tessel *et al.*	704	275	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	N	1 646 037	04/12/2006	Europe				

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	O	"Statement in Accordance with the Notice from the European Patent Office dated 1 October 2007 Concerning Business Methods (OJ EPO 11/2007, 592-593), XP002456252.

EXAMINER	DATE CONSIDERED

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402874461v1

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 646 037 B1

(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
26.03.2008 Bulletin 2008/13

(51) Int Cl.:
G10L 15/26 *(2006.01)*

(21) Application number: **05291989.1**

(22) Date of filing: **23.09.2005**

(54) Method and apparatus for enhancing speech recognition accuracy by using geographic data to filter a set of words

Verfahren und Vorrichtung für erhöhte Spracherkennungspräzision unter Verwendung geografischer Daten zur Filterung einer Wortgruppe

Procédé et appareil pour améliorer la précision de la reconnaissance vocale en utilisant des données géographiques pour filtrer un lot de mots

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

(30) Priority: **29.09.2004 US 953671**

(43) Date of publication of application:
12.04.2006 Bulletin 2006/15

(73) Proprietor: **FRANCE TELECOM**
75015 Paris (FR)

(72) Inventors:
- **Waters, Keith**
  West Newton
  MA 02465 (US)
- **Simon, Benoît Benjamin**
  Boston
  MA 02114 (US)

(56) References cited:
EP-A- 0 661 688
EP-A- 1 233 407
US-B1- 6 230 132

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 646 037 B1

Printed by Jouve, 75001 PARIS (FR)

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 174

Description

FIELD OF THE INVENTION

[0001] The invention relates generally to speech recognition systems and methods and, more particularly, to systems and methods for enhancing speech recognition accuracy by using geographic data to reduce the size of a set of words that must be checked to effect speech recognition.

BACKGROUND OF THE INVENTION

[0002] While visiting an unfamiliar city, a mobile handset user may wish to locate a business, landmark, street, or other place of interest. It would be quite advantageous if the user could place a voice call to a remote server at a designated telephone number, speaking his or her request for information into the handset. The handset would execute a speech recognition procedure, transforming the spoken request into a server query, and receiving the requested information from the remote server in the form of an electronic signal for producing audible speech. For example, a user in Manhattan may wish to locate the closest Neiman Marcus store. She dials a designated telephone number and speaks a request such as "where is the closest Neiman Marcus?" The handset uses speech recognition to convert the request into an electronic query for receipt by the remote server. Based upon the current location of the handset, the remote server accesses a database to retrieve the address and phone number of the nearest Neiman Marcus. The address and phone number are sent from the server to the user's handset in the form of an electronic signal, whereupon the handset converts the electronic signal into audible speech.

[0003] Unfortunately, there are significant hurdles to overcome if one wishes to use existing speech recognition algorithms to carry out the foregoing procedures. More specifically, it is a challenge to develop speech recognition algorithms, which provide a desired level of accuracy in certain operational environments, such as that of mobile telephonic devices. In general, the processing power and memory capabilities of mobile telephonic devices are limited by size and cost constraints, thereby placing limits on the extent to which the complexity of existing algorithms can be increased. Moreover, the existence of ambient noise severely degrades the performance of many speech recognition algorithms. In view of these shortcomings, prior art techniques have been developed to improve the performance of speech recognition algorithms in applications where processing power may be limited. These prior art techniques are directed toward enhancing a recognition model by utilizing improved acoustic models. The following definitions are presented herein for purposes of understanding and clarity:

[0004] *Lexical Model:* A lexical model breaks down individual words of a syntactic model (defined hereinafter) into a sequence of phonemes (also defined hereinafter).

[0005] *Acoustic Model:* An acoustic model breaks down the sequence of phonemes determined by the lexical model into a Markov model of cepstrum coefficients, also termed vector sequences. Cepstrum coefficients are generated by taking the Fourier Transform of the power spectrum of a speech signal.

[0006] *Recognition Model:* A recognition model is a set of rules and operations that are used by a recognition engine to recognize individual words. The recognition model includes a fully deployed speech recognition system which encompasses the acoustic model, the lexical model and the syntactic model as follows: recognition model = (acoustic model) x (lexical model) x (syntactic model).

[0007] U.S. Patent Application Publication No. US2003236099 discloses a technique for improving the accuracy of a speech recognition algorithm by selecting an appropriate acoustic model in accordance with the location of a mobile telephonic device ("mobile handset", or just "handset" for the sake of convenience). As indicated above, an acoustic model includes a set of cepstrum coefficient statistics for each phoneme in a language. Several different acoustic models can be precompiled, each representing a unique acoustical environment, such that a speech recognition system can select an acoustic model appropriate for a given set of environmental conditions. For example, each acoustic model is prepared by individually recording several hundred speakers in a controlled, model-specific laboratory environment that has known acoustical properties illustratively specified in terms of noise, echo, reverberation, and frequency response. Each model-specific laboratory environment is intended to represent a real-world environment, such as a warehouse, an office, a shopping mall, an airport, or the interior of an automobile. Hence, acoustic models incorporate properties of specific environments as well as characteristics of the human voice. The laboratory environment may include artificially generated sounds to simulate, for example, traffic, conversations, computer keyboard clicks, and forklift trucks.

[0008] Pursuant to this prior art technique, position information is retrieved from a location-based service (LBS), as defined hereinafter, based upon the current location of the mobile handset. The retrieved position information is then employed to select the acoustical properties of the environment surrounding the handset. An acoustic model that approximates the acoustical properties of the type of environment for the current location of the handset is selected from a set of previously prepared acoustic models. The selected acoustic model is then utilized to improve the accuracy of the speech recognition algorithm.

[0009] The technique disclosed in U.S. Patent Application Publication No. US2003236099 presents many practical shortcomings. Existing location-based services, using the Global Positioning System (GPS), will not

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determine a user's position to a requisite accuracy of, say, one to two meters, nor will such services determine a user's altitude with sufficient accuracy for many speech recognition applications. The impact of insufficient position accuracy is that, if a user is situated near the entrance of a building, it is not possible to accurately determine whether the user is, in fact, inside the building. The impact of insufficient altitude accuracy is that it is not possible to determine with certainty whether a user is within the building or standing on the roof. An acoustic model that is appropriate for an interior building lobby is unlikely to be totally appropriate for use in an outdoor setting. At the very least, selection of an inappropriate acoustic model based upon an inaccurate determination of a user's actual position will degrade the accuracy of many speech recognition algorithms.

[0010] Another shortcoming of the technique disclosed in U.S. Patent Application Publication No. US2003236099 is the need for creating an acoustic model. First of all, it is not feasible to create a unique acoustic model for every type of location. Secondly, even if an acoustic model is developed for a certain type of location, an actual location may not possess the acoustical characteristics embodied in the model. For example, due to variations in construction materials, furnishings, and room configurations, an acoustic model that attempts to represent a typical conference room, for example, may not adequately represent a specific conference room in a specific office building. Accordingly, what is needed is an improved technique for improving the accuracy of speech recognition algorithms.

[0011] EP1233407 recites a navigation system with speech recognition capacities for a moving vehicle. Whenever the distance between the vehicle and known active locations becomes greater then a given threshold, a pre-existing word list, corresponding to the active location, is acquired by the navigation system for subsequent use with the speech recognition engine.

[0012] US6230132 recites another navigation system with speech recognition functions. A lexicon is generated at periodic intervals with a limited number of words so as to facilitate the speech recognition functions. Furthermore, when a user needs to use the navigation system, he/she has to make a vocal request with the name of a location so that a lexicon can be generated.

[0013] EP0661688 recites a single device navigation apparatus, on board a car, with speed recognition functions. Pre-existing libraries are used and updated at regular intervals to facilitate the speech recognition engine.

SUMMARY OF THE INVENTION

[0014] The present invention is defined by the appended independent claims.

[0015] Other aspects and features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims. It should be further understood that, unless otherwise indicated, the drawings are merely intended to conceptually illustrate the structures and procedures described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In the drawings:

[0017] FIG. 1 is a diagrammatic representation of a geographic area of interest.

[0018] FIG. 2 is a data structure diagram setting forth a portion of an illustrative element database.

[0019] FIG. 3 is a data structure diagram setting forth an illustrative subset of words selected from the element database of FIG. 2.

[0020] FIG. 4 is a generalized information flow diagram showing a set of fundamental operations for the present invention.

[0021] FIG. 5 is a detailed block diagram setting forth information flow for a speech recognition system constructed in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

[0022] The following terms used herein are defined as follows:

[0023] *Geographic Area of Interest:* Illustratively defined in terms of a zip code, group of zip codes, cell identification (Cell-ID) information, caller ID (Call-ID) information, the boundaries of a state, county, city, town, place, or other governmental or municipal subdivision, standard USGS (United States Geological Survey) grids, locations within a fixed range of latitude and longitude, or locations within a specified geometric boundary. The geographic area of interest may, but need not, be set automatically based upon the present location of a handset. The geographic area of interest may, but need not, be designated by a user based upon manual, verbal, or user-specified input. The geographic area of interest can be a coarse geographic area of interest or a refined geographic area of interest, with the latter being a portion of the former.

[0024] *E911:* As mandated by the FCC (Federal Communications Commission), a standard for a system by which wireless carriers are able to pinpoint the location of a mobile device in an emergency.

[0025] Element: Name of at least one of a street, a business, a merchant, an individual's name, a place, a point of interest, a transportation facility, an individual household, an activity, and a landmark.

[0026] *GPS*: Global Positioning System -- Enables geographic position determination at a land-based portable device equipped to receive signals from three or more orbiting GPS satellites.

[0027] *LBS:* Location-Based Service -- Any service

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that obtains information concerning the current geographical location of a mobile device user. Illustrative examples of location-based services include maps displayed in an automobile that track a motorists' position using GPS, or automatic localization services provided by dialing 911 on an E911-compliant mobile telephone network.

[0028] *Mobile Device:* Any portable device enabled for wireless communication, such as a wireless telephone, a personal digital assistant, or a laptop computer equipped with a wireless modem.

[0029] *Phoneme:* A phoneme represents a unique human uttered sound. Individual words, as pronounced by a human speaker, consist of a sequence of phonemes.

[0030] *Syntactic Model:* A set of rules and operations that specify allowed word sequences (phrases) of one or more words for subsequent use in a speech recognition procedure. Allowed word sequences are set forth in a list of static allowed phrases. In addition, the phrases can be optionally weighted by occurrence probabilities. Otherwise, word sequences can be in the form of stochastic or probabilistic lists, such as a Markov model of word sequences. Syntactic models are usually designed to be specific to a particular speech engine.

[0031] *Word:* A unit of language that native speakers can identify, and which communicates a meaning. Words are the building blocks from which phrases and sentences are constructed. Illustratively, for elements, "The Empire State Building" is the name of an element that contains four words. A street with the name "125th Street" includes the six words "one hundred and twenty fifth street". The street name "K Street" has the words "K" (which is a word for purposes of this invention) and "street".

[0032] The invention presumes that a very large element database is available for some sizeable, designated geographic area, such as a city, state, county, or country. One example of a known element database is TIGER (Topologically Integrated Geographic Encoding and Referencing system), available from the United States Census Bureau. TIGER compounds localized street names, rivers and railroads into a series of large regional databases.

[0033] The element database contains a set of words for elements at locations that are within the designated geographic area. In accordance with an aspect of the invention, enhanced speech recognition accuracy is provided by using geographic data to automatically select a subset of the words in the element database for use with a speech recognition procedure. The subset of words is selected by selecting only those words in the element database that are situated within a geographic area of interest. The geographic area of interest, either coarse or refined (depending on the circumstances, as explained below) is illustratively defined in terms of a zip code, group of zip codes, cell identification (Cell-ID) information, caller ID (Call-ID) information, the boundaries of a state, county, city, town, place, or other governmental or municipal subdivision, standard USGS (United States Geological Survey) grids, locations within a fixed range of latitude and longitude, or locations within a specified geometric boundary.

[0034] By selecting a subset of words, the total number of words used in the speech recognition procedure is substantially reduced. For example, a large element database containing street and business names used throughout all five boroughs of New York City can be reduced to a substantially shorter list of street and business names covering only the Grand Central Station area by specifying zip code 10017. Such a reduction in the total number of potential street names to be recognized, significantly improves speech recognition accuracy.

[0035] Pursuant to a further aspect of the invention, position information is obtained from an LBS based upon the current location of a mobile handset, illustratively using any of GPS coordinates, zip codes, and cellular base station triangulation. The obtained position information can be utilized to automatically define a coarse geographic area of interest. Let us say, as an example, that zip codes are used for this purpose. Thus, once the current location of the handset is determined, the zip code which includes that location automatically becomes the coarse geographic area of interest. Typically, the system can determine which localization method to use based on a knowledge of call configuration. For example, when a call is initiated, the Cell-ID can be used to determine the approximate location of the device. Alternatively, the application itself can choose which methods to employ, or the application can prompt the user to select which method to use. An illustrative prompt might include "*Do you want to use Cell-ID, or GPS to determine you location?*"

[0036] In accordance with a further aspect of the invention, an interface enables a user to refine the coarse geographic area of interest. For example, the user can select a specified geometrical shape within the coarse geographic area centered about the current location of the handset. This can be accomplished using key-based entries. Also, a graphical user interface can be used to draw a geometrical shape within the coarse geographic area. Additionally or alternatively, a Cell-ID can be specified within the geographic area zip code, thus defining a refined geographic area of interest for which the subset of words is to be selected. Combining automatic definition of a coarse geographic area of interest with additional, user-selectable geometric refinement is advantageous because it further reduces the total number of words that must be used in the speech recognition procedure. For example, a user-selectable rectangular region of 300 x 300 feet may contain only a few dozen elements that need to be recognized.

[0037] FIG. 1 is a diagrammatic representation of a geographic region of interest contained within a large area 100, such as a city. The current geographic location of a mobile device is determined to be point 401. In this illustrative example, the coarse geographic area of inter-

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est is defined by the zip code. Thus, the coarse geographic area of interest is defined by Zip code region 470 within which point 401 is located. A mobile device user has selected a specific radius 407 around point 401 for defining the refined geographic area of interest. Elements contained (in whole or in part) within this coarse geographic area include Street A 420, Street B 422, and a first building 406. Elements contained within this coarse geographic area of interest but which are not within this refined geographic area include Street C 424, second building 404, and third building 402.

[0038] An element database (FIG. 2, 500) includes a list of element names for at least one of streets, businesses, merchants, places, points of interest, transportation facilities, individual households, activities, or landmarks in large area 100 (FIG. 1). This database can be part of the LBS database. Each element name is associated with one or more corresponding parameters for identifying or associating the element with a refined geographic area of interest, and a parameter for identifying or associating the element with a coarse geographic area of interest. A set of phonemes corresponding to the element name can be computed in real time by recognition model compiler 213, using the outputted element name (501) in conjunction with a phonetizer. A phonetizer is a mechanism that provides phonemic transcriptions for each of a plurality of element names. Phonemic transcriptions comprise a phoneme, or a sequences of two or more phonemes, which indicate the manner in which an element name may be spoken. Illustratively, the element name "Madison" has a corresponding phonemic transcription "mäd ê sun".

[0039] Element names are stored in an element name field 501. Each name in element name field 501 is associated with a corresponding parameter field (x,y) for the refined geographic area of interest 503, and a corresponding parameter field for the coarse geographic area of interest 505. These element names may or may not include elements that are within whatever refined geographic area of interest is selected by the user during operation of the invention (in this example, defined by radius 407 around point 401 of FIG. 1).

[0040] Refined geographic parameters are stored in the parameter field for the refined geographic area of interest 503 (FIG. 2). A refined geographic parameter sets forth a characteristic of an element in terms of how the refined geographic area of interest is defined. For example, if the refined geographic area is defined by the user as a shape (e.g., a circle) around the current location of the handset, the refined geographic parameters comprise (x,y) coordinates. In the illustrative example of FIG. 2, the refined geographic parameters are (x,y) coordinates determined with respect to an arbitrarily assigned reference point. When a first set and a second set of (x, y) coordinates are present in the parameter field for the refined geographic area of interest 503, this represents a line segment between the first set of (x,y) coordinates and the second set of (x,y) coordinates. Such a segment is used, for example, to define a street that extends from the first set of (x,y) coordinates to the second set of (x, y) coordinates.

[0041] Coarse geographic parameters are stored in the parameter field for the coarse geographic area of interest 505. A coarse geographic parameter sets forth a characteristic of an element in terms of how the coarse geographic area of interest is defined. For example, if the coarse geographic area of interest is defined in terms of one or more zip codes, the coarse geographic parameters in the parameter field for the coarse geographic area of interest 505 comprise one or more zip codes. For example, if Street A 420 (FIG. 1) crosses into two different zip code regions, then the parameter field for the coarse geographic area of interest 505 includes two zip codes, such as 10017 and 10036. However, other types of coarse geographic parameters could be employed to relate the element to a zip code system, such as standard USGS (United States Geological System) grids, regions within a fixed range of latitude and longitude, state boundaries, county boundaries, city boundaries, and/or boundaries of urbanized areas. For example, a lookup table could be used to determine the foregoing relationship.

[0042] Returning now to FIG. 1, and in accordance with one feature of the invention, only words corresponding to elements within the geographic area of interest are extracted from element database 500 (FIG. 2) to form word subset list 600 (FIG. 3). If the user defines the refined geographic area of interest as shown in FIG. 1, the limited set of words does not include Street C 424, second building 404, and third building 402. Use of this limited set of words enhances the accuracy of a subsequently performed speech recognition procedure because words pertaining to each and every element of large area 100 of FIG. 1 need not be considered.

[0043] FIG. 3 is a data structure diagram setting forth a portion of an illustrative word subset list 600. The names of one or more elements within the geographic area of interest are stored in an element name field 601. Optionally, word subset list 600 may include additional information, such as the probability that a particular element will be incorporated into a user's query based upon the distance of that element from the current position of the mobile device, so as to provide an enhanced level of performance.

[0044] FIG. 4 is a generalized information flow diagram describing a set of fundamental operations for the present invention. Geographic data acquisition mechanism 101 (the details of which are shown in FIG. 5) is equipped to collect geographic data corresponding to a mobile device's current geographic position and, based thereon, to determine and output a geographic area of interest. Geographic data includes, but is not limited to, any of: global positioning system (GPS) coordinates in latitude and longitude, and also altitude if needed, [x,y, z] coordinates, city name, place name, zip code area, geographic area, type of area (urban, suburban or coun-

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try), one or more cell identification (Cell-ID) parameters from a cellular network, or a caller identification (Call-ID) parameter from a terrestrial telephone network.

[0045] Word filtering mechanism 102 is equipped to receive a geographic area of interest from geographic data acquisition mechanism 101 and, based thereupon, select a subset of words from element database 500 (FIGs. 2 and 4). If a coarse geographic area of interest is being used, then the subset of words is selected by comparing coarse geographic parameters in the parameter field for the coarse geographic area of interest 505 corresponding to the elements in element name field 501 with coarse geographic parameters used to characterize the geographic area of interest. More specifically, if the coarse geographic area of interest is zip code 10017, then all the element names in element name field 501 will be selected which are associated with zip code 10017 in the parameter field for the coarse geographic area of interest 505. A similar operation is performed if a refined geographic area of interest is used. Of course, the parameter field for the refined geographic area of interest 503 will be used instead of the parameter field for the coarse geographic area of interest 505. The refined geographic parameters are combined with the coarse geographic parameters to enhance the word filtering mechanism 102 by using a two-step filtering process. A first step uses the parameter field for the coarse geographic area of interest 505, and a second step uses the parameter field for the refined geographic area of interest 503.

[0046] Word filtering mechanism 102 places the selected subset of words into a word subset list 600 (FIGs. 3 and 4). Speech recognition mechanism 103 (FIG. 4) is equipped to receive word subset list 600 (FIGS. 3 and 4) from word filtering mechanism 102 (FIG. 4) and, based thereupon, perform a speech recognition procedure. Illustratively, speech recognition mechanism 103 may be equipped to implement a speech recognition procedure by utilizing a (syntactic model) x (lexical model) x (acoustic model) paradigm in conjunction with Markov models. Alternatively or additionally, speech recognition mechanism 103 may utilize a neural network. More generally, the invention is applicable to any speech recognition mechanism that accepts and processes words or groups of words referred to as "grammar". Accordingly, word filtering mechanism 102 includes a grammar formatting mechanism that receives the word subset list 600 and formats the list into a grammar format usable by recognition model compiler 213.

[0047] Recognition model compiler 213 may or may not be required, depending upon the specific design characteristics of speech recognition mechanism 103. Recognition model compiler 213 parses (or analyzes) all of the entries in a formatted grammar, one after the other, and then, in one or more successive stages or "passes", constructs an output code readable by speech recognition mechanism 103. Since the speech recognition procedure is based upon a geographically refined subset of words, the overall accuracy of this procedure is enhanced relative to prior art designs. Speech recognition mechanism 103 can be implemented by a server or by a mobile handset.

[0048] A speech query from a mobile device user is received by an acoustic input mechanism 104 at the mobile device. Acoustic input mechanism 104 may be implemented using a microphone or other transducer equipped to transform acoustical vibrations into electronic signals. Acoustic input mechanism 104 feeds an electronic representation of user speech to speech recognition mechanism 103. Speech recognition mechanism 103 attempts to recognize one or more words in the electronic representation of user speech that are included in word subset list 600 retrieved from element database 500. If one or more words are recognized, speech recognition mechanism 103 sends an electronic message to an output mechanism 105 at the mobile device. The electronic message includes any recognized words in the speech query received from the mobile device user that were also included in word subset list 600. Output mechanism 105 converts the electronic message into audible and/or visual form for perception by the mobile device user. Illustratively, output mechanism 105 may be implemented using a loudspeaker coupled to audio amplifier circuitry and voice synthesizer circuitry for producing an audio message including one or more recognized words. Alternatively or additionally, output mechanism 105 may be implemented using a visual display device for displaying alphanumeric characters including one or more recognized words.

[0049] FIG. 5 is a detailed block diagram setting forth information flow for a speech recognition system constructed in accordance with an embodiment of the present invention. FIG. 5 shows details of geographic data acquisition mechanism 101. The depicted operations are performed either by a remote server 240 or by mobile device 250. Information flow commences upon receipt of a "start" signal at input mechanism 201 of mobile device 250. In practice, this "start" signal can be a request issued from a multimodal web page, an HTML page, or just a phone call. Alternatively, a user may place a call on a mobile handset to a designated telephone number to access a zip code form displayed on the mobile handset. The user fills in the zip code form using DTMF keypresses on the handset and validates the entered zip code by pressing DTMF digit "1" as a "start" signal. Basically, the "start" signal triggers a request for information.

[0050] Next, at mechanism 202, a decision is made as to whether the geographic area of interest will be determined locally (i.e., at mobile device 250), or at a remote location (i.e., at remote server 240). Depending upon the specifics of a given system application, this decision can be made by issuing a query to mobile device 250 in order to ascertain the configuration and capabilities of mobile device 250.

[0051] In cases where the geographic area of interest is determined locally, any one of two approaches may be employed. Pursuant to a first approach, mobile device

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250 may include an optional GPS receiver 207, whereupon acquired GPS data are forwarded to a geographic-area-of-interest defining mechanism 204 (server side, see FIG. 5). Mechanism 204 uses the GPS data corresponding to the current location of mobile device 250 to obtain coarse geographic parameters for characterizing the coarse geographic area of interest. According to a second approach, zip code data, for example, can be entered by the user at input mechanism 201 and forwarded to geographic-area-of-interest defining mechanism 204. Illustratively, zip code data are entered into input mechanism 201 by sequentially pressing keys on a DTMF (dual-tone, multifrequency) keypad. Mechanism 204 uses the entered zip code data as a coarse geographic parameter for characterizing the geographic area of interest.

[0052] In cases where the geographic area of interest is determined remotely, mechanism 202 forwards the request received from input mechanism 201 to a location-based service 203 at server 240. Alternatively or additionally, GPS data from GPS receiver 207 are conveyed to location-based service 203, if needed. In response to the received request, location-based service 203 retrieves, for example, zip code information or cell identification (Cell ID) data for mobile device 250. Cell-IDs data can be retrieved in a mobile communications network using the Automatic Number Identification (ANI) retrieved from the mobile device 250. ANI is a service that provides the receiver of a telephone call with the number of the calling phone. The method of providing this information is determined by the service provider. Cell ID data specifies the geographic location of the wireless base station currently in communication with mobile device 250 by identifying at least one of the telephone number and the Internet Protocol (IP) address assigned to mobile device 250. For example, mobile device 250 may send to location-based service 203 Cell ID data in the form of an automated number identification (ANI) parameter. Optionally or alternatively, location-based service 203 determines the geographic location of mobile device 250 by performing a triangulation procedure among a plurality of wireless base stations. The Cell ID data, Caller ID data, and/or triangulation data retrieved by location-based service 203 (ultimately through the telecommunication provider) are forwarded to geographic-area-of-interest defining mechanism 204.

[0053] Optionally, in cases where the geographic area of interest is determined remotely, LBS service 203 utilizes at least one of Caller ID data and Cell ID data to access a zip code database 243. Based upon the Caller ID data or the Cell ID data, a zip code is retrieved from zip code database 243 and then sent to geographic-area-of-interest defining mechanism 204. Although the illustrative embodiment of FIG. 5 shows zip code database 243 and location-based service 203 as separate elements, those skilled in the relevant art will easily recognize that zip code database 243 could, but need not, be incorporated into location-based service 203. Likewise, although element database 500 and location-based service 203 are shown as separate elements, those skilled in the relevant art will easily recognize that element database 500 could, but need not, be incorporated into location-based service 203.

[0054] Geographic-area-of-interest defining mechanism 204 processes incoming geographic data, illustratively comprising at least one of incoming GPS data, zip code data, Caller ID data, or Cell ID data, to generate one or more geographic parameters defining the geographic area of interest for mobile device 250. For example, as discussed above, if the incoming data are based upon zip code data, then the output of mechanism 204 is a zip code. This parameter, e.g., a zip code, is used to specify a geographic area of interest. The defined geographic area of interest may combine a coarse geographic area of interest with a refined geographic area of interest, as is illustrated in the following example. One or more zipcode(s) may be deduced from GPS coordinates, thus defining a coarse geographic area of interest. The GPS coordinates themselves, associated with an area of uncertainty, define a refined geographic area of interest. Such a defined geographic area of interest may be used to implement the two-step filtering process described above.

[0055] Optionally, as indicated by the dotted lines of FIG. 5, a user at mobile device 250 may wish to further refine the geographic area of interest defined by geographic-area-of-interest defining mechanism 204. If so, the geographic area of interest defined by geographic-area-of-interest defining mechanism 204 is referred to as a coarse geographic area of interest, and the area of interest as refined by the user is referred to as a refined geographic area of interest. The refined geographic area of interest comprises a subset of the coarse geographic area of interest. Input mechanism 201 accepts user input setting forth a geometric specification of a refined geographic area of interest. User input is illustratively received over connection line 275 in the form of keypad entries, graphical objects, sketches, textual descriptions, or vocal input. Examples of geometric specifications include squares, rectangles, octagons, triangles, circles, and freehand sketches. Geometry specification refinement mechanism 205 accepts user input from input mechanism 201, and refines the set of geographic parameters generated by geographic-area-of-interest defining mechanism 204.

[0056] The one or more geographic parameters generated by geographic-area-of-interest defining mechanism 204, as optionally refined by geometry specification refinement mechanism 205, are received by word filtering mechanism 102. Word filtering mechanism 102 is enabled to carry out its functions when two conditions are met. Firstly, mobile device 250 should be executing a speech-enabled application where the user has issued a request for information. This requirement is met upon generation of a request from input mechanism 201. Secondly, the geographic area of interest should be defined.

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This requirement is met once geographic-area-of-interest defining mechanism 204 generates the above-described geographic parameters.

[0057] When enabled, word filtering mechanism 102 uses the one or more geographic parameters received from mechanism 204 or 205 to determine whether or not each of a plurality of elements in element database 500 is situated within the geographic area of interest. The element names stored in element name field 501 (FIG. 2) may include elements that are within the geographic area of interest, as well as elements that do not lie within the geographic area of interest. Accordingly, word filtering mechanism 102 (FIG. 5) compares the one or more received parameters defining the geographic area of interest against one or more parameters stored in at least one of parameter field for the refined geographic area of interest 503 or parameter field for the coarse geographic area of interest 505 (FIG. 2), to determine whether or not each of a plurality of elements in element database 500 (FIGs. 2 and 5) is situated within the geographic area of interest. For example, Street A is characterized in the parameter field for the refined geographic area of interest 503 by a first and a second set of (x,y) coordinates. Accordingly, Street A is conceptualized as including a straight line segment connecting the first and second sets of (x,y) coordinates. If any portion of this straight line segment intersects the geographic area of interest, then Street A is included in word subset list 600 (FIGs. 3 and 5).

[0058] Word filtering mechanism 102 appends to word subset list 600 only those element names within the geographic area of interest. Optionally, if the user has made any refinements to the coarse geographic area of interest, only elements that are within the refined geographic area of interest are appended to word subset list 600.

[0059] The word subset list 600 of FIGs. 3 and 5 represents an illustrative output format for word filtering mechanism 102. Alternatively or additionally, the output of word filtering mechanism 102 may be conceptualized as a computer-readable stream of words representing one or more elements in a geographic area of interest. This stream, illustratively in text format, is compatible with at least one of a speech recognition engine or a voice browser embedding speech recognition mechanism 103 (FIG. 5). Optionally, word filtering mechanism 102 may reformat at least one of word subset list 600 or the computer-readable stream of words into a format such as an XML document, to provide a subset of words compatible with speech recognition mechanism 103.

[0060] Speech recognition mechanism 103 may be implemented at server 240 or at mobile device 250. In cases where speech recognition is performed at mobile device 250, the output from word filtering mechanism 102 (illustratively in the form of a stream of words corresponding to grammar subset list 600, FIG. 3) is sent from server 240 to mobile device 250. Word subset list 600 is then compiled by the recognition model compiler 213 at mobile device 250 to provide a speech recognition model for use by a speech recognition mechanism 103 responsive to the acoustic input mechanism 104. Speech recognition mechanism 103 then forwards recognized speech to the output mechanism 105 for generating an electronic output signal representing the recognized speech. Such an arrangement is advantageous because it reduces the burden on wireless communication resources. Transmissions between the server and the mobile device are reduced because only word subset list 600 needs to be communicated to the mobile device. The speech recognition steps can be performed at the mobile device with reference to word subset list 600, thereby enhancing the speed and efficiency of the speech recognition process.

[0061] If speech recognition is performed at server 240, then recognition model compiler 213 and speech recognition mechanism 103 are implemented at server 240 instead of at mobile device 250, wherein the output of speech recognition mechanism 103 is sent from server 240 to output mechanism 105 at mobile device 250.

[0062] The operational principles of the configurations shown in FIGs. 4 and 5 are best illustrated with reference to several illustrative scenarios. These scenarios clarify the location resolution process that will govern the filtering process performed by word filtering mechanism 102 in accordance with location data to be resolved. The scenarios consider use of any of several different types of inputs by which a location context will be determined.

[0063] Scenario One: Geographic area of interest to be determined by entered zip code and/or city. Zip code and/or city are entered into mobile device 250 by the user. Possible clients used by mobile device 250 to accept the entered zip code and/or city include a voice browser and/or a multimodal client. In the case of a phone call, the client is not the phone itself, but the voice browser (from the server point of view). Location data are provided in the form of a city and/or a zip code. The geographic area of interest corresponding to this location data is determined in the form of a city or zip code. In this case, location resolution is performed locally. The zip code and/or city are entered into mobile device 250 using DTMF keypresses and/or voice. An HTTP request is issued in response to the entered information after the information is received at input mechanism 201. In this case, word subset list 600 is generated by selecting a set of words and/or grammar pertaining to the entered city and/or zip code. The following steps are performed:

[0064] 1. User connects to geographic data acquisition mechanism 101 using mobile device 250. If mobile device 250 represents a multimodal client, an HTTP request is made by the client to a document server of word filtering mechanism 102 (FIGs. 4 and 5). If mobile device 250 represents a wireless telephone, an http request is made by the voice browser ("speaking" with the telephone) to the document server of word filtering mechanism 102.

[0065] 2. A first page is loaded into mobile device 250 or loaded onto the voice browser. The page is prompting the user to enter a zip code. The zip code by either be entered by DTMF (touch tones) or by voice. The grammar used to recognize the zip code is static.

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[0066] 3. The user enters the zip code into input mechanism 201. A second HTTP request is made by the client, with the zip code value as a parameter. As location-based service 203 is not employed in this scenario to resolve the location, location resolution is "local". The geographic area of interest is evaluated at geographic area of interest defining mechanism 204, and no further refinement of the geographical area of interest takes place.

[0067] 4. A second page is loaded into mobile device 250 (the "reduced" page). The document server of word filtering mechanism 102 computes reduced grammars associated with the page in the form of word subset list 600.

[0068] 5. The user can vocally interact with the page over mobile device 250, as the page is optimized for its location

[0069] Note: The geometry specification refinement mechanism 205 is not used in this scenario. If this mechanism were to be used, a "remote" location resolution must be performed so as to enable sending a map (for example) back to the multimodal client of mobile device 250.

[0070] Scenario Two: Geographic area of interest to be determined automatically using Caller ID or Cell ID.

[0071] Possible clients used by mobile device 250 for Caller Id or Cell ID include a voice browser and/or a multimodal client. Location data are provided in the form of a caller ID or cell ID parameter. The geographic area of interest is determined as a zip code or as an area ID that identifies a geographic area. Location resolution is performed remotely, not locally. Input mechanism 201 is not employed for purposes of location resolution. Mobile device 250 is programmed to issue an HTTP request while a first page is retrieved from a document server of word filtering mechanism 102. In this scenario, words and/or grammar from element database 500 are filtered to prepare word subset list 600 based upon ANI or Cell-ID information. Input mechanism 201 is completely transparent, in the sense that the request that trims the word filtering process appears at the first stage of the interaction, and there is no need of a data collecting stage, as in the previous scenario. The HTTP request can be issued by a voice browser (that provides ANI info) or a multimodal client at mobile device 250.

[0072] The following operational sequence is performed:

[0073] 1. User connects to geographic data acquisition mechanism 101 using mobile device 250. If the user is using a multimodal client at mobile device 250, an HTTP request is made by the client to the document server of word filtering mechanism 102. If mobile device 250 is a wireless telephone, an http request is made by the voice browser ("speaking" with the telephone) to the document server of word filtering mechanism 102. The ANI and/or the Cell ID are passed to the document server as part of the HTTP request. Location-based service 203 determines the geographic area of interest, in this case following the remote path indicated in FIG. 5 which commences at mechanism 202. Location-based service also determines geographic position of the user, an area of uncertainty with respect to the user's position, and one or more associated zip codes.

[0074] 2. A page is downloaded to mobile device 250 or loaded onto the voice browser. The geographic context is used by word filtering mechanism 102 to compute a word subset list 600 associated with the page in accordance with the previously determined geographic area of interest.

[0075] 3. The user can vocally interact with the page using mobile device 250. The page is optimized for the user's geographic area of interest.

[0076] Scenario Three: Geographic area of interest to be determined automatically using GPS data. Possible clients used by mobile device 250 for GPS include a multimodal client. Location data are provided in the form of GPS coordinates. The geographic area of interest is determined as a zip code, as (x,y) or (x,y,z) coordinates, optionally incorporating an area of uncertainty. Location resolution is performed locally, not remotely. Input mechanism 201 is not employed to determine geographic area of interest. An HTTP request is issued by mobile device 250 during the first page fetch. In this case, word filtering mechanism 102 is preparing a word subset list 600 by filtering element database 500 using GPS data. Input mechanism 201 is transparent, in the sense that the HTTP request that results in word filtering appears at the first stage of the interaction. Unlike the first scenario, there is no need for a data collecting stage. The following steps are performed:

[0077] 1. User connects to geographic data acquisition mechanism 101 using mobile device 250. If mobile device 250 utilizes a multimodal client, an HTTP request is made by the client to a document server of word filtering mechanism 102. The GPS information is sent as part of the http request. Location-based service 203 determines the geographic area of interest by adding coarse localization to the GPS information, and the coarse localization is sent to geographic area of interest defining mechanism 204.

[0078] 2. A page is downloaded to mobile device 250: The geographic area of interest in the form of the coarse and/or refined localization received at geographic area of interest defining mechanism 204 is used by word filtering mechanism 102 to compute a word subset list 600 and to place the word subset list into a page that is sent to mobile device 250, using the two-step filtering process described above.

[0079] 3. The user can vocally interact with the page, optimized for the geographic area of interest. Note:

[0080] 1. In cases where geometry specification refinement mechanism 205 is employed, an intermediate page is downloaded to mobile device 250, asking to the user to precise its area of interest (before step 2):

[0081] 1.a - An intermediate (i.e., "localization") page is downloaded to mobile device 250.

[0082] 1.b - The user inputs an area of interest into

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mobile device 250.

[0083] 1.c - A refined geographic area of interest is sent by mobile device 250 and incorporated into the geographic area of interest defined by geographic area of interest defining mechanism 204.

[0084] In contrast to prior art techniques, the present invention does not employ acoustic models to improve speech recognition accuracy. Instead, the invention reduces the total number of words that need to be considered by a speech recognition algorithm. The number of words is reduced by excluding words that do not relate to a geographic area of interest. In this manner, the reduced processing burden makes it possible to handle speech recognition at the handset. Moreover, the accuracy of the speech recognition algorithm is improved.

[0085] To summarize, the advantages of the invention include more accurate speech recognition due to utilization of a database that has been reduced in size (i.e., word subset list 600). The burden on communication resources is decreased by sending the reduced database to the handset, whereupon the handset performs speech recognition using only the reduced size database instead of a much larger database. The decreased burden on communication resources results in faster, more efficient speech recognition.

[0086] Thus, while there have been shown and described novel features of the invention as applied to embodiments thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices illustrated, and in their operation, may be made by those skilled in the art without departing from the scope of the invention, which is solely defined by the appended claims. For example, although an embodiment of the invention was described in terms of a user refining an automatically determined geographic area of interest, it is also possible for a user to augment an automatically determined coarse geographic area of interest.

[0087] In view of the foregoing, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results may be incorporated in any other disclosed or described or suggested form or embodiment as a general matter of design choice in as much as they fall within the scope of the claims appended hereto.

Claims

1. A method for use with a mobile handset equipped to communicate with a remote server over a wireless communications network, the remote server equipped to access an element database (500) including words that describe elements at each of a plurality of geographically defined locations, the method comprising the steps of:

   determining (202) geographic data for the mobile handset following a request; and
   using (102) the determined geographic data to automatically select by the remote server a subset (600) of words for use with a speech recognition procedure;

   wherein the subset of words is selected from the element database, thereby reducing the number of words used in the speech recognition procedure.

2. The method of claim 1 wherein the determined geographic data includes at least one of global positioning system (GPS) position data, cell identity (Cell-ID) data, caller identification (Caller ID) data, place name data, or zip code data.

3. The method of claim 1 wherein the geographic data are derived from a signal received from the mobile handset, said signal being related to a current position of said mobile handset or to a manual input entered into said mobile handset.

4. The method of any preceding claim wherein the elements include at least one of street names, businesses, merchants, points of interest, transportation facilities, individual households, activities, or landmarks.

5. The method of any preceding claim wherein the mobile handset receives the subset of words from the remote server and executes the speech recognition procedure based upon the received subset of words, thereby reducing use of the communications network and the remote server.

6. A speech recognition system comprising:

   a mobile handset equipped to communicate with a remote server over a wireless network,
   a data acquisition mechanism (101) for determining geographic data for the mobile handset following a request input; and
   a selection mechanism (102) for using the determined geographic data to automatically select a subset of words (106) for use with a speech recognition procedure;

   wherein the subset of words is selected by the remote server from an element database (500) said remote server has access to, said element database including words that describe elements at each of a plurality of geographically defined locations, thereby reducing the number of words used in the speech recognition procedure.

7. The speech recognition system of claim 6 wherein the geographic data are derived from a signal re-

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ceived from the mobile handset, said signal being related to a current position of said mobile handset or to a manual input entered into said mobile handset.

8. The speech recognition system of claim 6 wherein the determined geographic data includes at least one of global positioning system (GPS) position data, cell identity (Cell-ID) data, caller identification (Caller ID) data, place name data, or zip code data.

9. The speech recognition system of any of claims 6 to 8 wherein the elements include at least one of street names, businesses, merchants, points of interest, transportation facilities, individual households, activities, or landmarks.

10. A speech recognition system for associating received speech with words retrieved from an element database, the system comprising:

means for determining a geographic area of interest following a request wherein speech is to be received, said means further comprising:

(i) a portable location determining mechanism associated with a mobile handset for generating an indication signal indicative of current geographic location, and
(ii) a server, in communication with the portable location determining mechanism, programmed to determine a geographic area of interest from the indication signal;

means for selecting a subset of words from the element database based upon the geographic area of interest; said means comprising the server programmed to extract from the element database only words that are associated with the geographic area of interest; and,
means for associating the received speech with words selected from the subset of words, said means being implemented on the mobile handset.

11. The speech recognition system of claim 10 further comprising:

means for accepting a signal from at least one graphical user interface for selecting a portion of the determined geographic area of interest to thereby specify a further limited geographic area of interest; and
means for further reducing the subset of words according to the further limited geographic area of interest to generate a further subset of words, such that the means for associating received speech with words only selects words from the further subset of words.

12. The speech recognition system of claim 11 wherein the means for accepting a signal includes:

an electronic display for displaying a map of the determined geographic area of interest; and
a processing mechanism for combining the accepted signal with the map of the determined geographic area of interest so as to cause a display of the further limited geographic area of interest on the electronic display.

13. A mobile handset (250) comprising speech recognition means for association of received speech with words received from a remote database, the mobile handset comprising:

means for receiving a request;
means for providing a signal representing a geographic area of interest following said request;
means for transmitting said signal to a remote server and for receiving from the remote server a subset of words from the remote database based upon the geographic area of interest; and
means for associating the received speech with words selected from the subset of words.

14. The mobile handset of claim 13 wherein the means for providing a signal comprises means for determining a geographic area of interest wherein speech is to be received.

15. The mobile handset of claim 13 or 14 further comprising:

means (201) for accepting at least one input used to determine a refined geographic area of interest in the geographic area of interest;
means (205) for reducing the subset of words according to the refined geographic area of interest;

and wherein:

the means for associating the received speech is arranged for association of speech only with the reduced subset of words.

Patentansprüche

1. Verfahren zur Verwendung mit einem mobilen Handapparat, der dafür ausgestattet ist, über ein drahtloses Kommunikationsnetz mit einem abgesetzten Server zu kommunizieren, wobei der abgesetzte Server dafür ausgestattet ist, auf eine Elementdatenbank (500) zuzugreifen, die Wörter enthält, die

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Elemente an jedem von mehreren geographisch definierten Orten beschreiben, wobei das Verfahren die folgenden Schritte umfaßt:

Bestimmen (202) geographischer Daten für den mobilen Handapparat nach einer Anforderung und Verwenden (102) der bestimmten geographischen Daten zum automatischen Auswählen einer Teilmenge (600) von Wörtern zur Verwendung mit einer Spracherkennungsprozedur durch den abgesetzten Server;

wobei die Teilmenge von Wörtern aus der Elementdatenbank ausgewählt wird, wodurch die Anzahl der in der Spracherkennungsprozedur verwendeten Wörter reduziert wird.

2. Verfahren nach Anspruch 1, wobei die bestimmten geographischen Daten Positionsdaten des globalen Navigationssystems (GPS) und/oder Daten der Zellenidentität (Cell-ID) und/oder Daten der Anruferidentifikation (Caller ID) und/oder Städtenamendaten und/oder Postleitzahldaten umfassen.

3. Verfahren nach Anspruch 1, wobei die geographischen Daten aus einem aus dem mobilen Handapparat empfangenen Signal abgeleitet werden, wobei das Signal eine aktuelle Position des mobilen Handapparats oder eine in den mobilen Handapparat eingegebene manuelle Eingabe betrifft.

4. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Elemente Straßennamen und/oder Unternehmen und/oder Händler und/oder interessierende Punkte und/oder Transporteinrichtungen und/oder individuelle Haushalte und/oder Aktivitäten und/oder Sehenswürdigkeiten umfassen.

5. Verfahren nach einem der vorhergehenden Ansprüche, wobei der mobile Handapparat die Teilmenge von Wörtern von dem abgesetzten Server empfängt und auf der Basis der empfangenen Teilmenge von Wörtern die Spracherkennungsprozedur ausführt und **dadurch** die Benutzung des Kommunikationsnetzes und des abgesetzten Servers reduziert.

6. Spracherkennungssystem, umfassend:

einen mobilen Handapparat, der dafür ausgestattet ist, über ein drahtloses Netz mit einem abgesetzten Server zu kommunizieren,
einen Datenbeschaffungsmechanismus (101) zum Bestimmen von geographischen Daten für den mobilen Handapparat nach einer Anforderungseingabe und
einen Auswahlmechanismus (102) zum Verwenden der bestimmten geographischen Daten zum automatischen Auswählen einer Teilmenge von Wörtern (106) zur Verwendung mit einer Spracherkennungsprozedur;

wobei die Teilmenge von Wörtern durch den abgesetzten Server aus einer Elementdatenbank (500) ausgewählt wird, zu der der abgesetzte Server Zugang hat, wobei die Elementdatenbank Wörter enthält, die Elemente an jedem von mehreren geographisch definierten Orten beschreiben, wodurch die Anzahl der bei der Spracherkennungsprozedur verwendeten Wörter reduziert wird.

7. Spracherkennungssystem nach Anspruch 6, wobei die geographischen Daten aus einem aus dem mobilen Handapparat empfangenen Signal abgeleitet werden, wobei das Signal eine aktuelle Position des mobilen Handapparats oder eine in den mobilen Handapparat eingegebene manuelle Eingabe betrifft.

8. Spracherkennungssystem nach Anspruch 6, wobei die bestimmten geographischen Daten Positionsdaten des globalen Navigationssystems (GPS) und/oder Daten der Zellenidentität (Cell-ID) und/oder Daten der Anruferidentifikation (Caller ID) und/oder Städtenamendaten und/oder Postleitzahldaten umfassen.

9. Spracherkennungssystem nach einem der Ansprüche 6 bis 8, wobei die Elemente Straßennamen und/oder Unternehmen und/oder Händler und/oder interessierende Punkte und/oder Transporteinrichtungen und/oder individuelle Haushalte und/oder Aktivitäten und/oder Sehenswürdigkeiten umfassen.

10. Spracherkennungssystem zum Assoziieren von empfangener Sprache mit aus einer Elementdatenbank abgerufenen Wörtern, wobei das System folgendes umfaßt:

Mittel zum Bestimmen eines interessierenden geographischen Gebiets nach einer Aufforderung, wobei Sprache zu empfangen ist, wobei die Mittel ferner folgendes umfassen:

i) einen mit einem mobilen Handapparat assoziierten tragbaren Ortsbestimmungsmechanismus zum Erzeugen eines Anzeigesignals, das einen aktuellen geographischen Ort anzeigt und
ii) einen mit dem tragbaren Ortsbestimmungsmechanismus kommunizierenden Server, der dafür programmiert ist, aus dem Anzeigesignal ein interessierendes geographisches Gebiet zu bestimmen;

Mittel zum Auswählen einer Teilmenge von Wörtern aus der Elementdatenbank auf der Ba-

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sis des interessierenden geographischen Gebiets; wobei die Mittel den Server umfassen, der dafür programmiert ist, aus der Elementdatenbank nur Wörter zu extrahieren, die mit dem interessierenden geographischen Gebiet assoziiert sind und
Mittel zum Assoziieren der empfangenen Sprache mit aus der Teilmenge von Wörtern ausgewählten Wörtern, wobei die Mittel auf dem mobilen Handapparat implementiert sind.

11. Spracherkennungssystem nach Anspruch 10, ferner umfassend:

Mittel zum Annehmen eines Signals von mindestens einer graphischen Benutzeroberfläche zum Auswählen eines Teils des bestimmten interessierenden geographischen Gebiets, um **dadurch** ein weiter eingeschränktes interessierendes geographisches Gebiet zu spezifizieren und
Mittel zum weiteren Reduzieren der Teilmenge von Wörtern gemäß dem weiter eingeschränkten interessierenden geographischen Gebiet, um eine weitere Teilmenge von Wörtern zu erzeugen, dergestalt, daß die Mittel zum Assoziieren empfangener Sprache mit Wörtern nur Wörter aus der weiteren Teilmenge von Wörtern auswählen.

12. Spracherkennungssystem nach Anspruch 11, wobei die Mittel zum Annehmen eines Signals folgendes umfassen:

ein elektronisches Display zum Anzeigen einer Karte des bestimmten interessierenden geographischen Gebiets und
einen Verarbeitungsmechanismus zum Kombinieren des angenommenen Signals mit der Karte des bestimmten interessierenden geographischen Gebiets, um so eine Anzeige des weiter eingeschränkten interessierenden geographischen Gebiets auf dem elektronischen Display zu bewirken.

13. Mobiler Handapparat (150) mit Spracherkennungsmitteln zum Assoziieren empfangener Sprache mit aus einer abgesetzten Datenbank empfangenen Wörtern, wobei der mobile Handapparat folgendes umfaßt:

Mittel zum Empfangen einer Anforderung;
Mittel zum Bereitstellen eines Signals, das ein interessierendes geographisches Gebiet repräsentiert, nach der Anforderung;
Mittel zum Senden des Signals zu einem abgesetzten Server und zum Empfangen einer Teilmenge von Wörtern aus der abgesetzten Datenbank von dem abgesetzten Server auf der Basis des interessierenden geographischen Gebiets und
Mittel zum Assoziieren der empfangenen Sprache mit aus der Teilmenge von Wörtern ausgewählten Wörtern.

14. Mobiler Handapparat nach Anspruch 13, wobei die Mittel zum Bereitstellen eines Signals Mittel zum Bestimmen eines interessierenden geographischen Gebiets umfaßt, worin Sprache empfangen werden soll.

15. Mobiler Handapparat nach Anspruch 13 oder 14, ferner umfassen:

Mittel (210) zum Annehmen mindestens einer Eingabe, mit der ein verfeinertes interessierendes geographisches Gebiet in dem interessierenden geographischen Gebiet bestimmt wird;
Mittel (205) zum Reduzieren der Teilmenge von Wörtern gemäß dem verfeinerten interessierenden geographischen Gebiet und wobei

die Mittel zum Assoziieren der empfangenen Sprache dafür ausgelegt sind, Sprache nur mit der reduzierten Teilmenge von Wörtern zu assoziieren.

Revendications

1. Procédé pour une utilisation avec un combiné mobile équipé pour communiquer avec un serveur distant sur un réseau de communication sans fil, le serveur distant étant équipé pour accéder à une base de données d'éléments (500) comprenant des mots qui décrivent des éléments pour chacun d'une pluralité d'emplacements définis géographiquement, le procédé comprenant les étapes de :

détermination (202) de données géographiques pour le combiné mobile suite à une demande ; et utilisation (102) des données géographiques déterminées pour sélectionner automatiquement par le serveur distant un sous-ensemble (600) de mots pour une utilisation avec une procédure de reconnaissance vocale ;

dans lequel le sous-ensemble de mots est sélectionné parmi la base de données d'éléments, réduisant de ce fait le nombre de mots utilisés dans la procédure de reconnaissance vocale.

2. Procédé selon la revendication 1 dans lequel les données géographiques déterminées comprennent au moins une parmi des données de position du système de positionnement mondial (GPS), des données d'identité de cellule (identifiant de cellule), des

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données d'identification d'appelant (identifiant d'appelant), des données de nom de lieu ou des données de code postal.

3. Procédé selon la revendication 1 dans lequel les données géographiques sont déduites d'un signal reçu du combiné mobile, ledit signal étant lié à une position actuelle dudit combiné mobile ou à une entrée manuelle entrée dans ledit combiné mobile.

4. Procédé selon une revendication précédente quelconque dans lequel les éléments comprennent au moins un parmi des noms de rues, des entreprises, des commerçants, des centres d'intérêt, des installations de transport, des maisons individuelles, des activités ou des points de repère.

5. Procédé selon une revendication précédente quelconque dans lequel le combiné mobile reçoit le sous-ensemble de mots du serveur distant et exécute la procédure de reconnaissance vocale sur la base du sous-ensemble reçu de mots, réduisant de ce fait l'utilisation du réseau de communication et du serveur distant.

6. Système de reconnaissance vocale comprenant :

un combiné mobile équipé pour communiquer avec un serveur distant sur un réseau sans fil ;
un mécanisme d'acquisition de données (101) pour déterminer des données géographiques pour le combiné mobile suite à une entrée de demande ; et
un mécanisme de sélection (102) pour utiliser les données géographiques déterminées afin de sélectionner automatiquement un sous-ensemble de mots (106) pour une utilisation avec une procédure de reconnaissance vocale ;

dans lequel le sous-ensemble de mots est sélectionné par le serveur distant à partir d'une base de données d'éléments (500) à laquelle ledit serveur distant a accès, ladite base de données d'éléments comprenant des mots qui décrivent des éléments pour chacun d'une pluralité d'emplacements définis géographiquement, réduisant de ce fait le nombre de mots utilisés dans la procédure de reconnaissance vocale.

7. Système de reconnaissance vocale selon la revendication 6 dans lequel les données géographiques sont déduites d'un signal reçu du combiné mobile, ledit signal étant lié à une position actuelle dudit combiné mobile ou à une entrée manuelle entrée dans ledit combiné mobile.

8. Système de reconnaissance vocale selon la revendication 6 dans lequel les données géographiques déterminées comprennent au moins une parmi des données de position du système de positionnement mondial (GPS), des données d'identité de cellule (identifiant de cellule), des données d'identification d'appelant (identifiant d'appelant), des données de nom de lieu ou des données de code postal.

9. Système de reconnaissance vocale selon l'une quelconque des revendications 6 à 8 dans lequel les éléments comprennent au moins un parmi des noms de rues, des entreprises, des commerçants, des centres d'intérêt, des installations de transport, des maisons individuelles, des activités ou des points de repère.

10. Système de reconnaissance vocale pour associer une voix reçue à des mots récupérés d'une base de données d'éléments, le système comprenant :

des moyens pour déterminer une zone géographique d'intérêt suite à une demande dans laquelle une voix doit être reçue, lesdits moyens comprenant en outre :

(i) un mécanisme de détermination d'emplacement de portable associé à un combiné mobile pour générer un signal d'indication révélateur d'un emplacement géographique actuel, et
(ii) un serveur, en communication avec le mécanisme de détermination d'emplacement de portable, programmé pour déterminer une zone géographique d'intérêt à partir du signal d'indication ;

des moyens pour sélectionner un sous-ensemble de mots parmi la base de données d'éléments sur la base de la zone géographique d'intérêt ; lesdits moyens comprenant le serveur programmé pour extraire de la base de données d'éléments seulement des mots qui sont associés à la zone géographique d'intérêt ; et
des moyens pour associer la voix reçue à des mots sélectionnés parmi le sous-ensemble de mots, lesdits moyens étant mis en oeuvre sur le combiné mobile.

11. Système de reconnaissance vocale selon la revendication 10 comprenant en outre :

des moyens pour accepter un signal d'au moins une interface utilisateur graphique pour sélectionner une partie de la zone géographique d'intérêt déterminée afin de spécifier de ce fait une zone géographique d'intérêt limitée supplémentaire ; et
des moyens pour réduire en outre le sous-ensemble de mots selon la zone géographique

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d'intérêt limitée supplémentaire afin de générer un sous-ensemble supplémentaire de mots, de telle sorte que les moyens pour associer une voix reçue à des mots sélectionnent seulement des mots parmi le sous-ensemble supplémentaire de mots.

12. Système de reconnaissance vocale selon la revendication 11 dans lequel les moyens pour accepter un signal comprennent :

un affichage électronique pour afficher une carte de la zone géographique d'intérêt déterminée ; et
un mécanisme de traitement pour combiner le signal accepté avec la carte de la zone géographique d'intérêt déterminée de façon à provoquer un affichage de la zone géographique d'intérêt limitée supplémentaire sur l'affichage électronique.

13. Combiné mobile (250) comprenant des moyens de reconnaissance vocale pour une association d'une voix reçue à des mots reçus d'une base de données distante, le combiné mobile comprenant :

des moyens pour recevoir une demande ;
des moyens pour fournir un signal représentant une zone géographique d'intérêt suite à ladite demande ;
des moyens pour transmettre ledit signal à un serveur distant et recevoir du serveur distant un sous-ensemble de mots provenant de la base de données distante sur la base de la zone géographique d'intérêt ; et
des moyens pour associer la voix reçue à des mots sélectionnés parmi le sous-ensemble de mots.

14. Combiné mobile selon la revendication 13 dans lequel les moyens pour fournir un signal comprennent des moyens pour déterminer une zone géographique d'intérêt dans laquelle une voix doit être reçue.

15. Combiné mobile selon la revendication 13 ou 14 comprenant en outre:

des moyens (201) pour accepter au moins une entrée utilisée pour déterminer une zone géographique affinée d'intérêt dans la zone géographique d'intérêt ;
des moyens (205) pour réduire le sous-ensemble de mots selon la zone géographique affinée d'intérêt;

et dans lequel :

les moyens pour associer la voix reçue sont agencés pour une association d'une voix seulement avec le sous-ensemble réduit de mots.

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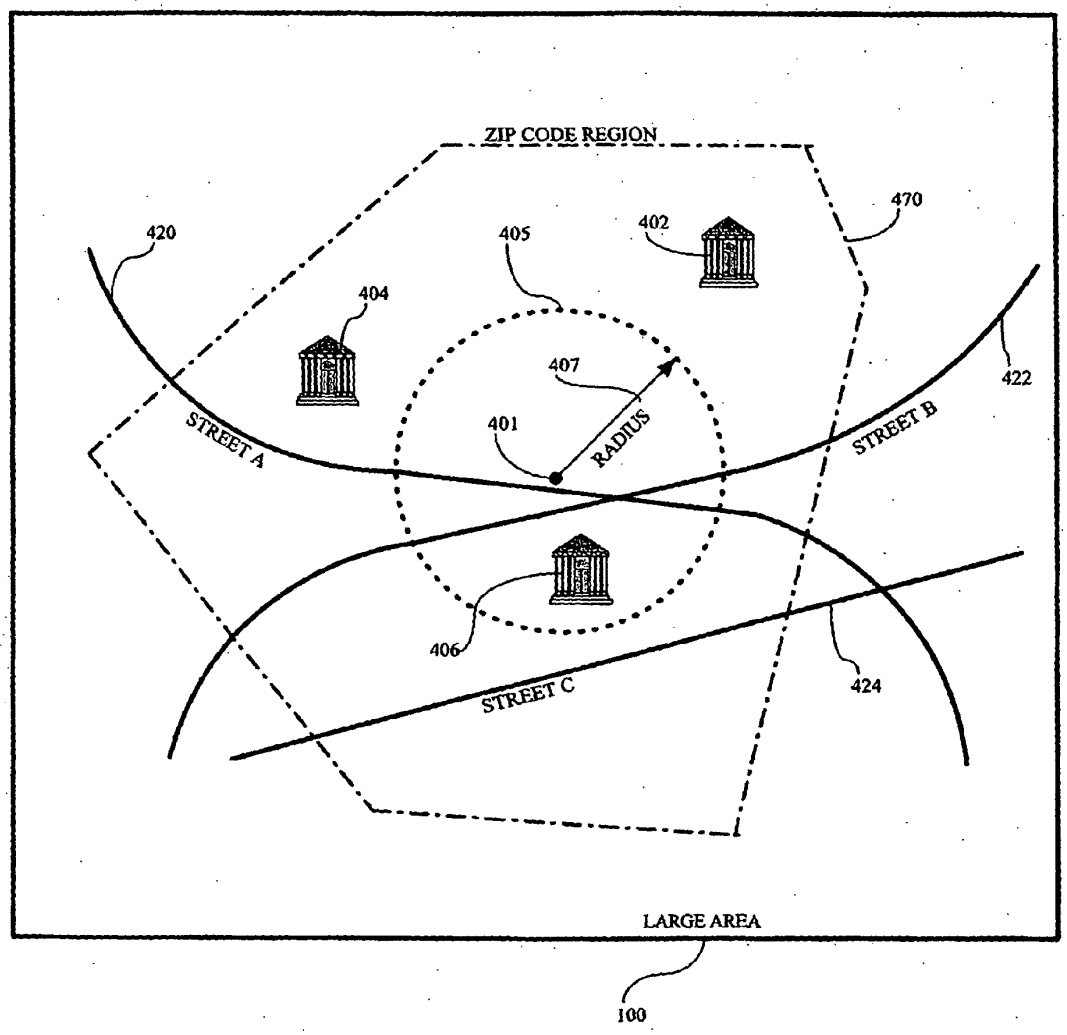


FIG. 1

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500

ELEMENT DATABASE

ELEMENT NAME FIELD 501	PARAMETER FIELD FOR THE REFINED GEOGRAPHIC AREA OF INTEREST 503	PARAMETER FIELD FOR THE COARSE GEOGRAPHIC AREA OF INTEREST 505
FIRST BUILDING	{[603001, 2428833]}	10017
SECOND BUILDING	{[602298, 2428830]}	10017
THIRD BUILDING	{[603010, 2428836]}	10017
STREET A	{[603012, 2428836],[603013, 24428836]}	10017, 10036
STREET B	{[603014, 2428836],[603015, 24428836]}	10017, 10055
STREET C	{[679010, 2428836],[680000, 24428836]}	10017, 12533
...	...	...
DEVON FARMS ROAD	{[673010, 2428836],[675000, 24428836]}	12582

FIG. 2

600

WORD SUBSET LIST

ELEMENT NAME FIELD 601
FIRST BUILDING
STREET A
STREET B

FIG. 3

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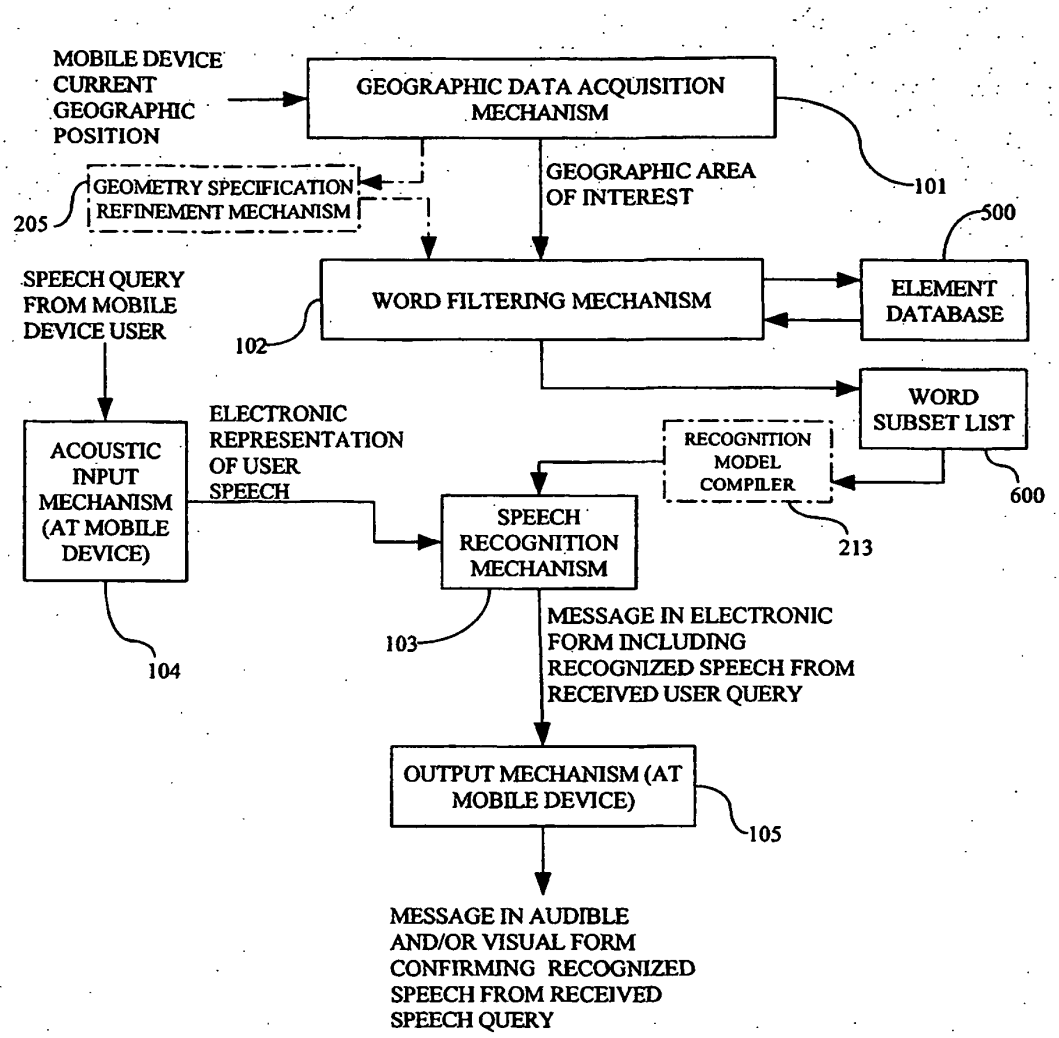


FIG. 4

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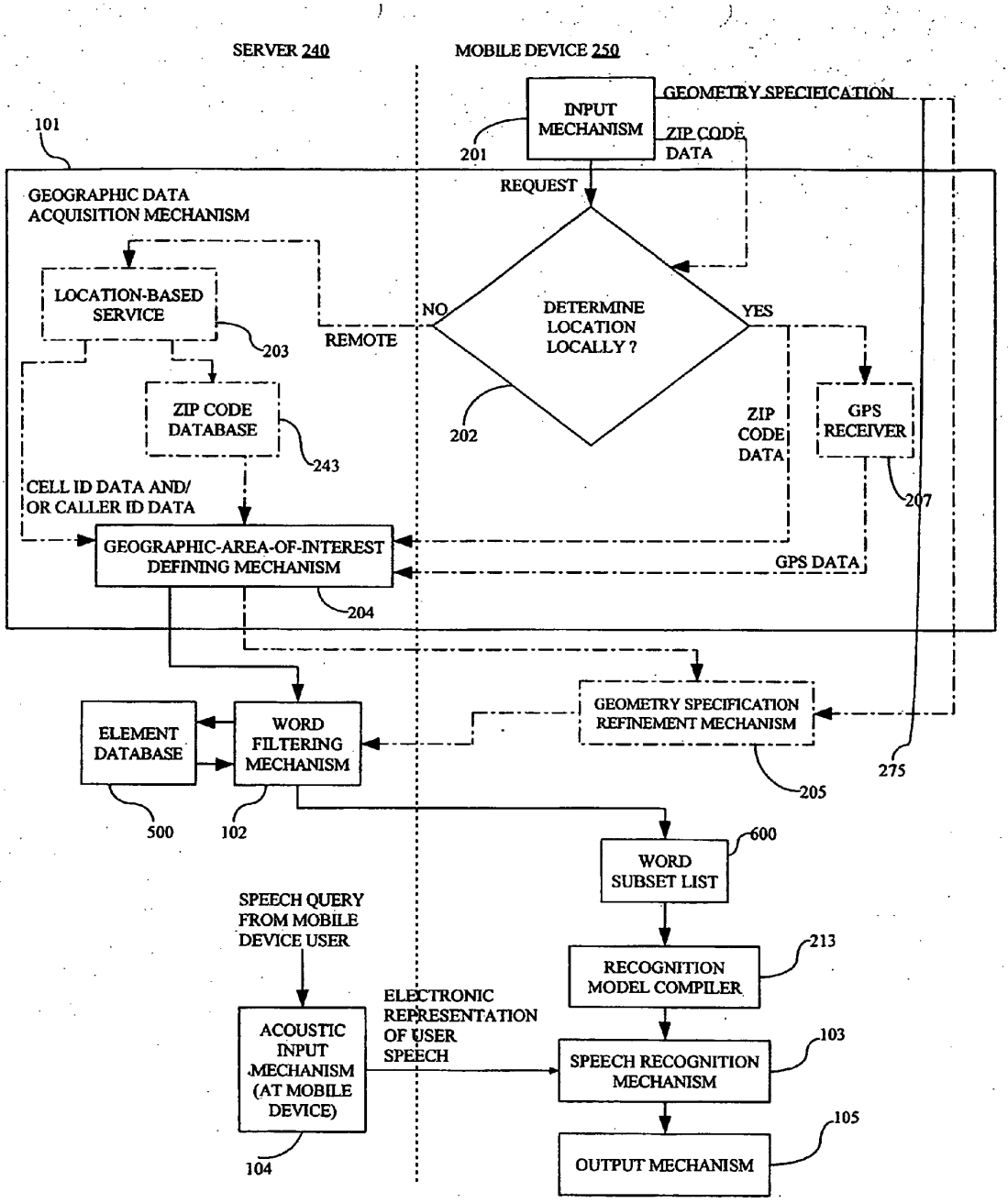


FIG. 5

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REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 2003236099 A **[0007] [0009] [0010]**
- EP 1233407 A **[0011]**
- US 6230132 B **[0012]**
- EP 0661688 A **[0013]**

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Electronic Patent Application Fee Transmittal

Application Number:	12130397
Filing Date:	30-May-2008
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Robert A. Kennewick
Filer:	Syed Jafar Ali/Miriam E. Nelsen
Attorney Docket Number:	090611-0370991

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Independent claims in excess of 3	2201	2	110	220
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**400**

Electronic Acknowledgement Receipt	
EFS ID:	9952184
Application Number:	12130397
International Application Number:	
Confirmation Number:	3889
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Robert A. Kennewick
Customer Number:	00909
Filer:	Syed Jafar Ali/Miriam E. Nelsen
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0370991
Receipt Date:	25-APR-2011
Filing Date:	30-MAY-2008
Time Stamp:	18:26:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$400
RAM confirmation Number	5424
Deposit Account	033975
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 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		090611-0370991_ResponseNFOA_IDS.pdf	1310513 8959e2b9effe2b2977865fdabc947d4652fc8a65	yes	33

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment/Req. Reconsideration-After Non-Final Reject	1	1
Specification	2	2
Claims	3	11
Applicant Arguments/Remarks Made in an Amendment	12	15
Transmittal Letter	16	32
Information Disclosure Statement (IDS) Filed (SB/08)	33	33

Warnings:

Information:

2	Foreign Reference	090611-0370991_EP1646037.pdf	266297 36740082e504a735aef6ee8e825a32002b5ba8ee	no	20

Warnings:

Information:

3	NPL Documents	090611-0370991_Statement_in_Accordance_with_EPO_Notice.pdf	86078 7ddc4ef601f05e721185f5f09398888cb7623795	no	1

Warnings:

Information:

4	Fee Worksheet (PTO-875)	fee-info.pdf	31988 6dd3ee8abf11f3455cb540cdb6bd64d1e937bf74	no	2

Warnings:

Information:

Total Files Size (in bytes):	1694876

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Robert A. KENNEWICK et al.	CONFIRMATION NO. :	3889
SERIAL NUMBER :	12/130,397	EXAMINER :	Martin Lerner
FILING DATE :	May 30, 2008	ART UNIT :	2626
FOR :	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE		

RESPONSE TO NON-FINAL OFFICE ACTION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Non-Final Office Action mailed **January 26, 2011**, please amend the above-identified application as follows:

Amendments to the Specification begin on page **2** of this paper.

Amendments to the Claims begin on page **3** of this paper.

Remarks/Arguments begin on page **12** of this paper.

It is believed that no extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 033975 (**Ref. No. 090611-0370991**).

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AMENDMENT

Amendments to the Specification: (identifying insertions and ~~deletions~~).

- Please amend the title as follows:

SYSTEMS AND METHODS FOR PROCESSING ~~RESPONDING TO~~ NATURAL LANGUAGE SPEECH ~~UTTERANCE~~ UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS

- Please amend the paragraph that begins on page 1, line 3, as follows:

This application is a continuation of ~~claims priority from~~ U.S. Patent Application Serial No. 10/452,147, entitled "Systems and Methods for Responding to Natural Language Speech Utterance," filed June 3, 2003, which issued as U.S. Patent No. 7,398,209 on July 8, 2008, and which claims the benefit of ~~priority from~~ U.S. Provisional Patent Application Serial No. 60/384,388, entitled "General Purpose Device for Speech Query and Response," filed June 3, 2002, the contents ~~disclosures~~ of which are hereby incorporated by reference in their entirety.

- Please amend paragraph **[48]**, which begins on page 22, as follows:

[048] The agents **106** return results of questions as responses to users. The response may be created using the results of information queries, the system personality **108** and the user preferences or other data in the user profile **110**. The agents **106** generally present these results using the speech unit **128**. The agents **106** ~~creates~~ create a response string, which is sent to the text to speech engine **124**. The text to speech engine **124** creates the required utterances, which may be encoded and compressed by the speech coder **122**. Once coded, the utterances are transmitted from the main unit **98** by the transceiver **126** to the transceiver **130** on the speech unit **128**. The utterance is then decoded and decompressed by the speech coder **138** and output by the speaker **136**.

Amendments to the Claims: Please replace all prior versions and listings of claims with the following listing of claims.

LISTING OF CLAIMS:

1-19. **(Cancelled)**

20. **(Currently Amended)** A [[The]] method ~~according to claim 19~~ for processing natural language speech utterances with context-specific domain agents, comprising:

receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request;

recognizing, at a speech recognition engine coupled to the processing device, one or more words or phrases contained in the utterance using information in one or more dictionary and phrase tables, wherein recognizing the one or more words [[and]] or phrases contained in the ~~received~~ utterance includes:

dynamically updating the information in the one or more dictionary and phrase tables based on a dynamic set of prior probabilities or fuzzy possibilities;

determining an identity associated with a ~~of the~~ user that spoke the utterance based on voice characteristics [[of]] associated with the utterance; and

associating the one or more recognized words [[and]] or phrases and a pronunciation [[of]] associated with the one or more recognized words [[and]] or phrases with the determined identity ~~of the user, the determined context,~~ and the ~~at least one~~ request contained in the utterance in response to ~~when~~ the one or more recognized words [[and]] or phrases ~~satisfy~~ satisfying a predetermined confidence level;

parsing, at a parser coupled to the processing device, the one or more recognized words or phrases to determine a meaning associated with the utterance and a context associated with the request contained in the utterance, wherein the one or more recognized words or phrases are further associated with the determined context in response to the one or more recognized words or phrases satisfying the predetermined confidence level;

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formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context;

processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance; and

presenting the generated response to the utterance via the speech unit.

21. (**Currently Amended**) A [[The]] method ~~according to claim 19~~ for processing natural language speech utterances with context-specific domain agents, comprising:

receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request;

recognizing, at a speech recognition engine coupled to the processing device, one or more words or phrases contained in the utterance using information in one or more dictionary and phrase tables, wherein recognizing the one or more words [[and]] or phrases contained in the ~~received~~ utterance ~~further~~ includes:

requesting a [[the]] user that spoke the utterance to spell the one or more ~~of the~~ words [[and]] or phrases in response to ~~when~~ the one or more recognized words [[and]] or phrases failing [[fail]] to satisfy a predetermined confidence level; and

updating the information in the one or more dictionary and phrase tables based on a phonetic alphabet spelling associated with [[of]] the ~~requested~~ one or more words [[and]] or phrases, wherein the user provides the phonetic alphabet spelling ~~provided by the user~~ in one or more subsequent natural language speech utterances;

parsing, at a parser coupled to the processing device, the phonetic alphabet spelling associated with the one or more words or phrases to determine a meaning associated with the utterance and a context associated with the request contained in the utterance;

formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context;

processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance; and

presenting the generated response to the utterance via the speech unit.

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22. (**Currently Amended**) The method according to claim [[19]] 20, wherein parsing the one or more recognized words or phrases to determine ~~determining~~ the context [[for]] associated with the ~~at least one~~ request ~~contained in the utterance~~ includes:

matching the one or more recognized words [[and]] or phrases to a set of keywords associated with [[a]] the dynamic set of prior probabilities or fuzzy possibilities;

scoring ~~one or more~~ multiple possible contexts for the one or more recognized words or phrases matched to the set of keywords using ~~one or more of~~ a profile [[of]] associated with the determined user identity, data content associated with the domain agent, or a context stack [[of]] that includes one or more recent contexts; and

~~determining the context by~~ selecting one ~~or more~~ of the scored multiple possible contexts having a highest score that satisfies the ~~satisfying a~~ predetermined confidence level to be the determined context.

23. (**Currently Amended**) The method according to claim 22, wherein parsing the one or more recognized words or phrases to determine ~~determining~~ the context [[for]] associated with the ~~at least one~~ request ~~contained in the utterance~~ further includes:

requesting the user to verify the one or more recognized words [[and]] or phrases ~~when~~ in response to determining that none of the scored multiple possible contexts ~~have a score satisfying~~ satisfy the predetermined confidence level; and

determining the context based on information ~~provided by~~ that the user provides in one or more subsequent natural language speech utterances.

24. (**Currently Amended**) A [[The]] method ~~according to claim 19~~ for processing natural language speech utterances with context-specific domain agents, comprising:

receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request;

recognizing, at a speech recognition engine coupled to the processing device, one or more words or phrases contained in the utterance using information in one or more dictionary and phrase tables;

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parsing, at a parser coupled to the processing device, information relating to the utterance to determine a meaning associated with the utterance and a context associated with the request contained in the utterance, wherein the parsed information includes the one or more recognized words or phrases;

formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context, wherein formulating the ~~at least one~~ request in accordance with the grammar used by the domain agent includes:

determining one or more required values and one or more optional values associated with formulating the [[for a]] request in the grammar used by the domain agent;

extracting one or more criteria and one or more parameters from one or more keywords contained in the one or more recognized words [[and]] or phrases, wherein the parser extracts the one or more criteria and the one or more parameters ~~extracted~~ using procedures sensitive to the determined context;

inferring one or more further criteria and one or more further parameters associated with the request using a dynamic set of prior probabilities or fuzzy possibilities; and

transforming the one or more extracted criteria, the one or more extracted parameters, the one or more [[and]] inferred criteria, and the one or more inferred parameters into one or more tokens having a format compatible with the grammar used by the domain agent, wherein the one or more tokens include ~~transformed criteria and parameters including~~ all [[of]] the required values and one or more of the optional values associated with formulating [[for]] the request in the grammar used by the domain agent;

processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance; and

presenting the generated response to the utterance via the speech unit.

25-26. (**Cancelled**)

27. (**Currently Amended**) A [[The]] method ~~according to claim 26~~ for processing natural language speech utterances with context-specific domain agents, comprising:

receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request, wherein the request includes at least one command and at least one question;

parsing, at a parser coupled to the processing device, information relating to the utterance to determine a meaning associated with the utterance and a context associated with the request contained in the utterance;

formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context;

processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance, wherein processing the formulated request with the domain agent includes:

directing the at least one command to one or more local or remote processing devices to execute the at least one command; and

querying one or more local or network information sources to resolve information requested in the at least one question, wherein querying the one or more local or network information sources further includes:

submitting multiple asynchronous queries to the one or more local or network information sources, wherein the multiple queries include one or more duplicate queries submitted to distinct information sources;

asynchronously receiving multiple results to the multiple asynchronous queries from the one or more local or network information sources; and

scoring a relevance associated with the multiple asynchronously received results using a dynamic set of prior probabilities or fuzzy possibilities to determine one or more best responses to the at least one question, wherein scoring ~~determining~~ the relevance associated with the multiple asynchronously

received results to determine the one or more best responses ~~to the at least one question~~ includes:

determining one or more tokens required to formulate a response to the at least one question;

applying ~~extracting~~ one or more scraping criteria to ~~values for the determined tokens from~~ the multiple asynchronously received results[[, the]] to extract one or more values ~~extracted by applying one or more scraping criteria to~~ for the asynchronously received results;

evaluating the one or more extracted values using the dynamic set of prior probabilities or fuzzy possibilities~~, wherein evaluating the extracted values includes resolving~~ to resolve ambiguous, incomplete, or conflicting information associated with the one or more extracted values; and

selecting one or more best values for the one or more required ~~determined~~ tokens from the one or more evaluated values, wherein the one or more best responses include the one or more ~~selected~~ best values for the one or more required tokens; and

presenting the generated response to the utterance via the speech unit, wherein the response presented via the speech unit includes results associated with the one or more local or remote processing device executing the at least one command and the one or more best responses to the at least one question.

28. (**Currently Amended**) The method according to claim 27, wherein scoring ~~determining~~ the relevance associated with the multiple asynchronously received results to determine the one or more best responses ~~to the at least one question~~ further includes:

determining that the dynamic set of prior probabilities or fuzzy possibilities [[has]] failed to resolve the ambiguous, incomplete, or conflicting information associated with the one or more extracted values; and

resolving the ambiguous, incomplete, or conflicting information associated with the one or more extracted values using one or more subsequently received results associated with [[of]] one or more the ~~plurality of~~ multiple asynchronous queries that remain pending.

29. (**Currently Amended**) The method according to claim 27, wherein scoring ~~determining~~ the relevance associated with the multiple asynchronously received results to determine the one or more best responses ~~to the at least one question~~ further includes:

determining that the dynamic set of prior probabilities or fuzzy possibilities [[has]] failed to resolve the ambiguous, incomplete, or conflicting information associated with the one or more extracted values; and

~~resolving the ambiguous, incomplete, or conflicting information by~~ submitting one or more additional queries to the local or network information sources to resolve the ambiguous, incomplete, or conflicting information associated with the one or more extracted values, wherein the domain agent infers ~~submitting the additional queries includes inferring~~ the local or network information sources associated with the one or more additional queries ~~to be queried~~ based on the multiple asynchronous results ~~of one or more of~~ to the multiple ~~plurality of~~ asynchronous queries that have already been received.

30. **(Currently Amended)** The method according to claim 27, wherein scoring ~~determining~~ the relevance associated with the multiple asynchronously received results to determine the one or more best responses ~~to the at least one question~~ further includes:

determining that the dynamic set of prior probabilities or fuzzy possibilities [[has]] failed to resolve the ambiguous, incomplete, or conflicting information associated with the one or more extracted values; and

~~resolving the ambiguous, incomplete, or conflicting information by~~ requesting [[the]] a user that spoke the utterance to provide additional information relating to the request, wherein the domain agent uses the additional information relating to the request to resolve ~~for resolving~~ the ambiguous, incomplete, or conflicting information associated with the one or more extracted values.

31. **(Currently Amended)** A [[The]] method ~~according to claim 18~~ for processing natural language speech utterances with context-specific domain agents, comprising:

receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request;

parsing, at a parser coupled to the processing device, information relating to the utterance to determine a meaning associated with the utterance and a context associated with the request contained in the utterance;

formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context;

processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance; and

presenting the generated response to the utterance via the speech unit, wherein presenting the ~~results of the processed request to the user~~ generated response includes:

selecting, by the domain agent, a format template ~~for~~ to use in presenting the ~~results~~ generated response;

selecting, by the domain agent, a personality ~~for~~ to use in presenting the ~~results~~ generated response;

determining, by the domain agent, an order ~~for~~ to use in presenting one or more tokens contained in the ~~results~~ generated response; and

performing, by the domain agent, one or more variable substitutions and transformations on the one or more tokens contained in the generated response to vary a terminology used in presenting [[of]] the ~~results~~ generated response.

32. (**Currently Amended**) The method according to claim 31, wherein presenting the ~~results of the processed request to the user~~ generated response further includes[[:]] formatting the ~~results~~ one or more tokens contained in the generated response in accordance with the selected format template, wherein a text to speech engine reads the one or more formatted tokens ~~results~~ in accordance with the selected personality to create a system-generated speech utterance that contains ~~presents~~ the generated response ~~results~~ to present via the ~~user~~ speech unit.

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REMARKS

Upon entry of the foregoing Amendment, claims 20-24 and 27-32 are pending in the application. Claims 20-24 and 27-32 have been amended. Claims 18-19 and 25-26 have been cancelled without prejudice or disclaimer. No claims have been newly added. Applicants believe that this Amendment does not add new matter. In view of the foregoing Amendment and the following Remarks, allowance of all the pending claims is requested.

EXAMINER INTERVIEW

Applicants thank Examiner Lerner for granting Applicants' representative the courtesy of an Examiner Interview on February 24, 2011. During the Examiner Interview, Applicants' representative discussed potential claim amendments to place the application in condition for allowance, as set forth in further detail below.

SPECIFICATION OBJECTIONS

The Examiner has objected to the title, requiring a "new title . . . that is clearly indicative of the invention to which the claims are directed." In addition, the Examiner has objected to the disclosure, indicating that the continuity data associated with the parent patent application should be updated and that the Preliminary Amendment filed July 7, 2008 has a typographical error incorrectly identifying ¶ [48] as ¶ [61].

Solely to expedite prosecution, and without acknowledging the propriety of the Examiner's alleged basis for the objection, Applicants note that the title and continuity data have been amended to address the Examiner's alleged objections, and further that the amendments to ¶ [48] have been represented in a manner that addresses the typographical error in the previously filed Preliminary Amendment.

Accordingly, for at least the reason that the amendments to the title and the specification fully address the Examiner's alleged objections, Applicants request that the Examiner withdraw the objections to the title and the disclosure.

ALLOWABLE SUBJECT MATTER

Applicants thank the Examiner for indicating that claims 20-21, 24, and 27-32 would be allowable if rewritten to overcome the rejection under 35 U.S.C. § 101 and presented in an independent form including the subject matter of any intervening claims. As such, Applicants note that claims 20, 21, 24, 27, 31 have been amended to rewrite the claims in independent form and address the Examiner's alleged basis for the rejection under 35 U.S.C. § 101, whereby independent claims 20, 21, 24, 27, 31 are allowable.

Applicants further note that claims 22, 23, 28-30 and 32 depend from and add features to one of amended independent claims 20, 27, and 31. Thus, claims 22, 23, 28-30 and 32 are allowable for at least the reason that they depend from allowable independent claims.

Accordingly, for at least the reason that all of the pending claims recite subject matter that the Examiner has identified as allowable or depend from an independent claim that recites subject matter that the Examiner has identified as allowable, Applicants respectfully request notice that all the pending claims are allowed.

REJECTION UNDER 35 U.S.C. § 101

The Examiner has rejected currently pending claims 20-24 and 27-32 under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. In particular, the Examiner alleges that the methods previously recited in claims 20-24 and 27-32 "fails to meet the 'machine or transformation' test" and therefore contends that the methods recited therein are "abstract." Office Action, pages 2-4.

Solely to expedite prosecution, and without acknowledging the propriety of the Examiner's alleged basis for the rejection, Applicants have amended the independent claims to further clarify that the methods recited therein include, among other things, "receiving, ***at a speech unit coupled to a processing device***, a natural language speech utterance that contains a request" in addition to various other features that are performed with components that are "coupled to ***the processing device***" (e.g., a "speech recognition engine," a "parser," etc.).

Accordingly, for at least the reason that the methods recited in the amended independent claims recite various features that are performed with components "coupled to a

processing device," the methods recited therein are directed to statutory subject matter. Applicants therefore respectfully request that the Examiner withdraw this rejection.

REJECTION UNDER 35 U.S.C. § 102

The Examiner has rejected previously pending claims 18-19 and 25 as allegedly being anticipated under 35 U.S.C. § 102(e) by U.S. Patent No. 6,757,718 to Halverson et al. ("Halverson"). Applicants note that claims 18-19 and 25 have been cancelled, and therefore this rejection has been rendered moot. As such, Applicants respectfully request that the Examiner withdraw this rejection.

REJECTION UNDER 35 U.S.C. § 103

The Examiner has rejected claims 22-23 under 35 U.S.C. § 103 as allegedly being unpatentable over Halverson in view of U.S. Patent No. 6,681,206 to Gorin et al. ("Gorin") and previously pending claim 26 under 35 U.S.C. § 103 as allegedly being unpatentable over Halverson in view of U.S. Patent No. 6,751,612 to Schuetze et al. ("Schuetze"). Applicants initially note that claim 26 has been cancelled and therefore respectfully request that the Examiner withdraw the rejection of claim 26, which has been rendered moot.

Furthermore, with respect to the rejection of claims 22-23, the rejection is improper and should be withdrawn because claims 22-23 recite allowable subject matter. More particularly, as discussed above, claim 20 has been amended to be rewritten in an independent form, wherein the Examiner has indicated that claim 20 would be allowable if so rewritten, while claims 22-23 depend from and add features to amended independent claim 20. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 22-23 for at least the reason that they depend from allowable independent claim 20.

CONCLUSION

Having addressed the outstanding rejections, Applicants respectfully submit that a full and complete response has been made to the Office Action. As such, the application is in condition for allowance. Notice to that effect is respectfully requested.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Date: **April 25, 2011**

Respectfully submitted,

By: _____

Syed Jafar Ali
Registration No. 58,780

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Robert A. KENNEWICK *et al.*	CONFIRMATION NO.:	3889
SERIAL NUMBER :	12/130,397	EXAMINER:	Martin Lerner
FILING DATE :	May 30, 2008	ART UNIT:	2626
FOR :	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicants hereby make of record in the above-identified application the documents listed on the attached Form PTO-1449.

This Supplemental Information Disclosure Statement is being filed more than three months after the filing date of a national application other than a continued prosecution application under 37 C.F.R. § 1.53(d), or more than three months after the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, and after the mailing date of the first Office Action on the merits, but before the mailing date of any of a Final Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution in the application. 37 C.F.R. § 1.97(c).

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Documents B and H were cited by the U.S. Patent Office in co-pending Application Serial No. 12/571,795, filed October 1, 2009, in an Office Action dated December 21, 2010. Documents A, C, D, F, G, and I were cited by the U.S. Patent Office in co-pending Application Serial No. 12/127,343, filed May 27, 2008, in an Office Action dated February 3, 2011. Document E was cited by the U.S. Patent Office in co-pending Application Serial No. 12/365,516, filed February 4, 2009, in an Office Action dated March 10, 2011. Document J was cited by the U.S. Patent Office in co-pending Application Serial No. 12/571,795, filed October 1, 2009, in an Office Action dated April 6, 2011.

Documents L-O were cited in search reports by foreign patent offices in counterpart foreign applications. Submission of an English language version of each search report that indicates the degree of relevance found by the foreign office is provided.

Please charge the $180.00 fee [37 C.F.R. § 1.17(p)] to Deposit Account No. 03-3975. In addition, please charge any fee deficiencies, or credit any overpayment, to Deposit Account No. 03-3975 as needed to ensure consideration of the Supplemental Information Disclosure Statement.

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 215

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

By _____
Syed Jafar Ali
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Dated: April 25, 2011

Meta Platforms, Inc. - IPR2025-01334
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 90611-390977	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US 10/56109	International filing date *(day/month/year)* 10 November 2010 (10.11.2010)	(Earliest) Priority Date *(day/month/year)* 10 November 2009 (10.11.2009)
Applicant VOICEBOX TECHNOLOGIES, INC.		

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 9 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. 1

   ☒ 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.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 10/56109

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 17/27 (2010.01)
USPC - 704/9
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)
USPC: 704/9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 704/257; 704/231; 704/E15.001 (see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(PGPB,USPT,USOC,EPAB,JPAB), GOOGLE SCHOLAR
terms: purchase, paid subscription, content dedication, natural language, transaction, utterance, song, movie, video, buy to own, pay, annotate, tag, recipient, multimodel, interact, metadata.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/0193420 A1 (Kennewick et al.) 30 September 2004 (30.09.2004), fig. 1, 3, 5-6, para [0013]-[0020], [0082], [0095]-[0182].	1-20
A	US 2009/0216540 A1 (Tessel et al.) 27 August 2009 (27.08.2009), entire document.	1-20
A	US 2008/0140385 A1 (Mahajan et al.) 12 June 2008 (12.06.2008), entire document.	1-20

☐ Further documents are listed in the continuation of Box C. ☐

* 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
18 December 2010 (18.12.2010)	07 JAN 2011
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

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Date
09.12.10

Reference	Application No./Patent No.
JMP/P513927EP	10182827.5 - 2225
Applicant/Proprietor	
Voicebox Technologies, Inc.	

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the European search report (R. 61 EPC) or the partial European search report/ declaration of no search (R. 63 EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☑ 0 additional set(s) of copies of such documents is (are) enclosed as well.

The following have been approved:

☑ Abstract ☑ Title

☐ The Abstract was modified and the definitive text is attached to this communication.

The following figure(s) will be published together with the abstract: 1

Refund of search fee

If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

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Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 18 2827

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 2007/050191 A1 (WEIDER CHRIS [US] ET AL) 1 March 2007 (2007-03-01) * abstract * * figures 1,5-8 * * paragraphs [0001] - [0008], [0020] * * paragraphs [0033], [0061] - [0073] * * paragraphs [0100], [0121], [0123] * * paragraphs [0126], [0133], [0140] * * paragraphs [0142], [0147], [0148] * * paragraphs [0153], [0167] * * paragraphs [0189] - [0194] * * paragraphs [0210], [0211], [0215] *	1-8, 10-15 9	INV. G10L15/18 G10L15/22
Y	EP 1 646 037 A2 (FRANCE TELECOM [FR]) 12 April 2006 (2006-04-12) * paragraphs [0049], [0050] * * paragraphs [0060], [0063] *	9	
A	US 6 598 018 B1 (JUNQUA JEAN-CLAUDE [US]) 22 July 2003 (2003-07-22) * the whole document *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

G10L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 December 2010	Tilp, Jan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

3

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 18 2827

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

01-12-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007050191 A1	01-03-2007	CN 101292282 A	22-10-2008
		EP 1929466 A2	11-06-2008
		WO 2007027546 A2	08-03-2007
EP 1646037 A2	12-04-2006	AT 390682 T	15-04-2008
		DE 602005005597 T2	30-04-2009
		ES 2304673 T3	16-10-2008
		US 2006074660 A1	06-04-2006
US 6598018 B1	22-07-2003	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

The examination is being carried out on the **following application documents**

Description, Pages

1-55 as originally filed

Claims, Numbers

1-15 as originally filed

Drawings, Sheets

1/6-6/6 as originally filed

1 Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

D1 US 2007/050191 A1 (WEIDER CHRIS [US] ET AL) 1 March 2007 (2007-03-01)

D2 EP 1 646 037 A2 (FRANCE TELECOM [FR]) 12 April 2006 (2006-04-12)

2 The application does not meet the requirements of Article 84 EPC, because certain claims as presently on file are not clear.

2.1 **Claims 1, 2, 4, 6, 11 and 13** are unclear in respectively claiming device features (see e.g. claim 1, lines 8-9 ("speech recognition engine"), lines 10-11 ("conversational language processor") and line 15 ("navigation agent"), and claim 6, line 23 ("location detection system")) within subject-matter initially defined to refer to a method (see e.g. claim 1, line 1).

2.2 The term "shared knowledge" used in **claim 1** (see line 11), **claim 5** (line 14), **claim 11** (lines 28 and 33) and **claim 14** (lines 12 and 18) is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear.

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2.3 The approximative term "substantially later" used in **claim 2** has no well-recognized meaning and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear.

2.4 **Claim 3** is unclear due to claiming the syntactically and semantically obscure expression "the proximity to the based on one or more topological domains".

2.5 Moreover, the term "geographic chunks" used in **claims 7-9** (see e.g. claim 7, line 32) is vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear.

2.6 Furthermore, the non-technical terms "affinities" and "affinity" used in **claims 10, 11 and 15** (see e.g. claim 10, line 21) are vague and unclear and leave the reader in doubt as to the meaning of the technical feature to which they refer, thereby rendering the definition of the subject-matter of said claims unclear.

2.7 Notwithstanding the objection raised above (see 2.6), **claim 10** does neither meet the requirements of Article 84 EPC in that the matter for which protection is sought is not defined. By claiming "determining affinities between the user and one or more peers of the user" (see claim 10, line 21), the claim attempts to define the subject-matter in terms of the result to be achieved. Such a definition is only allowable under the conditions elaborated in the Guidelines C-III, 4.10. In this instance, however, such a formulation is not allowable because it appears possible to define the subject-matter in more concrete terms, viz. in terms of how the effect is to be achieved.

2.8 For the assessment of the present set of claims with regard to novelty and inventive step, all present claims assessed above as unclear have been interpreted in the broadest possible sense.

3 The present set of claims filed with the EPO on September 29, 2010 introduces subject-matter which extends beyond the content of the parent application EP08781546 as filed, contrary to Article 76(1) EPC.

In particular, no basis can be found in the parent application for **claim 14** claiming "the advertisements including [...] a banner, an audio message, a video message, [...] and a data stream" (see claim 14, lines 21-23).

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4 Notwithstanding the lack of clarity and the lack of basis mentioned above under 2 and 3, the subject-matter of **claims 1-8 and 10-15** is not new within the meaning of Article 54(1) and (2) EPC, and the requirements of Article 52 (1) EPC are therefore not met.

4.1 European search report document D1 discloses (the references in parentheses applying to D1) - using the present wording of independent **claim 1**:

"A method for providing a natural language voice user interface in a voice navigation services environment (title and abstract), comprising:

receiving a voice-based destination input provided by a user, the voice-based destination input including at least a natural language utterance (paragraph [0062], lines 1-5);

generating one or more preliminary interpretations of the natural language utterance using a dynamic recognition grammar associated with a speech recognition engine (paragraphs [0133] and [0189]);

analyzing the preliminary interpretations using a conversational language processor, the conversational language processor using shared knowledge and information associated with a navigation context to determine an intended destination provided in the natural language utterance, the intended destination including an approximation of a destination (paragraphs [0189]-[0194]); and

communicating the intended destination to a navigation agent, the navigation agent operable to provide a route to the intended destination (paragraphs [0020], [0033] and [0061]-[0062]) by:

selecting a preliminary destination for the route, the selected preliminary destination having an address that best corresponds to the approximated destination; calculating a route from a current location of the user to the selected preliminary destination (paragraphs [0061]-[0062]); and

participating in a dialogue with the user to resolve a final destination for the calculated route, the dialogue includes one or more interactions with the user that successively refine the approximated destination until the final destination has been resolved (paragraphs [0061]-[0062])."

The subject-matter of claim 1 is therefore not new (Article 54(1) and (2) EPC).

4.2 Moreover, D1 discloses (the references in parentheses applying to D1) - using the present wording of independent **claim 6**:

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"A method for providing a natural language voice user interface in a voice navigation services environment (title and abstract), comprising:

receiving a navigation-related voice-based input provided by a user, the voice-based input including at least a natural language utterance (paragraph [0062], lines 1-5);

identifying a current location of a user using a location detection system (paragraph [0100]);

determining one or more topological domains associated with the current location of the user (paragraphs [0061]-[0073]);

generating a dynamic recognition grammar that includes grammar information associated with the determined topological domains (paragraphs [0133] and [0189]); and

using the dynamic recognition grammar to generate one or more interpretations of the natural language utterance (paragraphs [0153] and [0189])."

The subject-matter of claim 6 is therefore not new (Article 54(1) and (2) EPC).

4.3 D1 also discloses (the references in parentheses applying to D1) - using the present wording of independent **claim 11**:

"A method for providing advertisements in a voice navigation services environment (), comprising:

identifying a current location of a user using a location detection system (paragraph [0100]);

retrieving shared knowledge and information associated with a navigation context, the retrieved information used to determine probable interpretations of natural language utterances received in the voice navigation services environment (paragraphs [0153] and [0189]);

identifying one or more advertisements to provide to the user, the one or more advertisements identified based on an affinity to one or more of the current location of the user, the shared knowledge, or the information associated with the navigation context (paragraph [0067]); and

generating a multi-modal output to provide the one or more identified advertisements to the user (paragraphs [0067] and [0148])."

The subject-matter of claim 11 is therefore not new (Article 54(1) and (2) EPC).

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Meta Platforms, Inc. v. Dialect, LLC
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4.4 In light of D1 and the corresponding passages referenced in the European search report, dependent **claims 2-5, 7, 8, 10 and 12-15** do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to novelty.

5 The obligatory features of "dividing one or more of the geographic chunks into a plurality of tiles, the dynamic recognition grammar further organizing the grammar information according to the plurality of tiles" additionally claimed in dependent **claim 9**, lines 9-11, are not expressly disclosed in D1.

However, said additionally-claimed features are disclosed in D2 (see e.g. paragraphs [0049], [0050] and [0063]). It would have been obvious for the skilled person to combine the method disclosed in D1 with that disclosed in D2, with both said methods being directed to location-based speech recognition.

Consequently, the subject-matter of claim 9 does not involve an inventive step in the sense of Article 56 EPC.

6 The applicant is invited to file new claims which take account of the above and the following comments.

In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant should clearly identify the amendments made, irrespective of whether they concern amendments by addition, replacement or deletion, and indicate the passages of the application as filed on which these amendments are based (see Guidelines E - II, 1).

If the applicant considers it appropriate, these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.

When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and of any statements of problem or advantage, not to add subject - matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).

To meet the requirements of Rule 42(1)(b) EPC, document D1 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

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Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 226

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Office européen des brevets

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12 JAN 2011

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11 JAN 2011

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SYSTEM	DATE ENTERED	INITIALS
RECORDS	11/1	VW
FORWARDS		
FEE EARNER: REW	DEADLINE(S):	

Date
05.01.11

Reference	Application No./Patent No.
P111658EP/RW	08729143.1 - 2221 / 2109849 PCT/US2008053157
Applicant/Proprietor	
Voicebox Technologies, Inc.	

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the supplementary European search report (Art. 153(7) EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☑ 0 additional set(s) of copies of such documents is (are) enclosed as well.

Refund of the search fee

If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

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SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 08 72 9143

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X L	"STATEMENT IN ACCORDANCE WITH THE NOTICE FROM THE EUROPEAN PATENT OFFICE DATED 1 OCTOBER 2007 CONCERNING BUSINESS METHODS - EPC / ERKLAERUNG GEMAESS DER MITTEILUNG DES EUROPAEISCHEN PATENTAMTS VOM 1.OKTOBER 2007 UEBER GESCHAEFTSMETHODEN - EPU / DECLARATION CONFORMEMENT AU COMMUNIQUE DE L'OFFICE EUROP", 20071101, 1 November 2007 (2007-11-01), XP002456252, * the whole document * -----	1-15	INV. G06Q30/00

TECHNICAL FIELDS SEARCHED (IPC)

G06Q

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search	Date of completion of the search	Examiner
Munich	22 December 2010	Gardiner, Alexander

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1

EPO FORM 1503 03.82 (P04C04)

The examination is being carried out on the **following application documents**

Description, Pages

1-16 as originally filed

Claims, Numbers

1-15 filed on 15-10-2009

Drawings, Sheets

1/3-3/3 as originally filed

*****

1. The applicant was reminded in the search report that in accordance with the established practice of the EPO, no search need be performed in respect of those aspects of the claimed invention which relate solely to matter devoid of technical character.

1.1 The only identifiable technical aspects of the claimed invention in claims 1-15 relate to the use of conventional, general-purpose data processing technology for processing data of an inherently non-technical nature. In the present case these are, in claim 8, an input device, a processor and some form of presentation.

Even when interpreting the subject-matter defined as implying a computer or computer network with technical means interfaced to allow automation of the functions stipulated, without further detail to allow the technically skilled person adequate specification in order to understand any technical problem for which a technical solution is provided, the matter would be devoid of inventive step.

The information technology which would be (speculated to be) employed is considered to have been generally known as it was widely available to everyone at the date of filing/priority of the present application. The notoriety of such prior art cannot reasonably be contested. No documentary evidence was therefore considered required. A note to this effect has been made in the search report.

Accordingly the subject-matter of claims 1-15 is not considered inventive (Article 56 EPC) and the application is not allowable (Article 52 EPC).

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2. It is not apparent which part of the application could serve as a basis for a revised, allowable claim. Should the applicant nevertheless regard some particular matter as patentable an independent claim including such matter should be filed.

2.1 Should he consider it advisable to pursue protection of such matter, the applicant should not only give convincing argumentation in his letter of reply as regards the view of the examiner as noted above but also towards the technical difference between the subject-matter of the revised independent claim(s) and any state of the art of which he is aware, including the general knowledge of the person skilled in the art, and the significance thereof as regards a technical solution to a technical problem which may overcome the objection as regards a lack of inventive step.

2.2 The attention of the Applicant is drawn to the fact that the application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed, Article 123(2) EPC. This also applies to previously undisclosed combinations of features.

2.3 In order to expedite the procedure the Applicant is however requested to indicate with his reply where there is a basis for the amendments in the application as originally filed. Any information the Applicant may wish to submit concerning the subject-matter of the invention, for example further details of its advantages or of the problem it solves, and for which there is no basis in the application as filed, should be confined to that letter of reply rather than be incorporated into the application, see especially the Guidelines C-IV, section 11.10.

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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 12/130,397	Filing Date 05/30/2008	☐ 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	
AMENDMENT	**04/25/2011**	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 11	Minus	** 20	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $110 =	0	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	0	OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	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:
/STEFANIE BRYCE/

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

909 7590 05/09/2011

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
LERNER, MARTIN	
ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 05/09/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

TITLE OF INVENTION: SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$755	$300	$0	$1055	08/09/2011

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 SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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.

PTOL-85 (Rev. 02/11)

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
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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)

909 7590 05/09/2011
PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

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.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

TITLE OF INVENTION: SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$755	$300	$0	$1055	08/09/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
LERNER, MARTIN	2626	704-255000

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 credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information 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.

Meta Platforms, Inc. - IPR2025-01334
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

909 7590 05/09/2011

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
LERNER, MARTIN	
ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 05/09/2011

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 545 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 545 day(s).

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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Meta Platforms, Inc. - IPR2025-01334
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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.

Notice of Allowability	Application No.	Applicant(s)	
	12/130,397	KENNEWICK ET AL.	
	Examiner	Art Unit	
	MARTIN LERNER	2626	

-- 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 *Amendment filed 25 April 2011*.

2. ☒ The allowed claim(s) is/are *20 to 24 and 27 to 32*.

3. ☐ 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 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.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ 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. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 4/25/2011
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

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Meta Platforms, Inc. v. Dialect, LLC
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EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Independent claim 20 is allowable because the prior art of record does not disclose or reasonably suggest a combination of parsing to determine a meaning and a context of speech associated with a request involving a grammar by a domain agent, satisfying a predetermined confidence level, updating user specific vocabularies or dictionaries, and determining an identity of a user based on voice characteristics. *Sabourin* (U.S. Patent No. 6,208,964) teaches updating user specific vocabularies or dictionaries, but not in combination with satisfying a predetermined confidence level and determining an identity of the user based on voice characteristics of the user. Although determining an identity of a user based on voice characteristics is known individually for a voice profile, the prior art of record does not disclose or reasonably suggest that feature in combination with updating a user specific vocabulary when a predetermined confidence level is not met.

Independent claim 21 is allowable because the prior art of record does not disclose or reasonably suggest a combination of parsing to determine a meaning and a context of speech associated with a request involving a grammar by a domain agent, satisfying a predetermined confidence level, updating user specific vocabularies or dictionaries, and updating vocabulary information to indicate that spelling was used when the vocabulary item had to be spelled. *Holthouse et al.* (U.S. Patent No. 6,606,598) teaches that it is known to use confidence scores and thresholds to

determine whether recognition is correct, and updating vocabulary information to indicate that spelling was used when the vocabulary item had to be spelled. Still, *Holthouse et al.* doesn't clearly disclose requesting the user to spell when the recognized words fail to satisfy a confidence level. While *Marx et al.* (U.S. Patent No. 6,173,266) suggests a spelling fallback method when a dialogue module is unable or unsure of a response, the prior art of record does not disclose or reasonably suggest updating vocabulary information from spelling when a confidence level is not met.

Independent claim 24 is allowable because the prior art of record does not disclose or reasonably suggest a combination of parsing to determine a meaning and a context of speech associated with a request involving a grammar by a domain agent, determining one or more required values and one or more optional values associated with a request in the grammar used by the domain agent, inferring one more further criteria and one or more further parameters associated with the request, and transforming the extracted criteria, extracted parameters, inferred criteria, and inferred parameters into tokens having a format compatible with the grammar used by the domain agent. It is known individually to provide grammars with required and optional values, and to infer criteria from a current context, but the prior art of record does not disclose or reasonably suggest at least a format transformation in combination.

Independent claim 27 is allowable because the prior art of record does not disclose or reasonably suggest a combination of parsing to determine a meaning and a context of speech associated with a request involving a grammar by a domain agent, querying one or more local or network information sources to resolve information into at

least one question, where the querying involves submitting multiple asynchronous queries, receiving multiple results, scoring a relevance using a dynamic set of prior probabilities to determine one or more best responses, applying scraping criteria to extract one or more values, and presenting the generated response to the utterance via a speech unit. *Schuetze et al.* (U.S. Patent No. 6,751,612) teaches that it is known in the prior art to submit a plurality of queries and obtain a plurality of results to web crawlers for multiple information sources and scoring, but does not disclose or reasonably suggest further at least applying scraping criteria to extract the values.

Independent claim 31 is allowable because the prior art of record does not disclose or reasonably suggest a combination of parsing to determine a meaning and a context of speech associated with a request involving a grammar by a domain agent, selecting a format template by a domain agent to use for presenting the generated response, and performing by the domain agent one or more variable substitutions and transformations on tokens contained in the response to vary a terminology of presenting the generated response. *Handel et al.* (U.S. Patent No. 6,195,651) teaches format conversion for display presentation based upon a user profile, but omits variable substitutions. Although variable substitutions for abbreviations are known individually for responding to queries by speech recognition, the prior art of record does not disclose or reasonably suggest both format conversion and variable substitutions in combination with parsing to determine a meaning and a context associated with a request involving a grammar by a domain agent.

Any comments considered necessary by Applicants 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."

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARTIN LERNER whose telephone number is (571) 272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. 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.

/Martin Lerner/
Primary Examiner
Art Unit 2626
April 28, 2011
/

Notice of References Cited	Application/Control No. 12/130,397	Applicant(s)/Patent Under Reexamination KENNEWICK ET AL.	
	Examiner MARTIN LERNER	Art Unit 2626	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,208,964	03-2001	Sabourin, Michael	704/244
*	B	US-6,606,598	08-2003	Holthouse et al.	704/275
*	C	US-6,173,266	01-2001	Marx et al.	704/270
*	D	US-6,366,882	04-2002	Bijl et al.	704/235
*	E	US-6,912,498	06-2005	Stevens et al.	704/235
*	F	US-6,167,377	12-2000	Gillick et al.	704/240
*	G	US-6,018,708	01-2000	Dahan et al.	704/244
*	H	US-7,197,069	03-2007	Agazzi et al.	375/233
*	I	US-7,058,890	06-2006	George et al.	715/728
*	J	US-6,405,170	06-2002	Phillips et al.	704/270
	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.

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Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 242

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 3889

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
12/130,397	05/30/2008	704	2626	090611-0370991

APPLICANTS

Robert A. Kennewick, Seattle, WA;
David Locke, Redmond, WA;
Michael R. Kennewick SR., Bellevue, WA;
Michael R. Kennewick JR., Bellevue, WA;
Richard Kennewick, Woodinville, WA;
Tom Freeman, Mercer Island, WA;

**** CONTINUING DATA ***************************

This application is a CON of 10/452,147 06/03/2003 PAT 7,398,209
which claims benefit of 60/384,388 06/03/2002

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
06/06/2008

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /MARTIN LERNER/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		WA	7	17	3

ADDRESS

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102
UNITED STATES

TITLE

SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS

FILING FEE RECEIVED		
655	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

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 243

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12130397	KENNEWICK ET AL.
	Examiner	Art Unit
	MARTIN LERNER	2626

SEARCHED			
Class	Subclass	Date	Examiner
704	236, 246, 257, 270	1/20/2011	ML
707	709, 723, 728, 771	1/20/2011	ML
ALL	UPDATED	4/28/2011	ML
704	244	4/28/2011	ML

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search Attached	1/20/2011	ML
EAST Search Attached	4/28/2011	ML

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
704	236, 244, 246, 257	4/28/2011	ML
707	709, 723, 771	4/28/2011	ML

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Meta Platforms, Inc. v. Dialect, LLC
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	12130397	KENNEWICK ET AL.
	Examiner	**Art Unit**
	MARTIN LERNER	2626

ORIGINAL		INTERNATIONAL CLASSIFICATION														
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED									
704	236	G	1	0	L	15 / 18 (2006.01.01)										
CROSS REFERENCE(S)		G	1	0	L	15 / 22 (2006.01.01)										
		G	1	0	L	17 / 00 (2006.01.01)										
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)	G	0	6	F	17 / 27 (2006.01.01)										
704	244 246 257	G	0	6	F	17 / 30 (2006.01.01)										
707	709 723 771															

☐ 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
	1		17												
	2		18												
	3		19												
	4	1	20												
	5	4	21												
	6	2	22												
	7	3	23												
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	11	6	27												
	12	7	28												
	13	8	29												
	14	9	30												
	15	10	31												
	16	11	32												

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	11	
/MARTIN LERNER/ Primary Examiner.Art Unit 2626	4/28/2011	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	4	1

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 245

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	13	(("6,377,913") or ("6,622,119") or ("6,701,294") or ("6,704,708") or ("6,832,230") or ("7,003,463") or ("7,277,854") or ("7,415,414") or ("7,472,060") or ("7,873,523") or ("7,917,367") or ("20080140385") or ("20090216540")).PN.	US-PGPUB; USPAT	OR	OFF	2011/04/27 15:48
L2	31	kennewick.in.	US-PGPUB; USPAT	OR	OFF	2011/04/27 15:59
L3	29	updat$ adj dictionary and user adj specific	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:07
L4	4	updat$ adj dictionary and user adj specific and @ad<"20020603"	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:07
L5	0	updat$ adj (vocabulary or dictionary) and user adj specific adj (dictionary or vocabulary) and @ad<"20020603"	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:08
L6	94	704/244.ccls. and dictionary	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:09
L7	60	6 and @ad<"20020603"	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:09
L8	7	6 and @ad<"20020603" and user adj specific	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:09
L9	1	6 and @ad<"20020603" and user adj specific and confidence	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:10
L10	7	6 and @ad<"20020603" and user adj specific and updat$	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:14

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 246

L11	50	spell and updat$ near2 (dictionary or vocabulary) and @ad<"20020603"	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:19
L12	129	spell$ and updat$ near2 (dictionary or vocabulary) and @ad<"20020603"	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:19
L13	84	spell$ and updat$ near2 (dictionary or vocabulary) and @ad<"20020603" and speech	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:19
L14	46	spell$ and updat$ near2 (dictionary or vocabulary) and @ad<"20020603" and speech and "704"/$.ccls.	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:19
L15	7	spell$ and updat$ near2 (dictionary or vocabulary) and @ad<"20020603" and speech and "704"/$.ccls. and confidence	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:20
L16	27	spell$ and updat$ near2 (dictionary or vocabulary) and @ad<"20020603" and speech and "704"/$.ccls. and threshold	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:21
L17	31	15 or 16	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:21
L18	13	marx.in. and "704"/$.ccls.	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:40
L19	2	required adj values and optional adj values and "704"/$.ccls.	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:41
L20	407337	required same optional and "704"/$.ccls. and speech recognition	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:42
L21	255	required same optional and "704"/$.ccls. and speech adj recognition	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:42
L22	110	required near5 optional and "704"/$.ccls. and speech adj recognition	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:42
L23	41	required near5 optional and "704"/$.ccls. and speech adj recognition and @ad<"20020603"	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:43

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
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L24	29	required near5 optional and "704"/$.ccls. and speech adj recognition and @ad<"20020603" and format	US-PGPUB; USPAT	OR	OFF	2011/04/27 16:44

4/27/11 4:50:38 PM
C:\ Documents and Settings\ MLerner\ My Documents\ EAST\ workspaces\ Default EAST Workspace 1600x1200.wsp

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 248

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	6,377,913	04/23/2002	Coffman *et al.*	704	8	
	B	6,622,119	09/16/2003	Ramaswamy *et al.*	704	9	
	C	6,701,294	03/02/2004	Ball *et al.*	704	257	
	D	6,704,708	03/09/2004	Pickering	704	235	
	E	6,832,230	12/14/2004	Zilliacus *et al.*	707	203	
	F	7,003,463	02/21/2006	Maes *et al.*	704	270.1	
	G	7,277,854	10/02/2007	Bennett *et al.*	704	257	
	H	7,415,414	08/19/2008	Azara *et al.*	704	270	
	I	7,472,060	12/30/2008	Gorin *et al.*	704	240	
	J	7,873,523	01/18/2011	Potter *et al.*	704	275	
	K	7,917,367	03/29/2011	Di Cristo *et al.*	704	270.1	
	L	2008/0140385	06/12/2008	Mahajan *et al.*	704	9	
	M	2009/0216540	08/27/2009	Tessel *et al.*	704	275	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	N	1 646 037	04/12/2006	Europe				

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

	O	"Statement in Accordance with the Notice from the European Patent Office dated 1 October 2007 Concerning Business Methods (OJ EPO 11/2007, 592-593), XP002456252.

EXAMINER	DATE CONSIDERED
/Martin Lerner/	04/27/2011

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

402874461v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.L./

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)

909 7590. 05/09/2011
PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

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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.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

TITLE OF INVENTION: SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$755	$300	$0	$1055	08/09/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
LERNER, MARTIN	2626	704-255000

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 Pillsbury Winthrop Shaw Pittman LLP
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: VoiceBox Technologies, Inc.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Bellevue, Washington

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 credit any overpayment, to Deposit Account Number 03-3975 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date June 24, 2011

Typed or printed name Syed Jafar Ali Registration No. 58,780

This collection of information 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.

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Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 250

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Robert A. KENNEWICK *et al.*	CONFIRMATION NO.:	3889
SERIAL NUMBER :	12/130,397	EXAMINER:	Martin Lerner
FILING DATE :	May 30, 2008	ART UNIT:	2626
FOR :	SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS		

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicants hereby make of record in the above-identified application the documents listed on the attached Form PTO-1449.

This Supplemental Information Disclosure Statement is being filed more than three months after the filing date of a national application other than a continued prosecution application under 37 C.F.R. § 1.53(d), or more than three months after the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, and after the mailing date of any of a Final Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee. 37 C.F.R. § 1.97(d).

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 251

Documents M and Q were cited by the U.S. Patent Office in co-pending Application Serial No. 12/608,572, filed October 29, 2009, in an Office Action dated April 27, 2011. Documents A, E, G, H, and T were cited by the U.S. Patent Office in co-pending Application Serial No. 12/765,733, filed April 22, 2010, in an Office Action dated May 16, 2011. Documents B, C, F, J, K, U, and V were cited by the U.S. Patent Office in co-pending Application Serial No. 12/765,753, filed April 22, 2010, in an Office Action dated June 9, 2011. Documents I, L, N, O, and R were cited by the U.S. Patent Office in co-pending Application Serial No. 11/954,064, filed December 11, 2007, in an Office Action dated June 16, 2011. I hereby certify that no item of information contained in this Supplemental Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making reasonable inquiry, no item of information contained in this Supplemental Information Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Supplemental Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

Please charge the $180.00 fee [37 C.F.R. § 1.17(p)] to Deposit Account No. 03-3975. In addition, please charge any fee deficiencies, or credit any overpayment, to Deposit Account No. 03-3975 as needed to ensure consideration of the Supplemental Information Disclosure Statement.

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 252

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

By_____
Syed Jafar Ali
Registration No.: 58,780

Customer No.
00909

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Telefax: (703) 770-7901

Dated: June 24, 2011

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 253

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	5,027,406	06/25/1991	Roberts *et al.*			
	B	5,897,613	04/27/1999	Chan	704	210	
	C	5,960,399	09/28/1999	Barclay *et al.*	704	270	
	D	5,960,447	09/28/1999	Holt *et al.*	707	500	
	E	5,995,928	11/30/1999	Nguyen *et al.*	704	251	
	F	6,049,607	04/11/2000	Marash *et al.*	379	410	
	G	6,108,631	08/22/2000	Ruhl	704	270	
	H	6,269,336	07/31/2001	Ladd *et al.*	704	270	
	I	6,429,813	08/06/2002	Feigen	342	357.13	
	J	6,522,746	02/18/2003	Marchok *et al.*	379	406.03	
	K	6,549,629	04/15/2003	Finn *et al.*	381	92	
	L	7,024,364	04/04/2006	Guerra *et al.*	704	270	
	M	7,366,669	04/29/2008	Nishitani *et al.*	704	256	
	N	7,472,020	12/30/2008	Brulle-Drews	701	211	
	O	7,493,259	02/17/2009	Jones *et al.*	704	257	
	P	7,558,730	07/07/2009	Davis *et al.*	704	235	
	Q	7,676,365	03/09/2010	Hwang *et al.*	704	240	
	R	7,831,433	11/09/2010	Belvin *et al.*	704	275	
	S	7,949,529	05/24/2011	Weider *et al.*	704	270	
	T	2003/0120493	06/26/2003	Gupta	704	270.1	
	U	2003/0212550	11/13/2003	Ubale	704	215	
	V	2007/0033020	02/08/2007	(Kelleher) Francois *et al.*	704	226	
	W	2009/0271194	10/29/2009	Davis *et al.*	704	235	
	X	2011/0112827	05/12/2011	Kennewick *et al.*	704	9	
	Y	2011/0112921	05/12/2011	Kennewick *et al.*	705	26.1	
	Z	2011/0131036	06/02/2011	Di Cristo *et al.*	704	9	
	AA	2011/0131045	06/02/2011	Cristo *et al.*	704	249	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED

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APPLICANTS :	Robert A. KENNEWICK *et al.*	CONFIRMATION NO.:	3889
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FOR :	SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS		

FURTHER SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the duty of disclosure under 37 C.F.R. §§ 1.56, 1.97 and 1.98, Applicants hereby make of record in the above-identified application the document listed on the attached Form PTO-1449.

This Further Supplemental Information Disclosure Statement is being filed more than three months after the filing date of a national application other than a continued prosecution application under 37 C.F.R. § 1.53(d), or more than three months after the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, and after the mailing date of any of a Final Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee. 37 C.F.R. § 1.97(d).

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I hereby certify that each item of information contained in this Further Supplemental Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Further Supplemental Information Disclosure Statement. 37 C.F.R. § 1.97(e)(1).

The $180.00 fee [37 C.F.R. § 1.17(p)] is being paid with the Supplemental Information Disclosure Statement filed on even date herewith.

This document was cited in a search report by a foreign patent office in a counterpart foreign application. Submission of an English language version of the search report that indicates the degree of relevance found by the foreign office is provided.

It is respectfully requested that the Examiner initial and return a copy of the enclosed PTO-1449.

Respectfully submitted,

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(54) Multi-modal picture

(57) A system for presenting a multi-modal picture includes picture presentation equipment (37) for displaying an image (38) of the picture and for enabling a user to interact with the picture by selecting specific picture features and asking a specific query relating to the feature. A voice browser system (3) controlled according to dialog scripts (46) associated with the picture, determines an appropriate response having regard to the spoken user query and the picture feature being pointed to. Each picture can have multiple narrators associated with it and the can choose which narrator is currently active. Picture authoring apparatus is also provided.

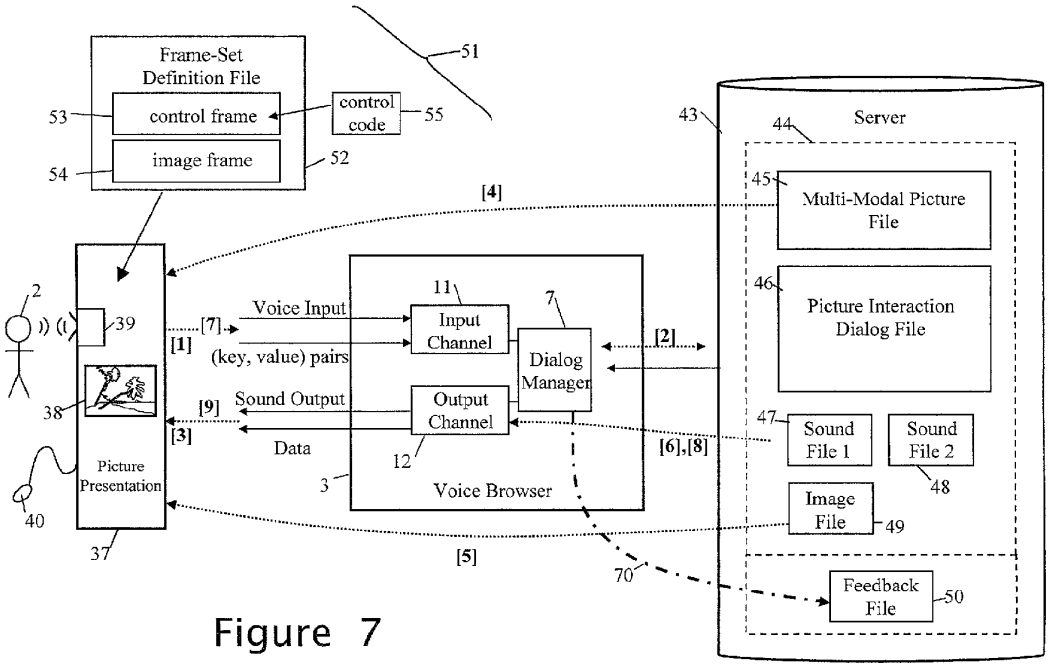


Figure 7

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Description

Field of the Invention

[0001] The present invention relates to multi-modal pictures with which a use can interact by spoken dialog exchanges.

Background of the Invention

[0002] In recent years there has been an explosion in the number of services available over the World Wide Web on the public internet (generally referred to as the "web"), the web being composed of a myriad of pages linked together by hyperlinks and delivered by servers on request using the HTTP protocol. Each page comprises content marked up with tags to enable the receiving application (typically a GUI browser) to render the page content in the manner intended by the page author; the markup language used for standard web pages is HTML (HyperText Markup Language).

[0003] However, today far more people have access to a telephone than have access to a computer with an Internet connection. Sales of cellphones are outstripping PC sales so that many people have already or soon will have a phone within reach where ever they go. As a result, there is increasing interest in being able to access web-based services from phones. 'Voice Browsers' offer the promise of allowing everyone to access web-based services from any phone, making it practical to access the Web any time and any where, whether at home, on the move, or at work.

[0004] Voice browsers allow people to access the Web using speech synthesis, pre-recorded audio, and speech recognition. Figure 1 of the accompanying drawings illustrates the general role played by a voice browser. As can be seen, a voice browser is interposed between a user 2 and a voice page server 4. This server 4 holds voice service pages (text pages) that are marked-up with tags of a voice-related markup language (or languages). When a page is requested by the user 2, it is interpreted at a top level (dialog level) by a dialog manager 7 of the voice browser 3 and output intended for the user is passed in text form to a Text-To-Speech (TTS) converter 6 which provides appropriate voice output to the user. User voice input is converted to text by speech recognition module 5 of the voice browser 3 and the dialog manager 7 determines what action is to be taken according to the received input and the directions in the original page. The voice input / output interface can be supplemented by keypads and small displays.

[0005] In general terms, therefore, a voice browser can be considered as a largely software device which interprets a voice markup language and generate a dialog with voice output, and possibly other output modalities, and / or voice input, and possibly other modalities (this definition derives from a working draft, dated September 2000, of the Voice browser Working Group of the World Wide Web Consortium).

[0006] Voice browsers may also be used together with graphical displays, keyboards, and pointing devices (e.g. a mouse) in order to produce a rich "multimodal voice browser". Voice interfaces and the keyboard, pointing device and display maybe used as alternate interfaces to the same service or could be seen as being used together to give a rich interface using all these modes combined.

[0007] Some examples of devices that allow multimodal interactions could be multimedia PC, or a communication appliance incorporating a display, keyboard, microphone and speaker/headset, an in car Voice Browser might have display and speech interfaces that could work together, or a Kiosk.

[0008] Some services may use all the modes together to provide an enhanced user experience, for example, a user could touch a street map displayed on a touch sensitive display and say "Tell me how I get here?". Some services might offer alternate interfaces allowing the user flexibility when doing different activities. For example while driving speech could be used to access services, but a passenger might used the keyboard.

[0009] Figure 2 of the accompanying drawings shows in greater detail the components of an example voice browser for handling voice pages 15 marked up with tags related to four different voice markup languages, namely:

- tags of a dialog markup language that serves to specify voice dialog behaviour;
- tags of a multimodal markup language that extends the dialog markup language to support other input modes (keyboard, mouse, etc.) and output modes (large and small screens);
- tags of a speech grammar markup language that serve to specify the grammar of user input; and
- tags of a speech synthesis markup language that serve to specify voice characteristics, types of sentences, word emphasis, etc.

[0010] When a page 15 is loaded into the voice browser, dialog manager 7 determines from the dialog tags and multimodal tags what actions are to be taken (the dialog manager being programmed to understand both the dialog and multimodal languages 19). These actions may include auxiliary functions 18 (available at any time during page processing) accessible through APIs and including such things as database lookups, user identity and validation, telephone call control etc. When speech output to the user is called for, the semantics of the output is passed, with any

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associated speech synthesis tags, to output channel 12 where a language generator 23 produces the final text to be rendered into speech by text-to-speech converter 6 and output to speaker 17. In the simplest case, the text to be rendered into speech is fully specified in the voice page 15 and the language generator 23 is not required for generating the final output text; however, in more complex cases, only semantic elements are passed, embedded in tags of a natural language semantics markup language (not depicted in Figure 2) that is understood by the language generator. The TTS converter 6 takes account of the speech synthesis tags when effecting text to speech conversion for which purpose it is cognisant of the speech synthesis markup language 25.

[0011] User voice input is received by microphone 16 and supplied to an input channel of the voice browser. Speech recogniser 5 generates text which is fed to a language understanding module 21 to produce semantics of the input for passing to the dialog manager 7. The speech recogniser 5 and language understanding module 21 work according to specific lexicon and grammar markup language 22 and, of course, take account of any grammar tags related to the current input that appear in page 15. The semantic output to the dialog manager 7 may simply be a permitted input word or may be more complex and include embedded tags of a natural language semantics markup language. The dialog manager 7 determines what action to take next (including, for example, fetching another page) based on the received user input and the dialog tags in the current page 15.

[0012] Any multimodal tags in the voice page 15 are used to control and interpret multimodal input/output. Such input/output is enabled by an appropriate recogniser 27 in the input channel 11 and an appropriate output constructor 28 in the output channel 12.

[0013] Whatever its precise form, the voice browser can be located at any point between the user and the voice page server. Figures 3 to 5 illustrate three possibilities in the case where the voice browser functionality is kept all together; many other possibilities exist when the functional components of the voice browser are separated and located in different logical/physical locations.

[0014] In Figure 3, the voice browser 3 is depicted as incorporated into an end-user system 8 (such as a PC or mobile entity) associated with user 2. In this case, the voice page server 4 is connected to the voice browser 3 by any suitable data-capable bearer service extending across one or more networks 9 that serve to provide connectivity between server 4 and end-user system 8. The data-capable bearer service is only required to carry text-based pages and therefore does not require a high bandwidth.

[0015] Figure 4 shows the voice browser 3 as co-located with the voice page server 4. In this case, voice input/output is passed across a voice network 9 between the end-user system 8 and the voice browser 3 at the voice page server site. The fact that the voice service is embodied as voice pages interpreted by a voice browser is not apparent to the user or network and the service could be implemented in other ways without the user or network being aware.

[0016] In Figure 5, the voice browser 3 is located in the network infrastructure between the end-user system 8 and the voice page server 4, voice input and output passing between the end-user system and voice browser over one network leg, and voice-page text data passing between the voice page server 4 and voice browser 3 over another network leg. This arrangement has certain advantages; in particular, by locating expensive resources (speech recognition, TTS converter) in the network, they can be used for many different users with user profiles being used to customise the voice-browser service provided to each user.

[0017] It is known to enhance pictures by providing associated speech annotations. It is an object of the present invention to provide further enhancements to such pictures.

Summary of the Invention

[0018] According to one aspect of the present invention, there is provided a system for presenting information concerning a picture to a user, the system comprising:

- a data store for holding responses, specific to said picture, in respect of specific user queries concerning particular picture features;
- a manually-operable feature-selection arrangement for enabling a user to select a feature in a displayed image of the picture, and for providing an output indication regarding what said particular feature, if any, the user has thereby selected;
- a voice dialog input-output subsystem including a speech recogniser for interpreting queries from a user;
- a control arrangement responsive to a user selecting a said particular feature and asking a specific query regarding that feature, to output the corresponding stored response.

[0019] Advantageously, each response is associated with a specified narrator and the user can opt to receive only the response of a selected narrator for either a current query or for all queries.

[0020] Preferably, provision is made for providing feedback to an author of the picture or its associated responses in the event that a user makes a query about a picture feature that is not a said particular picture feature or, although

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a query about such a feature, is not a said specific query for which a response is available.

[0021] According to another aspect of the present invention, there is provided a multi-modal picture specified by data held on at least one data carrier, this data comprising:

- picture image data for displaying a picture image;
- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features of the picture;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature in the displayed image; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

[0022] According to a further aspect of the present invention, there is provided a multi-modal picture comprising a hard-copy picture image, and data held on at least one data carrier, this data comprising:

- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature of the image; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

[0023] The present invention also encompasses the overall process of generating a multi-modal picture and using it to convey information about particular picture features to a user. Thus, according to a still further aspect of the present invention, there is provided a method of conveying information about particular features in a picture, the method comprising the steps of:

(a) creating the following specifically-associated data:

- picture image data for displaying a picture image;
- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features of the picture;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature in the displayed image; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user, which said response is to be used to reply to the user query;

(b) using the image data to display an image of the picture;
(c) having a user use a manually-operated selection arrangement to select a feature in the displayed image and using the first control data to determine which said particular feature in the picture image, if any, the user is selecting;
(d) receiving and interpreting a spoken query from the user to determine if a said specific query is being asked; and
(e) using the second control data to determine, on the basis of the said particular feature determined as being selected in step (c) and the said specific query determined as being asked in step (d), which said response is to be used to reply and thereupon using the response data to output the corresponding voice response.

[0024] Similarly, according to a yet further aspect of the present invention, there is provided a method of conveying information about particular features in a hard-copy picture, the method comprising the steps of:

(a) creating the following specifically-associated data:

- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features in said picture;
- first control data for enabling a determination to be made as to which said particular feature in the picture, if any, a user is selecting when using a selection arrangement to indicate a feature of the picture; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture

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feature is selected by the user, which said response is to be used to reply to the user query;

(b) making the picture and data available to a user;
(c) having the user use a manually-operated selection arrangement to select a feature in the picture and using the first control data to determine which said particular feature in the picture, if any, the user is selecting;
(d) receiving and interpreting a spoken query from the user to determine if a said specific query is being asked; and
(e) using the second control data to determine, on the basis of the said particular feature determined as being selected in step (c) and the said specific query determined as being asked in step (d), which said response is to be used to reply and thereupon using the response data to output the corresponding voice response.

[0025] According to another aspect of the present invention, there is provided apparatus for authoring a multi-modal picture, comprising:

- a first tool for defining image hotspots associated with particular picture-image features;
- a second tool with speech recognition capability, for recording user responses input by voice, to user-specified queries each associated with a particular said picture-image feature; and
- means for automatically generating control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by a user, which said response is to be used to reply to the user query.

[0026] With respect to the above-mentioned feature regarding the provision of feedback on user queries for which responses are not available, a further independent aspect of the present invention provides a method of collecting user-interest information regarding a picture, the method comprising the steps of:

(a) presenting a picture image to a user, particular picture features in the image each having associated information that is presented to the user upon the user requesting such information;
(b) recognising a user information request, in respect of a picture feature, made by the user at least selecting that picture feature using a feature-selection arrangement; and
(c) in response to recognition of a user information request in step (b) concerning a picture feature that is other than a said particular picture feature, outputting an identifier of the concerned picture feature independently of the presented image.

[0027] This aspect of the invention may be implemented in the form of a system for collecting user-interest information regarding a picture, the system comprising:

- a data store for holding information concerning particular picture features;
- a feature-selection arrangement for enabling a user to select a feature in a displayed view of the picture, and for providing an output indication regarding what said particular feature, if any, the user has thereby selected;
- an information-output subsystem for outputting information about picture features to the user;
- a control arrangement for recognising a user information request, in respect of a picture feature, made by the user at least selecting that picture feature using the feature-selection arrangement, the control arrangement including:
  - first output means arranged to respond to a user making an information request concerning a said particular feature, by outputting the corresponding stored information via the information-output subsystem; and
  - second output means arranged to respond to a user making an information request concerning a picture feature that is other than a said particular picture feature, by outputting an identifier of the concerned picture feature for informing an author of the picture or its associated information regarding the unsatisfied information request.

Brief Description of the Drawings

[0028] A method and apparatus embodying the invention will now be described, by way of nonlimiting example, with reference to the accompanying diagrammatic drawings, in which:

. **Figure 1** is a diagram illustrating the role of a voice browser;
. **Figure 2** is a diagram showing the functional elements of a voice browser and their relationship to different types of voice markup tags;
. **Figure 3** is a diagram showing a voice service implemented with voice browser functionality located in an end-user system;

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- **Figure 4** is a diagram showing a voice service implemented with voice browser functionality co-located with a voice page server;
- **Figure 5** is a diagram showing a voice service implemented with voice browser functionality located in a network between the end-user system and voice page server; and
- **Figure 6** shows an example picture image of a multi-modal picture embodying the invention;
- **Figure 7** is a diagram of a system for presenting a multi-modal picture to a user;
- **Figure 8** is a diagram showing constituent dialog blocks of a picture interaction dialog file of the Figure 6 multi-modal picture;
- **Figure 9** is a diagram of apparatus for authoring a multi-modal picture;
- **Figure 10** shows, in respect of the Figure 6 image, a user seeking information from two picture features for which there is no associated information; and
- **Figure 11** shows the Figure 6 picture image enhanced with upper and lower information bars.

Best Mode of Carrying Out the Invention

[0029] In the following description, voice dialog interaction with a user is described based on a voice page server serving a dialog page with embedded voice markup tags to a multi-modal voice browser. Unless otherwise indicated, the foregoing description of voice browsers, and their possible locations and access methods is to be taken as applying also to the described embodiments ofthe invention. Furthermore, although voice-browser based forms of voice dialog services are preferred, the present invention in its widest conception, is not limited to these forms of voice dialog service system and other suitable systems will be apparent to persons skilled in the art.

Multi-Modal Picture

[0030] Figure 6 depicts a multi-modal picture comprising a displayed picture image 30 (here shown as being of a holiday island taken, for example, whilst the author of the picture was on holiday) with which a recipient (referred to below as the "user") can interact using multiple modalities and, in particular, by spoken dialogues and the use of a pointing arrangement, such as a cursor controlled by a mouse, stylus or keyboard keys, a touch-screen detection arrangement, etc. Thus, the user can query the picture using speech input, the query being either a general query about the picture or a specific query about a particular feature (item or area) of the picture indicated by use of the pointing arrangement (for example, the user uses a mouse to move a cursor over a picture feature and then clicks a mouse button). Of course, only certain picture features will have been set up to be queried and in the Figure 6 example, there are three such features, namely a coconut tree 31, a first person 32, and a second person 33; the dashed boxes around these features represent the "hotspot" image areas set up to encompass the features, the dashed lines generally not being visible (though displaying a hotspot boundary can be used as one way of indicating the hotspot to the user - a more typical way would be, in the case of the pointing arrangement being a mouse-controlled cursor, to change the cursor image as it moved into and out of a hotspot).

[0031] Processing functionality associated with the multi-modal picture is arranged to recognize one or more one or more general queries and, for each picture feature set up for selection, one or more specific queries. For each query set to be recognized, there is a corresponding response which is output to the user when the query is recognized, this output generally being in spoken form, generated using either speech synthesis or pre-recorded audio content. Thus, for example:

General Queries - available general queries can include picture location, the date of the picture was taken, and a description of the general subject of the picture. For instance:

User: "Describe the picture"
System: "This is a picture of the XYZ beach"
User: "What is the date?"
System: "The picture was taken November last year"
User: "What is the location?"
System: "XYZ beach is in Martinique, an island that is part of the French West Indies."

(In this and other dialog examples given in the present specification, the "System" is the functionality used to present the multi-modal picture to the user and to provide for multi-modal interaction).

Specific Queries - typically, the same specific queries are available for all the selectable picture features; example specific queries are: "What it is?", "Any story?", etc. For instance:

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User: "What is it"? "
System: "This is my cousin John".
User: "Any story?"
System: "John goes fishing quite often in the Caribbean Sea. One day, he just escaped a white shark attack."

[0032] The responses from the system can, of course, be more than just a simple single turn response and may involve a multi-turn structured dialog. Provision may also be made for different levels of content, for instance an initial level of public information and a lower level of private information only accessible under password control (or by some other security check procedure). Alternatively, there may be both a brief and a much fuller response .

[0033] A further possibility is to have responses from more than one narrator. Thus, a user can first obtain a response from one person associated with the picture and then a response from a different person also associated with the picture. For example, the user receives a picture from his/her parents. In the picture, the user's mother appears to be talking to someone, but the user's father looks bored. The user interaction might therefore proceed as follows:

User: "Mother, who is she?" [User uses pointing arrangement to indicate a person in the picture].
System: [In pre-recorded voice of user's mother] "This is my colleague from work. We had such a good time."
User: "Father, can you please describe the picture?"
System: [In pre-recorded voice of user's father] "We went to this rather boring evening with your mother's colleagues. They ended up talking about clothes all the time."

[0034] From the foregoing general description of a multi-modal picture, it will be appreciated that the term "multi-modal picture" covers more than just the picture image and includes also the associated dialog and the behaviour of the picture in response to user input.

Example Implementation

[0035] Figure 7 depicts an example implementation of a system for presenting a multi-modal picture.

[0036] The multi-modal picture is specified by a set 44 of related files held on a server 43, these files specifying both the image associated with the multi-modal picture and also the picture interaction dialogue associated with the picture. At least the dialogue and image files of set 44 are specifically associated with each other- that is, the association of these files is prespecified (in advance of user interaction) with the contents of the dialogue file being specifically tailored to the picture represented by the image file of the same set 44.

[0037] User 2 has local picture-presentation equipment 37; in the present case, this equipment is standard processing platform, such as a PC or portable computer, arranged to run a graphical web browser such as Microsoft's Internet Explorer. Other implementations of the picture presentation equipment 37 can alternatively be provided such as a mobile phone with a graphical display and suitable programs.

[0038] The picture-presentation equipment 37 displays the picture image of the multi-modal picture on display 38 and also provides for the input and output audio data via audio functionality 39, this audio input and output being transferred to and from a voice browser 3 (here shown as located separately from the picture picture-presentation equipment - for example, a network-based voice browser - but alternatively, integrated with the picture-presentation equipment 37). The picture-presentation equipment also has an associated pointing arrangement 40 depicted in Figure 7 as a mouse for controlling a cursor movable over the displayed picture image; other forms of pointing arrangements for selecting features of the picture image are, of course, also possible such as the use of touch pads, tracker balls or joysticks for moving an image cursor; touch-sensitive displays and other arrangements (such as a matrix of infra-red beams immediately overlying the display) for enabling a user to use a finger or stylus to point directly at a feature of the displayed image; etc..

[0039] The voice browser 3 comprises input channel 11, dialog manager 7 and output channel 12. The voice browser provides interactive dialog with the user, via the picture-presentation equipment 37, in respect of the currently-presented multi-modal picture, this dialog being in accordance with picture interaction dialog data retrieved from server 43.

[0040] The Figure 7 voice browser 3, as well as providing for voice input and output exchanges with the picture-presentation equipment 37, is also arranged to receive input data from the equipment in the form of key,value pairs indicating, for example, the selection of a particular picture feature by the user using the pointing arrangement 40 of the picture-presentation equipment. This data input is used by the dialog manager 7 in determining the course of the dialog with the user. The voice browser 3 can also provide data back to the picture-presentation equipment 37.

[0041] The picture-presentation equipment 37, voice browser 3 and server 3 inter-communicate via any suitable communications infrastructure or direct links.

[0042] Considering in more detail the files involved in the presentation of a multi-modal picture, these comprise, in addition to the set 44 of files that specify a multi-modal picture, a set of generic files 51. The multi-modal picture files

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44 comprise:

- the picture file 45, this file including a source reference for the picture image file 49 to be displayed and map data defining the image hotspots;
- a picture interaction dialog file 46 containing dialog scripts;
- one or more sound files 47, 48 (such as " .wav" files) containing audio data;
- the image file 49 (such as a ".jpg" or ".gif' file) containing the image data to be displayed.

[0043] The generic files 51 can be stored locally in the picture-presentation equipment 37 or retrieved from a remote location such as the server 43. The generic files comprise:

- a frame-set definition file 52 defining two frames 53, 54 into which page files can be independently loaded; one frame 53 is used to hold a file 55 containing control code (the contents of this frame not being visible), and the other frame 54 being used to hold the picture file 45 for the multi-modal picture to be presented.
- the control code file 55 to be loaded into frame 53, the control code being in the form of a number of scripts the main purpose of which is to provide key,value pairs to the voice browser according to events detected by the browser software run by the picture-presentation equipment 37 - in particular, clicking on an image hotspot as defined in file 45 is arranged to trigger a corresponding script in the control code file 55 whereby to cause a corresponding key,value pair to be passed to the voice browser 3 to inform it that a particular picture feature (corresponding to the activated hotspot) has been selected by the user.

[0044] To use the generic files to present a particular multi-modal picture, it is necessary to provide a reference to the multi-modal picture. This reference can, for example, be manually input by the user into an initial form displayed in the image frame 54 and then used by a script to request the loading of a file into frame 54. Alternatively, the multi-modal picture reference can be included as data in a query string attached to the URL of the frame-set definition file 52 (this URL and query string being, for example, provided to the user by the author of the multi-modal picture); in this case, in response to a request for the frame-set definition file 52, server-side code could, for example, extract the data from the query string and place it in the file source reference in the definition line for frame 54 in the frame-set definition file before that file is returned to the user.

[0045] In the present example, the multi-modal picture reference used to initiate presentation of the multi-modal picture is a reference to the picture interaction dialog file 46 to be loaded into the voice browser, rather than a reference to the picture file 45 that is to be loaded into the image frame 54. Thus, the multi-modal picture reference, however obtained, is passed in a key,value pair to the voice browser 3; voice browser 3 thereupon retrieves the picture interaction dialog file 46 to the dialog manager 7 of the voice browser. The file 46 includes a reference to the picture image file 45 to be loaded into the frame 54 and this reference is returned to the picture-presentation equipment 37 where it is used to retrieve the picture file 45. Where the picture-presentation equipment 37 comprises a standard web browser, one way of achieving the above is to have the dialog file reference sent (either as a source reference in the frame-set definition file or by a script in, for example, file 55) to the voice browser in a request for a file to load into frame 54, the voice browser sending back the picture file reference as a redirection.

[0046] It will be appreciated that the multi-modal picture reference passed into the generic files could have been that of the picture file 45, the latter then being retrieved into frame 54 and including an "onLoad" event script for passing to the voice browser a reference to the interaction dialog file.

[0047] The various steps involved in presenting a multi-modal picture according to the Figure 7 implementation are summarized below with reference to the reference numerals in square brackets in Figure 7:

[1] the generic files 51 have been loaded into the picture-presentation equipment 37 and a multi-modal picture reference has been provided; as a result, a key,value pair including a reference to the picture interaction dialog file 46 is passed to the voice browser 3;

[2] voice browser retrieves the dialog file 46 from the server 43 and dialog manger 7 uses the file to control further interaction with the user;

[3] the first action taken by the dialog manager 7 under the control of dialog file 46 is to pass to the equipment the reference for the picture file 45 along with a voice greeting to the user;

[4] the picture file 45 (including a reference to the image file 49) is retrieved from server 43 and loaded into the image frame 54;

[5] the image file 49 is retrieved from the server 43 and displayed on display 38;

[6] meanwhile, the dialog manager 7 causes a sound (in sound file 47) to be played to the user to indicate that the picture is ready to receive user input (this sound can simply be an appropriate background sound such as, for the Figure 6 picture image, the sound of the sea);

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[7] the user queries the picture by voice input (and possibly also by pointing to a particular area of the picture, this being indicated by a corresponding key,value pair sent to the voice browser along with the user voice input);
[8] dialog manager 7 acknowledges the receipt of the user query by causing an acknowledgement sound (in sound file 48) to be played back to the user;
[9] the dialog manager 7, having determined the appropriate response to the user query, outputs this response.

Steps [8] and [9] are repeated as many times as required by the user. In due course the user asks to exit and the dialog is terminated by the dialog manager.

[0048] Figure 8 illustrates the contents of the picture interaction dialog file 46. This file contains a number of dialog blocks 60 to 73 that contain dialog elements and/or control structures relating to dialog progression. Thus, dialog block 60 provides the initial greeting and causes the picture file reference to be passed to the equipment 37 (in step [3] above). Block 61 defines the query grammar and represents a waiting state for the dialog pending the receipt of a query from the user.

[0049] Block 62 carries out an analysis of a recognized query to determine whether it is an exit request (if so, an exit dialog block 63 is entered), a generic request, or a specific request; generic and specific requests are further analyzed to determine the nature of the query (that is, what "action" - type of information - is being requested). For a general query, the available actions are, in the present example, "date", "description", and "location; for a specific query, the action types are, in the present example, "what" and "story". Depending on the outcome of the action analysis, the dialog manager proceeds to one of blocks 64 - 66 (for a general query) or one of blocks 67 and 68 (for a specific query). The analysis carried out by dialog block 62 is on the basis of voice input only.

[0050] If the query was a general one, then block 64 is used to answer a date query, block 65 is used to respond to a description query, and block 66 is used to respond to a location query.

[0051] If the query was a specific "what" query, block 67 determines the identity of the picture feature (object) involved using the key,value pair provided to the voice browser; depending on the object identity, the dialog manager proceeds either to a "what" dialog block 70 for a coconut tree or to a "what" dialog block 71 for a French tourist. Similarly if the query was a specific "story" query, block 68 determines the identity of the picture feature (object) involved using the key,value pair provided to the voice browser; depending on the object identity, the dialog manager proceeds either to a "story" dialog block 72 for a coconut tree or to a "story" dialog block 73 for a French tourist.

[0052] After a response is provided by any one of the dialog blocks 64-66 or 70-73, the dialog manager returns to dialog block 61.

[0053] An example dialog interaction based on the Figure 6 picture and the Figure 8 dialog structure is given below; in this example, there is one narrator called Roger.

Example Interaction:

[0054]

System:	"This picture was sent to you by Guillaume. You can talk to Roger to ask for information about it."
User:	"Roger, Describe the picture"
System:	"This is a picture of the XYZ beach."
User:	"What is the location?"
System:	"This picture was taken in Martinique, an island located in the French West Indies."
User:	"What is it" [and clicks on feature 31]
System:	"This is a coconut tree. This kind of trees is very common in the Caribbean."
User:	"Any story?"
System:	"When I was little, I used to get coconuts from my garden. There is a sweet liquid inside that is very tasty. We use coconut to make ice creams and all sorts of nice desserts."
User:	"What is it?" [and clicks on 32]
System:	"I guess this is a French tourist"
User:	"Any story?"
System:	"Tourism is one of the main source of revenue in Martinique. A lot of people come from France when it is winter over there."
User:	"Exit"
System:	"Thanks for using this digital picture frame."

[0055] The Appendix to the present description includes a detailed script example of the Figure 8 dialog interaction as well as the HTML source of a picture file 45.

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Multi-modal picture authoring tool.

[0056] Figure 9 illustrates apparatus for enabling an author 80 to author a multi-modal picture. The apparatus comprises a computing platform 81 providing a graphical user interface and running a tool, such as Microsoft's FrontPage product, for authoring mark-up language pages and for creating image hotspot maps. The apparatus further comprises a speech interface system 82 (here shown as a voice browser though other forms of speech interface system can be used). The speech interface system 82 permits the author 80 to interact with the apparatus by voice and is set up to recognize command words such as "Record".

[0057] Different people, known as narrators, can author different aspects of the same picture. The apparatus keeps a record of narrators known to it.

[0058] The apparatus is arranged to interact with one or more narrators to build up, in memory, the set of files 44 that specify a multi-modal picture, it being assumed that the picture image file 47 around which the multi-modal picture is to be built has already been loaded into memory (for example, from a digital camera) and is displayed via the graphical user interface (GUI) of platform 81. The process of building the required files is controlled by a top-level authoring program 90 that has three main steps 91-93 as will be more fully explained below.

Identifying the narrator - (step 91)

[0059] The first step of the authoring program is to identify the current narrator. The narrator speaks his/her name into the speech interface system 82; if the name is known to the apparatus, the system replies with a recognition greeting. However, if the narrator's name is not already known to the apparatus, the system asks the narrator to create a new profile (basically, input his/her name and any other required information), using appropriate data collection screens displayed on the graphical user interface of the computing platform 81.

[0060] Example: the apparatus knows the following names: "Lawrence" and "Marianne".

Apparatus: "What is your name?"
Narrator: "Steve".
Apparatus: "Sorry, I do not know this name, please write it down."
Narrator: [inputs "Steve" via a data collection screen of the GUI].

[0061] The authoring program uses the narrator's name to customize a greeting dialog block of a template picture interaction dialog file 46.

Adding general information about the picture - (step 92)

[0062] After identification, the narrator can input general information concerning the picture image such as the date, the location or the description, via a spoken dialogue. In the following example, the command words recognized by the speech interface system 82 are shown in bold whilst the nature of information being recorded (corresponding to the query "action" type of Figure 8) is indicated by underlining. The words indicating the nature of the information are either pre-designated to the system (effectively limiting the classification of information to be input) or else the system can be arranged to analyze narrator "Record" commands to determine the nature of the information to be recorded.

Example:

[0063]

Narrator: **"Record** description"
Apparatus: [Plays a beep].
Narrator: "This is a picture of me and John fishing in the Caribbean sea". [The apparatus records this input, either directly as sound data or as a text data after the input has been subject to speech recognition by the system 82]
Narrator: **"Write** date".
Apparatus: [displays date capture screen on GUI].
Narrator: [inputs date information via GUI].
Narrator: **"Record** story"
Apparatus: [Plays a beep.]
Narrator: "This day, John was attacked by a white shark." [The apparatus records this input]

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[0064] The authoring program uses the input from the narrator to create corresponding dialog blocks, similar to those described above with reference to Figure 8, in dialog file 46.

Adding specific information - (step 93)

[0065] The narrator can also input information concerning a specific feature of the picture image. To do this, the narrator indicates the picture feature of interest by using the GUI to draw a "hotspot" boundary around the feature. The apparatus responds by asking the narrator to input a label for the feature via an entry screen displayed on the GUI.. The authoring program uses the input from the narrator to create the multi-media picture file 45 holding an image hotspot map with appropriate links to the control code scripts.

[0066] The narrator can then enter further information using the speech interface system or the GUI. The narrator can record or write multiple descriptions or stories for a single area of the picture, for example, to give different level of details.

Narrator: **"Record** description".
Apparatus: [Plays beep.]
Narrator: "It is a whale" [The apparatus records this input]
Narrator: **"Record** story"
Apparatus: [Plays beep.]
Narrator: "We saw this whale on the way to Dominica." [The apparatus records this input]
Narrator: **"Record next"** (indicates that further details for the story are to be recorded).
Narrator: "We were crossing the Guadeloupe channel when we saw it." [The apparatus records this input]

[0067] Again, the authoring program uses the input from the narrator to create corresponding dialog blocks; thus, for the above example, where a "whale" hotspot has been designated by the user, the authoring program generates a set of dialogs blocks: 'whaleDescription', 'whaleStoryI', 'whaleStory2', etc.

[0068] After the first narrator has finished inputting information, other narrators can enter information in the same manner.

User Feedback

[0069] It will be appreciated that the authoring of a multi-modal picture, and in particular the adding of the dialog data, can be quite involved. As a result, it is quite likely that the author will not always include information that a recipient may be interested in.

[0070] It is therefore useful to be able to monitor a user's interaction with a multi modal picture to see if the user tries to access missing information. For example, a user receives the Figure 6 multi modal picture from a friend. Two objects 35,36 (a building and an island) in the picture image intrigues the user (see Figure 9) who therefore clicks on each picture feature concerned and asks for more information ("What is it?"). Unfortunately, there are no hotspots associated with either picture feature and therefore in each case the voice browser comes back with the response "Sorry, there is no information about this item."

[0071] However, the coordinates corresponding to each picture feature the user clicked are known to the browser used to display the picture image and the control script (for example, in file 55) can be used to pass the coordinates as key,value pairs to the voice browser 3. At the same time, a user verbal query is also passed to the voice browser. The voice browser first determines whether the query is a general one and if it is, the voice browser ignores the received coordinate values; however, if the voice browser determines that the query is a specific one, then it determines from the key,value pairs received that the user has indicated a picture feature for which there is no corresponding information available. In this case, the voice browser logs the received coordinate values and the associated "action" type (in the example given above, "what" or "story") in a feedback file 50 that forms part of the set 44 of related files associated with the multimodal picture (see arrow 70 in Figure 7). For example, upon the user clicking on the island feature 36 in Figure 9 and asking "what is this?", the data (action='what'; coordx =400;coordy=300) is logged to file 50. Such logging functionality is, for example, provided by a further dialog block of Figure 8. The logged coordinates provide, together with an indication of the picture concerned, a picture-feature identifier that identifies the picture feature about which information has been requested by the user.

[0072] Alternatively or additionally to logging the "desired-information" feedback data in file 50, the author of the multi-modal picture can be sent a message (for example, an e-mail message) explaining the query from the user such as "John wants a description of this object.". This message includes a picture feature identifier that identifies the picture feature concerned. The picture feature identifier can take the form of explicit data items indicative of the picture concerned and the coordinates of the feature in the picture or may more directly indicate the feature by including either

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image data representing the relevant portion of the picture image or image data showing the picture image with a marking indicating the position in the image of the feature concerned (both such forms of picture-feature indication can also be included the feedback file 50 additionally or alternatively to the feature coordinates). The picture-feature indication need not be sent to the file 50 (or included in a message to the author) at the time the system detects that the user has asked for information about a non-hotspot picture feature; instead, the indication and related query can be temporarily stored and output, together with other accumulated similar indications and queries, either at a specified time or event (such as termination of viewing of the picture by the user) or upon request from the picture author.

[0073] The author can then decide whether or not to add in further information by adding an additional hotspot and additional dialogs (for example, using the above-described authoring apparatus).

[0074] Of course, the same general feedback process can be used where although a selected picture feature is associated with an existing hotspot, there is no existing query "action" corresponding to a user's query. Furthermore, a similar feedback process can be used where user queries are input by means other than speech (such as, for example, via a keyboard or by a hand-writing or stroke recognition system) and, indeed, where there are no explicit user queries such as when the selecting of picture feature is taken as a request for information about that feature.

Variants

[0075] Many variants are, of course, possible to the arrangements described above. For example, Figure 11 illustrates a variant form of the multi-modal picture in which the picture image 30 is accompanied by upper and lower information bars 100 and 101 respectively. The upper information bar 100 indicates the narrators associated with the picture whilst the lower information bar 101 indicates what types of general and specific queries are available for use. These information bars assists the user in appreciating what queries can be put and to whom. To further assist the user, speaking (or clicking on) a narrator's name is preferably arranged to indicate what hotspots are associated with that narrator and where these hotspots are located in the image - thus, in Figure 11, narrator "Vivian" has been selected and hotspot 32 is indicated on the picture image by a dashed hotspot boundary line. Query types used by "Vivian" can also be indicated by highlighting these types (in the Figure 11 example, "Vivian" has used general query type 'description' and specific query types 'what' and 'story'). Preferably, once a narrator has been selected, that narrator remains selected until a different (or all) narrators is subsequently selected, whereby with a narrator selected, only the responses of that narrator will be used in responding to the users' queries. However, it is also possible to arrange for selection of a narrator to be effective only for a single query. In this latter case, a convenient way of providing for user selection of a narrator to answer a query about a particular feature is for a list of narrators of responses about that feature to be displayed whenever the user points to that feature.

[0076] Instead of identifying narrators by name as shown in Figure 11, other forms of identifier can be used such as an image of each narrator.

[0077] As regards the generic control code, this can be provided in the form of a Java applet or any other suitable form and is not limited to the use of client-side scripts of the form described above. Furthermore, rather than the frame-set definition file 52 and control code file 55 being generic in form, they can be made specific to each multi-modal picture.

[0078] As already indicated, picture invocation can be initiated in a variety of ways. As a further example, picture invocation can be arranged to be effected by the creator sending the user a reference to the picture interaction dialog file, the user sending this reference to the voice browser to enable the latter to retrieve the dialog file; the dialog file is arranged to cause the return to the user of the frame-set definition file (or a reference to it) with the latter already including the correct source reference to the picture file as well as to the control code file.

[0079] Persons skilled in the art will appreciate that there are very many ways of implementing multi-modal pictures and the supporting functionality ranging from the multiple file approach described above to having just a single data file containing all the necessary data and arranged to be executed by specifically adapted software. It will also be appreciated that whilst in the described embodiments the course of the system-user interaction is controlled by the control logic embedded in the picture interaction dialog file and interpreted by the dialog manager 7 of the voice browser, it is possible to provide this functionality separate from the voice browser and the response scripts (thus, in general terms, the dialog block 62, 67 and 68 would be used by a separate control arrangement for determining, on the basis of the user voice and pointing-arrangement inputs, which of multiple stored responses is the appropriate one to play back to the user). Furthermore, it is not necessary to explicitly identify a selected feature from the coordinates output by the pointing arrangement as a separate step to choosing an appropriate response to a particular user query; thus, a picture feature could simply be specified in the control logic of the dialog interaction file by its coordinate values (of range of values) whereby this control logic tests coordinate values output by the pointing arrangement against coordinate values of particular features in the course of selecting a response to a user query.

[0080] With respect to the selection of a picture feature of interest to a user, in the described embodiments this has been carried out by means of a user-operated pointing arrangement whereby data input about the picture feature of interest is generated through a manual operation. In addition to the described arrangements for manually effecting

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feature selection, it is possible to use an arrangement in which the coordinates of the feature of interest are manually input using a keypad (a coordinate system being displayed as part of the image presented to the user, or being presented around the boundary of the display area). Another possible feature-selection arrangement is one based on specifying, via keypad input, a particular area of the display where either the display is divided into labelled areas or there is a direct mapping between keypad keys and display areas. It is also possible to label each feature of interest in the image with a reference and have the user effect feature selection by keypad input of the appropriate reference.

[0081] Further as regards the determination of which picture feature is being selected by a user, it should be noted that determining the picture feature of interest from the image coordinates or image area identified by whatever selection arrangement is being used, can be done in ways other than that described above in which image coordinates generated by the feature-selection arrangement are mapped to picture features using predetermined mapping data as described above. For example, the image can have data encoded into it that labels particular picture features, the pointing arrangement being arranged to read this label data when over the corresponding picture feature. Technology for embedding auxiliary data in picture image data in a way that does not degrade the image for the average human viewer is already known in the art.

[0082] The picture image can be a hard-copy image carrying markings (such as infra-red ink markings) intended to be read by a sensor of a suitable pointing arrangement whereby to determine what particular picture feature is being pointed to; the markings can be a pattern of markings enabling the pointing arrangement to determine the position of its sensor on the image (in which case, an image map can be used to translate the coordinates into picture features) or the markings can be feature labels appropriately located on the image. Even without special markings added to the image, the image can still be a hard-copy image provided the image is located in a reference position relative to which the pointing arrangement can determine the position of a pointing element (so that an image map can be used to translate pointing-element position into picture features). Other manually-operated selection arrangements, such as those based on explicit coordinate input via a keypad, can also be used.

[0083] Where image map data is used to translate image coordinates to picture features, the image map data can be held separately from the picture file and only accessed when needed; this facilitates updating of the image map data. A reference (e.g. URL) to the image map data can be included in the picture file or, where the image is a hard-copy image, in markings carried by the image.

[0084] Preferably, the described embodiments are applied to pictures of scenes and places in the real world such as a tourist might take with a camera. However, it is also possible to apply the embodiments to topographic pictures that are primarily intended to convey map-type information.

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APPENDIX

This Appendix forms an integral part of the description.

Example of Multi-Modal Picture file.

The following HTML file was generated using Microsoft FrontPage and is the Multi-Modal Picture file 45 for the picture depicted in Figure 6; the HTML code pulls in image file "beachPicture.jpg" and defines three "hotspots" which when clicked result in a call to a function (method) of the control code file 55 with the passing of a parameter value indicating which hotspot has been clicked on.

File Name: MMPicture1.htm

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<meta name="GENERATOR" content="Microsoft FrontPage 4.0">
<meta name="ProgId" content="FrontPage.Editor.Document">
<title>Frame Page</title>
</head>
<body>
<p><map name="FPMap0">
<area href="http://localhost/mmpic1/dpfBlank.htm"
onclick="parent.parent.scriptFrame.pushParams('object=coconutTree')"
target="invisible" coords="128, 84, 253, 236" shape="rect">
<area href="http://localhost/mmpic1/dpfBlank.htm"
onclick="parent.parent.scriptFrame.pushParams('object=frenchTourist')"
target="invisible" shape="rect" coords="204, 266, 219, 282">
<area href="http://localhost/mmpic1/dpfBlank.htm"
onclick="parent.parent.scriptFrame.pushParams('object=frenchTourist')"
target="invisible" shape="rect" coords="309, 257, 324, 269"></map>
<img border="0" src="beachPicture.jpg" align="center" usemap="#FPMap0"
width="569" height="375"></p>
</body>
</html>
```


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Example of Picture Interaction Dialogue file

[0085] The following is an example implementation of the Figure 8 picture interaction dialog file 46. In this example, there is one narrator called Roger. The user can say things like:"Roger, what is the date?".

```
<talkml>
    <!--variables declaration-->
    <create name="object"              expr="'undefined'"/>
    <create name="action"              expr="'what'"/>
    <create name="type"          expr="'generic'"/>
    <!-- Specify here the url of the display webserver-->
    <display-server url="localhost"/>

    <dialog name="welcome">
        <say> Welcome to the digital picture frame. </say>
        <!-- Display the Multi Modal picture of beach. -->
        <display-show url="MMPicture1.htm"/>
        <say>
            This picture was sent to you by Guillaume. You can talk to Roger to
            ask for information about it.
        </say>
        <goto next="getUserRequest"/>
    </dialog>

    <dialog name="getUserRequest">
        <play src="sound1.wav"/>
        <display-listen wait_after="2000"/>
        <speech wait_after="2000">
            sentence =  narrator question | question | exit {action='exit'};
            question =  genericQuestion {type='generic'} | specificQuestion
                        {type='specific'};
```


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```
            narrator = roger {narrator='roger'};
            roger    = "roger";
            genericQuestion = date {action='date'}| location {action='location'}|
                              description {action='description'};
            date     = "what is the date";
            location = "what is the location";
            description = "describe the picture";
            specificQuestion= what {action='what'} | story {action='story'};
            what     = "what is it";
            story    = "any story";
            exit     = "exit";
        </speech>

        <recognised>
            <play src="sound2.wav"/>
            <goto next="filterRequest"/>
        </recognised>

        <unrecognised>
            <play src="sound2.wav"/>
            <say> I am sorry, I have some trouble understanding you.</say>
            <retry/>
        </unrecognised>

</dialog>


<dialog name="filterRequest">
        <if cond="action='exit'">
            <goto next="exit"/>
        </if>
```


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```
        <if cond="type='generic'">
                <if cond="action='description'"><goto next="description"/></if>
                <if cond="action='date'"><goto next="date"/></if>
                <if cond="action='location'"><goto next="location"/></if>
        </if>

        <if cond="type='specific'">
                <if cond="action='what'">    <goto next="what"/>  </if>
                <if cond="action='story'">    <goto next="story"/></if>
        </if>

</dialog>


<dialog name="description">
        <say>
                This is a picture of the beach.
        </say>
        <goto next="getUserRequest"/>
</dialog>


<dialog name="date">
        <say>
                Guillaume took this picture during his last trip home to
                Martinique last November
        </say>
        <goto next="getUserRequest"/>
</dialog>


<dialog name="location">
```


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```
        <say>
            This picture was taken in Martinique, an island located in the
            French West Indies.
        </say>
        <goto next="getUserRequest"/>
    </dialog>

    <dialog name="what">
        <if cond="object='coconutTree'"><goto next="coconutTreeWhat"/></if>
        <if cond="object='frenchTourist'"><goto next="frenchTouristWhat"/></if>
        <say>
            Apparently, you did not click on any parts of the picture. Try
            again.
        </say>
        <goto next="getUserRequest"/>
    </dialog>


    <dialog name="story">
        <if cond="object='coconutTree'"><goto next="coconutTreeStory"/></if>
        <if cond="object='frenchTourist'"><goto next="frenchTouristStory"/></if>
        <say>
            Apparently, you did not click on any parts of the picture. Try
            again.
        </say>
        <goto next="getUserRequest"/>
    </dialog>

    <dialog name="frenchTouristWhat">
        <say>
            I guess this is a French tourist.
        </say>
```


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```
        <goto next="getUserRequest"/>
    </dialog>

    <dialog name="coconutTreeWhat">
        <say>
            This is a coconut tree. This kind of trees is very common in the
            Caribbean.
        </say>
        <goto next="getUserRequest"/>
    </dialog>

    <dialog name="frenchTouristStory">
        <say>
            Tourism is one of the main source of revenue in Martinique. A lot
            of people come from France when it is winter over there.
        </say>
        <goto next="getUserRequest"/>
    </dialog>

    <dialog name="coconutTreeStory">
        <say>
            When I was little,I used to get coconuts from my garden. There is
            a sweet liquid inside that is very tasty. We use coconut to make
            ice creams and all sorts of nice desserts.
        </say>
        <goto next="getUserRequest"/>
    </dialog>
```


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```
<dialog name="exit">
    <say> Thanks for using this digital picture frame. </say>
</dialog>

</talkml>
```

Claims

1. A system for presenting information concerning a picture to a user, the system comprising:

   - a data store for holding responses, specific to said picture, in respect of specific user queries concerning particular picture features;
   - a manually-operable feature-selection arrangement for enabling a user to select a feature in a displayed image of the picture, and for providing an output indication regarding what said particular feature, if any, the user has thereby selected;
   - a voice dialog input-output subsystem including a speech recogniser for interpreting queries from a user;
   - a control arrangement responsive to a user selecting a said particular feature and asking a specific query regarding that feature, to output the corresponding stored response.

2. A system according to claim 1, wherein image-map data is associated with the picture image for mapping image coordinates to said particular features, the selection arrangement being arranged to use the image-map data to determine what picture feature is selected by the user.

3. A system according to claim 1, wherein said image includes label data positioned in the region of a said particular picture feature to indicate the identity of that feature, the selection arrangement being arranged to read the label data to determine what picture feature is selected by the user.

4. A system according to any one of claims 1 to 3, further comprising a display subsystem for displaying said image provided to it in the form of digital image data.

5. A system according to any one of claims 1 to 3, wherein the picture image is a hard-copy image.

6. A system according to any one of the preceding claims, wherein the data store is arranged also to hold responses concerning general queries that are not associated with any particular picture feature, the control arrangement being arranged to respond to the user voice input of a general query by returning the appropriate response.

7. A system according to any one of the preceding claims, wherein the voice interface subsystem and control arrangement are arranged to cooperate in recognising multiple different queries in respect of a particular picture feature selected by the user.

8. A system according to claim 1, wherein each of at least some of the responses is associated with a specified narrator, the system being arranged to permit a user to receive only the response of a user-selected narrator in respect of at least one query.

9. A system according to claim 8, wherein user selection of a narrator is arranged to be effected by voice input, the control arrangement being arranged to respond to the selection of a particular specified narrator by user voice input, by using only the said responses associated with that narrator in providing a response to a user query.

10. A system according to claim 9, further comprising means for displaying, along with said picture image, identifiers of narrators associated with the picture.

11. A system according to claim 9, further comprising a display subsystem for displaying said image provided to it in

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the form of digital image data and identifiers of narrators associated with the picture; the display subsystem being arranged to respond to selection of a particular specified narrator by user voice input by indicating on the displayed image the said particular features for which responses are available concerning that narrator.

12. A system according to claim 8, further comprising a display subsystem for displaying said image provided to it in the form of digital image data, and identifiers of narrators associated with the picture; user selection of a narrator being arranged to be effected by the user using said selection arrangement to select a displayed narrator identifier, and the control arrangement being arranged to respond to the selection of a particular narrator by using only the said responses associated with that narrator in providing a response to a user query.

13. A system according to claim 12, wherein the display subsystem is arranged to respond to selection of a particular specified narrator to indicate on the displayed image the said particular features for which responses are available concerning the currently-selected narrator.

14. A system according to any one of the preceding claims, wherein said selection arrangement is a pointing arrangement usable by the user to point to a feature of interest in a displayed view of the picture.

15. A system according to any one of the preceding claims, further comprising a feedback arrangement arranged to respond to a user query concerning a picture feature that is other than a said particular picture feature, by outputting at least an identifier of the concerned picture feature for informing an author of the picture or its associated responses regarding the unsatisfied query.

16. A system according to any one of the preceding claims, further comprising a feedback arrangement arranged to respond to a user query that although concerning a said particular picture feature is not a said specific query, by outputting an indication of the query and an identifier of the concerned picture feature for informing an author of the picture or its associated responses regarding the unsatisfied query.

17. A system according to claim 15, wherein the feedback arrangement is further arranged to output an indication of the user query together with said picture feature identifier.

18. A system according to any one of claims 15 to 17, wherein the picture feature identifier arranged to be output by the feedback arrangement comprises an indication of the picture concerned and image coordinates of the picture feature.

19. A system according to any one of claims 15 to 17, further comprising means for converting digital picture data into said displayed image of the picture, the picture feature identifier arranged to be output by the feedback arrangement comprising digital data representing a corresponding portion of the image.

20. A system according to any one of claims 15 to 17, further comprising means for converting digital picture data into said displayed image of the picture, the picture feature identifier arranged to be output by the feedback arrangement comprising digital data representing the image with a marking indicating the position of the feature in the image.

21. A system according to any one of claims 15 to 20, wherein the feedback arrangement is operative to output said picture feature identifier to a log file.

22. A system according to any one of claims 15 to 20, wherein the feedback arrangement is operative to output said picture feature identifier in the form of an electronic message addressed to a person associated with the generation of the picture or its associated responses.

23. A multi-modal picture specified by data held on at least one data carrier, this data comprising:

- picture image data for displaying a picture image;
- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features of the picture;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature in the displayed image; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture

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feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

24. A multi-modal picture according to claim 23, wherein the first control data comprises image-map data mapping image coordinates to said particular features.

25. A multi-modal picture according to claim 23, wherein the first control data comprises label data arranged to be positioned in the displayed image in the region of each said particular picture feature to indicate the identity of that feature.

26. A multi-modal picture according to claim 23, wherein at least some of the said responses are associated with a narrator identified in the response data, the second control data enabling the determination of which said response is to be used to reply to the user query to be restricted to those responses associated with a said narrator that has been selected by the user.

27. A multi-modal picture according to any one of claims 23 to 26, wherein the picture is of a non-topographic real-world scene.

28. A multi-modal picture comprising a hard-copy picture image, and data held on at least one data carrier, this data comprising:

- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature of the image; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

29. A multi-modal picture according to claim 28, wherein the first control data comprises image-map data mapping image coordinates to said particular features.

30. A multi-modal picture according to claim 28, wherein the first control data comprises label data arranged to be positioned in or on the image in the region of each said particular picture feature to indicate the identity of that feature.

31. A multi-modal picture according to claim 28, wherein at least some of the said responses are associated with a narrator identified in the response data, the second control data enabling the determination of which said response is to be used to reply to the user query to be restricted to those responses associated with a said narrator that has been selected by the user.

32. A multi-modal picture according to any one of claims 28 to 31, wherein the picture is of a non-topographic real-world scene.

33. Apparatus for authoring a multi-modal picture, comprising:

- a first tool for defining image hotspots associated with particular picture-image features;
- a second tool with speech recognition capability, for recording user responses input by voice, to user-specified queries each associated with a particular said picture-image feature; and
- means for automatically generating control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by a user, which said response is to be used to reply to the user query.

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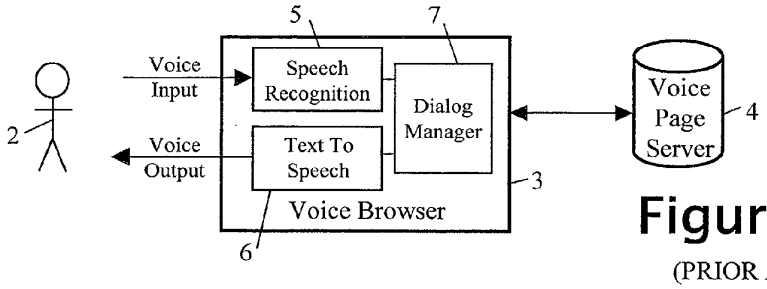


Figure 1

(PRIOR ART)

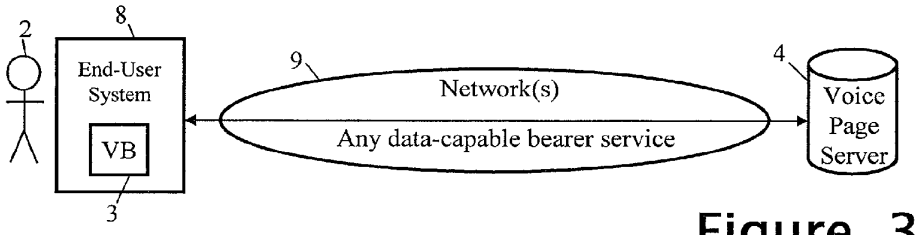


Figure 3

(PRIOR ART)

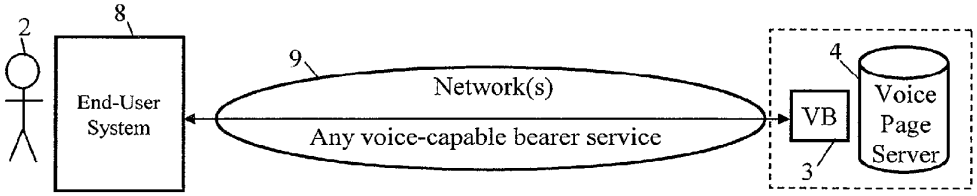


Figure 4

(PRIOR ART)

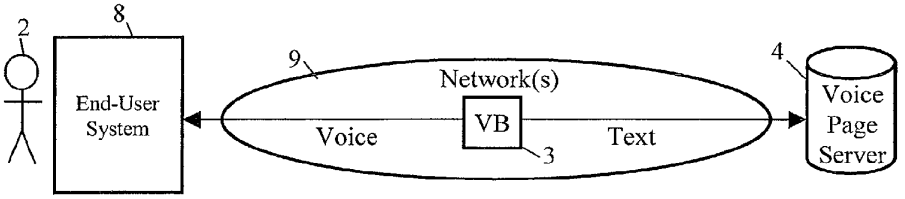


Figure 5

(PRIOR ART)

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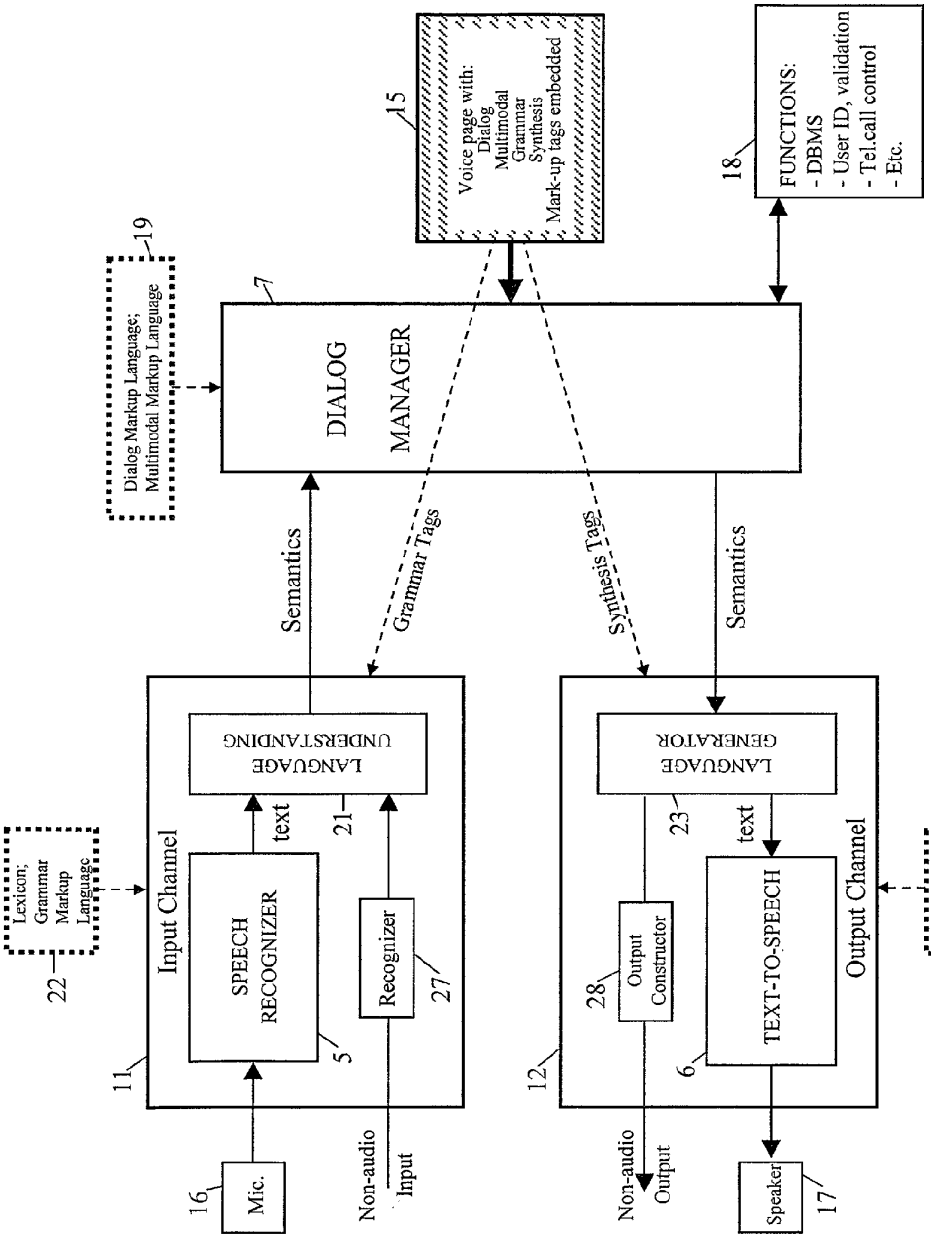


Figure 2
(PRIOR ART)

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Meta Platforms, Inc. v. Dialect, LLC
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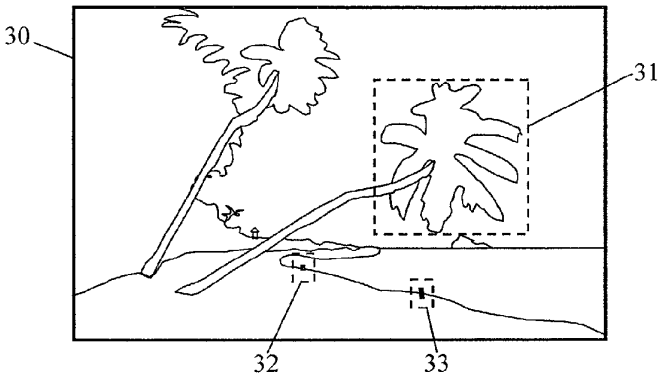


Figure 6

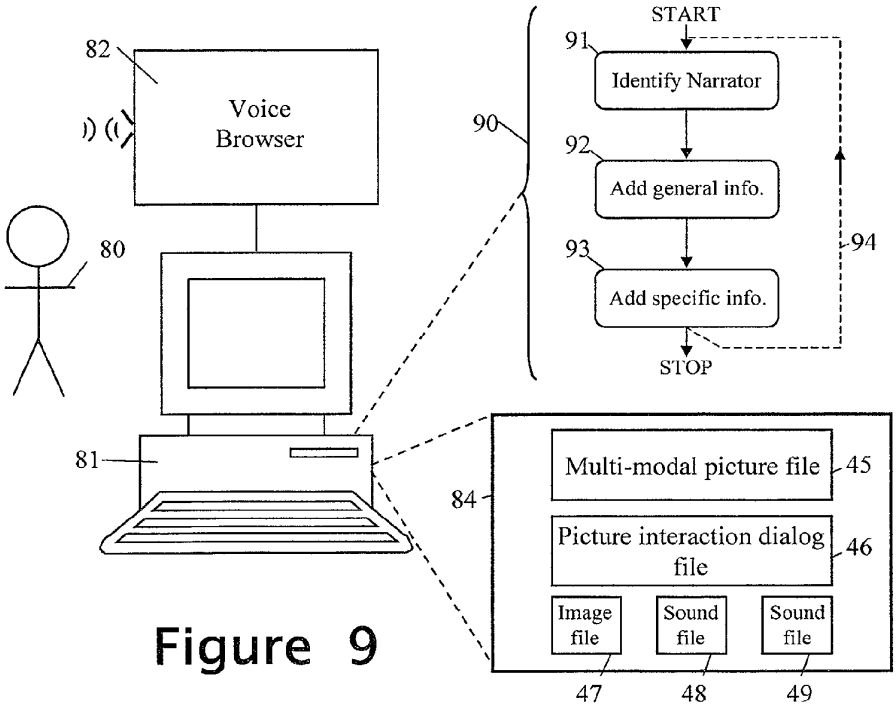


Figure 9

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Meta Platforms, Inc. v. Dialect, LLC
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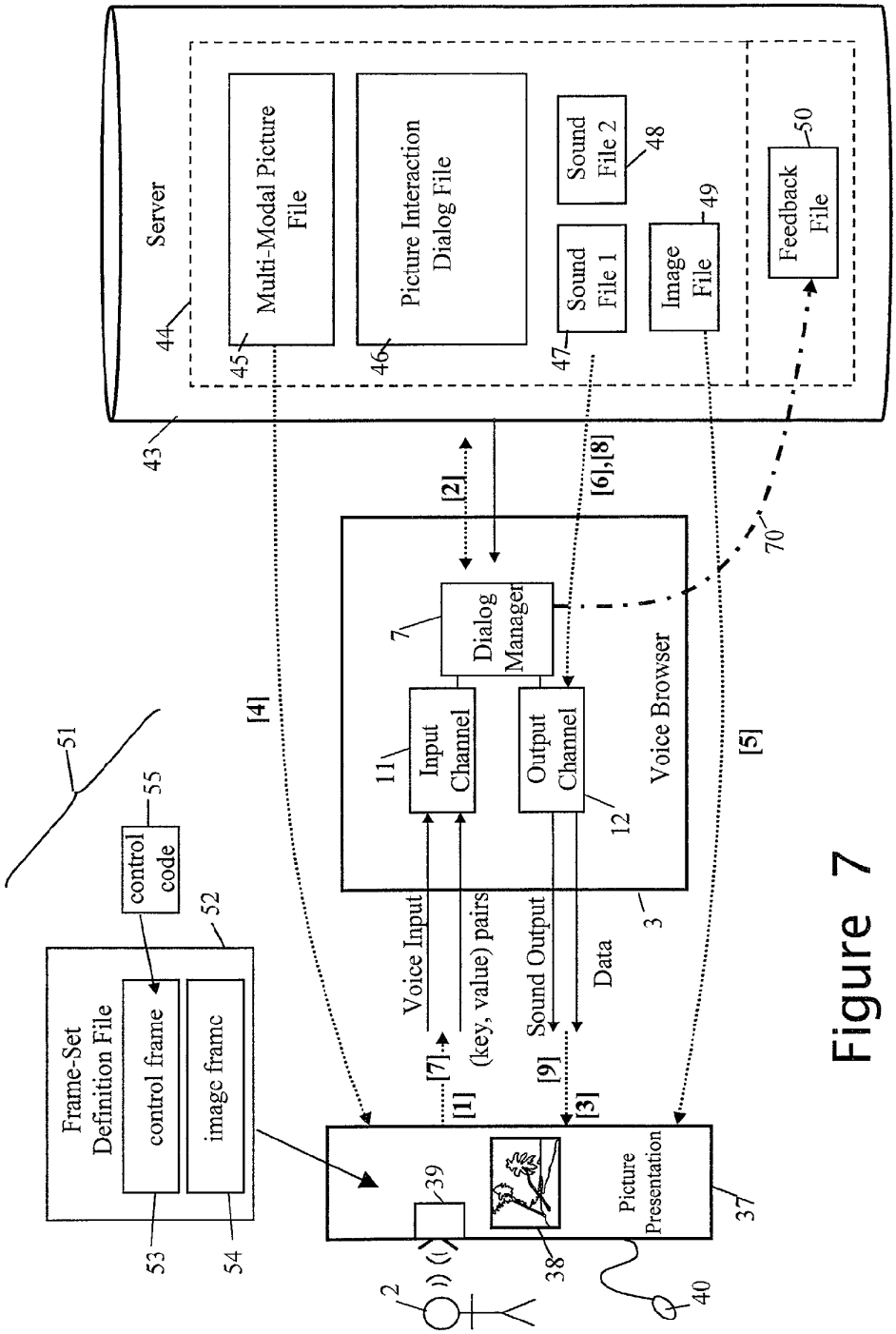
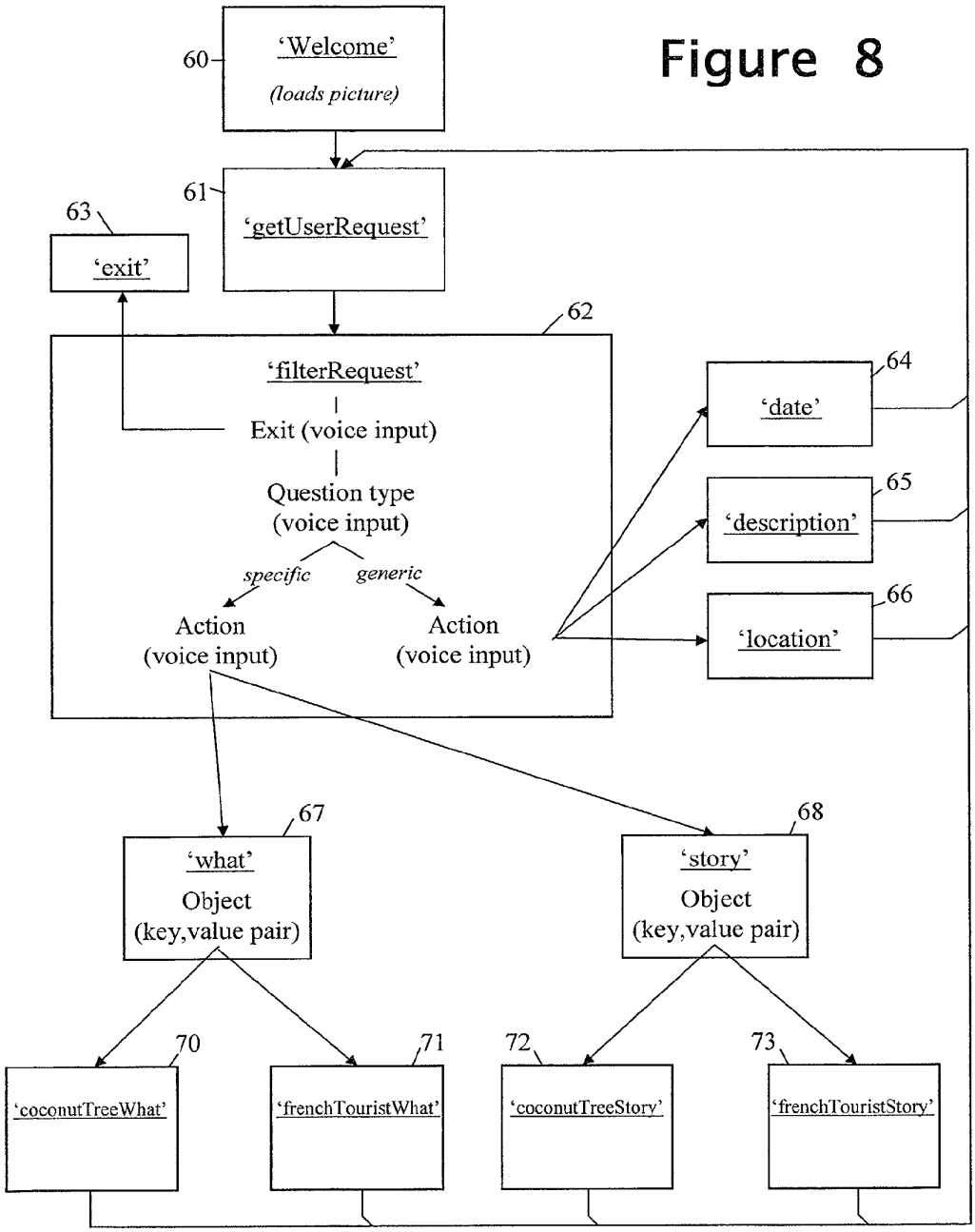


Figure 7

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Figure 8



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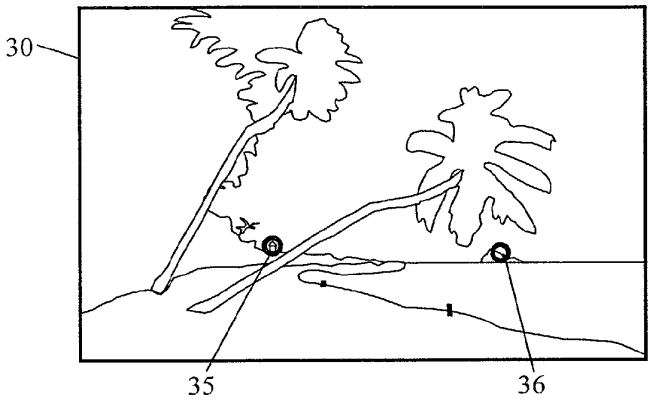


Figure 10

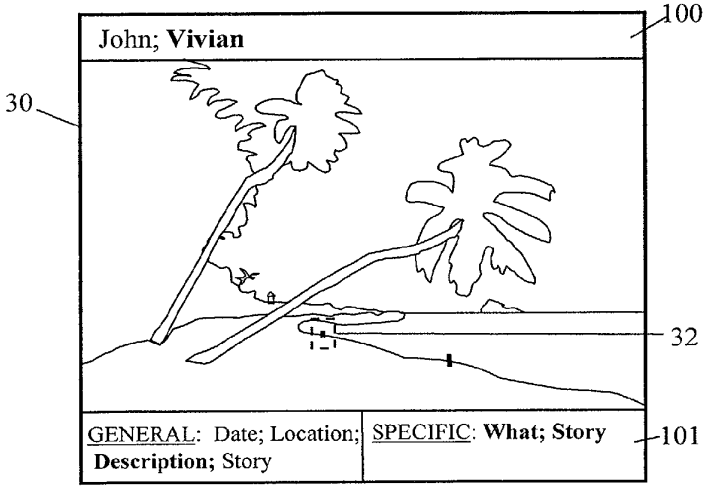


Figure 11

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Meta Platforms, Inc. v. Dialect, LLC
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Electronic Patent Application Fee Transmittal

Application Number:	12130397
Filing Date:	30-May-2008
Title of Invention:	SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS
First Named Inventor/Applicant Name:	Robert A. Kennewick
Filer:	Syed Jafar Ali/Susan Trader
Attorney Docket Number:	090611-0370991

Filed as Small 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:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	755	755
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**1235**

Electronic Acknowledgement Receipt

EFS ID:	10381020
Application Number:	12130397
International Application Number:	
Confirmation Number:	3889
Title of Invention:	SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS
First Named Inventor/Applicant Name:	Robert A. Kennewick
Customer Number:	00909
Filer:	Syed Jafar Ali/Susan Trader
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0370991
Receipt Date:	24-JUN-2011
Filing Date:	30-MAY-2008
Time Stamp:	13:28:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1235
RAM confirmation Number	11844
Deposit Account	033975
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		0370991.pdf	933877 af9559912f069317c2f7bb821d9b5e275691d201	yes	15

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Issue Fee Payment (PTO-85B)	1	1
Transmittal Letter	2	4
Information Disclosure Statement (IDS) Form (SB08)	5	5
Transmittal Letter	6	14
Information Disclosure Statement (IDS) Form (SB08)	15	15

Warnings:

Information:

2	Foreign Reference	EP1320043A2.pdf	1416212 2ec7d64c9ab7063100d70c545035fd72a13ded77	no	28

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	33751 92a4c0f9c13b4107e193883248f305014f3df690	no	2

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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.
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991	3889

909 7590 07/20/2011

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
LERNER, MARTIN	
ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
07/20/2011	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_ip@pillsburylaw.com
margaret.drosos@pillsburylaw.com

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Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
12/130,397	30 May 2008	KENNEWICK ET AL.	090611-0370991

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER
MARTIN LERNER

ART UNIT	PAPER
2626	20110713

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

PTO-90C (Rev.04-03)

INFORMATION DISCLOSURE STATEMENTS

The Information Disclosure Statements (IDS) submitted on 24 June 2011 were filed after the mailing date of the Notice of Allowance on 09 May 2011. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the Information Disclosure Statements are being considered by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARTIN LERNER whose telephone number is (571)272-7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. 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.

/Martin Lerner/
Primary Examiner
Art Unit 2626
July 13, 2011

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	5,027,406	06/25/1991	Roberts *et al.*			
	B	5,897,613	04/27/1999	Chan	704	210	
	C	5,960,399	09/28/1999	Barclay *et al.*	704	270	
	D	5,960,447	09/28/1999	Holt *et al.*	707	500	
	E	5,995,928	11/30/1999	Nguyen *et al.*	704	251	
	F	6,049,607	04/11/2000	Marash *et al.*	379	410	
	G	6,108,631	08/22/2000	Ruhl	704	270	
	H	6,269,336	07/31/2001	Ladd *et al.*	704	270	
	I	6,429,813	08/06/2002	Feigen	342	357.13	
	J	6,522,746	02/18/2003	Marchok *et al.*	379	406.03	
	K	6,549,629	04/15/2003	Finn *et al.*	381	92	
	L	7,024,364	04/04/2006	Guerra *et al.*	704	270	
	M	7,366,669	04/29/2008	Nishitani *et al.*	704	256	
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	P	7,558,730	07/07/2009	Davis *et al.*	704	235	
	Q	7,676,365	03/09/2010	Hwang *et al.*	704	240	
	R	7,831,433	11/09/2010	Belvin *et al.*	704	275	
	S	7,949,529	05/24/2011	Weider *et al.*	704	270	
	T	2003/0120493	06/26/2003	Gupta	704	270.1	
	U	2003/0212550	11/13/2003	Ubale	704	215	
	V	2007/0033020	02/08/2007	(Kelleher) Francois *et al.*	704	226	
	W	2009/0271194	10/29/2009	Davis *et al.*	704	235	
	X	2011/0112827	05/12/2011	Kennewick *et al.*	704	9	
	Y	2011/0112921	05/12/2011	Kennewick *et al.*	705	26.1	
	Z	2011/0131036	06/02/2011	Di Cristo *et al.*	704	9	
	AA	2011/0131045	06/02/2011	Cristo *et al.*	704	249	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED
/Martin Lerner/	07/13/2011

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

402972613v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.L./

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0370991	12/130,397
	Applicant(s)	
	Robert A. KENNEWICK *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	May 30, 2008	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	A	1 320 043 A2	06/18/2003	Europe				

OTHER DOCUMENTS *(Including Author, Title, Date, Pertinent Pages, Etc.)*

EXAMINER	DATE CONSIDERED
/Martin Lerner/	07/13/2011

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

402972910v1

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/130,397	09/06/2011	8015006	090611-0370991	3889

909 7590 08/17/2011

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

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 617 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):

Robert A. Kennewick, Seattle, WA;
David Locke, Redmond, WA;
Michael R. Kennewick SR., Bellevue, WA;
Michael R. Kennewick JR., Bellevue, WA;
Richard Kennewick, Woodinville, WA;
Tom Freeman, Mercer Island, WA;

Large Entity Declaration

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number: 12/130,397 **Current Date: March 16, 2015**

Filing Date: 5/30/2008

Patent Number: 8,015,006

Issue Date: 9/6/2011

CHANGE OF ENTITY STATUS PURSUANT TO 37 C.F.R. §1.27 (g)(2)

Commissioner for Patents
Mail Stop M Correspondence
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication hereby notifies the United States Patent and Trademark Office that small entity status is no longer applicable for the above-identified patent.

COMPANY or FIRM NAME AND ADDRESS:

Nuance Communications, Inc.
1 Wayside Road
Burlington, MA 01803

Respectfully submitted,

Signature
Leanne Fitzgerald
Printed Name
VP, Associate General Counsel
Title

OR
Reg. # If US Attorney_____

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6700444

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
NUANCE COMMUNICATIONS, INC.	01/01/2021

RECEIVING PARTY DATA

Name:	VOICE INVENTIONS, LLC
Street Address:	2 EXECUTIVE DRIVE
Internal Address:	STE. 270
City:	FORT LEE
State/Country:	NEW JERSEY
Postal Code:	07024

PROPERTY NUMBERS Total: 29

Property Type	Number
Patent Number:	7398209
Patent Number:	7502738
Patent Number:	7809570
Patent Number:	8015006
Patent Number:	8112275
Patent Number:	8140327
Patent Number:	8155962
Patent Number:	8731929
Patent Number:	9734825
Patent Number:	7693720
Patent Number:	9031845
Patent Number:	7640160
Patent Number:	7917367
Patent Number:	8326634
Patent Number:	8849670
Patent Number:	9263039
Patent Number:	7620549
Patent Number:	8332224
Patent Number:	8620659

Property Type	Number
Patent Number:	9626959
Patent Number:	7949529
Patent Number:	8195468
Patent Number:	8447607
Patent Number:	8849652
Patent Number:	9495957
Patent Number:	7634409
Patent Number:	7983917
Patent Number:	8069046
Patent Number:	8150694

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Email: eddie.weiss@voiceinventions.com
Correspondent Name: EDWARD WEISS
Address Line 1: 2 EXECUTIVE DRIVE
Address Line 2: STE. 270
Address Line 4: FORT LEE, NEW JERSEY 07024

NAME OF SUBMITTER:	EDWARD WEISS
SIGNATURE:	/Edward Weiss/
DATE SIGNED:	05/10/2021
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 4
source=2020-12-24 - Assignment Nuance to Voice Inventions#page1.tif
source=2020-12-24 - Assignment Nuance to Voice Inventions#page2.tif
source=2020-12-24 - Assignment Nuance to Voice Inventions#page3.tif
source=2020-12-24 - Assignment Nuance to Voice Inventions#page4.tif

PATENT ASSIGNMENT AGREEMENT

This PATENT ASSIGNMENT AGREEMENT (the "Assignment Agreement") between Nuance Communications, Inc., a Delaware corporation, with an address at One Wayside Road, Burlington, MA 01803 ("Assignor"), and Voice Inventions, LLC, a Texas Limited Liability Company, with an address at 2 Executive Drive, Suite 270, Fort Lee, NJ 07024 ("Assignee").

RECITALS

WHEREAS the parties have entered into a certain Patent Purchase and Licensing Agreement (the "Purchase Agreement"), with an effective date of January 1, 2021;

WHEREAS Assignor possesses all legal rights, title, and interests in and to the patents listed in Exhibit A (the "Assigned Patent Portfolio") to this Assignment Agreement;

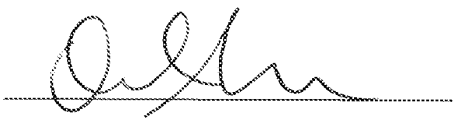
WHEREAS the parties desire to effectuate the assignment and transfer of the Assigned Patent Portfolio to Assignee such that Assignee shall acquire, and thus hereby acquires, all of Assignor's worldwide rights, title, and interests in and to the Assigned Patent Portfolio; and

WHEREAS the parties further desire that the assignment of the Assigned Patent Portfolio be undertaken in a such a manner as to allow Assignee to make such assignment a matter of record in the appropriate domestic and international patent offices;

NOW THEREFORE, for good and valuable consideration, the receipt of which by Assignor is hereby acknowledged, Assignor hereby sells, assigns, and transfers to Assignee, and Assignee hereby purchases and accepts from Assignor, all of Assignor's worldwide rights, title and interest, in and to the Assigned Patent Portfolio, including any and all of Assignor's rights to sue for past damages, subject to the terms and conditions of the Purchase Agreement.

IN WITNESS WHEREOF, intending to be legally bound, Assignor has caused this Assignment Agreement to by executed by its duly authorized representative and made effective, as of January 1, 2021.

Nuance Communications, Inc.
Assignor

By 

Name: David Greenbaum
Title: VP, Litigation & IP

Exhibit A

Assigned Patent Portfolio

	COUNTRY	TITLE	APPLICATION NUMBER	DATE FILED	PATENT NUMBER
1	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	10/452,147	Jun 3, 2003	7,398,209
2	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	11/747,547	May 11, 2007	7,502,738
3	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	12/168,554	Jul 7, 2008	7,809,570
4	US	SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS	12/130,397	May 30, 2008	8,015,006
5	US	SYSTEM AND METHOD FOR USER-SPECIFIC SPEECH RECOGNITION	12/765,733	Apr 22, 2010	8,112,275
6	US	SYSTEM AND METHOD FOR FILTERING AND ELIMINATING NOISE FROM NATURAL LANGUAGE UTTERANCES TO IMPROVE SPEECH RECOGNITION AND PARSING	12/765,753	Apr 22, 2010	8,140,327
7	US	METHOD AND SYSTEM FOR ASYNCHRONOUSLY PROCESSING NATURAL LANGUAGE UTTERANCES	12/838,982	Jul 19, 2010	8,155,962
8	US	AGENT ARCHITECTURE FOR DETERMINING MEANINGS OF NATURAL LANGUAGE UTTERANCES	12/365,516	Feb 4, 2009	8,731,929
9	US	SYSTEM AND METHOD FOR PROCESSING NATURAL LANGUAGE UTTERANCES	14/278,627	May 15, 2014	9,734,825
10	US	MOBILE SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCES	10/618,633	Jul 15, 2003	7,693,720
11	US	MOBILE SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	12/705,311	Feb 12, 2010	9,031,845

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12	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	11/197,504	Aug 5, 2005	7,640,160
13	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	12/617,506	Nov 12, 2009	7,917,367
14	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	13/019,834	Feb 2, 2011	8,326,634
15	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	13/690,895	Nov 30, 2012	8,849,670
16	US	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	14/500,723	Sep 29, 2014	9,263,039

17	US	SYSTEM AND METHOD OF SUPPORTING ADAPTIVE MISRECOGNITION IN CONVERSATIONAL SPEECH	11/200,164	Aug 10, 2005	7,620,549
18	US	SYSTEM AND METHOD OF SUPPORTING ADAPTIVE MISRECOGNITION IN CONVERSATIONAL SPEECH	12/571,795	Oct 1, 2009	8,332,224
19	US	SYSTEM AND METHOD OF SUPPORTING ADAPTIVE MISRECOGNITION IN CONVERSATIONAL SPEECH	13/022,370	Feb 7, 2011	8,620,659
20	US	SYSTEM AND METHOD OF SUPPORTING ADAPTIVE MISRECOGNITION IN CONVERSATIONAL SPEECH	14/143,903	Dec 30, 2013	9,626,959

21	US	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	11/212,693	Aug 29, 2005	7,949,529
22	US	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	13/084,197	Apr 11, 2011	8,195,468
23	US	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	13/488,299	Jun 4, 2012	8,447,607
24	US	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	13/898,045	May 20, 2013	8,849,652

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Meta Platforms, Inc. v. Dialect, LLC
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25	US	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	14/467,641	Aug 25, 2014	9,495,957

26	US	DYNAMIC SPEECH SHARPENING	11/513,269	Aug 31, 2006	7,634,409
27	US	DYNAMIC SPEECH SHARPENING	12/608,544	Oct 29, 2009	7,983,917
28	US	DYNAMIC SPEECH SHARPENING	12/608,572	Oct 29, 2009	8,069,046
29	US	SYSTEM AND METHOD FOR PROVIDING AN ACOUSTIC GRAMMAR TO DYNAMICALLY SHARPEN SPEECH INTERPRETATION	13/150,977	Jun 1, 2011	8,150,694

30	CN	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	2006800362006	Aug 4, 2006	ZL200680036200.6
31	CN	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	2015102059396	Aug 4, 2006	ZL201510205939.6
32	CN	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	200680038560	Aug 29, 2006	200680038560

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PTO/AIA/81A (02-15)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	8015006
Issue Date	09/06/11
First Named Inventor	Kennewick, Robert A
Title	Systems and methods for processing natural language speech
Attorney Docket No.	9032-0012

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 174889

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☒ The address associated with the above-identified Customer Number.

OR

☐ The address associated with the Customer Number identified in the box at right:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

SIGNATURE of Applicant or Patent Owner

Signature	/Jeff Ronaldi/	Date	02/27/2023
Name	Jeff Ronaldi	Telephone	(571) 334-1112
Title and Company	Manager, Dialect, LLC		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 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.

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.

PTO/AIA/96 (08-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Dialect, LLC

Application No./Patent No.: 8015006 Filed/Issue Date: 09/06/11

Titled: Systems and methods for processing natural language speech utterances with context-sp

Dialect, LLC, a limited liability company

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Kennewick, Robert A et al. To: VoiceBox Technologies, Inc.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 021697, Frame 0920, or for which a copy thereof is attached.

2. From: VoiceBox Technologies, Inc. To: VoiceBox Technologies Corporation

   The document was recorded in the United States Patent and Trademark Office at
   Reel 032620, Frame 0956, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). 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 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/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: VoiceBox Technologies Corporation To: Nuance Communications, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 034703, Frame 0429, or for which a copy thereof is attached.

4. From: Nuance Communications, Inc. To: Voice Inventions, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 056185, Frame 0742, or for which a copy thereof is attached.

5. From: Voice Inventions, LLC To: Dialect, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 060820, Frame 0857, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jeff Ronaldi/	02/27/2023
Signature	Date
Jeff Ronaldi	Manager, Dialect, LLC
Printed or Typed Name	Title or Registration 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.

Electronic Acknowledgement Receipt

EFS ID:	47602214
Application Number:	12130397
International Application Number:	
Confirmation Number:	3889
Title of Invention:	SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS
First Named Inventor/Applicant Name:	Robert A. Kennewick
Customer Number:	909
Filer:	David Alexander Gerasimow
Filer Authorized By:	
Attorney Docket Number:	090611-0370991
Receipt Date:	28-FEB-2023
Filing Date:	30-MAY-2008
Time Stamp:	11:24:49
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	Power of Attorney	8015006.pdf	206919 0e263f8333aa5aa0b1de188bbc37dcaccff589d5	no	2

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	8015006-aia0096.pdf	197058 2b40e9c35a63c2f2eb2b9310849b4e3d9a467ee4	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	403977	

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.

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	4/3/2023	for the District of Delaware

PLAINTIFF	DEFENDANT
Dialect, LLC	Google LLC and Alphabet Inc.

PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 See Attached		
2		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 7,398,209 B2	7/8/2008	Dialect, LLC
2	US 7,502,738 B2	3/10/2009	Dialect, LLC
3	US 7,640,160 B2	12/29/2009	Dialect, LLC
4	US 7,693,720 B2	4/6/2010	Dialect, LLC
5	US 8,015,006 B2	9/6/2011	Dialect, LLC
6	US 8,447,607 B2	5/21/2013	Dialect, LLC
7	US 8,849,652 B2	9/30/2014	Dialect, LLC
8	US 9,031,845 B2	5/12/2015	Dialect, LLC

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	4/3/2023	District of Delaware

PLAINTIFF	DEFENDANT
Cedar Lane Technologies Inc.	Best Lighting Products Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,391,159	6/24/2008	Cedar Lane Technologies Inc.
2			Cedar Lane Technologies Inc.
3			Cedar Lane Technologies Inc.
4			Cedar Lane Technologies Inc.
5			Cedar Lane Technologies Inc.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

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AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court District of Delaware on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
	4/3/2023	District of Delaware

PLAINTIFF	DEFENDANT
Cedar Lane Technologies Inc.	Hubbell Incorporated

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,391,159	6/24/2008	Cedar Lane Technologies Inc.
2			Cedar Lane Technologies Inc.
3			Cedar Lane Technologies Inc.
4			Cedar Lane Technologies Inc.
5			Cedar Lane Technologies Inc.

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

UNITED STATES
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P.O. Box 1450
Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
12/130,397	**11/09/2023 12:26:00 PM Z ET**	**090611-0370991**

Title of Invention

SYSTEMS AND METHODS FOR PROCESSING NATURAL LANGUAGE SPEECH UTTERANCES WITH CONTEXT-SPECIFIC DOMAIN AGENTS

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	8015006
CONFIRMATION #	3889	FILED BY	David Gerasimow
PATENT CENTER #	63206353	FILING DATE	05/30/2008
CUSTOMER #	909	FIRST NAMED INVENTOR	Robert A. Kennewick
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
8015006.pdf	2	Power of Attorney	212 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8015006.pdf	A11061BB92A90311C66EDE3698462F0EEB38057470ED73C089 48F2EC2067D17DABD5BA31AF26C32E93C9EC9CD91767BD94 A10B757498FDC7A6B8AFC5DD7ED419

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 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

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PTO/AIA/81A (02-15)
Approved for use through 03/31/2021. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	8015006
Issue Date	09/06/11
First Named Inventor	Kennewick, Robert A
Title	Systems and methods for processing natural language speech
Attorney Docket No.	9032-0012

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith: 174899

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☒ The address associated with the above-identified Customer Number.

OR

☐ The address associated with the Customer Number identified in the box at right:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on 02/28/2023.

SIGNATURE of Applicant or Patent Owner

Signature	/Jeff Ronaldi/	Date	11/06/2023
Name	Jeff Ronaldi	Telephone	(571) 334-1112
Title and Company	Manager, Dialect, LLC		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 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.

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.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/130,397	05/30/2008	Robert A. Kennewick	9032-0012

CONFIRMATION NO. 3889

174899
The Law Offices of David A. Gerasimow, P.C.
211 W. Wacker Dr.
Ste. 1717
Chicago, IL 60606

POA ACCEPTANCE LETTER

OC000000064866809

Date Mailed: 11/22/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/09/2023.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/byemane/

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
Ex. 1043 - Page 319

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/130,397	05/30/2008	Robert A. Kennewick	090611-0370991

CONFIRMATION NO. 3889

909
Pillsbury Winthrop Shaw Pittman, LLP
PO Box 10500
McLean, VA 22102

POWER OF ATTORNEY NOTICE

OC000000064866795

Date Mailed: 11/22/2023

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/09/2023.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/byemane/

Meta Platforms, Inc. - IPR2025-01334
Meta Platforms, Inc. v. Dialect, LLC
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Trials@uspto.gov
Tel: 571-272-7822

Paper 11
Entered: October 11, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

DIALECT, LLC,
Patent Owner.

IPR2024-00748
Patent 8,015,006 B2

Before KRISTEN L. DROESCH, NEIL T. POWELL, and GEORGE R. HOSKINS, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. BACKGROUND

Google LLC ("Petitioner") filed a Petition for *inter partes* review of claims 1–6 and 9 of U.S. Patent No. 8,015,006 B2 (Ex. 1001, "the '006 patent"). Paper 2 ("Pet."). Dialect, LLC ("Patent Owner") filed a Preliminary Response. Paper 8 ("Prelim. Resp.").

An *inter partes* review may not be instituted "unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Having considered the arguments and the associated evidence, we determine that Petitioner has not shown a reasonable likelihood that it will prevail in establishing the unpatentability of any of the challenged claims. Accordingly, we do not institute *inter partes* review of claims 1–6 and 9 of the '006 patent.

B. RELATED PROCEEDINGS

The parties indicate that the '006 patent is involved in *Dialect, LLC v. Google LLC*, No. 1:23-cv-00378 (D. Del.), as well as *Dialect, LLC v. Amazon.com, Inc.*, No. 1:23-cv-00581 (E.D. Va.). Pet. 15; Paper 5, 1. Petitioner also identifies IPR2024-00746, IPR2024-00747, IPR2024-00749, IPR2024-00750, IPR2024-00751, IPR2024-00752, and IPR2024-00753 as involving the same parties and patents related to the '006 patent. Pet. 15–16.

C. THE '006 PATENT

The '006 patent relates to retrieving online information or processing commands through a speech interface. Ex. 1001, 1:20–22. According to the '006 patent, "current systems are generally unable to provide a complete environment for users to make natural language speech queries and receive

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natural sounding responses" due to "a number of significant barriers to creation of a complete natural language speech-based query and response environment." *Id.* at 1:50–55. The '006 patent explains that the "present invention provides a complete speech-based information query, retrieval, processing and presentation environment." *Id.* at 9:61–63. The '006 patent discusses one embodiment in connection with Figure 1, which is reproduced below.

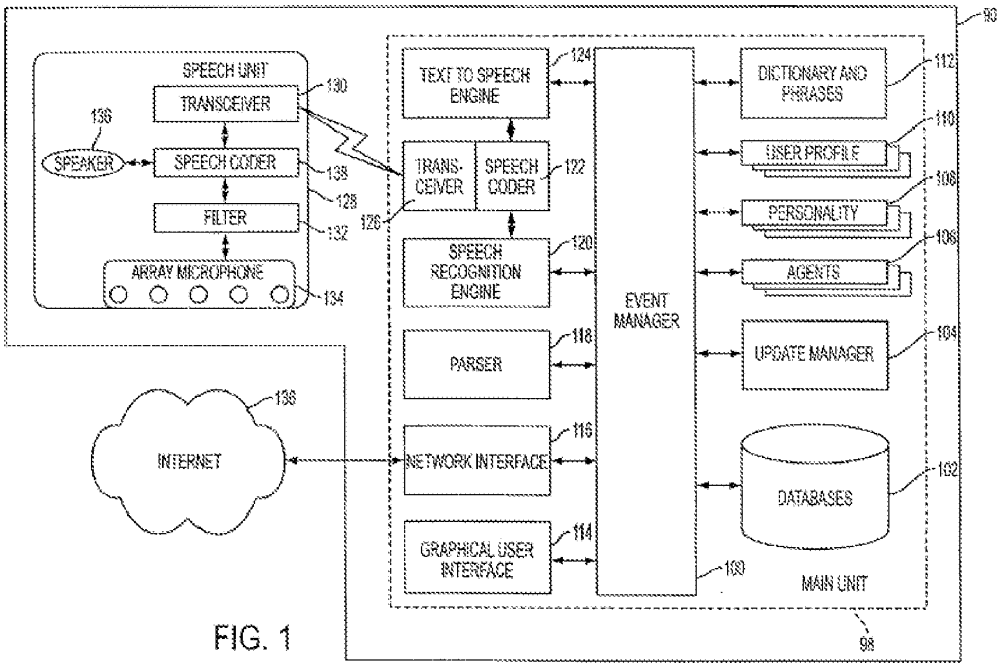


FIG. 1

"[Figure] 1 shows a schematic diagram view of a system 90 according to an embodiment of the invention." Ex. 1001, 10:4–5.

In particular, Figure 1 shows system 90 with main unit 98 and speech unit 128. Ex. 1001, 10:6–7. "Agents 106 contain packages of both generic and domain specific behavior for the system 98." *Id.* at 10:15–16. "User specific data, parameters, and session and history information that may

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determine the behavior of agents 106 are stored in one or more user profiles 110." *Id.* at 10:19–22. "The system 90 may [also] comprise of different types of agents," such as "domain agents" that organize "generic and domain specific behavior and information," as well as "system agent[s]" that "provide[] functionality and basic services." *Id.* at 11:28–32.

D. ILLUSTRATIVE CLAIMS

Of the challenged claims, claims 1, 4, 5, and 6 are independent. Each of claims 2 and 3 depends, directly or indirectly, from claim 1. Claim 9 depends from claim 6. Independent claim 1 is reproduced below:

> 1. A method for processing natural language speech utterances with context-specific domain agents, comprising:
>
> receiving, at a speech unit coupled to a processing device, a natural language speech utterance that contains a request;
>
> recognizing, at a speech recognition engine coupled to the processing device, one or more words or phrases contained in the utterance using information in one or more dictionary and phrase tables, wherein recognizing the one or more words or phrases contained in the utterance includes:
>
> dynamically updating the information in the one or more dictionary and phrase tables based on a dynamic set of prior probabilities or fuzzy possibilities;
>
> determining an identity associated with a user that spoke the utterance based on voice characteristics associated with the utterance; and
>
> associating the one or more recognized words or phrases and a pronunciation associated with the one or more recognized words or phrases with the determined identity and the request contained in the utterance in response to the one or more recognized words or phrases satisfying a predetermined confidence level;

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> parsing, at a parser coupled to the processing device, the one or more recognized words or phrases to determine a meaning associated with the utterance and a context associated with the request contained in the utterance, wherein the one or more recognized words or phrases are further associated with the determined context in response to the one or more recognized words or phrases satisfying the predetermined confidence level;
>
> formulating, at the parser, the request contained in the utterance in accordance with a grammar used by a domain agent associated with the determined context;
>
> processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance; and
>
> presenting the generated response to the utterance via the speech unit.

Ex. 1001, 25:49–26:21.

E. ASSERTED GROUNDS OF UNPATENTABILITY

Petitioner challenges the patentability of claims 1–6 and 9 of the '006 patent on the following grounds (Pet. 17–18):

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Meta Platforms, Inc. v. Dialect, LLC
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Claim(s) Challenged	35 U.S.C. §	References
1–3	103(a)[1]	Coffman[2], Kanevsky[3], Kneser[4], Zadrozny[5]
4	103(a)	Coffman, Kanevsky, Kneser, Zadrozny, Maes '101[6], Franceschi[7]
5	103(a)	Coffman, Kanevsky, Kneser, Zadrozny, Chai[8]
6, 9	103(a)	Coffman, Kanevsky, Kneser, Zadrozny, Redfern[9]

In support of its challenges, Petitioner also relies on the Declaration of Christopher M. Schmandt. Ex. 1002.

---

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. § 103, effective March 16, 2013. The '006 patent's filing date is before March 16, 2013, so we apply the pre-AIA version of § 103. Ex. 1001, code (22).

[2] Coffman et al., International Patent Application Publication No. WO 00/20962, published Apr. 13, 2000 (Ex. 1003, "Coffman").

[3] Kanevsky et al., U.S. Patent No. 5,897,616, issued Apr. 27, 1999 (Ex. 1004, "Kanevsky").

[4] Kneser et al., U.S. Patent No. 6,157,912, issued Dec. 5, 2000 (Ex. 1005, "Kneser").

[5] Zadrozny et al., *NL Understanding with a Grammar of Constructions*, Coling 94: The 15th International Conference on Computational Linguistics, 1994 (Ex. 1006, "Zadrozny").

[6] Maes, U.S. Patent No. 6,073,101, issued June 6, 2000 (Ex. 1010, "Maes '101").

[7] Franceschi, U.S. Patent No. 6,321,196 B1, issued Nov. 20, 2001 (Ex. 1011, "Franceschi").

[8] Chai et al., U.S. Patent No. 6,829,603 B1, issued Dec. 7, 2004 (Ex. 1012, "Chai").

[9] Redfern, U.S. Patent No. 6,078,914, issued June 20, 2000 (Ex. 1013, "Redfern").

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II. ANALYSIS

A. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner contends that an ordinarily skilled artisan for the '006 patent "would have possessed a bachelor's degree in electrical engineering or computer science, and two years of work experience in the field of speech- and natural language-interfaces for interacting with and directing computer systems and software, including speech recognition and processing (and more experience could substitute for less formal education, and vice versa)." Pet. 19 (citing Ex. 1002 ¶¶ 11–15). At this stage, Patent Owner does not dispute Petitioner's proposed level of skill in the art. *See, generally,* Prelim. Resp.

Based on this record, we adopt Petitioner's articulation of the level of ordinary skill in the art, which appears to be consistent with the '006 patent and the asserted prior art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

B. CLAIM INTERPRETATION

We apply the same claim construction standard used in district courts, namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b) (2022). In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13.

Both parties express that we do not need to construe any claim language explicitly. Pet. 21; Prelim. Resp. 14. We agree that no explicit claim construction is necessary for this Decision. *See Nidec Motor Corp. v.*

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Zhongshan Broad Ocean Motor Co., 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that only claim terms in controversy need to be construed, and only to the extent necessary to resolve the controversy (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

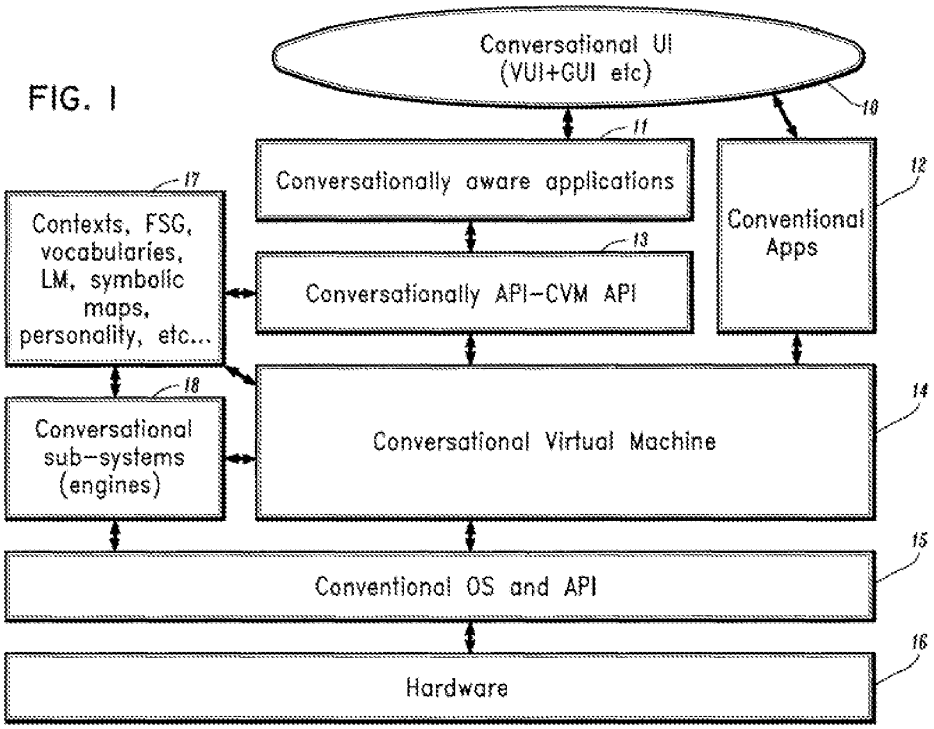
C. PRIOR ART REFERENCES

1. *Coffman*

Coffman relates to conversational computing. Ex. 1003, 1:7–8.[10] Coffman discusses "a system that provides conversational computing across multiple platforms, devices and applications through a universal conversational user interface, which goes far beyond adding speech I/O or conversational capabilities to existing applications, building conventional conversational applications or superficially integrating 'speech' in conventional operating systems." *Id.* at 3:29–4:2. Coffman discusses an example embodiment in connection with Figure 1, which is reproduced below.

[10] When addressing Coffman, we cite its native pagination.

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"[Figure] 1 is a block diagram of a conversational computing system according to an embodiment of the present invention." Ex. 1003, 9:27–28.

Coffman discloses conversational virtual machine (CVM) 14 as a kernel that runs on top of conventional operating system (OS) 16 to provide backward compatibility for conventional platforms by managing dialog and context, conversational sub-systems (engines) and resources, and conversational protocols/communications across platforms and devices with different capabilities. Ex. 1003, 1:12–17, 4:17–26, 13:1–3. "The CVM kernel is the core layer that controls the dialog across applications and devices on the basis of their registered conversational capabilities and requirements." *Id.* at 4:27–28. "[C]onventional applications 12 are managed by the CVM kernel layer 14 which is responsible for accessing, via the OS APIs, GUI menus and commands of the conventional applications as

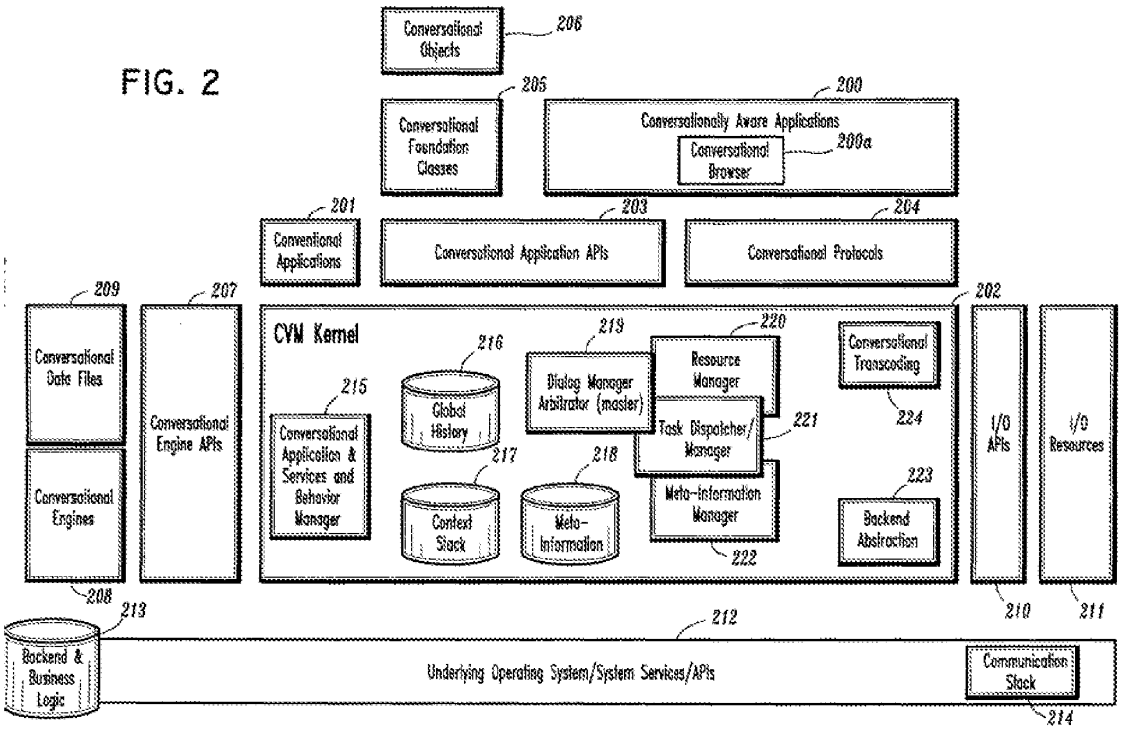
well as the underlying OS commands." *Id.* at 13:3–5. Conversational subsystems 18, e.g., speech recognition, natural language understanding (NLU) and natural dialog generation (NLG) engines, are accessed through the CVM. *Id.* at 5:1–7.

Coffman also discloses conversationally aware applications 11, which "are specifically programmed for operating with a CVM core layer (or kernel) 14 via conversation applications APIs 13," based on "their registered conversational capabilities and requirements." Ex. 1003, 12:28–32. CVM kernel 14 controls the dialog across applications and devices based on their registered conversational capabilities and provides a unified conversational user interface (CUI). *Id.* A conversationally aware application 11 provides its data file to the CVM for use by the conversational subsystems 18 by "registering all its conversational capabilities and requirements," including active vocabulary, symbolic mapping (if NLU is supported or in a context state list), associated meta-information to allow categorization of the output, conversational I/O information, and CVM capabilities/state (master, slave, or partner CVM). *Id.* at 57:22–58:2.

Figure 2 of Coffman, reproduced below, illustrates abstract layers of an embodiment of Coffman's conversational computing system. Ex. 1003, 9:29–30.

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FIG. 2



Ex. 1003, Fig. 2. Conversationally aware applications 200 interact with CVM kernel layer 202 via conversationally aware application API layer 203. *Id.* at 13:16–19. CVM kernel layer (or CVM controller) 202 includes a meta-information manager 222, resource manager 220, context stack 217, global history 216, dialog manager 219, and task dispatcher 221. *Id.* at Fig. 2, 19:26–29, 21:3–4, 21:23, 21:28–29. Within kernel 202, context stack 217 "is associated with the organized/sorted context corresponding to each active dialog (or deferred dialog- agents/memorization)" and "includes all the variable, states, input, output and queries to the backend that are performed in the context of the dialog and any extraneous event that occurs during the dialog." *Id.* at 21:23–28.

2. *Kanevsky*

Kanevsky discloses a "method and apparatus for securing access to a service or facility employing automatic speech recognition, text-independent speaker identification, natural language understanding techniques and additional dynamic and static features." Ex. 1004, code (57). Kanevsky explains employing "a unique combination of random questions, automatic speech recognition (ASR) and text-independent speaker recognition to provide a significant improvement in secure access to services and/or facilities . . . requiring security measures." *Id.* at 5:34–39.

3. *Kneser*

Kneser discloses a method "for adapting the unigram language model values which automatically carries out a subdivision of the words into semantic classes." Ex. 1005, code (57). As part of this system and method, Kneser explains that "unigram language model values obtained from a large quantity of texts are adapted on the basis of an updated speech signal, and adapted M-gram language model values are obtained by means of said adapted unigram language model values." *Id.* at 2:1–6. "This renders it possible to adapt the M-gram values already on the basis of a small quantity of spoken text data in which a major portion of the word sequences on which the M-gram values are based has not yet occurred." *Id.* at 2:9–14. "[C]lassification can be achieved automatically when different training speech signals are available which originate, for example, from different subject fields and comprise different styles of speech or language." *Id.* at 2:34–38.

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4. *Zadrozny*

Zadrozny discloses "an approach to a natural language understanding based on a *computable grammar of constructions*," each of which "consists of a set of features of form and a description of meaning in a context." Ex. 1006, 19. Zadrozny explains that "[a] grammar is a set of constructions." *Id.* Zadrozny further discloses that "grammars of constructions can be parsed like 'standard' grammars, except that the set of features is richer. Given a string (representing a sentence, a fragment of a discourse or a paragraph), the parser assigns it a construction." *Id.* Specifically, "the program uses application-specific knowledge to translate the action and its parameters into a form that can be executed by the application." *Id.* at 20.

5. *Maes '101*

Maes '101 relates to "provid[ing] speaker dependent information for speech recognition and/or ambiguity resolution." Ex. 1010, code (57). Maes '101 explains "[f]eature vectors representing each of a plurality of overlapping frames of an arbitrary, text independent speech signal are computed and compared to vector parameters and variances stored as codewords in one or more codebooks corresponding to each of one or more enrolled users." *Id.*

6. *Franceschi*

Franceschi discloses a "[s]peech recognition apparatus [that] includes means for determining when a speaker desires to spell a first word." Ex. 1011, code (57). Franceschi explains that "[t]he speaker may then say a sequence of words selected from a large vocabulary without being restricted to a pre-specified phonetic alphabet." *Id.* "The apparatus recognizes the

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spoken words, associates letters with these words and then arranges the letters to form the first word." *Id.*

7. *Chai*

Chai relates to a "system, method, and program product that are used in interactive natural language dialog." Ex. 1012, code (57). Chai explains "presentation managers operating on a computer system present information from the computer system to one or more users over network interface(s) and accept queries from the users using one or more known input/output modalities." *Id.* Then, "[a] natural language parser parses one or more natural language phrases received over one or more of the network interfaces by one or more of the presentation managers into one or more logical forms (parsed user input), each logical form having a grammatical and structural organization." *Id.*

8. *Redfern*

Redfern relates to "[a] meta search system [that] accepts natural language queries which are parsed to extract relevant content." Ex. 1013, code (57). Redfern explains "[t]he results from . . . search engines are received and examined and a selected number of the information sources represented therein are obtained." *Id.* "These obtained information sources are then examined to rank their relevance to the extracted relevant content and the portions of interest in each of these ranked information sources are determined" and "output to the user in ranked order, having first been processed to clean up the portions to include valid formatting and complete paragraphs and/or sentences." *Id.*

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D. PETITIONER'S OBVIOUSNESS CHALLENGES

Petitioner asserts that its "grounds rely primarily on **Coffman**." Pet. 21. More specifically, Petitioner explains that "[a]ll grounds combine Coffman with **Kanevsky** (**EX1004**), **Kneser** (**EX1005**) and **Zadrozny** (**EX1006**), which disclose known techniques related to speech recognition and natural language processing. Grounds 2-4 combine these references with **Maes '101** (**EX1010**), **Franceschi** (**EX1011**), **Chai** (**EX1012**) and/or **Redfern** (**EX1013**) for features recited in claims 2-6 and 9." *Id.* at 21–22. Petitioner then elaborates on its bases for asserting that the challenged claims would have been obvious over the prior art, addressing each limitation of claims 1–6 and 9 in detail. *Id.* at 22–91.

Patent Owner argues that Petitioner fails to address persuasively "every claim requirement of a 'domain agent,'" as recited in the challenged claims. Prelim. Resp. 4. For example, Patent Owner contends that Petitioner does not address sufficiently persuasively the challenged claims' recitation of "processing the formulated request with the domain agent associated with the determined context to generate a response to the utterance" (which we also refer to as the "processing limitation"), as recited in each of independent claims 1 and 4–6. *E.g.*, *id.* at 28–36.

In view of all of the parties' arguments and evidence, the record does not demonstrate a reasonable likelihood of Petitioner prevailing with respect to any challenged claim. For example, Petitioner and Mr. Schmandt do not address the challenged claims' processing limitation in a sufficiently persuasive manner. Coffman provides high-level disclosure, which Petitioner and Mr. Schmandt recognize. *See, e.g.*, Pet. 49; Ex. 1002 ¶ 137. Coffman's high-level discussion lacks clear disclosures of certain key things

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that Petitioner and Mr. Schmandt perceive in Coffman's disclosure. And Petitioner and Mr. Schmandt do not provide sufficiently clear, persuasive explanation to substantiate their position that Coffman teaches certain key aspects of the challenged claims' processing limitation.

Mr. Schmandt rests his opinion regarding the processing limitation on his testimony that "[a]s explained above, Coffman teaches that the conversationally-aware application associated with the determined context ('**the domain agent associated with the determined context**') is invoked to process the user's request." Ex. 1002 ¶ 139 (citing Ex. 1003, 37:2–4, 13:8–13, 58:9–11, 40:9–19, 30:4–10); *see also* Pet. 49–50 (same position citing same Coffman passages). This alleged teaching is not clearly in the cited passages of Coffman. And, although Mr. Schmandt represents that he "explained above"[11] why he reads Coffman this way, he does not provide a cohesive, persuasive explanation of his reading of Coffman. Ex. 1002 ¶ 139. Instead, Mr. Schmandt's testimony resorts significantly to conclusory statements without logical, persuasive support. *See, e.g.*, Ex. 1002 ¶ 125 ("making clear that an application is automatically selected and carries out a request as a result of processing by the conversational system."). Petitioner does no better. *See, e.g.*, Pet. 44.

For example, Petitioner and Mr. Schmandt do not persuasively explain their view that Coffman teaches processing a user's request by invoking a conversationally-aware application "associated with the determined context," as required by the challenged claims. *See, e.g.*,

[11] We find this vague reference unhelpful for identifying which parts of Mr. Schmandt's testimony allegedly explain why he reads Coffman the way he does.

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Pet. 49–51; Ex. 1002 ¶¶ 139–140. In support of their understanding of Coffman, Petitioner and Mr. Schmandt first cite Coffman's disclosure that "[t]he first task to have its dialog completed by producing a non-ambiguous query is executed and the corresponding query as interpreted by the other application is stored to activate if the recognized query is rejected by the user." Ex. 1003, 37:2–4; Pet. 49–50; Ex. 1002 ¶ 139. Based on this and Coffman's passage at page 42, lines 1–7, Petitioner and Mr. Schmandt contend that Coffman "mak[es] clear that an application is automatically selected and carries out a request as a result of processing by the conversational system." Pet. 44 (citing Ex. 1003, 37:2–4, 42:1–7; Ex. 1002 ¶ 125); Ex. 1002 ¶ 125 (citing Ex. 1003, 37:2–4, 42:1–7).

Contrary to this conclusory assertion, Coffman's passages at page 37, lines 1–2 and page 42, lines 1–7 do not teach clearly that the system selects or invokes a conversationally aware application (i.e., the alleged domain agent) associated with a determined context. In these passages, the only mention of an application refers to "a query as interpreted by the other application," which is not a clear teaching of selecting or invoking a conversationally aware application associated with a determined context. Ex. 1003, 37:3–4. And Petitioner and Dr. Schmandt do not explain persuasively why they read these passages the way they do. *See, e.g.*, Pet. 49–50; Ex. 1002 ¶ 139.

Petitioner and Mr. Schmandt also cite the following passages of Coffman:

> In general, conversational sub-systems 18 are responsible for converting voice requests into queries and converting outputs and results into spoken messages using the appropriate data files 17 (e.g., contexts, finite state grammars, vocabularies, language models, symbolic query maps etc.) The conversation application

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> API 13 conveys all the information for the CVM 14 to transform queries into application calls and conversely converts output into speech, appropriately sorted before being provided to the user.

Ex. 1003, 13:8–13.

> Again, the API conveys all information for the CVM to transform queries into application calls and conversely converts output into speech, appropriately sorted before being provided to the user.

Ex. 1003, 58:9–11; Pet. 50; Ex. 1002 ¶ 139. In these passages, the only mention of an application is the vague language "transform queries into application calls," which is not a clear disclosure of selecting or invoking a conversationally-aware application associated with a determined context to process a user request. To the contrary, the cited passages seem to suggest that user requests are processed by conversational sub-systems 18 with data files 17. Ex. 1003, 13:8–11 ("In general, *conversational sub-systems 18 are responsible for converting voice requests into queries and converting outputs and results into spoken messages using the appropriate data files 17* (e.g., contexts, finite state grammars, vocabularies, language models, symbolic query maps etc.)." (emphasis added)). And again, Petitioner and Mr. Schmandt do not provide a cohesive, persuasive explanation of why they believe these passages support their understanding of Coffman's teachings. *See, e.g.*, Pet. 49–50; Ex. 1002 ¶ 139.

Petitioner and Mr. Schmandt further cite Coffman's passage at page 40, lines 9–19. This passage does not mention an application, let alone a conversationally-aware application associated with a determined context. *See* Ex. 1003, 40:9–19. Instead, the passage refers to, for example, "activities," "basic system calls," "actions," "subsystems," "complet[ing] the query," and "executed or running processes." *Id.*

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Petitioner and Mr. Schmandt also cite Coffman's passage at page 30, lines 4–10. This disclosure states "each new task, process, or thread creates *a new stack entry* and is associated with a *discourse*," as opposed to being associated with an "application" as Mr. Schmandt testifies, and also states "*[e]ach application may be associated with multiple discourses.*" Ex. 1003, 30:4–10 (emphases added). Neither Petitioner nor Mr. Schmandt provides persuasive explanation of how Coffman's disclosure of determining a matching *discourse* in a context stack can correspond to determining a matching *application* such as one of Coffman's conversationally-aware applications 11, especially when each application can be associated with multiple discourses. *See* Pet. 49–50; Ex. 1002 ¶ 139. Such explanation also is lacking in prior portions of the Petition and Mr. Schmandt's testimony, which cite various Coffman disclosures that most pertinently describe Coffman's context stack(s) as being associated with a "discourse," or perhaps with a non-specific "engine" or "process" or "task" or "thread" or "subsystem." *See, e.g.*, Pet. 35, 40–41 (citing Ex. 1003, 6:32–7:3, 29:18–30:10, 41:2–5, 42:1–5; Ex. 1002 ¶ 120); Ex. 1002 ¶¶ 113, 120 (citing Ex. 1003, 6:32–7:3, 29:18–30:10, 41:2–5, 42:1–5). In sum, Petitioner and Mr. Schmandt never explain persuasively why they believe Coffman teaches invoking a conversationally-aware application that is "associated with the determined context," as required by the challenged claims.

Nor do Petitioner and Mr. Schmandt persuasively demonstrate that the other cited prior art references cure the foregoing deficiency with respect to the challenged claims' requirement for a "domain agent associated with the determined context." For example, although Zadrozny demonstrates

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knowledge in the art of using a grammar of constructions suitable for a particular application, Petitioner and Mr. Schmandt do not allege or persuasively demonstrate that it teaches or suggests using a domain agent or conversationally-aware application "associated with the determined context," as required by the challenged claims. *See, e.g.*, Ex. 1006, 19–22; Pet. 46–49; Ex. 1002 ¶¶ 57–61, 132–138.

Because Petitioner's arguments and evidence do not address sufficiently persuasively the challenged claims' "domain agent associated with the determined context," the record does not demonstrate a reasonable likelihood of Petitioner prevailing with respect to any of the challenged claims.

III. CONCLUSION

For the above reasons, we conclude the record does not demonstrate a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, so we deny institution of the petitioned *inter partes* review per 35 U.S.C. § 314(a).

IV. ORDER

In consideration of the foregoing, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), the petitioned institution of *inter partes* review of the '006 patent is *denied*.

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