PTO/AIA/15 (03-13)
Approved for use through 01/31/2014. OMB 0651-0032
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UTILITY PATENT APPLICATION TRANSMITTAL

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

Attorney Docket No.	090611-0434304
First Named Inventor	Philippe DI CRISTO
Title	See Addendum 1
Express Mail Label No.	Via EFS Web

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. [ ] **Fee Transmittal Form** (PTO/SB/17 or equivalent)
2. [✓] **Applicant asserts small entity status.** See 37 CFR 1.27
3. [ ] **Applicant certifies micro entity status.** See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
4. [✓] **Specification** [*Total Pages* 52] Both the claims and abstract must start on a new page. *(See MPEP § 608.01(a) for information on the preferred arrangement)*
5. [✓] **Drawing(s)** (35 U.S.C. 113) [*Total Sheets* 8]
6. **Inventor's Oath or Declaration** [*Total Pages* 4] *(including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e))*
   - a. [ ] Newly executed (original or copy)
   - b. [✓] A copy from a prior application (37 CFR 1.63(d))
7. [✓] **Application Data Sheet** ** See note below.* See 37 CFR 1.76 (PTO/AIA/14 or equivalent)
8. **CD-ROM or CD-R** in duplicate, large table, or Computer Program (*Appendix*)
   - [ ] Landscape Table on CD
9. **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 PAPERS

10. [✓] **Assignment Papers** (cover sheet & document(s))
    Name of Assignee VOICEBOX TECHNOLOGIES CORPORATION
11. [✓] **37 CFR 3.73(c) Statement** (*when there is an assignee*) [✓] **Power of Attorney**
12. [ ] **English Translation Document** (*if applicable*)
13. [✓] **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    - [ ] Copies of citations attached
14. [ ] **Preliminary Amendment**
15. [ ] **Return Receipt Postcard** (*MPEP § 503*) (*Should be specifically itemized*)
16. [ ] **Certified Copy of Priority Document(s)** (*if foreign priority is claimed*)
17. [ ] **Nonpublication Request** Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
18. [ ] **Other:**

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS

[✓] The address associated with Customer Number: 00909 **OR** [ ] Correspondence address below

Name					
Address					
City		State		Zip Code	
Country		Telephone		Email	

Signature	/Ngai B. Zhang/	Date	2014-09-29
Name (Print/Type)	Ngai B. Zhang	Registration No. (Attorney/Agent)	65,473

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.

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.

ADDENDUM 1

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

PTO/AIA/14 (12-13)
Approved for use through 01/31/2014. 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 contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Philippe		DI CRISTO	

Residence Information (Select One) ◉ US Residency ◯ Non US Residency ◯ Active US Military Service

City	Bellevue	State/Province	WA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	177 107th Avenue, N.E.		
Address 2	#1007		
City	Bellevue	State/Province	WA
Postal Code	98004	Country i	US

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Min		KE	

Residence Information (Select One) ◉ US Residency ◯ Non US Residency ◯ Active US Military Service

City	Bothell	State/Province	WA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	3221 201st Place, S.E.		
Address 2			
City	Bothell	State/Province	WA
Postal Code	98012	Country i	US

Inventor 3 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Robert	A.	KENNEWICK	

Residence Information (Select One) ◉ US Residency ◯ Non US Residency ◯ Active US Military Service

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

City	Seattle	State/Province	WA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	2204 S. Eddy Street		
Address 2			
City	Seattle	State/Province	WA
Postal Code	98108	Country i	US

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Lynn	Elise	ARMSTRONG	

Residence Information (Select One) (•) US Residency ( ) Non US Residency ( ) Active US Military Service

City	Woodinville	State/Province	WA	Country of Residence i	US

Mailing Address of Inventor:

Address 1	19807 183rd Place, N.E.		
Address 2			
City	Woodinville	State/Province	WA
Postal Code	98077	Country i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	00909		
Email Address	Docket_ip@pillsburylaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE		
Attorney Docket Number	090611-0434304	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	Suggested Figure for Publication (if any)	

Filing By Reference :

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	00909		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status	Pending				Remove
Application Number	Continuity Type		Prior Application Number	Filing Date (YYYY-MM-DD)	
	Continuation of		13/690895	2012-11-30	
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/690895	Continuation of	13/019834	2011-02-02	8326634	2012-12-04
Prior Application Status	Patented				Remove

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13/019834	Continuation of	12/617506	2009-11-12	7917367	2011-03-29
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12/617506	Continuation of	11/197504	2005-08-05	7640160	2009-12-29
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.				Add	

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

EFS Web 2.2.11

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

- (●) Assignee
- ( ) Legal Representative under 35 U.S.C. 117
- ( ) Joint Inventor
- ( ) Person to whom the inventor is obligated to assign.
- ( ) Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name	VoiceBox Technologies Corporation		
Mailing Address Information:			
Address 1	11980 NE 24th Street		
Address 2	Suite 100		
City	Bellevue	**State/Province**	WA
Country i	US	Postal Code	98005
Phone Number		Fax Number	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

Email Address	

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/Ngai B. Zhang/			Date (YYYY-MM-DD)	2014-09-29
First Name	Ngai B.	Last Name	Zhang	Registration Number	65473

Additional Signature may be generated within this form by selecting the Add button. Add

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	090611-0434304
	Application Number	
Title of Invention	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	

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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.

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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.

ATTORNEY DOCKET NUMBER: **090611-0418718**

DECLARATION (37 C.F.R. 1.63) FOR UTILITY PATENT APPLICATION USING AN APPLICATION DATA SHEET (37 C.F.R. 1.76)

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

As a below named inventor, I hereby declare that:

This declaration is directed to the attached application, or (if following box is checked):

[x] United States application number 13/690,895 filed on November 30, 2012.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR Section 1.56.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

(1) Legal Name of Inventor: **PHILIPPE DI CRISTO**

Signature: _____ Date: 7/23/14

(2) Legal Name of Inventor: **MIN KE**

Signature: _____ Date: _____

(3) Legal Name of Inventor: **ROBERT A. KENNEWICK**

Signature: _____ Date: 7/23/14

(4) Legal Name of Inventor: **LYNN ELISE ARMSTRONG**

Signature: _____ Date: _____

ATTORNEY DOCKET NUMBER: **090611-0418718**

DECLARATION (37 C.F.R. 1.63) FOR UTILITY PATENT APPLICATION USING AN APPLICATION DATA SHEET (37 C.F.R. 1.76)

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

As a below named inventor, I hereby declare that:

This declaration is directed to the attached application, or (if following box is checked):

[x] United States application number 13/690,895 filed on November 30, 2012.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR Section 1.56.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

(1) Legal Name of Inventor: **PHILIPPE DI CRISTO**

Signature:_____ Date:_____

(2) Legal Name of Inventor: **MIN KE**

Signature:_____ Date:_____

(3) Legal Name of Inventor: **ROBERT A. KENNEWICK**

Signature:_____ Date:_____

(4) Legal Name of Inventor: **LYNN ELISE ARMSTRONG**

Signature: Lynn Elise Armstrong Date: 8/8/14

Doc code: Oath
Document Description: Oath or declaration filed

PTO/AIA/02 (07-13)
Approved for use through 01/31/2014. 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.

SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

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

This statement is directed to:

☐ The attached application,

OR

☐ United States application or PCT international application number 13/690,895 filed on November 30, 2012.

LEGAL NAME of inventor to whom this substitute statement applies:

(*E.g.*, Given Name (first and middle (if any)) and Family Name or Surname)

Min KE

Residence (except for a deceased or legally incapacitated inventor):

City	State	Country
Bothell	WA	U.S.A.

Mailing Address (except for a deceased or legally incapacitated inventor):

3221 201st Place, S.E.

City	State	Zip	Country
Bothell	WA	98012	U.S.A.

I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Relationship to the inventor to whom this substitute statement applies:

- ☐ Legal Representative (for deceased or legally incapacitated inventor only),
- ☒ Assignee,
- ☐ Person to whom the inventor is under an obligation to assign,
- ☐ Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or
- ☐ Joint Inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- [ ] Inventor is deceased,
- [ ] Inventor is under legal incapacity,
- [ ] Inventor cannot be found or reached after diligent effort, or
- [x] Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- [x] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- [ ] An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: Todd Kenck | Date (Optional):

Signature: Todd Kenck

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name: VoiceBox Technologies Corporation

Title of Person Executing This Substitute Statement: Chief Financial Officer of VoiceBox Technologies Corporation

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City Mercer Island | State WA | Country U.S.A.

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

11980 NE 24th Street, Suite 100

City Bellevue | State WA | Zip 98005 | Country U.S.A.

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

ASSIGNMENT

WHEREAS, **Philippe Di Cristo**, a citizen of France, residing at 177 107th Avenue, N.E., #1007, Bellevue, Washington 98004; **Min Ke**, a citizen of the United States of America, residing at 3221 201st Place, S.E., Bothell, Washington 98012; and **Robert A. Kennewick**, a citizen of the United States of America, residing at 2204 S. Eddy Street, Seattle, Washington 98108 (hereinafter "Assignors"), have made an invention entitled

"SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE"

described in an application for United States Letters Patent filed herewith; and

WHEREAS, **VoiceBox Technologies, Inc.** (hereinafter "Assignee"), a **Washington** corporation having a place of business at **10505 NE 38th Place, Building 9, Kirkland, Washington 98033**, is desirous of acquiring the entire right, title and interest in and to the aforesaid invention, application and all Letters Patent of the United States or any foreign country, including continuations, continuations-in-part, reissues, reexaminations, extensions, substitutes and divisions which may be granted therefor;

NOW THEREFORE, in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, we, the said Assignors, by these presents do sell, assign and transfer unto Assignee, its successors, legal representatives and assigns, the full and exclusive right in and to the said invention as described in the said application, and in and to any Letters Patent of the United States or any foreign country, including continuations, continuations-in-part, reissues, reexaminations, extensions, substitutes and divisions which may be granted therefor and all rights to claim priority on the basis of said application;

AND WE HEREBY authorize and request the Commissioner of Patents and Trademarks or any other proper officer or agency of any country to issue all said Letters Patent to said Assignee;

AND WE HEREBY warrant and covenant that we have the full right to convey the entire interest herein assigned and that we have not executed and will not execute any instrument or assignment in conflict herewith;

AND WE HEREBY agree to communicate to said Assignee or its representatives any facts known to us respecting said invention, to execute all divisional, continuation, reissue, reexamination, extension, substitute and foreign applications, sign all lawful documents and

make all rightful oaths and declarations relating to said invention, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors, legal representatives or assigns, and to testify in any judicial or administrative proceeding and generally do everything possible to aid the said Assignee to obtain and enforce said Letters Patent in the United States or any foreign country when requested so to do by said Assignee.

Signature of Inventor:
Inventor's Name: Philippe Di Cristo

Date of Execution: 8/4/05

Signature of Inventor:
Inventor's Name: Min Ke

Date of Execution: 8/4/05

Signature of Inventor:
Inventor's Name: Robert A. Kennewick

Date of Execution: 8/4/05

ASSIGNMENT

WHEREAS, **Lynn Elise Armstrong**, a citizen of the United States of America, residing at 19807 183rd Place, N.E., Woodinville, Washington 98077 (hereinafter "Assignor"), has made an invention entitled

"SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE"

described in an application for United States Letters Patent filed on August 5, 2005, and assigned U.S. Patent Application Serial No. 11/197,504; and

WHEREAS, **VoiceBox Technologies, Inc.** (hereinafter "Assignee"), a **Washington** corporation having a place of business at **11980 NE 24th Street, Suite 100, Bellevue, Washington 98005**, is desirous of acquiring the entire right, title and interest in and to the aforesaid invention, application and all Letters Patent of the United States or any foreign country, including continuations, continuations-in-part, reissues, reexaminations, extensions, substitutes and divisions which may be granted therefor;

NOW THEREFORE, in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, I, the said Assignor, by these presents do sell, assign and transfer unto Assignee, its successors, legal representatives and assigns, the full and exclusive right in and to the said invention as described in the said application, and in and to any Letters Patent of the United States or any foreign country, including continuations, continuations-in-part, reissues, reexaminations, extensions, substitutes and divisions which may be granted therefor and all rights to claim priority on the basis of said application; and we further grant to Assignee the sole right to sue and collect damages for past infringement;

AND I HEREBY authorize and request the Commissioner of Patents and Trademarks or any other proper officer or agency of any country to issue all said Letters Patent to said Assignee;

AND I HEREBY warrant and covenant that we have the full right to convey the entire interest herein assigned and that we have not executed and will not execute any instrument or assignment in conflict herewith;

AND I HEREBY agree to communicate to said Assignee or its representatives any facts known to us respecting said invention, to execute all divisional, continuation, reissue, reexamination, extension, substitute and foreign applications, sign all lawful documents and

make all rightful oaths and declarations relating to said invention, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors, legal representatives or assigns, and to testify in any judicial or administrative proceeding and generally do everything possible to aid the said Assignee to obtain and enforce said Letters Patent in the United States or any foreign country when requested so to do by said Assignee.

Signature of Inventor:
Inventor's Name: Lynn Elise Armstrong

Date of Execution: 4-16-2007

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AGREEMENT OF MERGER, WHICH MERGES:

"VOICEBOX TECHNOLGIES, INC.", A WASHINGTON CORPORATION,

WITH AND INTO "VOICEBOX TECHNOLOGIES CORPORATION" UNDER THE NAME OF "VOICEBOX TECHNOLOGIES CORPORATION", A CORPORATION ORGANIZED AND EXISTING UNDER THE LAWS OF THE STATE OF DELAWARE, AS RECEIVED AND FILED IN THIS OFFICE THE TWENTY-FIFTH DAY OF SEPTEMBER, A.D. 2008, AT 6:37 O'CLOCK P.M.

Jeffrey W. Bullock, Secretary of State

4588910 8100M

AUTHENTICATION: 0684785

131016747

DATE: 08-22-13

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of Delaware
Secretary of State
Division of Corporations
Delivered 06:37 PM 09/25/2008
FILED 06:37 PM 09/25/2008
SRV 080988788 - 4588910 FILE

AGREEMENT AND PLAN OF MERGER
OF VOICEBOX TECHNOLOGIES CORPORATION
A DELAWARE CORPORATION
AND
VOICEBOX TECHNOLOGIES, INC.
A WASHINGTON CORPORATION

THIS AGREEMENT AND PLAN OF MERGER dated as of September 15, 2008, (the "***Agreement***") is between VoiceBox Technologies Corporation, a Delaware corporation ("***VoiceBox-DE***"), and VoiceBox Technologies, Inc., a Washington corporation ("***VoiceBox-WA***" and together with VoiceBox-DE, the "***Constituent Corporations***").

RECITALS

A. VoiceBox-DE is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware and has authorized capital stock consisting of 1,000 shares of Common Stock, all of which are issued and outstanding and held by VoiceBox-WA.

B. VoiceBox-WA is a corporation duly incorporated and validly existing under the laws of the State of Washington and has authorized capital stock consisting of 100,000,000 shares of Common Stock and 50,000,000 shares of Preferred Stock, of which 9,500,000 shares are designated as Series A Preferred Stock, 1,584,577 shares are designated as Series A-1 Preferred Stock, and 10,563,846 shares are designated as Series B Preferred Stock. As of September 15, 2008, 19,158,673 shares of Common Stock were issued and outstanding, 8,747,339 shares of Series A Preferred were issued and outstanding, 1,320,481 shares of Series A-1 Preferred were issued and outstanding, and 3,961,441 shares of Series B Preferred were issued and outstanding.

C. The Board of Directors of VoiceBox-WA has determined that, for the purpose of effecting the reincorporation of VoiceBox-WA in the State of Delaware, it is advisable and in the best interests of VoiceBox-WA that VoiceBox-WA merge with and into VoiceBox-DE upon the terms and conditions herein provided.

D. The respective Boards of Directors of VoiceBox-DE and VoiceBox-WA have approved this Agreement and have directed that this Agreement be submitted to a vote of their respective stockholders and shareholders and be executed by the undersigned officers.

NOW, THEREFORE, in consideration of the mutual agreements and covenants set forth herein, VoiceBox-DE and VoiceBox-WA hereby agree, subject to the terms and conditions hereinafter set forth, as follows:

I. MERGER

1.1 Merger. In accordance with the provisions of this Agreement, the Delaware General Corporation Law and the Washington Business Corporations Act, VoiceBox-WA shall be merged with and into VoiceBox-DE (the "***Merger***"), the separate existence of VoiceBox-WA shall cease and VoiceBox-DE

shall be, and is herein sometimes referred as, the "***Surviving Corporation***," and the name of the Surviving Corporation shall be VoiceBox Technologies Corporation.

1.2 Filing and Effectiveness. The Merger shall be completed when the following actions shall have been completed:

(a) This Agreement and Plan of Merger shall have been adopted and approved by the stockholders of each Constituent Corporation in accordance with the requirements of the Delaware General Corporation Law and the Washington Business Corporations Act;

(b) All of the conditions precedent to the consummation of the Merger specified in this Agreement shall have been satisfied or duly waived by the party entitled to satisfaction thereof;

(c) An executed Agreement and Plan of Merger meeting the requirements of the Delaware General Corporation Law shall have been filed with the Secretary of State of the State of Delaware; and

(d) An executed Agreement and Plan of Merger meeting the requirements of the Washington Business Corporations Act shall have been filed with the Secretary of State of the State of Washington.

The date and time when the Merger shall become effective, shall be the date upon which subsections (a), (b) and (c) of this Section 1.2 are satisfied and as to VoiceBox-WA on the day subsection (d) is satisfied, is herein called the "***Effective Time of the Merger***."

1.3 Effect of the Merger. Upon the Effective Time of the Merger, the separate existence of VoiceBox-WA shall cease, and VoiceBox-DE, as the Surviving Corporation, (i) shall continue to possess all of VoiceBox-DE's assets, rights, powers and property as constituted immediately prior to the Effective Time of the Merger, (ii) shall be subject to all actions previously taken by its and VoiceBox-WA's Board of Directors, (iii) shall succeed, without other transfer, to all of the assets, rights, powers and property of VoiceBox-WA in the manner more fully set forth in Section 259 of the Delaware General Corporation Law, (iv) shall continue to be subject to all of the debts, liabilities and obligations of VoiceBox-DE as constituted immediately prior to the Effective Time of the Merger, and (v) shall succeed, without other transfer, to all of the debts, liabilities and obligations of VoiceBox-WA in the same manner as if VoiceBox-DE had itself incurred them, all as more fully provided under the applicable provisions of the Delaware General Corporation Law and the Washington Business Corporations Act.

1.4 Assignment and Assumption of Lease. Upon the Effective Time of the Merger, in addition to the effects on the assets, rights, powers and property and the debts, liabilities and obligations of the parties hereto occurring by operation of law as set forth in Section 1.3, above, VoiceBox-WA hereby assigns, and VoiceBox-DE hereby assumes, all of VoiceBox-WA's rights and obligations set forth in the Office Building Lease, dated November 16, 2005, in which VoiceBox-WA is the Tenant and Pine Forest Properties, Inc. is the Landlord.

II. CHARTER DOCUMENTS, DIRECTORS AND OFFICERS

2.1 Certificate of Incorporation. The Amended and Restated Certificate of Incorporation of VoiceBox-DE attached to this Agreement as Exhibit A shall become the Certificate of Incorporation of the Surviving Corporation until duly amended in accordance with the provisions thereof and applicable law.

2.2 Bylaws. The Bylaws of VoiceBox-DE as in effect immediately prior to the Effective Time of the Merger shall continue in full force and effect as the Bylaws of the Surviving Corporation until duly amended in accordance with the provisions thereof and applicable law.

2.3 Directors and Officers. The directors and officers of VoiceBox-WA immediately prior to the Effective Time of the Merger shall be the directors and officers of the Surviving Corporation until their successors shall have been duly elected and qualified or until as otherwise provided by law, by the Certificate of Incorporation of the Surviving Corporation, or by the Bylaws of the Surviving Corporation.

III. MANNER OF CONVERSION OF STOCK

3.1 VoiceBox-WA Common Stock. Upon the Effective Time of the Merger, each share of VoiceBox-WA Common Stock, issued and outstanding immediately prior thereto shall by virtue of the Merger and without any action by the Constituent Corporations, the holder of such shares or any other person, be converted into and exchanged for one fully paid and nonassessable share of Common Stock, $0.0001 par value per share, of the Surviving Corporation.

3.2 VoiceBox-WA Preferred Stock

(a) Series A Preferred Stock. Upon the Effective Time of the Merger, each share of VoiceBox-WA Series A Preferred Stock, issued and outstanding immediately prior thereto shall by virtue of the Merger and without any action by the Constituent Corporations, the holder of such shares or any other person, be converted into and exchanged for one fully paid and nonassessable share of Series A Preferred Stock, $0.0001 par value per share, of the Surviving Corporation.

(b) Series A-1 Preferred Stock. Upon the Effective Time of the Merger, each share of VoiceBox-WA Series A-1 Preferred Stock, issued and outstanding immediately prior thereto shall by virtue of the Merger and without any action by the Constituent Corporations, the holder of such shares or any other person, be converted into and exchanged for one fully paid and nonassessable share of Series A-1 Preferred Stock, $0.0001 par value per share, of the Surviving Corporation.

(c) Series B Preferred Stock. Upon the Effective Time of the Merger, each share of VoiceBox-WA Series B Preferred Stock, issued and outstanding immediately prior thereto shall by virtue of the Merger and without any action by the Constituent Corporations, the holder of such shares or any other person, be converted into and exchanged for one fully paid and nonassessable share of Series B Preferred Stock, $0.0001 par value per share, of the Surviving Corporation.

3.3 VoiceBox-WA Stock Plan, Options, Warrants, Convertible Promissory Notes, Stock Purchase Rights and Convertible Securities.

(a) Upon the Effective Time of the Merger, the Surviving Corporation shall assume the obligations of VoiceBox-WA under, and continue, the 2002 Stock Plan, as amended (the "***2002 Plan***"), and all other employee benefit plans of VoiceBox-WA. Each (i) each outstanding and unexercised option granted under the Company's 2002 Plan, (ii) warrant, (iii) convertible promissory notes, or (iv) or right to purchase, or security convertible into, any class or series of capital stock of VoiceBox-WA (each, a "***Right***") shall become, subject to the provisions in Section 3.3(c), an option, warrant, convertible promissory note, right to purchase, or a security convertible into the Surviving Corporation's capital stock of the same class or series on the basis of one share of the Surviving Corporation's capital stock for each share of VoiceBox-WA capital stock issuable pursuant to any such Right, on the same terms and conditions and at an exercise price equal to the exercise price applicable to any such VoiceBox-WA Right at the Effective Time of the Merger. This Section 3.3(a) shall not apply to VoiceBox-WA Common Stock or VoiceBox-WA Preferred Stock. Such

VoiceBox-WA Common Stock is subject to Section 3.1 and such VoiceBox-WA Preferred Stock is subject to Section 3.2.

(b) A number of shares of the Surviving Corporation's capital stock shall be reserved for issuance upon the exercise of options, warrants, convertible promissory notes, stock purchase rights and convertible securities equal to the number of shares of VoiceBox-WA Common Stock and VoiceBox-WA Preferred Stock so reserved immediately prior to the Effective Time of the Merger.

(c) The assumed Rights shall not entitle any holder thereof to a fractional share upon exercise or conversion. Any fractional share interests to which a holder of an assumed Right would otherwise be entitled upon exercise or conversion shall be rounded down to the nearest whole number and the exercise price shall be rounded up to the nearest whole cent.

3.4 VoiceBox-DE Common Stock. Upon the Effective Time of the Merger, each share of Common Stock, $0.0001 par value, of VoiceBox-DE issued and outstanding immediately prior thereto shall, by virtue of the Merger and without any action by VoiceBox-DE, by the holder of such shares, or any by other person, be canceled and returned to the status of authorized but unissued shares.

3.5 Exchange of Certificates. After the Effective Time of the Merger, each holder of an outstanding certificate representing shares of VoiceBox-WA Common Stock or VoiceBox-WA Preferred Stock, as the case may be, may be asked to surrender the same for cancellation to an exchange agent, whose name will be delivered to holders prior to any requested exchange (the "***Exchange Agent***"), and each such holder shall be entitled to receive in exchange therefor a certificate or certificates representing the number of shares of the Surviving Corporation's Common Stock or Preferred Stock into which the surrendered shares were converted as herein provided. Until so surrendered, each outstanding certificate theretofore representing shares of VoiceBox-WA Common Stock or VoiceBox-WA Preferred Stock, as the case may be, shall be deemed for all purposes to represent the number of shares of the Surviving Corporation's Common Stock or Preferred Stock into which such shares of VoiceBox-WA Common Stock or VoiceBox-WA Preferred Stock were converted in the Merger.

The registered owner on the books and records of the Surviving Corporation or the Exchange Agent of any such outstanding certificate shall, until such certificate shall have been surrendered for transfer or conversion or otherwise accounted for to the Surviving Corporation or the Exchange Agent, have and be entitled to exercise any voting and other rights with respect to and to receive dividends and other distributions upon the shares of Common Stock and/or Preferred Stock, as the case may be, of the Surviving Corporation represented by such outstanding certificate as provided above.

Each certificate representing Common Stock and Preferred Stock of the Surviving Corporation so issued in the Merger shall bear the same legends, if any, with respect to the restrictions on transferability as the certificates of VoiceBox-WA so converted and given in exchange therefore, unless otherwise determined by the Board of Directors of the Surviving Corporation in compliance with applicable laws.

If any certificate for shares of the Surviving Corporation's capital stock is to be issued in a name other than that in which the certificate surrendered in exchange therefor is registered, it shall be a condition of issuance thereof that the certificate so surrendered shall be properly endorsed and otherwise in proper form for transfer, that such transfer otherwise be proper and comply with applicable securities laws and that the person requesting such transfer pay to the Exchange Agent any transfer or other taxes payable by reason of issuance of such new certificate in a name other than that of the registered holder of the certificate surrendered or establish to the satisfaction of the Surviving Corporation that such tax has been paid or is not payable.

Meta Platforms, Inc. - Exhibit 1002
Page 24 of 262

IV. GENERAL

4.1 Further Assurances. From time to time, as and when required by VoiceBox-DE or by its successors or assigns, there shall be executed and delivered on behalf of VoiceBox-WA such deeds and other instruments, and there shall be taken or caused to be taken by it such further and other actions as shall be appropriate or necessary in order to vest or perfect in or conform of record or otherwise by VoiceBox-DE the title to and possession of all the property, interests, assets, rights, privileges, immunities, powers, franchises and authority of VoiceBox-WA and otherwise to carry out the purposes of this Agreement, and the officers and directors of VoiceBox-DE are fully authorized in the name and on behalf of VoiceBox-WA or otherwise to take any and all such action and to execute and deliver any and all such deeds and other instruments.

4.2 Abandonment. At any time before the Effective Time of the Merger, this Agreement may be terminated and the Merger may be abandoned for any reason whatsoever by the Board of Directors of either VoiceBox-WA or of VoiceBox-DE, or of both, notwithstanding the approval of this Agreement by the shareholders of VoiceBox-WA or by the sole stockholder of VoiceBox-DE, or by both.

4.3 Amendment. The Boards of Directors of the Constituent Corporations may amend this Agreement at any time prior to the filing of this Agreement (or certificate in lieu thereof) with the Secretary of State of the State of Delaware, provided that an amendment made subsequent to the adoption of this Agreement by the stockholders of either Constituent Corporation shall not: (a) alter or change the amount or kind of shares, securities, cash, property and/or rights to be received in exchange for or on conversion of all or any of the shares of any class or series thereof of such Constituent Corporation, (b) alter or change any term of the Certificate of Incorporation of the Surviving Corporation to be effected by the Merger, or (c) alter or change any of the terms and conditions of this Agreement if such alteration or change would adversely affect the holders of any class of capital stock of any Constituent Corporation.

4.4 Registered Office. The registered office of the Surviving Corporation in the State of Delaware is 2711 Centerville Road, Suite 400, City of Wilmington 19808, County of New Castle. The name of the Corporation's registered agent is Corporation Service Company.

4.5 Agreement. Executed copies of this Agreement will be on file at the principal place of business of the Surviving Corporation at 11980 NE 24th Street, Suite 100, Bellevue, Washington 98005, and copies thereof will be furnished to any stockholder of either Constituent Corporation upon request and without cost.

4.6 Governing Law. This Agreement shall in all respects be construed, interpreted and enforced in accordance with and governed by the laws of the State of Delaware and, so far as applicable, the merger provisions of the Washington Business Corporations Act.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, this Agreement and Plan of Merger having first been approved by the resolutions of the Board of Directors of VoiceBox-DE and VoiceBox-WA is hereby executed on behalf of each of such two corporations and attested by their respective officers thereunto duly authorized, as of the date first written above.

VOICEBOX TECHNOLOGIES, INC.
a Washington corporation

By: _____
Name: Mike Kennewick
Title: CEO

VOICEBOX TECHNOLOGIES CORPORATION
a Delaware corporation
By: _____
Name: Mike Kennewick
Title: CEO

ATTEST:

VOICEBOX TECHNOLOGIES CORPORATION
a Delaware corporation
By: _____
Name: THOMAS FREEMAN
Title: Secretary

[SIGNATURE PAGE TO MERGER AGREEMENT BETWEEN VOICEBOX TECHNOLOGIES, INC.
[AND VOICEBOX TECHNOLOGIES CORPORATION]

Exhibit A

Amended and Restated Certificate of Incorporation

4408269_1.DOC

AMENDED AND RESTATED

CERTIFICATE OF INCORPORATION OF

VOICEBOX TECHNOLOGIES CORPORATION

VoiceBox Technologies Corporation, a corporation organized and existing under the laws of the State of Delaware, certifies that:

A. The name of this corporation is VoiceBox Technologies Corporation. This corporation's original Certificate of Incorporation was filed with the Secretary of State of the State of Delaware on August 18, 2008.

B. This Amended and Restated Certificate of Incorporation was duly adopted in accordance with Sections 242 and 245 of the General Corporation Law of the State of Delaware, and has been duly approved by the written consent of the stockholders of this corporation in accordance with Section 228 of the General Corporation Law of the State of Delaware.

C. The text of the Certificate of Incorporation is amended and restated to read as set forth in **EXHIBIT A** attached hereto.

IN WITNESS WHEREOF, this corporation has caused this Amended and Restated Certificate of Incorporation to be signed by Michael Kennewick, a duly authorized officer of this corporation, on September 15, 2008.

By: _____
Michael Kennewick,
Chief Executive Officer

4343477_5.DOC

AMENDED AND RESTATED
CERTIFICATE OF INCORPORATION
OF
VOICEBOX TECHNOLOGIES CORPORATION

ARTICLE 1
NAME

The name of this corporation is VoiceBox Technologies Corporation.

ARTICLE 2
REGISTERED AGENT

The address of this corporation's registered office in the State of Delaware is 2711 Centerville Road, Suite 400, in the City of Wilmington, County of New Castle. The name of the registered agent at such address is Corporation Service Company.

ARTICLE 3
PURPOSE AND POWERS

The purpose and powers of this corporation are as follows:

3.1 To engage in any lawful business.

3.2 To engage in any and all activities that, in the judgment of the Board of Directors of this corporation (the "***Board***"), may at any time be incidental or conducive to the attainment of the foregoing purpose.

3.3 To exercise any and all powers that a corporation formed under the Delaware General Corporation Law ("***DGCL***"), or any amendment thereto or substitute therefor, is entitled at the time to exercise.

ARTICLE 4
CAPITAL STOCK

4.1 **Authorized Capital**. This corporation shall have authority to issue One Hundred Fifty-Eight Million Ninety-Three Thousand Three Hundred Fifty-Seven (158,093,357) shares of stock in the aggregate. Such shares shall be divided into two classes as follows:

4.1.1 One Hundred Million (100,000,000) shares of common stock, $0.0001 par value per share (the "***Common Stock***").

4.1.2 Fifty-Eight Million Ninety-Three Thousand Three Hundred Fifty-Seven (58,093,357) shares of preferred stock, $0.0001 par value per share (the "***Preferred Stock***"). The shares of Preferred Stock may be divided into and issued in series.

4.1.3 The number of authorized shares of Common Stock may be increased or decreased (but not below the number of shares of Common Stock then outstanding) by the affirmative

vote of the holders of a majority of the outstanding shares of this corporation entitled to vote (voting together as a single class on an as-if-converted basis).

4.2 **Common Stock**. Except to the extent rights, preferences, privileges or restrictions are granted to Preferred Stock or any series thereof, or as provided below, Common Stock has unlimited voting rights and is entitled to receive the net assets of this corporation upon dissolution. Except to the extent rights, preferences, privileges or restrictions are granted to Preferred Stock or any series thereof, or as provided below, the relative rights, preferences, privileges and restrictions granted to or imposed upon the Common Stock and the holders thereof are as follows:

4.2.1 **Dividend Rights**. The holders of record of the outstanding shares of Common Stock shall be entitled to receive, when, as and if declared by the Board, out of any funds of this corporation legally available therefor, such cash and other dividends as may be declared from time to time by the Board subject, however, to any preferential rights granted to any series of Preferred Stock to first receive such assets and funds.

4.2.2 **Liquidation Rights**. In the event of any liquidation, dissolution or winding up of the affairs of this corporation, whether voluntary or involuntary, the holders of outstanding shares of Common Stock shall be entitled to receive ratably, based on the total number of shares of Common Stock held by each, all the assets and funds of this corporation available for distribution to its stockholders, whether from capital or surplus, subject, however, to any preferential rights granted to any series of Preferred Stock to first receive such assets and funds.

4.2.3 **Voting Rights**. Each holder of outstanding shares of Common Stock shall be entitled to one vote for each share of Common Stock held.

4.3 **Designation of Rights, Preferences and Privileges of Series A-1 Preferred Stock, Series A Preferred Stock, Series B Preferred Stock and Series C Preferred Stock**. One Million Five Hundred Eighty-Four Thousand Five Hundred Seventy-Seven (1,584,577) shares of Preferred Stock are designated as Series A-1 Preferred Stock (the "***Series A-1 Preferred***"). Eight Million Seven Hundred Forty-Seven Thousand Three Hundred Thirty-Nine (8,747,339) shares of Preferred Stock are designated as Series A Preferred Stock (the "***Series A Preferred***"). Three Million Nine Hundred Sixty-One Thousand Four Hundred Forty-One (3,961,441) shares of Preferred Stock are designated as Series B Preferred Stock (the "***Series B Preferred***"). Forty-Three Million Eight Hundred Thousand (43,800,000) shares of Preferred Stock are designated as Series C Preferred Stock (the "***Series C Preferred***"). Except as otherwise provided in this Certificate of Incorporation, all shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall be identical and shall entitle the holders thereof to the same rights and privileges. The relative rights, preferences, privileges and restrictions granted to or imposed upon the shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred and the holders thereof are as follows:

4.3.1 **Dividend Rights.**

4.3.1.1 The holders of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall be entitled to receive, prior and in preference to any dividend on the Common Stock, dividends, when, as and if declared by the Board, out of funds legally available therefor, at the rate of (a) $0.0606 per share (per annum), in the case of the Series A Preferred, Series A-1 Preferred and Series B Preferred, as adjusted for any consolidations, combinations, stock distributions, stock dividends, stock splits or similar events (each, a "***Recapitalization Event***"), and (b) $0.0609 per share (per annum), in the case of the Series C Preferred, as adjusted for any

Recapitalization Event. Except as otherwise provided in this Certificate of Incorporation, no dividend or distribution of cash or property by this corporation without consideration shall be paid with respect to any shares of Common Stock or any shares of capital stock ranking junior to the Series A-1 Preferred, Series A Preferred, Series B Preferred or Series C Preferred unless the holders of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred are first paid (i) all declared but unpaid dividends and (ii) a dividend per share of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred equal to the dividend that would be payable on the number of shares of Common Stock into which each such share of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred, as the case may be, is then convertible pursuant to Section 4.3.4. The right to receive such dividends on the Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall not be cumulative, and no rights shall accrue to the holders of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred by reason of the fact that dividends on such shares are not declared or paid in any prior year.

4.3.1.2 Cash Dividends, if any, shall be paid by mailing a check, postage prepaid, to the address of each holder (or, in the case of joint holders, to the address of any such holder) of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred and/or Common Stock, as applicable, as shown on the books of this corporation, or to such other address as such holder specifies for such purpose by written notice to this corporation. The mailing of such check shall satisfy all obligations of this corporation with respect to such dividends, unless such check is not paid upon timely presentation.

4.3.1.3 Reasonable distributions made by this corporation in connection with its repurchase of shares of Common Stock issued to or held by officers, directors or employees of, or consultants to, this corporation or its subsidiaries upon termination of their employment or services pursuant to agreements (whether now existing or hereafter entered into) providing for the right of repurchase between this corporation and such persons upon termination of employment or services shall not be deemed dividends or distributions for purposes of this Section 4.3.1.

4.3.2 **Liquidation Rights.**

4.3.2.1 In the event of any liquidation, dissolution or winding up of this corporation, whether voluntary or involuntary:

4.3.2.1.1 The holders of each outstanding share of Series C Preferred shall be entitled to receive, prior and in preference to any distribution of the assets or surplus funds of this corporation to the holders of outstanding shares of Common Stock or any other series of Preferred Stock, an amount equal to $0.7614 per share (as adjusted for any Recapitalization Event), plus all declared and unpaid dividends on the Series C Preferred; provided, that if the remaining assets and surplus funds available for distribution among the holders of outstanding shares of Series C Preferred shall be insufficient to permit the payment to such holders of their full preferential amount, then the entire assets and surplus funds of this corporation then remaining legally available for distribution shall be distributed ratably among the holders of outstanding shares of Series C Preferred in proportion to the preferential amount each such holder is otherwise entitled to receive.

4.3.2.1.2 If assets or surplus funds remain following the distributions as provided in Section 4.3.2.1.1, the holders of each outstanding share of Series A-1 Preferred, Series A Preferred and Series B Preferred shall be entitled to receive, prior and in preference to any distribution of the assets or surplus funds of this corporation to the holders of outstanding shares of Common Stock or any series of Preferred Stock that ranks on liquidation junior to the Series A-1

Preferred, Series A Preferred and Series B Preferred by reason of their ownership thereof, and subject to the rights of any series of Preferred Stock that ranks on liquidation prior to the Series A-1 Preferred, Series A Preferred and Series B Preferred, an amount equal to (i) $0.7573 per share (as adjusted for any Recapitalization Event), in the case of the Series A-1 Preferred, plus all declared and unpaid dividends on the Series A-1 Preferred, (ii) $0.7573 per share (as adjusted for any Recapitalization Event), in the case of the Series A Preferred, plus all declared and unpaid dividends on the Series A Preferred, and (iii) $0.7573 per share (as adjusted for any Recapitalization Event), in the case of the Series B Preferred, plus all declared and unpaid dividends on the Series B Preferred; provided, that if the remaining assets and surplus funds available for distribution among the holders of outstanding shares of Series A-1 Preferred, Series A Preferred and Series B Preferred (and any other series of Preferred Stock entitled to share in such distribution on a parity with the Series A-1 Preferred, Series A Preferred and Series B Preferred) shall be insufficient to permit the payment to such holders of their full preferential amount, then the entire assets and surplus funds of this corporation then remaining legally available for distribution shall be distributed ratably among the holders of outstanding shares of Series A-1 Preferred, Series A Preferred and Series B Preferred (and any other series of Preferred Stock entitled to share in such distribution on a parity with the Series A-1 Preferred, Series A Preferred and Series B Preferred) in proportion to the preferential amount each such holder is otherwise entitled to receive.

4.3.2.1.3 If assets or surplus funds remain following the distributions as provided in Sections 4.4.2.1.1 and 4.4.2.1.2, then the entire remaining assets and funds of this corporation legally available for distribution, if any, shall be distributed pro rata among the holders of outstanding shares of Common Stock, Series A-1 Preferred, Series B Preferred and Series C Preferred based on the number of shares of Common Stock held by each (with the holders of Series A-1 Preferred, Series B Preferred and Series C Preferred being deemed to hold that number of shares of Common Stock into which their shares of Series A-1 Preferred, Series B Preferred and Series C Preferred, as the case may be, are then convertible); *provided, however*, that (i) the Series A-1 Preferred shall participate in distributions under this Section 4.3.2.1.3 until the aggregate distributions to the holders of Series A-1 Preferred on a per share basis (including those distributions paid under Section 4.3.2.1.2 above) equal $2.2719 (as adjusted for any Recapitalization Event), plus all declared and unpaid dividends on the Series A-1 Preferred, (ii) the Series B Preferred shall participate in distributions under this Section 4.3.2.1.3 until the aggregate distributions to the holders of the Series B Preferred on a per share basis (including those distributions paid under Section 4.3.2.1.2 above) equal $2.2719 (as adjusted for any Recapitalization Event), plus all declared and unpaid dividends on the Series B Preferred, and (iii) the Series C Preferred shall participate in distributions under this Section 4.3.2.1.3 until the aggregate distributions to the holders of the Series C Preferred on a per share basis (including those distributions paid under Section 4.3.2.1.1 above) equal $1.5228 (as adjusted for any Recapitalization Event), plus all declared and unpaid dividends on the Series C Preferred. Thereafter, the balance of such remaining assets and funds shall be distributed ratably among the holders of Common Stock (not including the Series A-1 Preferred, the Series B Preferred or the Series C Preferred on as-if converted basis). The Series A Preferred shall not be entitled to share in any distributions pursuant to this Section 4.3.2.1.3.

4.3.2.2 The (i) sale, lease, exclusive license or other conveyance of all or substantially all of the assets of this corporation, (ii) the acquisition of this corporation by another entity by means of merger, consolidation, share exchange, reorganization or otherwise pursuant to which shares of capital stock of this corporation are converted into cash, securities or other property of the acquiring entity or any of its affiliates and upon which, the holders of voting securities of this corporation immediately prior to such merger, consolidation, share exchange or reorganization do not beneficially own, directly or indirectly, a majority of the combined voting power of the surviving entity resulting from such merger, consolidation, share exchange or reorganization, or (iii) a liquidation within the meaning of this Section 4.3.2, shall each be regarded as a "***Deemed Liquidation***"; provided, however, that this

provision shall not apply (i) to any merger effected exclusively for the purpose of changing the domicile of this corporation or the issuance of stock pursuant to an equity financing by this corporation or (ii) if the holders of a sixty percent (60%) of the outstanding shares of the Series C Preferred, voting together as a single class on an as converted to Common Stock basis, agree not to treat such transaction as a liquidation within the meaning of this Section 4.3.2.

4.3.2.3 In the event of a Deemed Liquidation, either voluntary or involuntary, the holders of Preferred Stock shall be entitled to receive at the closing (and at each date after the closing on which additional amounts (such as earn-out payments, escrow amounts and other contingent payments) are paid to stockholders of this corporation) for each share of Preferred Stock then held, out of the proceeds of such Deemed Liquidation, the greater of (i) the amount of cash, securities or other property to which such holder would be entitled to receive in a Deemed Liquidation pursuant to Sections 4.4.2.1.1, 4.4.2.1.2 and 4.4.2.1.3, as the case may be, or (ii) or the amount of cash, securities or other property to which such holder would be entitled to receive in a Deemed Liquidation with respect to such shares if such shares had been converted to Common Stock immediately prior to such Deemed Liquidation.

4.3.2.4 If any of the assets of this corporation are to be distributed other than in the form of cash under this Section 4.3.2, then the value of the assets to be distributed to the holders of outstanding shares of Preferred Stock shall be determined in good faith by the Board. Notwithstanding the above, any securities to be distributed to the stockholders shall be valued as follows:

4.3.2.4.1 if traded on a securities exchange, the value shall be deemed to be the average of the closing prices of the securities on such exchange over the 30-day period ending three business days prior to the distribution;

4.3.2.4.2 if actively traded over-the-counter, the value shall be deemed to be the average of the closing bid prices over the 30-day period ending three business days prior to the distribution; and

4.3.2.4.3 if there is no active public market, the value shall be the fair market value thereof, as determined in good faith by the Board.

4.3.3 **Voting Rights.**

4.3.3.1 Generally. Each holder of outstanding shares of Series A-I Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall be entitled to vote on all matters and shall be entitled to that number of votes equal to the total number of shares of Common Stock into which such holder's shares of Series A-I Preferred, Series A Preferred, Series B Preferred and Series C Preferred, as the case may be, are convertible, at the record date for the determination of stockholders entitled to vote or consent on such matter, or, if no such record date is established, at the date on which notice of the meeting of stockholders at which the vote is to be taken is mailed, or the date any written consent of stockholders is solicited if the action is to be taken by written consent. Fractional votes will not be permitted, but will be rounded up or down to the nearest whole number with one-half being rounded up based on the aggregate number of shares of Preferred Stock held. Except as otherwise expressly provided herein or by the DGCL, the holders of outstanding shares of Series A-I Preferred, Series A Preferred, Series B Preferred, Series C Preferred and Common Stock shall vote together as a single class on all matters.

4.3.3.2 Election of Directors. For so long as at least 5,000,000 shares of Series C Preferred remain outstanding (as adjusted for any Recapitalization Event), the holders of Series C Preferred, voting as a separate class, shall be entitled to elect two (2) members of the Board at each meeting or pursuant to each consent of this corporation's stockholders for the election of directors. The holders of Common Stock, voting as a separate class, shall be entitled to elect two (2) members of the Board at each meeting or pursuant to each consent of this corporation's stockholders for the election of directors. The holders of Common Stock and Preferred Stock, voting together as a single class on an as-if-converted basis, shall be entitled to elect all remaining members of the Board at each meeting or pursuant to each consent of this corporation's stockholders for the election of directors. If a vacancy on the Board in a director position previously occupied by a director elected by a separate class or classes of stockholders is to be filled by the Board, only directors elected by the same class or classes of stockholders as those who would be entitled to vote to fill such vacancy shall vote to fill such vacancy.

4.3.4 **Conversion**. The holders of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall have conversion rights as follows:

4.3.4.1 Right to Convert. Each share of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall be convertible, at the option of the holder thereof, at any time after the date of issuance of such shares, at the office of this corporation or any transfer agent for such stock, into such number of fully paid and nonassessable shares of Common Stock as is determined by dividing (i) $0.7573, in the case of the Series A-1 Preferred, (ii) $0.7573, in the case of the Series A Preferred, (iii) $0.7573, in the case of the Series B Preferred and (iv) $0.7614, in the case of the Series C Preferred, by the then applicable conversion price for the Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred, determined as hereinafter provided for such series. The conversion price shall initially be $0.7573 per share for the Series A-1 Preferred (the "***Series A-1 Conversion Price***"). The conversion price shall initially be $0.7573 per share for the Series A Preferred (the "***Series A Conversion Price***"). The conversion price shall initially be $0.7573 per share for the Series B Preferred (the "***Series B Conversion Price***"). The conversion price shall initially be $0.7614 per share for the Series C Preferred (the "***Series C Conversion Price***").

4.3.4.2 Automatic Conversion. Each share of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall automatically be converted into shares of Common Stock based upon the then effective Series A-1 Conversion Price, Series A Conversion Price, Series B Conversion Price or Series C Conversion Price, as the case may be, (a) immediately upon the consummation of this corporation's sale of its Common Stock in a firm commitment underwritten public offering pursuant to a registration statement on Form S-1 under the Securities Act of 1933, as amended (the "Securities Act") the public offering price of which is at least $3.81 per share (as adjusted for any Recapitalization Event) with aggregate proceeds to this corporation of not less than $20,000,000 (prior to deducting underwriters' commissions and registration expenses) (a "***Qualified IPO***"), or (b) upon the receipt by this corporation of a written request for such conversion from the holders of at least sixty (60%) of the shares of Series C Preferred then outstanding.

4.3.4.3 Mechanics of Conversion. Before any holder of Series A-1 Preferred, Series A Preferred, Series B Preferred or Series C Preferred shall be entitled to convert the same into shares of Common Stock, pursuant to Section 4.3.4.1 such holder (i) shall surrender the certificate or certificates therefor, duly endorsed, at the principal corporate office of this corporation or of any transfer agent for the Series A-1 Preferred, Series A Preferred, Series B Preferred or Series C Preferred, or the holder notifies this corporation or its transfer agent that such certificates have been lost, stolen, or destroyed and executes an agreement satisfactory to this corporation to indemnify this corporation from any loss incurred by it in connection with such certificates (a "***Lost Certificate***

Affidavit"), and (ii) shall give written notice by mail, postage prepaid, to this corporation at its principal corporate office, of the election to convert the same and shall state the name or names in which the certificate or certificates for shares of Common Stock are to be issued. In the event of an automatic conversion pursuant to Section 4.3.4.2, the outstanding shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, as the case may be, shall be converted automatically without any further action by the holders of such shares and whether or not the certificates representing such shares are surrendered to this corporation or its transfer agent; provided, however, that this corporation shall not be obligated to issue certificates or Lost Certificate Affidavit evidencing the shares of Common Stock issuable upon such automatic conversion unless the certificates evidencing such shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred are either delivered to this corporation or its transfer agent as provided above. This corporation shall, as soon as practicable after such delivery, or, in the case of a lost certificate, after delivery of such agreement and indemnification, issue and deliver at such office to such holder of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred or to the nominee or nominees of such holder, a certificate or certificates for the number of shares of Common Stock to which such holder shall be entitled. Such conversion shall be deemed to have been made immediately prior to the close of business on the date of such surrender of the shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred to be converted, and the person or persons entitled to receive the shares of Common Stock issuable upon such conversion shall be treated for all purposes as the record holder or holders of such shares of Common Stock as of such date. If the conversion is in connection with an underwritten offer of securities registered pursuant to the Securities Act, the conversion may, at the option of any holder tendering Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred for conversion, be conditioned upon the closing with the underwriter of the sale of securities pursuant to such offering, in which event the person(s) entitled to receive the Common Stock issuable upon such conversion of the Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred shall not be deemed to have converted such stock until immediately prior to the closing of such sale of securities. In the event some but not all of the shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred represented by a certificate or certificates surrendered by a holder are converted, this corporation shall execute and deliver to or on the order of the holder, at the expense of this corporation, a new certificate representing the shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, as the case may be, that were not converted.

4.3.4.4 Conversion Price Adjustments of Series A-l Preferred, Series B Preferred and Series C Preferred.

4.3.4.4.1 In the event this corporation, at any time after the date on which the first share of any Series C Preferred is issued (the "***Original Issue Date***"), shall issue Additional Stock (as defined below) (including Additional Stock deemed to be issued pursuant to Section 4.3.4.4.5 without consideration or for a consideration per share less than the Series A-1 Conversion Price, Series B Conversion Price or Series C Conversion Price in effect on the date of and immediately prior to such issuance, then, and in each such event, such Series A-l Conversion Price, Series B Conversion Price or Series C Conversion Price, as the case may be, shall be reduced, concurrently with such issuance, to a price (calculated to the nearest tenth of a cent) determined by multiplying such Series A-l Conversion Price, Series B Conversion Price or Series C Conversion Price, as the case may be, by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately prior to such issuance plus the number of shares of Common Stock that the aggregate consideration received by this corporation for the total number of shares of Additional Stock so issued (or deemed issued) would purchase at the Series A-l Conversion Price, Series B Conversion Price or Series C Conversion Price, as the case may be, and the denominator of which shall be the number of shares of Common Stock outstanding immediately prior to such issuance plus the number of such shares of Additional Stock so

issued (or deemed issued). For the purpose of the above calculation, the number of shares of Common Stock outstanding immediately prior to such issuance shall be calculated on a fully diluted basis, as if all shares of Preferred Stock had been fully converted into shares of Common Stock immediately prior to such issuance and any outstanding warrants, options or other rights for the purchase of shares of stock or convertible securities had been fully exercised immediately prior to such issuance (and the resulting securities fully converted into shares of Common Stock, if so convertible) as of such date, but not including in such calculation any Additional Stock issuable with respect to shares of Series A-l Preferred, Series B Preferred and Series C Preferred or outstanding options, warrants or other rights for the purchase of shares of stock or convertible securities, solely as a result of the adjustment of the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price resulting from the issuance of Additional Stock causing such adjustment.

4.3.4.4.2 No adjustment of the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price shall be made in an amount less than $0.01 per share, provided, that any adjustments that are not required to be made by reason of this sentence shall be carried forward and shall be taken into account in any subsequent adjustment made to the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price. Except as provided in subsections 4.4.4.4.5(c) and (d) below, no adjustment of the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price shall have the effect of increasing the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price above the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price, as the case may be, in effect immediately prior to such adjustment.

4.3.4.4.3 In the case of the issuance of Common Stock for cash, the consideration shall be deemed to be the amount of cash paid before deducting any discounts, commissions or other expenses allowed, paid or incurred by this corporation for any underwriting or otherwise in connection with its issuance and sale.

4.3.4.4.4 In the case of the issuance of Common Stock for consideration in whole or in part other than cash, the consideration other than cash shall be deemed to be its fair value as determined by the Board irrespective of any accounting treatment.

4.3.4.4.5 In the case of the issuance of options to purchase or rights to subscribe for Common Stock, securities by their terms convertible into or exchangeable for Common Stock, or options to purchase or rights to subscribe for such convertible or exchangeable securities (which options, rights, convertible or exchangeable securities are not excluded from the definition of Additional Stock), the following provisions shall apply:

a. The aggregate maximum number of shares of Common Stock deliverable upon exercise of such options to purchase or rights to subscribe for Common Stock shall be deemed to have been issued at the time such options or rights were issued for a consideration equal to the consideration (determined in the manner provided in Sections 4.4.4.4.3 and 4.4.4.4.4 above) received by this corporation upon the issuance of such options or rights plus the minimum purchase price provided in such options or rights for the Common Stock covered thereby, but no further adjustment to the Series A-l Conversion Price, the Series B Conversion Price or the Series C Conversion Price shall be made for the actual issuance of Common Stock upon the exercise of such options or rights in accordance with their terms;

b. The aggregate maximum number of shares of Common Stock deliverable upon conversion of or in exchange for any such convertible or exchangeable securities

or upon the exercise of options to purchase or rights to subscribe for such convertible or exchangeable securities and subsequent conversion or exchange thereof shall be deemed to have been issued at the time such securities were issued or such options or rights were issued for a consideration equal to the consideration received by this corporation for any such securities and related options or rights, plus the additional consideration, if any, to be received by this corporation upon the conversion or exchange of such securities or the exercise of any related options or rights (the consideration in each case to be determined in the manner provided in Sections 4.4.4.4.3 and 4.4.4.4.4 above), but no further adjustment to the Series A-1 Conversion Price, Series B Conversion Price or Series C Conversion Price shall be made for the actual issuance of Common Stock upon the conversion or exchange of such securities in accordance with their terms;

c. If such options, rights or convertible or exchangeable securities by their terms provide, with the passage of time or otherwise, for any increase in the consideration payable to this corporation, or decrease in the number of shares of Common Stock issuable, upon the exercise, conversion or exchange thereof, the Series A-1 Conversion Price, the Series B Conversion Price or the Series C Conversion Price computed upon the original issue thereof, and any subsequent adjustments based thereon, shall, upon such increase or decrease becoming effective, be recomputed to reflect such increase or decrease with respect to such options, rights and securities not already exercised, converted or exchanged prior to such increase or decrease becoming effective, but no further adjustment to the Series A-1 Conversion Price, the Series B Conversion Price or the Series C Conversion Price shall be made for the actual issuance of Common Stock upon the exercise of any such options or rights or the conversion or exchange of such securities in accordance with their terms;

d. Upon the expiration of any such options or rights, the termination of any such rights to convert or exchange or the expiration of any options or rights related to such convertible or exchangeable securities, the Series A-1 Conversion Price, the Series B Conversion Price or the Series C Conversion Price, as the case may be, shall promptly be readjusted to such Series A-1 Conversion Price, the Series B Conversion Price or the Series C Conversion Price as would have been obtained had the adjustment which was made upon the issuance of such options, rights or securities or options or rights related to such securities been made upon the basis of the issuance of only the number of shares of Common Stock actually issued upon the exercise of such options or rights, upon the conversion or exchange of such securities or upon the exercise of the options or rights related to such securities; provided, however, that no such adjustment of the Series A-1 Conversion Price, the Series B Conversion Price or the Series C Conversion Price shall affect shares of Common Stock previously issued upon conversion of the Series A-1 Preferred, Series B Preferred or Series C Preferred; and

e. If any such options or rights shall be issued in connection with the issue and sale of other securities of this corporation, together comprising one integral transaction in which no specific consideration is allocated to such options or rights by the parties thereto, such options or rights shall be deemed to have been issued for such consideration as determined in good faith by the Board.

4.3.4.4.6 "***Additional Stock***" shall mean any shares of Common Stock issued (or deemed to have been issued pursuant to Section 4.3.4.4.5 by this corporation after the Original Issue Date, other than shares of:

a. Common Stock issued or issuable upon conversion of shares of Series A-1 Preferred, Series A Preferred, Series B Preferred or Series C Preferred;

b. Common Stock issued or issuable to officers, directors, employees or sales representatives of, or consultants to, this corporation pursuant to this corporation's 2002 Stock Option Plan or, if approved by the Board, including at least one director elected by the holders of the Series C Preferred, stock purchase plans, agreements or other similar arrangements;

c. Common Stock issued or issuable to entities or individuals in connection with the acquisition of intellectual property or technology approved by the Board, including at least one director elected by the holders of the Series C Preferred;

d. Common Stock issued or issuable to a commercial lender or lessor of this corporation, or other provider of goods and services in connection with a transaction approved by the Board, including at least one director elected by the holders of the Series C Preferred;

e. Common Stock issued or issuable to entities or individuals in connection with the acquisition of another corporation or other entity or the business thereof by this corporation or any subsidiary by means of merger, consolidation, purchase of assets or other transaction or series of transactions approved by the Board, including at least one director elected by the holders of the Series C Preferred;

f. Common Stock issued or issuable to entities in connection with joint ventures, development projects, acquisitions, or other strategic transactions approved by the Board, including at least one director elected by the holders of the Series C Preferred;

g. Common Stock issuable upon conversion of options, warrants, notes or other rights to acquire securities of this corporation that were outstanding as of the Original Issue Date;

h. Common Stock issued or issuable at any time pursuant to a stock split, dividend or distribution, or upon any adjustment of the Series A-1 Conversion Price, Series A Conversion Price, Series B Conversion Price or Series C Conversion Price, including antidilution adjustments or other similar adjustments; and

i. Common Stock issued or issuable in a transaction as to which the application of antidilution protection has been waived for a series of Preferred Stock by written consent of holders of at least a majority of the outstanding shares of such series of Preferred Stock with respect to which the conversion rate of such series of Preferred Stock would have otherwise been adjusted as a result of such application of antidilution protection, with each such series of Preferred Stock voting as a separate class; provided, however, that waiver of antidilution protection for Series C Preferred shall require the written consent of the holders of at least sixty percent (60%) of the outstanding shares of Series C Preferred.

4.3.5 **Other Distributions.** In the event this corporation shall declare a distribution payable in securities of other persons, evidences of indebtedness issued by this corporation or other persons, assets (excluding cash dividends) or options or rights not referred to in Section 4.3.4, then, in each such case for the purpose of this Section 4.3.5, each of the holders of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred shall be entitled to a proportionate share of any such distribution as though they were the holders of the number of shares of Common Stock of this corporation into which their shares of Series A-1 Preferred, Series A Preferred, Series B Preferred and Series C Preferred, respectively, are then convertible as of the record date fixed for

the determination of the holders of outstanding shares of Common Stock of this corporation entitled to receive such distribution.

4.3.6 **Recapitalizations**. If the Common Stock issuable upon the conversion of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, as the case may be, shall be changed into the same or a different number of shares of any other class or classes of stock of this corporation, whether by capital reorganization, reclassification or otherwise (other than a subdivision or combination of shares or stock dividend provided for elsewhere in this Section 4 or a merger, consolidation, share exchange or reorganization provided for in Section 4.3.2.2), then and in each such event each share of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred shall be convertible into the kind and amount of shares of stock and other securities and property receivable upon such reorganization, reclassification or other change by the number of shares of Common Stock into which such share of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, respectively, might have been converted immediately prior to such reorganization, reclassification or change, all subject to further adjustment as provided herein.

4.3.7 **No Fractional Shares; Certificates as to Adjustment**.

4.3.7.1 No fractional shares of Common Stock or scrip representing fractional shares shall be issued upon the conversion of shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, but this corporation shall pay to the holder of such shares a cash adjustment in respect of such fractional shares in an amount equal to the same fraction of the market price per share of the Common Stock (as determined in a reasonable manner prescribed by the Board) at the close of business on the applicable conversion date. The determination as to whether or not any fractional shares are issuable shall be based upon the total number of shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, respectively, being converted at any one time by any holder, not upon each share of Series A-l Preferred, Series A Preferred, Series B Preferred and Series C Preferred being converted.

4.3.7.2 In each case of an adjustment or readjustment of the Series A-l Conversion Price, Series A Conversion Price, Series B Conversion Price or Series C Conversion Price, this corporation at its expense will furnish each holder of outstanding shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, as the case may be, with a certificate, signed by this corporation's Chief Financial Officer or Treasurer, showing such adjustment or readjustment and stating in detail the facts upon which such adjustment or readjustment is based.

4.3.8 **Notices of Record Date**. In the event of any taking by this corporation of a record of the holders of any class of securities for the purpose of determining the holders thereof who are entitled to receive any dividend or other distribution, any right to subscribe for, purchase or otherwise acquire any shares of stock of any class or other securities or property, or to receive any other right, this corporation shall mail to each holder of outstanding shares of Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred, as the case may be, at least twenty (20) days prior to the date specified therein, a notice specifying the date on which any such record is to be taken for the purpose of such dividend, distribution or right, and the amount and character of such dividend, distribution or right.

4.3.9 **Reservation of Stock Issuable Upon Conversion**. This corporation shall at all times reserve and keep available out of its authorized but unissued shares of Common Stock such number of its shares of Common Stock as shall be sufficient to effect the conversion of all outstanding shares and rights to acquire shares of the Series A-l Preferred, Series A Preferred, Series B Preferred or Series C Preferred and any other series of Preferred Stock; and if at any time the number of authorized but

unissued shares of Common Stock shall not be sufficient to effect the conversion of all then outstanding shares and rights to acquire shares of the Preferred Stock, in addition to such other remedies as shall be available to the holder of such Preferred Stock, this corporation will take such corporate action as may, in the opinion of its counsel, be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes.

4.3.10 **Notices.** Any notice required by the provisions of this Section 4 to be given to the holders of outstanding shares of Series A-1 Preferred, Series A Preferred, Series B Preferred or Series C Preferred shall be deemed effectively given: (a) if delivered by hand, upon delivery; (b) if by facsimile machine during normal business hours, upon transmission with confirmation of receipt by the receiving party's facsimile terminal and if not sent during normal business hours, then on the next business day; (c) if sent by documented overnight delivery service, on the date following the date on which such notice or other written communication is delivered to such overnight delivery service for mailing; or (d) if mailed via first-class regular mail, forty-eight (48) hours after mailing to the address on record for such holder.

4.3.11 **Protective Voting Requirements.** For so long as any shares of Series C Preferred remain outstanding, the vote or written consent of the holders of at least sixty percent (60%) of the outstanding shares of Series C Preferred shall be necessary for effecting or validating the following actions (whether consummated by merger, amendment, consolidation or otherwise):

4.3.11.1 altering or changing the rights, preferences or privileges of the Preferred Stock or any series of Preferred Stock;

4.3.11.2 any increase or decrease in the authorized number of shares of Common Stock or Preferred Stock or any series of Preferred Stock;

4.3.11.3 creating (by reclassification or otherwise) any new class or series of stock or any other securities convertible into equity securities of this corporation having rights, preferences or privileges senior to or on a parity with the Series C Preferred;

4.3.11.4 any redemption or repurchase of any shares of Preferred Stock or Common Stock (excluding shares repurchased at the lower of fair market value or cost upon termination of an employee or consultant pursuant to a restricted share purchase agreement, equity incentive agreement or similar agreement);

4.3.11.5 a Deemed Liquidation;

4.3.11.6 any amendment, waiver, alteration or repeal of any provision of this Certificate of Incorporation or the Bylaws of this corporation;

4.3.11.7 any increase or decrease in the authorized number of members of the Board, unless approved in writing by the holders of at least sixty percent (60%) of the Series C Preferred;

4.3.11.8 any action that results in the payment or declaration of a dividend on any shares of Common Stock or Preferred Stock;

4.3.11.9 any borrowings, loans, or guarantees or incurrence, issuance or guarantee of debt in excess of five hundred thousand dollars ($500,000); or

4.3.11.10 any sale, transfer or encumbrance of technology other than licenses granted by this corporation in the ordinary course of business.

4.4 **Issuance of Certificates**. The Board shall have the authority to issue shares of the capital stock of this corporation and the certificates therefor subject to such transfer restrictions and other limitations as it may deem necessary to promote compliance with applicable federal and state securities laws, and to regulate the transfer thereof in such manner as may be calculated to promote such compliance or to further reasonable purpose.

4.5 **Reissuance of Preferred Stock**. In the event that any shares of Preferred Stock shall be converted pursuant to Section 4.3.4 or otherwise repurchased by this corporation, the shares so converted or repurchased shall be cancelled and shall not be issuable by this corporation.

ARTICLE 5
LIMITATION OF LIABILITY; INDEMNIFICATION

5.1 To the fullest extent permitted by the DGCL as the same exists or as may hereafter be amended, a director of this corporation shall not be personally liable to this corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director. If the DGCL is amended to authorize corporate action further eliminating or limiting the personal liability of directors, then the liability of a director of this corporation shall be eliminated or limited to the fullest extent permitted by the DGCL, as so amended.

5.2 This corporation shall have the power to indemnify, to the extent permitted by the DGCL, as it presently exists or may hereafter be amended from time to time, any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (a "***Proceeding***") by reason of the fact that he or she is or was a director, officer, employee or agent of this corporation or is or was serving at the request of this corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any such Proceeding.

5.3 In the event that a member of the Board who is also a partner or employee of an entity that is a holder of Preferred Stock and that is in the business of investing and reinvesting in other entities, or an employee of an entity that manages such an entity (each, a "***Fund***") acquires knowledge of a potential transaction or other matter in such individual's capacity as a partner or employee of the Fund or the manager or general partner of the Fund and that may be an opportunity of interest for both this corporation and such Fund (a "***Corporate Opportunity***"), then this corporation (i) renounces any expectancy that such director or Fund offer an opportunity to participate in such Corporate Opportunity to this corporation and (ii) to the fullest extent permitted by law, waives any claim that such opportunity constituted a Corporate Opportunity that should have been presented by such director or Fund to this corporation or any of its affiliates; provided, however, that such director acts in good faith and such opportunity was not offered to such person in his or her capacity as a director of this corporation.

5.4 Neither any amendment nor repeal of this Article 5, nor the adoption of any provision of this corporation's Certificate of Incorporation inconsistent with this Article 5, shall eliminate or reduce the effect of this Article 5, in respect of any matter occurring, or any action or proceeding accruing or arising or that, but for this Article 5, would accrue or arise, prior to such amendment, repeal or adoption of an inconsistent provision.

ARTICLE 6
MANAGEMENT

6.1 For the management of the business and for the conduct of the affairs of this corporation, and in further definition, limitation and regulation of the powers of this corporation, of its directors and of its stockholders or any class thereof, as the case may be, it is further *provided* that:

6.1.1 The management of the business and the conduct of the affairs of this corporation shall be vested in its Board. The number of directors which shall constitute the whole Board shall be fixed by the Board in the manner provided in the Bylaws, subject to any restrictions which may be set forth in this Certificate of Incorporation.

6.1.2. Except as otherwise set forth in this Certificate of Incorporation, the Board is expressly empowered to adopt, amend or repeal the Bylaws of this corporation. The stockholders shall also have the power to adopt, amend or repeal the Bylaws of this corporation; provided however, that, in addition to any vote of the holders of any class or series of stock of this corporation required by law or by this Certificate of Incorporation, the affirmative vote of the holders of at least a majority of the voting power of all of the then-outstanding shares of the capital stock of this corporation entitled to vote generally in the election of directors, voting together as a single class, shall be required to adopt, amend or repeal any provision of the Bylaws of this corporation.

6.1.3 The directors of this corporation need not be elected by written ballot unless the Bylaws so provide.

ARTICLE 7
EXISTENCE

This corporation is to have perpetual existence.

ARTICLE 8
MEETINGS AND BOOKS

Meetings of stockholders may be held within or without the State of Delaware, as the Bylaws may provide. The books of this corporation may be kept (subject to any provision contained in the statutes) outside of the State of Delaware at such place or places as may be designated from time to time by the Board or in the Bylaws of this corporation.

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	1A	4,430,669	02/07/1984	Cheung	358	122	
	1B	4,821,027	04/11/1989	Mallory *et al.*	340	521	
	1C	4,829,423	05/09/1989	Tennant *et al.*	364	200	
	1D	4,910,784	03/20/1990	Doddington *et al.*	381	43	
	1E	5,027,406	06/25/1991	Roberts *et al.*	381	43	
	1F	5,155,743	10/13/1992	Jacobs	375	28	
	1G	5,164,904	11/17/1992	Sumner	364	436	
	1H	5,208,748	05/04/1993	Flores *et al.*	364	419	
	1I	5,274,560	12/28/1993	LaRue	364	444	
	1J	5,357,596	10/18/1994	Takebayashi *et al.*	395	2.84	
	1K	5,377,350	12/27/1994	Skinner	395	600	
	1L	5,386,556	01/31/1995	Hedin et al.	395	600	
	1M	5,424,947	06/13/1995	Nagao et al.	364	419.08	
	1N	5,471,318	11/28/1995	Ahuja et al.	358	400	
	1O	5,475,733	12/12/1995	Eisdorfer et al.	379	52	
	1P	5,488,652	01/30/1996	Bielby *et al.*	379	88	
	1Q	5,499,289	03/12/1996	Bruno et al.	379	220	
	1R	5,500,920	03/19/1996	Kupiec	395	2.79	
	1S	5,517,560	05/14/1996	Greenspan	379	114	
	1T	5,533,108	07/02/1996	Harris et al.	379	201	
	1U	5,537,436	07/16/1996	Bottoms et al.	375	222	
	1V	5,539,744	07/23/1996	Chu et al.	370	60	
	1W	5,557,667	09/17/1996	Bruno et al.	379	201	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	1X	1 320 043 A2	06/18/2003	Europe				
	1Y	1 646 037	04/12/2006	Europe				
	1Z	WO 99/46763	09/16/1999	International				
	1AA	WO 00/21232	04/13/2000	International				
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	2A	5,559,864	09/24/1996	Kennedy, Jr.	379	59	
	2B	5,563,937	10/08/1996	Bruno et al.	379	201	
	2C	5,577,165	11/19/1996	Takebayashi et al.	395	2.84	
	2D	5,590,039	12/31/1996	Ikeda et al.	395	759	
	2E	5,608,635	03/04/1997	Tamai	364	449.3	
	2F	5,617,407	04/01/1997	Bareis	369	275.3	
	2G	5,633,922	05/27/1997	August et al.	379	220	
	2H	5,634,086	05/27/1997	Rtischev *et al.*	395	2.79	
	2I	5,652,570	07/29/1997	Lepkofker	340	573	
	2J	5,675,629	10/07/1997	Raffel et al.	379	58	
	2K	5,696,965	12/09/1997	Dedrick	395	610	
	2L	5,708,422	01/13/1998	Blonder et al.	340	825.34	
	2M	5,721,938	02/24/1998	Stuckey	395	754	
	2N	5,722,084	02/24/1998	Chakrin et al.	455	551	
	2O	5,740,256	04/14/1998	Castello Da Costa *et al.*	361	94.7	
	2P	5,742,763	04/21/1998	Jones	395	200.3	
	2Q	5,748,841	05/05/1998	Morin *et al.*	395	2.66	
	2R	5,748,974	05/05/1998	Johnson	395	759	
	2S	5,752,052	05/12/1998	Richardson et al.	395	759	
	2T	5,754,784	05/19/1998	Garland et al.	395	200.49	
	2U	5,761,631	06/02/1998	Nasukawa	704	9	
	2V	5,774,841	06/30/1998	Salazar *et al.*	704	225	
	2W	5,774,859	06/30/1998	Houser *et al.*	704	275	

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	2X	WO 01/78065	10/18/2001	International				
	2Y	WO 2004/072954	08/26/2004	International				
	2Z	WO 2007/019318	02/15/2007	International				
	2AA	WO 2007/021587	02/22/2007	International				
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	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	5,794,050	08/11/1998	Dahlgren et al.	395	708	
	3B	5,794,196	08/11/1998	Yegnanarayanan *et al.*	704	255	
	3C	5,797,112	08/18/1998	Komatsu *et al.*	701	201	
	3D	5,799,276	08/25/1998	Komissarchik *et al.*	704	251	
	3E	5,802,510	09/01/1998	Jones	707	2	
	3F	5,832,221	11/03/1998	Jones	375	200.36	
	3G	5,839,107	11/17/1998	Gupta *et al.*	704	270	
	3H	5,848,396	12/08/1998	Gerace	705	10	
	3I	5,855,000	12/29/1998	Waibel *et al.*	704	235	
	3J	5,867,817	02/02/1999	Catallo *et al.*	704	255	
	3K	5,878,385	03/02/1999	Bralich *et al.*	704	9	
	3L	5,878,386	03/02/1999	Coughlin	704	10	
	3M	5,892,813	04/06/1999	Morin *et al.*	379	88.01	
	3N	5,892,900	04/06/1999	Ginter *et al.*	395	186	
	3O	5,895,464	04/20/1999	Bhandari *et al.*	707	3	
	3P	5,895,466	04/20/1999	Goldberg et al.	707	5	
	3Q	5,897,613	04/27/1999	Chan	704	210	
	3R	5,902,347	05/11/1999	Backman *et al.*	701	200	
	3S	5,911,120	06/08/1999	Jarett et al.	455	417	
	3T	5,918,222	06/29/1999	Fukui *et al.*	707	1	
	3U	5,926,784	07/20/1999	Richardson et al.	704	9	
	3V	5,933,822	08/03/1999	Braden-Harder et al.	707	5	
	3W	5,950,167	09/07/1999	Yaker	704	275	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	3X	WO 2007/027989	03/08/2007	International				
	3Y	WO 2008/098039	08/14/2008	International				
	3Z	WO 2008/118195	10/02/2008	International				
	3AA	WO 2009/075912	06/18/2009	International				
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	3DD	ZHAO, Yilin, "Telematics: Safe and Fun Driving", IEEE Intelligent Systems, Volume 17, Issue 1, 2002, pages 10-14.

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	4B	5,960,397	09/28/1999	Rahim	704	244	
	4C	5,960,399	09/28/1999	Barclay *et al.*	704	270	
	4D	5,960,447	09/28/1999	Holt *et al.*	707	500	
	4E	5,963,894	10/05/1999	Richardson et al.	704	9	
	4F	5,963,940	10/05/1999	Liddy et al.	707	5	
	4G	5,987,404	11/16/1999	Della Pietra et al.	704	9	
	4H	5,991,721	11/23/1999	Asano et al.	704	257	
	4I	5,995,119	11/30/1999	Cosatto et al.	345	473	
	4J	5,995,928	11/30/1999	Nguyen *et al.*	704	251	
	4K	6,009,382	12/28/1999	Martino et al.	704	1	
	4L	6,014,559	01/11/2000	Amin	455	413	
	4M	6,018,708	01/25/2000	Dahan *et al.*	704	244	
	4N	6,021,384	02/01/2000	Gorin et al.	704	1	
	4O	6,028,514	02/22/2000	Lemelson *et al.*	340	539	
	4P	6,035,267	03/07/2000	Watanabe *et al.*	704	1	
	4Q	6,044,347	03/28/2000	Abella et al.	704	272	
	4R	6,049,602	04/11/2000	Foladare et al.	379	265	
	4S	6,049,607	04/11/2000	Marash *et al.*	379	410	
	4T	6,058,187	05/02/2000	Chen	380	21	
	4U	6,067,513	05/23/2000	Ishimitsu	704	233	
	4V	6,076,059	06/13/2000	Glickman *et al.*	704	260	
	4W	6,078,886	06/20/2000	Dragosh et al.	704	270	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	4X	WO 2010/096752	08/26/2010	International				
	4Y	2006-146881	06/08/2006	Japan				
	4Z	2008-027454	02/07/2008	Japan				
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	4DD	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.

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	5B	6,085,186	07/04/2000	Christianson *et al.*	707	3	
	5C	6,101,241	08/08/2000	Boyce et al.	379	88.01	
	5D	6,108,631	08/22/2000	Ruhl	704	270	
	5E	6,119,087	09/12/2000	Kuhn et al.	704	270	
	5F	6,122,613	09/19/2000	Baker	704	235	
	5G	6,134,235	10/17/2000	Goldman et al.	370	352	
	5H	6,144,667	11/07/2000	Doshi et al.	370	401	
	5I	6,144,938	11/07/2000	Surace *et al.*	704	257	
	5J	6,154,526	11/28/2000	Dahlke *et al.*	379	88.03	
	5K	6,160,883	12/12/2000	Jackson et al.	379	230	
	5L	6,167,377	12/26/2000	Gillick *et al.*	704	240	
	5M	6,173,266	01/09/2001	Marx *et al.*	704	270	
	5N	6,173,279	01/09/2001	Levin et al.	707	5	
	5O	6,175,858	01/16/2001	Bulfer *et al.*	709	206	
	5P	6,185,535	02/06/2001	Hedin *et al.*	704	270	
	5Q	6,188,982	02/13/2001	Chiang	704	256	
	5R	6,192,110	02/20/2001	Abella *et al.*	379	88.01	
	5S	6,192,338	02/20/2001	Haszto *et al.*	704	257	
	5T	6,195,634	02/27/2001	Dudemaine *et al.*	704	231	
	5U	6,195,651	02/27/2001	Handel *et al.*	707	2	
	5V	6,199,043	03/06/2001	Happ	704	272	
	5W	6,208,964	03/27/2001	Sabourin	704	244	

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	5X	TURUNEN, "Adaptive Interaction Methods in Speech User Interfaces", Conference on Human Factors in Computing Systems, Seattle, Washington, 2001, pages 91-92.
	5Y	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.
	5Z	VANHOUCKE, Vincent, "Confidence Scoring and Rejection Using Multi-Pass Speech Recognition", Nuance Communications, Menlo Park, CA, 2005, 4 pages.

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	6A	6,208,972	03/27/2001	Grant *et al.*	704	275	
	6B	6,219,346	04/17/2001	Maxemchuk	370	338	
	6C	6,219,643	04/17/2001	Cohen *et al.*	704	257	
	6D	6,226,612	05/01/2001	Srenger *et al.*	704	256	
	6E	6,233,556	05/15/2001	Teunen *et al.*	704	250	
	6F	6,233,559	05/15/2001	Balakrishnan	704	275	
	6G	6,233,561	05/15/2001	Junqua *et al.*	704	277	
	6H	6,236,968	05/22/2001	Kanevsky *et al.*	704	275	
	6I	6,246,981	06/12/2001	Papineni *et al.*	704	235	
	6J	6,246,990	06/12/2001	Happ	704	275	
	6K	6,266,636	07/24/2001	Kosaka *et al.*	704	244	
	6L	6,269,336	07/31/2001	Ladd *et al.*	704	270	
	6M	6,272,455	08/07/2001	Hoshen *et al.*	704	1	
	6N	6,275,231	08/14/2001	Obradovich	345	349	
	6O	6,278,377	08/21/2001	DeLine *et al.*	340	815.4	
	6P	6,278,968	08/21/2001	Franz *et al.*	704	3	
	6Q	6,288,319	09/11/2001	Catona	84	609	
	6R	6,292,767	09/18/2001	Jackson *et al.*	704	1	
	6S	6,301,560	10/09/2001	Masters	704	251	
	6T	6,308,151	10/23/2001	Smith	704	235	
	6U	6,311,159	10/30/2001	Van Tichelen *et al.*	704	275	
	6V	6,314,402	11/06/2001	Monaco et al.	704	275	
	6W	6,321,196	11/20/2001	Franceschi	704	243	

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	6X	WENG, Fuliang, *et al.*, "Efficient Lattice Representation and Generation", Speech Technology and Research Laboratory, SRI International, Menlo Park, CA, 1998, 4 pages.
	6Y	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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	7A	6,356,869	03/12/2002	Chapados *et al.*	704	275	
	7B	6,362,748	03/26/2002	Huang	340	901	
	7C	6,366,882	04/02/2002	Bijl *et al.*	704	235	
	7D	6,366,886	04/02/2002	Dragosh et al.	704	270.1	
	7E	6,374,214	04/16/2002	Friedland *et al.*	704	235	
	7F	6,377,913	04/23/2002	Coffman *et al.*	704	8	
	7G	6,381,535	04/30/2002	Durocher *et al.*	701	202	
	7H	6,385,596	05/07/2002	Wiser *et al.*	705	51	
	7I	6,385,646	05/07/2002	Brown et al.	709	217	
	7J	6,393,403	05/21/2002	Majaniemi	704	275	
	7K	6,393,428	05/21/2002	Miller et al.	707	102	
	7L	6,397,181	05/28/2002	Li *et al.*	704	256	
	7M	6,404,878	06/11/2002	Jackson et al.	379	221.01	
	7N	6,405,170	06/11/2002	Phillips *et al.*	704	270	
	7O	6,408,272	06/18/2002	White *et al.*	704	270.1	
	7P	6,411,810	06/25/2002	Maxemchuk	455	453	
	7Q	6,411,893	06/25/2002	Ruhl	701	207	
	7R	6,415,257	07/02/2002	Junqua *et al.*	704	275	
	7S	6,418,210	07/09/2002	Sayko	379	142.15	
	7T	6,420,975	07/16/2002	DeLine *et al.*	340	815.4	
	7U	6,429,813	08/06/2002	Feigen	342	357.13	
	7V	6,430,285	08/06/2002	Bauer et al.	379	265.01	
	7W	6,430,531	08/06/2002	Polish	704	257	

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	7X	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.
	7Y	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.

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	8A	6,434,523	08/13/2002	Monaco	704	257	
	8B	6,434,524	08/13/2002	Weber	704	257	
	8C	6,434,529	08/13/2002	Walker *et al.*	704	275	
	8D	6,442,522	08/27/2002	Carberry et al.	704	257	
	8E	6,446,114	09/03/2002	Bulfer et al.	709	206	
	8F	6,453,153	09/17/2002	Bowker et al.	455	67.4	
	8G	6,453,292	09/17/2002	Ramaswamy et al.	704	235	
	8H	6,456,711	09/24/2002	Cheung et al.	379	265.09	
	8I	6,456,974	09/24/2002	Baker *et al.*	704	270.1	
	8J	6,466,654	10/15/2002	Cooper *et al.*	379	88.01	
	8K	6,466,899	10/15/2002	Yano *et al.*	704	1	
	8L	6,470,315	10/22/2002	Netsch *et al.*	704	256	
	8M	6,487,494	11/26/2002	Odinak *et al.*	701	202	
	8N	6,487,495	11/26/2005	Gale *et al.*	701	209	
	8O	6,498,797	12/24/2002	Anerousis et al.	370	522	
	8P	6,499,013	12/24/2002	Weber	704	257	
	8Q	6,501,833	12/31/2002	Phillips *et al.*	379	88.07	
	8R	6,501,834	12/31/2002	Milewski et al.	379	93.24	
	8S	6,505,155	01/07/2003	Vanbuskirk *et al.*	704	246	
	8T	6,510,417	01/21/2003	Woods *et al.*	704	275	
	8U	6,513,006	01/28/2003	Howard *et al.*	704	257	
	8V	6,522,746	02/18/2003	Marchok *et al.*	379	406.03	
	8W	6,523,061	02/18/2003	Halverson et al.	709	202	

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	8X	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.
	8Y	"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.

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	9A	6,532,444	03/11/2003	Weber	704	257	
	9B	6,539,348	03/25/2003	Bond et al.	704	9	
	9C	6,549,629	04/15/2003	Finn *et al.*	381	92	
	9D	6,553,372	04/22/2003	Brassell et al.	707	5	
	9E	6,556,970	04/29/2003	Sasaki *et al.*	704	257	
	9F	6,556,973	04/29/2003	Lewin	704	277	
	9G	6,560,576	05/06/2003	Cohen et al.	704	270	
	9H	6,560,590	05/06/2003	Shwe *et al.*	706	55	
	9I	6,567,778	05/20/2003	Chao Chang et al.	704	257	
	9J	6,567,797	05/20/2003	Schuetze *et al.*	707	2	
	9K	6,570,555	05/27/2003	Prevost *et al.*	345	156	
	9L	6,570,964	05/27/2003	Murveit et al.	379	67.1	
	9M	6,571,279	05/27/2003	Herz *et al.*	709	217	
	9N	6,574,597	06/03/2003	Mohri *et al.*	704	251	
	9O	6,574,624	06/03/2003	Johnson et al.	707	5	
	9P	6,578,022	06/10/2003	Foulger *et al.*	706	45	
	9Q	6,581,103	06/17/2003	Dengler	709	231	
	9R	6,584,439	06/24/2003	Geilhufe *et al.*	704	270	
	9S	6,587,858	07/01/2003	Strazza	707	102	
	9T	6,591,239	07/08/2003	McCall *et al.*	704	275	
	9U	6,594,257	07/15/2003	Doshi et al.	370	352	
	9V	6,594,367	07/15/2003	Marash *et al.*	381	92	
	9W	6,598,018	07/22/2003	Junqua	704	251	

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	10A	6,601,026	07/29/2003	Appelt *et al.*	704	9	
	10B	6,604,075	08/05/2003	Brown *et al.*	704	270.1	
	10C	6,604,077	08/05/2003	Dragosh et al.	704	270.1	
	10D	6,606,598	08/12/2003	Holthouse *et al.*	704	275	
	10E	6,611,692	08/26/2003	Raffel et al.	455	552	
	10F	6,614,773	09/02/2003	Maxemchuk	370	337	
	10G	6,615,172	09/02/2003	Bennett *et al.*	704	257	
	10H	6,622,119	09/16/2003	Ramaswamy *et al.*	704	9	
	10I	6,629,066	09/30/2003	Jackson et al.	704	9	
	10J	6,631,346	10/07/2003	Karaorman *et al.*	704	9	
	10K	6,631,351	10/07/2003	Ramachandran *et al.*	704	270	
	10L	6,633,846	10/14/2003	Bennett *et al.*	704	257	
	10M	6,636,790	10/21/2003	Lightner *et al.*	701	33	
	10N	6,643,620	11/04/2003	Contolini *et al.*	704	270	
	10O	6,647,363	11/11/2003	Claassen	704	1	
	10P	6,650,747	11/18/2003	Bala et al.	379	265.06	
	10Q	6,658,388	12/02/2003	Kleindienst *et al.*	704	275	
	10R	6,678,680	01/13/2004	Woo	707	6	
	10S	6,681,206	01/20/2004	Gorin *et al.*	704	243	
	10T	6,691,151	02/10/2004	Cheyer et al.	709	202	
	10U	6,701,294	03/02/2004	Ball *et al.*	704	257	
	10V	6,704,396	03/09/2004	Parolkar *et al.*	379	88.17	
	10W	6,704,576	03/09/2004	Brachman *et al.*	455	503	

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	11A	6,704,708	03/09/2004	Pickering	704	235	
	11B	6,707,421	03/16/2004	Drury *et al.*	342	357.1	
	11C	6,708,150	03/16/2004	Hirayama *et al.*	704	243	
	11D	6,721,001	04/13/2004	Berstis	348	231.3	
	11E	6,721,633	04/13/2004	Funk *et al.*	701	1	
	11F	6,721,706	04/13/2004	Strubbe *et al.*	704	275	
	11G	6,726,636	04/27/2004	Der Ghazarian *et al.*	600	532	
	11H	6,735,592	05/11/2004	Neumann *et al.*	707	101	
	11I	6,739,556	05/25/2004	Langston	244	189	
	11J	6,741,931	05/25/2004	Kohut *et al.*	701	209	
	11K	6,742,021	05/25/2004	Halverson *et al.*	709	218	
	11L	6,745,161	06/01/2004	Arnold *et al.*	704	7	
	11M	6,751,591	06/15/2004	Gorin *et al.*	704	257	
	11N	6,751,612	06/15/2004	Schuetze *et al.*	707	4	
	11O	6,754,485	06/22/2004	Obradovich *et al.*	455	414.1	
	11P	6,754,627	06/22/2004	Woodward	704	235	
	11Q	6,757,544	06/29/2004	Rangarajan *et al.*	455	456.1	
	11R	6,757,718	06/29/2004	Halverson *et al.*	709	218	
	11S	6,795,808	09/21/2004	Strubbe *et al.*	704	275	
	11T	6,801,604	10/05/2004	Maes *et al.*	379	88.17	
	11U	6,801,893	10/05/2004	Backfried *et al.*	704	257	
	11V	6,813,341	11/02/2004	Mahoney	379	88.01	
	11W	6,829,603	12/07/2004	Chai *et al.*	707	5	

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	12B	6,833,848	12/21/2004	Wolff *et al.*	345	719	
	12C	6,850,603	02/01/2005	Eberle *et al.*	379	88.16	
	12D	6,856,990	02/15/2005	Barile *et al.*	707	10	
	12E	6,865,481	03/08/2005	Kawazoe *et al.*	701	211	
	12F	6,868,380	03/15/2005	Kroeker	704	240	
	12G	6,868,385	03/15/2005	Gerson	704	275	
	12H	6,873,837	03/29/2005	Yoshioka *et al.*	455	321	
	12I	6,877,001	04/05/2005	Wolf *et al.*	707	3	
	12J	6,877,134	04/05/2005	Fuller *et al.*	715	500.1	
	12K	6,901,366	05/31/2005	Kuhn *et al.*	704	275	
	12L	6,910,003	06/21/2005	Arnold *et al.*	704	4	
	12M	6,912,498	06/28/2005	Stevens *et al.*	704	235	
	12N	6,915,126	07/05/2005	Mazzara, Jr.	455	411	
	12O	6,928,614	08/09/2005	Everhart	715	728	
	12P	6,934,756	08/23/2005	Maes	709	227	
	12Q	6,937,977	08/30/2005	Gerson	704	201	
	12R	6,937,982	08/30/2005	Kitaoka *et al.*	704	252	
	12S	6,941,266	09/06/2005	Gorin *et al.*	704	257	
	12T	6,944,594	09/13/2005	Busayapongchai *et al.*	704	275	
	12U	6,950,821	09/27/2005	Faybishenko *et al.*	707	10	
	12V	6,954,755	10/11/2005	Reisman	707	10	
	12W	6,959,276	10/25/2005	Droppo *et al.*	704	226	

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	13B	6,963,759	11/08/2005	Gerson	455	563	
	13C	6,964,023	11/08/2005	Maes *et al.*	715	811	
	13D	6,968,311	11/22/2005	Knockeart *et al.*	704	270	
	13E	6,973,387	12/06/2005	Masclet *et al.*	701	211	
	13F	6,975,993	12/13/2005	Keiller	704	275	
	13G	6,980,092	12/27/2005	Turnbull *et al.*	340	425.5	
	13H	6,983,055	01/03/2006	Luo	381	313	
	13I	6,990,513	01/24/2006	Belfiore *et al.*	709	203	
	13J	6,996,531	02/07/2006	Korall *et al.*	704	270	
	13K	7,003,463	02/21/2006	Maes *et al.*	704	270.1	
	13L	7,016,849	03/21/2006	Arnold *et al.*	704	275	
	13M	7,020,609	03/28/2006	Thrift *et al.*	704	270.1	
	13N	7,024,364	04/04/2006	Guerra *et al.*	704	270	
	13O	7,027,586	04/11/2006	Bushey *et al.*	379	265.09	
	13P	7,027,975	04/11/2006	Pazandak *et al.*	704	9	
	13Q	7,035,415	04/25/2006	Belt *et al.*	381	92	
	13R	7,036,128	04/25/2006	Julia *et al.*	719	317	
	13S	7,043,425	05/09/2006	Pao	704	211	
	13T	7,054,817	05/30/2006	Shao	704	270	
	13U	7,058,890	06/06/2006	George *et al.*	715	728	
	13V	7,062,488	06/13/2006	Reisman	707	8	
	13W	7,069,220	06/27/2006	Coffman *et al.*	704	275	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	14A	7,072,834	07/04/2006	Zhou	704	244	
	14B	7,076,362	07/11/2006	Ohtsuji *et al.*	701	211	
	14C	7,082,469	07/25/2006	Gold *et al.*	709	231	
	14D	7,085,708	08/01/2006	Manson	704	9	
	14E	7,092,928	08/15/2006	Elad *et al.*	706	60	
	14F	7,107,210	09/12/2006	Deng *et al.*	704	226	
	14G	7,107,218	09/12/2006	Preston	704	270	
	14H	7,110,951	09/19/2006	Lemelson *et al.*	704	270	
	14I	7,127,395	10/24/2006	Gorin *et al.*	704	257	
	14J	7,127,400	10/24/2006	Koch	704	270.1	
	14K	7,130,390	10/31/2006	Abburi	379	88.17	
	14L	7,136,875	11/14/2006	Anderson *et al.*	707	104.1	
	14M	7,137,126	11/14/2006	Coffman *et al.*	719	328	
	14N	7,143,037	11/28/2006	Chestnut	704	251	
	14O	7,143,039	11/28/2006	Stifelman *et al.*	704	270	
	14P	7,146,319	12/05/2006	Hunt	704	254	
	14Q	7,149,696	12/12/2006	Shimizu *et al.*	705	1	
	14R	7,165,028	01/16/2007	Gong	704	233	
	14S	7,170,993	01/30/2007	Anderson *et al.*	379	265.09	
	14T	7,171,291	01/30/2007	Obradovich	701	29	
	14U	7,174,300	02/06/2007	Bush	704	275	
	14V	7,177,798	02/13/2007	Hsu *et al.*	704	9	
	14W	7,184,957	02/27/2007	Brookes *et al.*	704	246	

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	15A	7,190,770	03/13/2007	Ando *et al.*	379	88.01	
	15B	7,197,069	03/27/2007	Agazzi *et al.*	375	233	
	15C	7,197,460	03/27/2007	Gupta *et al.*	704	270.1	
	15D	7,203,644	04/10/2007	Anderson *et al.*	704	246	
	15E	7,206,418	04/17/2007	Yang *et al.*	381	92	
	15F	7,207,011	04/17/2007	Mulvey *et al.*	715	812	
	15G	7,215,941	05/08/2007	Beckmann *et al.*	455	404.1	
	15H	7,228,276	06/05/2007	Omote *et al.*	704	243	
	15I	7,231,343	06/12/2007	Treadgold *et al.*	704	9	
	15J	7,236,923	06/26/2007	Gupta	704	9	
	15K	7,254,482	08/07/2007	Kawasaki *et al.*	701	211	
	15L	7,272,212	09/18/2007	Eberle *et al.*	379	88.17	
	15M	7,277,854	10/02/2007	Bennett *et al.*	704	257	
	15N	7,283,829	10/16/2007	Christenson *et al.*	455	461	
	15O	7,283,951	10/16/2007	Marchisio *et al.*	704	9	
	15P	7,289,606	10/30/2007	Sibal *et al.*	379	52	
	15Q	7,299,186	11/20/2007	Kuzunuki *et al.*	704	270.1	
	15R	7,301,093	11/27/2007	Sater *et al.*	84	615	
	15S	7,305,381	12/04/2007	Poppink *et al.*	1	1	
	15T	7,321,850	01/22/2008	Wakita	704	10	
	15U	7,328,155	02/05/2008	Endo *et al.*	704	251	
	15V	7,337,116	02/26/2008	Charlesworth *et al.*	704	254	
	15W	7,340,040	03/04/2008	Saylor *et al.*	379	67.1	

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	16A	7,366,285	04/29/2008	Parolkar *et al.*	379	88.17	
	16B	7,366,669	04/29/2008	Nishitani *et al.*	704	256	
	16C	7,376,645	05/20/2008	Bernard	707	3	
	16D	7,386,443	06/10/2008	Parthasarathy *et al.*	704	201	
	16E	7,398,209	07/08/2008	Kennewick *et al.*	704	255	
	16F	7,406,421	07/29/2008	Odinak *et al.*	704	275	
	16G	7,415,414	08/19/2008	Azara *et al.*	704	270	
	16H	7,421,393	09/02/2008	Di Fabbrizio *et al.*	704	275	
	16I	7,424,431	09/09/2008	Greene *et al.*	704	270	
	16J	7,447,635	11/04/2008	Konopka *et al.*	704	275	
	16K	7,451,088	11/11/2008	Ehlen *et al.*	704	270.1	
	16L	7,454,608	11/18/2008	Gopalakrishnan *et al.*	713	100	
	16M	7,461,059	12/02/2008	Richardson *et al.*	707	5	
	16N	7,472,020	12/30/2008	Brulle-Drews	701	211	
	16O	7,472,060	12/30/2008	Gorin *et al.*	704	240	
	16P	7,472,075	12/30/2008	Odinak *et al.*	705	26	
	16Q	7,477,909	01/13/2009	Roth	455	466	
	16R	7,478,036	01/13/2009	Shen *et al.*	704	9	
	16S	7,487,088	02/03/2009	Gorin *et al.*	704	240	
	16T	7,487,110	02/03/2009	Bennett *et al.*	705	26	
	16U	7,493,259	02/17/2009	Jones *et al.*	704	257	
	16V	7,493,559	02/17/2009	Wolff *et al.*	715	727	
	16W	7,502,672	03/10/2009	Kolls	701	29	

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	17A	7,502,738	03/10/2009	Kennewick *et al.*	704	257	
	17B	7,516,076	04/07/2009	Walker *et al.*	704	275	
	17C	7,529,675	05/05/2009	Maes	704	270.1	
	17D	7,536,297	05/19/2009	Byrd *et al.*	704	10	
	17E	7,536,374	05/19/2009	Au	706	55	
	17F	7,542,894	06/02/2009	Murata	704	9	
	17G	7,546,382	06/09/2009	Healey *et al.*	709	246	
	17H	7,548,491	06/16/2009	Macfarlane	367	198	
	17I	7,552,054	06/23/2009	Stifelman *et al.*	704	270	
	17J	7,558,730	07/07/2009	Davis *et al.*	704	235	
	17K	7,574,362	08/11/2009	Walker *et al.*	704	275	
	17L	7,577,244	08/18/2009	Taschereau	379	218.01	
	17M	7,606,708	10/20/2009	Hwang	704	257	
	17N	7,620,549	11/17/2009	Di Cristo *et al.*	704	257	
	17O	7,634,409	12/15/2009	Kennewick *et al.*	704	257	
	17P	7,640,006	12/29/2009	Portman *et al.*	455	412.1	
	17Q	7,640,160	12/29/2009	Di Cristo *et al.*	704	257	
	17R	7,640,272	12/29/2009	Mahajan *et al.*	707	104.1	
	17S	7,676,365	03/09/2010	Hwang *et al.*	704	240	
	17T	7,676,369	03/09/2010	Fujimoto *et al.*	704	270	
	17U	7,684,977	03/23/2010	Morikawa	704	211	
	17V	7,693,720	04/06/2010	Kennewick *et al.*	704	275	
	17W	7,729,916	06/01/2010	Coffman *et al.*	704	270	

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	18A	7,729,918	06/01/2010	Walker *et al.*	704	275	
	18B	7,729,920	06/01/2010	Chaar *et al.*	704	275	
	18C	7,734,287	06/08/2010	Ying	455	423	
	18D	7,748,021	06/29/2010	Obradovich	725	105	
	18E	7,788,084	08/31/2010	Brun *et al.*	704	7	
	18F	7,801,731	09/21/2010	Odinak *et al.*	704	275	
	18G	7,809,570	10/05/2010	Kennewick *et al.*	704	257	
	18H	7,818,176	10/19/2010	Freeman *et al.*	704	270	
	18I	7,831,426	11/09/2010	Bennett	704	252	
	18J	7,831,433	11/09/2010	Belvin *et al.*	704	275	
	18K	7,856,358	12/21/2010	Ho	704	270	
	18L	7,873,519	01/18/2011	Bennett	704	257	
	18M	7,873,523	01/18/2011	Potter *et al.*	704	275	
	18N	7,873,654	01/18/2011	Bernard	707	769	
	18O	7,881,936	02/01/2011	Longe *et al.*	704	257	
	18P	7,890,324	02/15/2011	Bangalore *et al.*	704	231	
	18Q	7,894,849	02/22/2011	Kass *et al.*	455	550.1	
	18R	7,902,969	03/08/2011	Obradovich	340	439	
	18S	7,917,367	03/29/2011	Di Cristo *et al.*	704	270.1	
	18T	7,920,682	04/05/2011	Byrne *et al.*	379	88.18	
	18U	7,949,529	05/24/2011	Weider *et al.*	704	270	
	18V	7,949,537	05/24/2011	Walker *et al.*	704	275	
	18W	7,953,732	05/31/2011	Frank *et al.*	707	724	

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	19A	7,974,875	07/05/2011	Quilici *et al.*	705	14.4	
	19B	7,983,917	07/19/2011	Kennewick *et al.*	704	257	
	19C	7,984,287	07/19/2011	Gopalakrishnan *et al.*	713	100	
	19D	8,005,683	08/23/2011	Tessel *et al.*	704	275	
	19E	8,015,006	09/06/2011	Kennewick *et al.*	704	236	
	19F	8,060,367	11/15/2011	Keaveney	704	247	
	19G	8,069,046	11/29/2011	Kennewick *et al.*	704	257	
	19H	8,073,681	12/06/2011	Baldwin *et al.*	704	9	
	19I	8,077,975	12/13/2011	Ma *et al.*	382	187	
	19J	8,082,153	12/20/2011	Coffman *et al.*	704	270	
	19K	8,086,463	12/27/2011	Ativanichayaphong *et al.*	704	275	
	19L	8,112,275	02/07/2012	Kennewick *et al.*	704	240	
	19M	8,140,327	03/20/2012	Kennewick *et al.*	704	226	
	19N	8,140,335	03/20/2012	Kennewick *et al.*	704	257	
	19O	8,145,489	03/27/2012	Freeman *et al.*	704	257	
	19P	8,150,694	04/03/2012	Kennewick *et al.*	704	257	
	19Q	8,155,962	04/10/2012	Kennewick *et al.*	704	257	
	19R	8,170,867	05/01/2012	Germain	704	9	
	19S	8,195,468	06/05/2012	Weider *et al.*	704	275	
	19T	8,219,399	07/10/2012	Lutz *et al.*	704	270	
	19U	8,219,599	07/10/2012	Tunstall-Pedoe	707	955	
	19V	8,224,652	07/17/2012	Wang *et al.*	704	275	
	19W	8,255,224	08/28/2012	Singleton *et al.*	704	275	

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	20A	8,326,627	12/04/2012	Kennewick *et al.*	704	257	
	20B	8,326,634	12/04/2012	Di Cristo *et al.*	704	270.1	
	20C	8,326,637	12/04/2012	Baldwin *et al.*	704	275	
	20D	8,332,224	12/11/2012	Di Cristo *et al.*	704	257	
	20E	8,370,147	02/05/2013	Kennewick *et al.*	704	257	
	20F	8,447,607	05/21/2013	Weider *et al.*	704	250	
	20G	8,452,598	05/28/2013	Kennewick *et al.*	704	257	
	20H	8,509,403	08/13/2013	Chiu *et al.*	379	114.13	
	20I	8,515,765	08/20/2013	Baldwin et al.	704	275	
	20J	8,527,274	09/03/2013	Freeman *et al.*	704	257	
	20K	8,589,161	11/19/2013	Kennewick *et al.*	704	252	
	20L	8,620,659	12/31/2013	Di Cristo et al.	704	257	
	20M	8,719,009	05/06/2014	Baldwin et al.	704	9	
	20N	8,719,026	05/06/2014	Kennewick *et al.*	704	257	
	20O	8,738,380	05/27/2014	Baldwin *et al.*	704	257	
	20P	2001/0041980	11/15/2001	Howard *et al.*	704	270	
	20Q	2001/0049601	12/06/2001	Kroeker *et al.*	704	254	
	20R	2001/0054087	12/20/2001	Flom *et al.*	709	218	
	20S	2002/0015500	02/07/2002	Belt *et al.*	381	66	
	20T	2002/0022927	02/21/2002	Lemelson *et al.*	701	301	
	20U	2002/0029261	03/07/2002	Shibata	709	219	
	20V	2002/0032752	03/14/2002	Gold *et al.*	709	218	
	20W	2002/0035501	03/21/2002	Handel *et al.*	705	10	

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	21A	2002/0040297	04/04/2002	Tsiao *et al.*	704	257	
	21B	2002/0049535	04/25/2002	Rigo *et al.*	701	211	
	21C	2002/0049805	04/25/2002	Yamada *et al.*	709	202	
	21D	2002/0059068	05/16/2002	Rose *et al.*	704	246	
	21E	2002/0065568	05/30/2002	Silfvast *et al.*	700	94	
	21F	2002/0067839	06/06/2002	Heinrich	381	110	
	21G	2002/0069059	06/06/2002	Smith	704	257	
	21H	2002/0069071	06/06/2002	Knockeart et al.	704	275	
	21I	2002/0082911	06/27/2002	Dunn *et al.*	705	14	
	21J	2002/0087312	07/04/2002	Lee *et al.*	704	251	
	21K	2002/0087326	07/04/2002	Lee *et al.*	704	270.1	
	21L	2002/0087525	07/04/2002	Abbott *et al.*	707	3	
	21M	2002/0107694	08/08/2002	Lerg	704	273	
	21N	2002/0120609	08/29/2002	Lang *et al.*	707	1	
	21O	2002/0124050	09/05/2002	Middeljans	709	203	
	21P	2002/0133354	09/19/2002	Ross *et al.*	704	275	
	21Q	2002/0133402	09/19/2002	Faber *et al.*	705	14	
	21R	2002/0135618	09/26/2002	Maes et al.	345	767	
	21S	2002/0138248	09/26/2002	Corston-Oliver *et al.*	704	1	
	21T	2002/0143532	10/03/2002	McLean *et al.*	704	235	
	21U	2002/0143535	10/03/2002	Kist *et al.*	704	251	
	21V	2002/0161646	10/31/2002	Gailey *et al.*	705	14	
	21W	2002/0173333	11/21/2002	Buchholz *et al.*	455	527	

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	22A	2002/0173961	11/21/2002	Guerra	704	258	
	22B	2002/0184373	12/05/2002	Maes	709	228	
	22C	2002/0188602	12/12/2002	Stubler *et al.*	707	3	
	22D	2002/0198714	12/26/2002	Zhou	704	252	
	22E	2003/0014261	01/16/2003	Kageyama	704	275	
	22F	2003/0016835	01/23/2003	Elko *et al.*	381	92	
	22G	2003/0046346	03/06/2003	Mumick *et al.*	709	205	
	22H	2003/0064709	04/03/2003	Gailey *et al.*	455	412	
	22I	2003/0065427	04/03/2003	Funk *et al.*	701	1	
	22J	2003/0069734	04/10/2003	Everhart	704	275	
	22K	2003/0088421	05/08/2003	Maes *et al.*	704	270.1	
	22L	2003/0097249	05/22/2003	Walker *et al.*	704	1	
	22M	2003/0110037	06/12/2003	Walker *et al.*	704	257	
	22N	2003/0112267	06/19/2003	Belrose	345	728	
	22O	2003/0115062	06/19/2003	Walker *et al.*	704	258	
	22P	2003/0120493	06/26/2003	Gupta	704	270.1	
	22Q	2003/0135488	07/17/2003	Amir *et al.*	707	3	
	22R	2003/0144846	07/31/2003	Denenberg *et al.*	704	277	
	22S	2003/0158731	08/21/2003	Falcon *et al.*	704	231	
	22T	2003/0161448	08/28/2003	Parolkar *et al.*	379	88.17	
	22U	2003/0182132	09/25/2003	Niemoeller	704	275	
	22V	2003/0204492	10/30/2003	Wolf *et al.*	707	3	
	22W	2003/0206640	11/06/2003	Malvar *et al.*	381	93	

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	23A	2003/0212550	11/13/2003	Ubale	704	215	
	23B	2003/0212558	11/13/2003	Matula	704	260	
	23C	2003/0212562	11/13/2003	Patel *et al.*	704	275	
	23D	2003/0225825	12/04/2003	Healey *et al.*	709	203	
	23E	2003/0236664	12/25/2003	Sharma	704	251	
	23F	2004/0006475	01/08/2004	Ehlen *et al.*	704	270.1	
	23G	2004/0010358	01/15/2004	Oesterling *et al.*	701	49	
	23H	2004/0025115	02/05/2004	Sienel *et al.*	715	513	
	23I	2004/0044516	03/04/2004	Kennewick *et al.*	704	5	
	23J	2004/0098245	05/20/2004	Walker *et al.*	704	1	
	23K	2004/0117179	06/17/2004	Balasuriya	704	231	
	23L	2004/0117804	06/17/2004	Scahill *et al.*	719	320	
	23M	2004/0122674	06/24/2004	Bangalore *et al.*	704	276	
	23N	2004/0140989	07/22/2004	Papageorge	345	700	
	23O	2004/0158555	08/12/2004	Seedman *et al.*	707	3	
	23P	2004/0166832	08/26/2004	Portman *et al.*	455	412.1	
	23Q	2004/0167771	08/26/2004	Duan *et al.*	704	10	
	23R	2004/0172258	09/02/2004	Dominach *et al.*	704	277	
	23S	2004/0193408	09/30/2004	Hunt	704	209	
	23T	2004/0193420	09/30/2004	Kennewick *et al.*	704	257	
	23U	2004/0199375	10/07/2004	Ehsani *et al.*	704	4	
	23V	2004/0205671	10/14/2004	Sukehiro *et al.*	715	532	
	23W	2004/0243417	12/02/2004	Pitts, III *et al.*	704	276	

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	24A	2005/0015256	01/20/2005	Kargman	704	272	
	24B	2005/0021334	01/27/2005	Iwahashi	704	240	
	24C	2005/0021470	01/27/2005	Martin *et al.*	705	51	
	24D	2005/0021826	01/27/2005	Kumar	709	232	
	24E	2005/0021331	01/27/2005	Huang *et al.*	704	231	
	24F	2005/0033574	02/10/2005	Kim *et al.*	704	251	
	24G	2005/0033582	02/10/2005	Gadd *et al.*	704	277	
	24H	2005/0043940	02/24/2005	Elder	704	9	
	24I	2005/0114116	05/26/2005	Fiedler	704	201	
	24J	2005/0125232	06/09/2005	Gadd	704	270.1	
	24K	2005/0131673	06/16/2005	Koizumi *et al.*	704	2	
	24L	2005/0137850	06/23/2005	Odell	704	4	
	24M	2005/0137877	06/23/2005	Oesterling *et al.*	704	275	
	24N	2005/0143994	06/30/2005	Mori *et al.*	704	235	
	24O	2005/0144013	06/30/2005	Fujimoto *et al.*	704	277	
	24P	2005/0216254	09/29/2005	Gupta *et al.*	704	9	
	24Q	2005/0234727	10/20/2005	Chiu	704	270.1	
	24R	2005/0246174	11/03/2005	DeGolia	704	270	
	24S	2005/0283752	12/22/2005	Fruchter *et al.*	717	100	
	24T	2006/0041431	02/23/2006	Maes	704	270.1	
	24U	2006/0047509	03/02/2006	Ding *et al.*	704	231	
	24V	2006/0074671	04/06/2006	Farmaner *et al.*	704	257	
	24W	2006/0206310	09/14/2006	Ravikumar *et al.*	704	9	

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	25A	2006/0217133	09/28/2006	Christenson *et al.*	455	461	
	25B	2006/0285662	12/21/2006	Yin *et al.*	379	88.16	
	25C	2007/0033005	02/08/2007	Cristo *et al.*	704	9	
	25D	2007/0033020	02/08/2007	(Kelleher) Francois *et al.*	704	226	
	25E	2007/0038436	02/15/2007	Cristo *et al.*	704	9	
	25F	2007/0038445	02/15/2007	Helbing *et al.*	704	235	
	25G	2007/0043569	02/22/2007	Potter, III *et al.*	704	270	
	25H	2007/0043574	02/22/2007	Coffman *et al.*	704	275	
	25I	2007/0043868	02/22/2007	Kumar *et al.*	709	226	
	25J	2007/0050191	03/01/2007	Weider *et al.*	704	275	
	25K	2007/0055525	03/08/2007	Kennewick *et al.*	704	257	
	25L	2007/0061067	03/15/2007	Zeinstra *et al.*	701	200	
	25M	2007/0061735	03/15/2007	Hoffberg *et al.*	715	744	
	25N	2007/0073544	03/29/2007	Millett *et al.*	704	277	
	25O	2007/0078708	04/05/2007	Yu *et al.*	705	14	
	25P	2007/0078709	04/05/2007	Rajaram	705	14	
	25Q	2007/0094003	04/26/2007	Huang *et al.*	704	3	
	25R	2007/0118357	05/24/2007	Kasravi *et al.*	704	10	
	25S	2007/0135101	06/14/2007	Ramati *et al.*	455	414.1	
	25T	2007/0146833	06/28/2007	Satomi *et al.*	358	537	
	25U	2007/0162296	07/12/2007	Altberg *et al.*	705	1	
	25V	2007/0179778	08/02/2007	Gong *et al.*	704	9	
	25W	2007/0186165	08/09/2007	Maislos *et al.*	715	728	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	26A	2007/0198267	08/23/2007	Jones *et al.*	704	257	
	26B	2007/0203736	08/30/2007	Ashton	705	1	
	26C	2007/0214182	09/13/2007	Rosenberg	707	104.1	
	26D	2007/0250901	10/25/2007	McIntire *et al.*	725	146	
	26E	2007/0265850	11/15/2007	Kennewick *et al.*	704	257	
	26F	2007/0299824	12/27/2007	Pan *et al.*	707	3	
	26G	2008/0034032	02/07/2008	Healey *et al.*	709	203	
	26H	2008/0065386	03/13/2008	Cross *et al.*	704	270	
	26I	2008/0091406	04/17/2008	Baldwin *et al.*	704	4	
	26J	2008/0103761	05/01/2008	Printz *et al.*	704	9	
	26K	2008/0109285	05/08/2008	Reuther *et al.*	705	7	
	26L	2008/0115163	05/15/2008	Gilboa *et al.*	725	34	
	26M	2008/0133215	06/05/2008	Sarukkai	704	2	
	26N	2008/0140385	06/12/2008	Mahajan *et al.*	704	9	
	26O	2008/0147410	06/19/2008	Odinak	704	270.1	
	26P	2008/0154604	06/26/2008	Sathish *et al.*	704	257	
	26Q	2008/0177530	07/24/2008	Cross *et al.*	704	4	
	26R	2008/0189110	08/07/2008	Freeman *et al.*	704	251	
	26S	2008/0235023	09/25/2008	Kennewick *et al.*	704	257	
	26T	2008/0235027	09/25/2008	Cross	704	270.1	
	26U	2008/0319751	12/25/2008	Kennewick *et al.*	704	257	
	26V	2009/0052635	02/26/2009	Jones *et al.*	379	88.02	
	26W	2009/0067599	03/12/2009	Agarwal *et al.*	379	114.21	

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	27A	2009/0076827	03/19/2009	Bulitta *et al.*	704	275	
	27B	2009/0106029	04/23/2009	DeLine *et al.*	704	275	
	27C	2009/0117885	05/07/2009	Roth	455	414.3	
	27D	2009/0144271	06/04/2009	Richardson *et al.*	707	5	
	27E	2009/0150156	06/11/2009	Kennewick *et al.*	704	257	
	27F	2009/0171664	07/02/2009	Kennewick *et al.*	704	257	
	27G	2009/0216540	08/27/2009	Tessel *et al.*	704	275	
	27H	2009/0271194	10/29/2009	Davis *et al.*	704	235	
	27I	2009/0273563	11/05/2009	Pryor	345	157	
	27J	2009/0276700	11/05/2009	Anderson *et al.*	715	700	
	27K	2009/0299745	12/03/2009	Kennewick *et al.*	704	257	
	27L	2009/0307031	12/10/2009	Winkler *et al.*	705	7	
	27M	2009/0313026	12/17/2009	Coffman *et al.*	704	275	
	27N	2010/0023320	01/28/2010	Di Cristo *et al.*	704	9	
	27O	2010/0029261	02/04/2010	Mikkelsen *et al.*	455	419	
	27P	2010/0049501	02/25/2010	Kennewick *et al.*	704	9	
	27Q	2010/0049514	02/25/2010	Kennewick *et al.*	704	233	
	27R	2010/0057443	03/04/2010	Di Cristo *et al.*	704	9	
	27S	2010/0063880	03/11/2010	Atsmon *et al.*	705	14.53	
	27T	2010/0036967	02/11/2010	Caine *et al.*	709	236	
	27U	2010/0185512	07/22/2010	Borger *et al.*	705	14.49	
	27V	2010/0145700	06/10/2010	Kennewick *et al.*	704	257	
	27W	2010/0204986	08/12/2010	Kennewick *et al.*	704	226	

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	28A	2010/0204994	08/12/2010	Kennewick *et al.*	704	257	
	28B	2010/0217604	08/26/2010	Baldwin *et al.*	704	275	
	28C	2010/0286985	11/11/2010	Kennewick *et al.*	704	257	
	28D	2010/0299142	11/25/2010	Freeman *et al.*	704	9	
	28E	2010/0312566	12/09/2010	Odinak *et al.*	704	275	
	28F	2011/0112827	05/12/2011	Kennewick *et al.*	704	9	
	28G	2011/0112921	05/12/2011	Kennewick *et al.*	705	26.1	
	28H	2011/0131036	06/02/2011	Di Cristo *et al.*	704	9	
	28I	2011/0131045	06/02/2011	Cristo *et al.*	704	249	
	28J	2011/0231182	09/22/2011	Weider *et al.*	704	9	
	28K	2011/0231188	09/22/2011	Kennewick *et al.*	704	236	
	28L	2012/0022857	01/26/2012	Baldwin *et al.*	704	9	
	28M	2012/0101809	04/26/2012	Kennewick *et al.*	704	9	
	28N	2012/0101810	04/26/2012	Kennewick *et al.*	704	9	
	28O	2012/0109753	05/03/2012	Kennewick *et al.*	705	14.58	
	28P	2012/0150636	06/14/2012	Freeman *et al.*	705	14.49	
	28Q	2012/0278073	11/01/2012	Weider et al.	704	235	
	28R	2013/0054228	02/28/2013	Baldwin *et al.*	704	9	
	28S	2013/0080177	03/28/2013	Chen	704	275	
	28T	2013/0211710	08/15/2013	Kennewick *et al.*	701	419	
	28U	2013/0253929	09/26/2013	Weider *et al.*	704	235	
	28V	2013/0297293	11/07/2013	Di Cristo *et al.*	704	9	
	28W	2013/0304473	11/14/2013	Baldwin *et al.*	704	257	

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	29A	2013/0339022	12/19/2013	Baldwin *et al.*	704	257	
	29B	2014/0012577	01/09/2014	Freeman *et al.*	704	249	
	29C	2014/0108013	04/17/2014	Di Cristo *et al.*	704	254	
	29D	2014/0156278	06/05/2014	Kennewick *et al.*	704	254	
	29E	2014/0249821	09/04/2014	Kennewick *et al.*	704	257	
	29F	2014/0249822	09/04/2014	Baldwin *et al.*	704	257	
	29G	2014/0288934	09/25/2014	Kennewick *et al.*	704	254	

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SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] This application is a continuation of U.S. Patent Application Serial No. 13/690,895, entitled "System and Methods for Responding to Natural Language Speech Utterance," filed November 30, 2012, now allowed, which is a continuation of U.S. Patent Application Serial No. 13/019,834, filed February 2, 2011, (which issued as U.S. Patent No. 8,326,634 on December 4, 2012), which is a continuation of U.S. Patent Application Serial No. 12/617,506, filed November 12, 2009, (which issued as U.S. Patent No. 7,917,367 on March 29, 2011), which is a continuation of U.S. Patent Application Serial No. 11/197,504, filed August 5, 2005, (which issued as U.S. Patent No. 7,640,160 on December 29, 2009), the contents of which are hereby incorporated by reference in their entirety.

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[002] The invention relates to retrieval of information or processing of commands through a speech interface and/or a combination of a speech interface and a non-speech interface. More specifically, the invention provides a fully integrated environment that allows users to submit natural language questions and commands via the speech interface and the non-speech interface. Information may be obtained from a wide range of disciplines, making local and network inquiries 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.

BACKGROUND OF THE RELATED ART

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

[004] Speech recognition has steadily improved in accuracy and today is successfully used in a wide range of applications. Natural language processing has been applied to the parsing of speech queries. Yet, current systems do not reliably provide a complete environment for users to submit verbal and/or textual communications through natural language queries that are processed to provide natural responses. There remain a number of significant barriers to creation of a complete speech-based and/or non-speech-based natural language query and response environment.

SUMMARY OF THE INVENTION

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

[006] According to one aspect of the invention, users may provide the system with spoken utterances and/or textual communications in a natural language format, including imperfect information such as, incomplete thoughts, incomplete sentences, incomplete phrases, slang terminology, repeated words, word variations, synonyms, or other imperfect information. In order for machines (e.g., computer devices) to properly respond to questions and/or commands that are presented in the natural language format, the questions and/or commands may be parsed and interpreted to formulate machine processable queries and algorithms.

[007] In another aspect of the invention, systems are provided for overcoming the deficiencies of prior systems through the application of a complete speech-based information query, retrieval, presentation and command environment or a combination of speech-based and non-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 submitting queries or commands to multiple domains. Through this integrated approach, a complete speech-based natural language query and response environment may be created. Alternatively, a combination of speech-based and non-speech-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.

[008] According to another aspect of the invention, the system may include a speech unit interface device that receives utterances, including 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 response and/or generate a natural language message, such as an alert message, without any prompting from a user. According to another embodiment of the invention, the non-speech interface may be provided in addition to, or in place of, the speech unit interface. For example, the non-speech interface may communicate non-speech information, such as textual communications, graphical or tabular information, or other non-speech information.

[009] According to one embodiment of the invention, infrastructure may be provided to maintain context information during multi-modal interactions, such as speech and/or non-speech interactions. According to one exemplary embodiment of the invention, context information may be maintained in a multi-modal environment by providing communication

channels between multi-modal devices, or mobile device, and the system. The communication channels allow the system to receive multi-modal input such as text-based commands and questions and/or voice commands and questions. According to another embodiment of the invention, the multi-modal input may include a string of text, such as keywords, that are received as commands or questions. According to yet another embodiment of the invention, the system may synchronize the context between the multi-modal devices and the speech-based units. In order to send a response to the corresponding device, the system may track the source and send the response to the corresponding speech interface or the non-speech interface.

[010] According to an alternative embodiment of the invention, context information may be maintained using a context manager that may be centrally positioned to receive input from multiple sources and to provide output to multiple sources. According to one embodiment, the devices that communicate with the context manager may register through a registration module and may subscribe to one or more events. According to another embodiment of the invention, the context manager may receive input in Context XML form, for example. The other registered devices may be informed of context changes through a context tracking module to enable synchronizing of context across the registered modules. According to one embodiment of the invention, registered modules may be added or removed from the system. The registered modules may include dynamic link libraries (DLLs) that are specific to multi-modal devices.

[011] According to yet another alternative embodiment of the invention, context information may be determined from a command or request that is presented in a textual format and/or a command or request that is presented as an utterance and processed using a multi-pass automatic speech recognition module that transcribes the utterance to a text message. The command or request may be compared against a context description grammar to identify a match. Any active grammars in the context description grammar may be scored against the command or request and a best match may be sent to a response generator module. Agents may be associated with corresponding response generator modules and may retrieve the

requested information for generation of a response. The agents may update a context stack to enable follow-up requests.

[012] According to another aspect of the invention, the speech unit and/or multi-modal device may be incorporated into the computer device or system, or may be separate structures. If separate structures are provided, the speech unit and/or multi-modal devices may be connected to the computer device via a wired or wireless connection. If a wireless connection is provided, a base unit may be connected to the computer, internally or externally, to communicate with the speech unit and/or multi-modal device.

[013] According to another aspect of the invention, the computer devices or systems may comprise stand alone or networked PCs, personal digital assistants (PDAs), cellular telephones, or other computer devices or systems. For convenience, these and other computer alternatives are referred to as computers. One aspect of the invention comprises software that may be installed onto the computer, where the software may include one or more of the following modules: a non-speech information receiving module; a speech recognition module that captures user utterances; a parser that parses the utterance; a text to speech engine module that converts the text to speech; a network interface that enables the computer to interface with one or more networks; a non-speech interface module; and an event manager for managing events. Preferably, the event manager is in communication with a context description grammar, 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, a cognitive model that provides statistical abstracts of user interaction patterns with the system, one or more databases, and other components.

[014] According to another aspect of the invention domain specific behavior and information may be organized into data managers. Data managers are autonomous executables that receive, process, and respond to user questions, queries and commands. The data managers provide complete, convenient and re-distributable packages or modules of functionality, typically for a specific domain or application. Data managers may be complete packages of executable code, scripts, links to information, and other forms of communication data that provide a specific package of functionality, usually in a specific domain. In other words, data

managers include components for extending the functionality to a new domain. Further, data managers and their associated data may be updated remotely over a network as new behavior is added or new information becomes available. Data managers may use system resources and the services of other, typically more specialized, data managers. Data managers may 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 manager may be used to add new data managers to the system or update existing data managers.

[015] According to another aspect of the invention, license management capabilities allowing the sale of data managers 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 data managers, update existing data managers by adding new behaviors and information, and making these data managers for other users as agents.

[016] In order to enhance the natural query and response environment, the system may format results to increase understandability to users. Formatting and presentation of results may be based 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. By contrast, rigid, highly formatted, or structured presentation of results may be deemed unnatural by many users.

[017] According to another embodiment of the invention, the system may simulate some aspects of a human "personality." In some cases, the presentation of the response and the terms that are used to provide the response may be randomized to avoid the appearance of rigidly formatted or mechanical responses. The use of other simulated personality characteristics is also desirable. For example, a response that may be upsetting to the user may be presented in a sympathetic manner. Furthermore, results of requests may be long text strings, lists, tables or other lengthy sets of data. Natural presentation of this type of information presents particular challenges because simply reading the long response is generally not preferred. Instead, the system may parse important sections from the response and may initially provide only reports. Determining what parts of a long response are presented may be based 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 may give the user interactive control over what information to present and how much information to present, to stop the response all together, or to take other actions.

[018] According to another aspect of the invention, the system may process and respond to questions, requests and/or commands. Keywords or context may be used to determine whether the received utterance and/or textual message includes a request or command. For example, utterances may include aspects of questions, requests and/or commands. For example, a user may utter "record my favorite TV program." A request is processed to determine the name, the channel, and time for the user's favorite TV program. A command must be executed to set a video recorder to capture this program.

[019] For utterances including questions and/or requests, the system may perform multiple steps that may include one or more of:

- capturing the user's questions and/or requests through speech recognition components that operate in a variety of real-world environments;
- parsing and interpreting the question and/or request;
- determining the domain of expertise and context, invoking the proper resources, including agents;
- formulating one or more requests to one or more local and/or network data sources or sending appropriate commands to local or remote devices or the system itself;
- performing presentation formatting, variable substitutions and transformations to modify the requests to a form that yields desired results from the available sources;
- executing the multiple requests or commands in an asynchronous manner and dealing gracefully with failures;
- extracting or scraping the desired information from the one or more results, which may be returned in any one of a number of different formats;

- evaluating and interpreting the results, including processing of errors to provide one or more results judged to be "best," even if the results are ambiguous, incomplete, or conflicting;
- performing formatting, variable substitutions and transformations to modify the results to a form most easily understood by the user; and
- presenting the compound result, through a text to speech engine or a multi-modal interface, to the user in a useful and expected manner.

[020] The above steps may be performed with knowledge of the domain of expertise, the context for the question or command, domain specific information, the history of the user's interactions, user preferences, available information sources or commands, and responses obtained from the sources.

[021] Probabilistic or fuzzy set decision and matching methods may be applied to deal with inconsistent, ambiguous, conflicting and incomplete information or responses. In addition, asynchronous queries may be used to provide rapid and graceful failure of requests or commands that allow the system to robustly return results quickly and in a manner that seems natural to the user.

[022] Many everyday questions are inherently subjective and result in answers that are a matter of opinion 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 adaptive, probabilistic, and fuzzy set decision and matching methods to identify the subjective nature of the question and to evaluate a range of possible answers, wherein one or more answers may be selected that most accurately represent the type of result desired by the user.

[023] 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 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 may create commands for regularly used reports, automatically generated alerts, and other requests and for the

formatting and presentation of results. The system may use profile data in interpreting questions, formulating requests, interpreting request results 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.

[024] According to one aspect of the invention, the system may attempt to provide rapid responses in order to provide a natural question and response environment. The rapid responses may be provided without obtaining additional information. The system may determine agent composition, context and/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 trigger one or more agents to respond to the user's question or command. The agents may make one or more requests and rapidly return a formatted response. Thus, users may receive direct responses to a set of questions, each with a different response or context. In some cases, the available information, including the request results, may not adequately answer the questions presented. In such situations, the user may be asked one or more follow-up questions to resolve the ambiguity. Additional requests may then be made before an adequate response is provided. In these cases, the system may use context information, user profile information and/or domain specific information to minimize the interaction with the user required to deliver a response.

[025] If the confidence level of the domain or context score is not high enough to ensure a reliable response, the system may request that the user verify that 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.

[026] According to one aspect of the invention, the system may accept any natural language question or command and, as a result, may be subject to ambiguous requests. To assist users in

formulating 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.

[027] In order to make the responses to user's questions and commands seem more natural, the system may employ one or more dynamically invokable personalities and/or emotional models. Personalities and emotional models have specific characteristics that simulate the behavioral characteristics of real humans. Examples of these characteristics include sympathy, irritation, and helpfulness and associated emotions. 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 and/or emotions 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, and responses obtained from the sources.

[028] According to another aspect of the invention, special procedures may be employed to present information in the form of long text strings, tables, lists or other long response sets. Simply presenting a long set of information in an ordered manner may not be considered natural or what most users have in mind. The system may use probabilistic or fuzzy set matching methods to extract relevant information and present these subsets first. Further the system may provide commands allowing users to skip through the list, find keywords or key information in the list or stop processing the list altogether.

[029] 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 may be 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.

[030] 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:

- capturing the user's command through speech recognition that operates in a variety of real-world environments;
- parsing and interpreting the command;
- determining the domain for the command and context, invoking the proper resources, including agents;
- formulating device specific commands for the system or external devices;
- routing commands to the system, or external devices, including external devices connected to data networks;
- receiving and processing results of commands, including errors; and
- optionally, providing responses to users indicating the success or failure of the command, and possibly including state information.

[031] The system may be used in conjunction with a wide range of platform environments. These environments may 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, such as 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.

[032] According to another aspect of the invention, the system may be deployed in a network of devices that use a 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.

[033] According to one embodiment of the invention, the system may support multiple users that access the system at different times. According to another embodiment of the invention, the system may support multiple users that access the system during a same session in an interleaved or overlapping manner. The system may recognize the multiple users by name, voice, or other characteristic and may invoke a correct profile for each user. If multiple users are addressing the system in overlapping or interleaved sessions, the system may identify the multiple users and may invoke one or more corresponding profiles. For applications that require security safeguards, the multiple users may be verified using voiceprint matching, password or pass-phrase matching, or other security safeguards.

[034] When multiple users are engaged in interleaved sessions, the system may gracefully resolve conflicts using a probabilistic or fuzzy set decision method for each user. This process may simulate the manner in which a human would address multiple questions from various sources. For example, the system may answer short questions first in time while answering longer questions later in time. Alternatively, the system may answer questions in the order that they are received, among other configurations.

[035] 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 may allow third party content developers to develop, distribute and sell specialized or domain specific system programs and information. Content may be created though creation of new data managers, scripting existing data managers, adding new data to agents or databases and adding or modifying links to information sources. Distribution of this information is sensitive to the user's interests and use history and to their willingness to pay or not.

[036] 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 data managers and information in their particular areas of expertise, to improve 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.

[037] 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 may be 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.

[038] Some example applications for the invention 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;
- interfaces 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.

[039] 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

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

[041] Figure 1 is an overall diagrammatic view according to one embodiment of the invention.

[042] Figure 2 is a schematic block diagram showing the agent architecture according to one embodiment of the invention.

[043] Figure 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.

[044] Figure 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.

[045] Figure 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.

[046] Figure 5 is a process for correctly interpreting a user's utterance according to one embodiment of the invention.

[047] Figure 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.

[048] Figure 7 illustrates a diagram for centrally maintaining context, according to one embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[049] Barriers to natural human request-response interaction between humans and machines include that natural language queries may be incomplete in their definition. Furthermore, context of previous questions, knowledge of the domain, and/or the user's history of interests and preferences may be needed to properly interpret questions and/or commands. Thus, natural language questions may not be easily transformed to machine processable form. Compounding this problem, natural language questions may be ambiguous or subjective. In these cases, forming a machine processable query and returning a natural language response may be difficult.

[050] In order for machines (e.g., computer devices) to properly respond to questions or commands that are submitted in a natural language form, machine processable queries and algorithms may be formulated after the natural form questions or commands have been parsed and interpreted. Algorithms describe how the machines should gather data to respond to the questions or commands. Depending on the nature of the questions or commands, there may not be a simple set of queries and algorithms that will return an adequate response. Several queries and algorithms may need to be initiated and even these queries and algorithms may

need to be chained or concatenated to achieve a complete response. Further, no single available source may contain the entire set of results needed to generate a complete response. Thus, multiple queries and/or algorithms, perhaps with several parts, may be generated to access multiple data sources that are located either locally, remotely, or both. Not all of the data sources, queries and/or algorithms may return useful results or any results at all.

[051] Useful results that are returned are often embedded in other information and may need to be extracted from the other information. For example, a few keywords or numbers may need to be "scraped" from a larger amount of other information in a text string, table, list, page, video stream or other information. At the same time, extraneous information including graphics or pictures may be removed to process the response. In any case, the multiple results must be evaluated and combined to form the best possible response, even in cases where some queries do not return useful results or fail to produce results entirely. In cases where the question is determined to be ambiguous or the result is inherently subjective, determining the results to present in the response 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.

[052] The following detailed description refers to the accompanying drawings, and describes exemplary embodiments of the 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.

[053] The invention provides a complete speech-based information query, retrieval, processing, and presentation environment or a combination of speech-based and non-speech-based information query, retrieval, processing, and presentation environment. In addition, the invention may be useful for controlling 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 submitting requests or commands in multiple domains. Through this integrated approach, a complete

speech-based natural language query, algorithm and response environment or a combination of speech-based and non-speech-based may be created. Figure 1 shows one exemplary schematic diagram view of a system 90 according to an embodiment of the invention.

[054] The system 90 may include a main unit 98, a speech unit 128, and multi-modal device 155. Alternatively, the system 98 may comprise completely separate systems for main unit 98, speech unit 128 and multi-modal device 155. 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.

[055] Agents 106 may include a collection of grammars, criteria handlers, and algorithms that are accessed to respond to a set of requests and/or commands. Agents 106 further may 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. One or more user profiles 110 may be provided that includes user specific data, parameters, and session and history information for determining the behavior of agents 106. One or more personality modules 108 may be provided in a data determining system that includes personality characteristics for agents 106. The update manager 104 manages the automatic and manual loading and updating of agents 106 and their associated data from the Internet 146 or other network through the network interface 116.

[056] According to one embodiment of the invention, the speech-based interface for the system 90 may include one or more speech units 128. Speech units 128 may include one or more microphones, for example array microphone 134, to receive the utterances from 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 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.

[057] According to one embodiment of the invention, the non-speech-based interface for the system 90 may include one or more multi-modal devices 155 that may include mobile devices, stand alone or networked computers, personal digital assistances (PDAs), portable computer devices, or other multi-modal devices.

[058] The speech units 128, multi-modal devices 155 and the main unit 98 may communicate over a communication link. The communication link may include a wired or wireless link. According to one embodiment, the communication link may comprise an RF link. The transceiver 130 on the speech unit may communicate 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.

[059] According to one embodiment of the invention, coded speech received at the transceiver 126 on the main unit 98 may be passed to the speech coder 122 for decoding and decompression. The decoded speech may be processed by the speech recognition engine 120 using the context description grammar module 112, among other information. Any recognized information may be processed by the parser 118, which transforms information into complete algorithms and questions using data supplied by knowledge agents. Knowledge agents may be selected from the plurality of agents 106 using a grammar stack, wherein the knowledge agents provide information for generating a response to the question or command. The knowledge agents may then process the commands or questions by creating queries that are submitted to local databases 102 or submitted through the network interface 116 to external data sources over the Internet 146 or external other networks. Algorithms typically result in actions taken by the system 90 itself (i.e., pause or stop), or to a remote device or data source (i.e., download data or program, or control a remote device), through the network interface to the Internet or other data interface.

[060] According to one embodiment of the invention, knowledge agents may return results of questions as responses to users. The responses may be created using the results of information queries, the system personality 108, the user preferences, other data in the user profile 110, and/or other information. Agents 106 may present these results using the speech unit 128. The agents 106 may create a response string, which is sent to the text to speech engine 124. The text to speech engine 124 generates the 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. Alternatively, agents 106 may present the results using multi-modal devices 155.

[061] The non-speech interface 114 may be part of, or separate from, the multi-modal devices 155 and may be used as a substitute or may complement the speech interface. For example, non-speech interface 114 may be used to present and to interact with non-speech (e.g., graphical or tabular) information in a manner more easily digested by the user. According to one embodiment of the invention, multi-modal support may be provided to maintain the context during both voice interaction and interaction through the non-speech interface 114. In one exemplary embodiment, a communication channel may be opened between multi-modal devices 155 and the main user interface system 90 to allow multi-modal devices 155 to input text commands and questions. The multi-modal devices 155 may receive and/or provide one or more types of communications including speech, text, digital audio files, and other communications. According to another embodiment of the invention, multi-modal devices 155 may send a string of text or keywords for a command or question. The main interface system 90 may synchronize the context between multi-modal device 155 and the speech units 128. In order to send a response to the corresponding device, the main user interface system 90 may track where the input came from so that the response may be sent to a TTS or multi-modal device 155.

[062] According to an alternative embodiment of the invention illustrated in Figure 7, a context manager 702 may be centrally maintained to allow input from and output to multiple mobile devices 36. Each of the mobile devices may communicate with the context manager

702 to register via registration module 712, wherein registration may indicate events that the mobile devices 36 may subscribe to. The context manager 702 may receive input in Context XML form, for example. The other registered mobile devices 36 may be informed of a context changes through context tracking module 714, thereby synchronizing the context across the registered mobile devices 36. According to one embodiment of the invention, registered mobile devices 36 may be added or removed. The registered mobile devices 36 may be dynamic link libraries (DLLs) that may be specific to the mobile devices 36.

[063] According to yet another alternative embodiment of the invention, context information may be determined from a command or request that is presented as a text message and/or a command or request that is presented as a verbal utterance and processed using a multi-pass automatic speech recognition module that transcribes the verbal utterance to a text message. The multi-pass automatic speech recognition module may use a dictation grammar or a large vocabulary grammar, among other resources, to transcribe the verbal utterance into a text message. On platforms where a dictation grammar is not available, the multi-pass automatic speech recognition module may use a virtual dictation grammar that uses decoy words for out-of-vocabulary words. Decoy words may include utility words, nonsense words, isolated syllables, isolated distinct sounds and other decoy words.

[064] According to one embodiment of the invention, the text message may be searched for a particular character, group of characters, word, group of words, and other text combinations. The text combination may be compared against entries in a context description grammar that is associated with each agent 106. If a match is identified between an active grammar in the context description grammar and the command and/or request, then the match may be scored. The agents 106 may be ranked based on the determined score. In generating an aggregate response from the one or more responses received from the agents 106, the ordering of the responses from the individual agents may be determined based on the rank of agents 106. The aggregate response may be generated by a response generator module. Agents 106 may update a context stack that includes an ordered list of command contexts, to enable follow-up requests.

[065] According to another embodiment of the invention, if a match is not found, or only a partial match is found, between the text message and active grammars, then a knowledge-enhanced speech recognition system may be used to semantically broaden the search. The knowledge-enhanced speech recognition system may be used to determine the intent of the request and/or to correct false recognitions. The knowledge-enhanced speech recognition may access a set of expected contexts that are stored in a context stack to determine a most likely context. The knowledge-enhanced speech recognition may use context specific matchers that are able to identify context such as time, location, numbers, dates, categories (e.g., music, movies, television, addresses, etc.) and other context. The matching may be performed by comparing a character, group of characters, a word, group of words, and other text combinations. Alternatively, or in addition to text based matching, the matching may be performed using phonetic matching, among other techniques. The results of any match may be used to generate a command and/or request that is communicated to agents 106 for additional processing. According to one embodiment of the invention, non-speech interface 114 may show system, state and history information in a more concise manner than is possible through the speech interface. Non-speech interface 114 may be accessed to create or extend capabilities of agents 106. These operations may include scripting of agents, adding data to the agent or databases 102 used by the agent, adding links to information sources, among other operations.

[066] According to another embodiment of the invention, system 90 may include different types of agents 106. For example, generic and domain specific behavior and information may be organized into domain agents. A system agent, on the other hand, may provide default functionality and basic services. The domain agents provide complete, convenient and re-distributable packages or modules for each application area. In other words, the domain agents include data that is 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 data managers and the system agent 150. 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 data managers by third parties to one or more users on a one time or subscription basis. In addition, users with particular expertise may create data managers, update existing data managers by adding new behaviors and information, and make these data managers to other users as agents. A block diagram of an agent architecture according to an embodiment of the invention is shown in Figure 2.

[067] Agents 106 may receive and return events to the event manager 100. Both system agents 150 and domain agents 156 may 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 may invoke selected agents. Agents use the nonvolatile storage for data, parameters, history information and local content provided in the system databases 102.

[068] According to one embodiment of the invention, 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. Agent manager 154 includes knowledge of agents 106 and maps agents 106 to the agent library 158. At shutdown, the agent manager may unload the agents 106. The agent manager 154 also performs license management functions for the domain agents 156 and content in the databases 102.

[069] The system agent 150 manages the criteria handlers 152 that handle specific parameters or values (criteria) used to determine context for questions and commands. According to one embodiment of the invention, criteria handlers 152 include parsing routines that are specialized to recognize particular parts of speech, such as times, locations, movie titles, and other parts of speech. The criteria handlers 152 may identify matching phrases and extract semantic attributes from the phrases. Both the system agent 150 and the domain agents 156 may use the criteria handlers 152. The various domain agents 156 may 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 may use the services of the agent library 158, which contains utilities for commonly used functions. According to one embodiment of the invention, the agent library may be a dynamic link library that implements one or more agents.

The agent 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.

[070] Domain agents 156 may be data-driven, scripted or created with compiled code. A base of generic agent may be 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.

[071] According to another embodiment of the invention, capabilities are provided to distribute and update system agents 150, domain agents 156, agent library 158 components, databases 102, and context description grammar 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 manage 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 these functions for all agents and database content including, agents and content available to all users or agents and/or content available to selected 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;

- updates to content, including dictionaries, encyclopedias and almanacs; and
- other content and database components.

[072] 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 146 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 manager 104 may uninstall agents that are no longer in use. In one embodiment of the invention, the update manager 104 may periodically query one or more sources of the licensed agents and database components to locate and 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.

[073] The agent manager 154 may provide license management clients that are capable of executing most any license terms and conditions. When a particular agent 106 and/or database element 102 is selected based on a submitted command, the agent 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 from web sites maintained by groups of domain experts) may also be managed by the agent manager 154.

[074] If questions or commands do not match an agent that is currently loaded on the system, the agent manager 154 may search the network 146 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 manager.

[075] 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 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 non-speech 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.

[076] 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 requests. The domain agent 156 passes a context description 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 may include 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.

3. A response list, determining the response of the domain 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 agent package 156. The user specific parameters are contained in the user profile 110.

[077] 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);
- special spelling;
- keywords;
- transformation or substitution variables;
- domains of interest; and
- other values.

[078] 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 variable (i.e., time, location, etc.) to determine when alerts should be sent. For example, an alert can be generated by sampling a stock price every fifteen minutes 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, users 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, users can create a "morning" report, which presents selected multimedia information from different sources (e.g., news, sports, traffic, weather, etc.) in the order and formats desired. Alerts and reports can be created using only voice commands and responses, commands and responses through non-speech 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
- 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.

[079] Filtering and noise elimination may be important in facilitating the various functionalities of the system 90. Recognition and parsing of the user's speech is implemented with good signal to noise ratio at the input to the speech recognition engine 120. To provide acceptable results, a set of acoustic models, an array microphone 134, a filter 132, or other components, may be employed. If a good signal to noise ratio cannot be achieved, a noise identification algorithm may be used and the appropriate acoustic model, for example, one that has been trained in conditions similar to the identified noise, may be selected. 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.

[080] 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-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.

[081] 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 the system in the same manner possible if they were physically present.

[082] 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. Calculations are conducted for comparing the background noise to the signal received from the user's speech and optimizing 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.

[083] 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.

[084] 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 ratio. The headset may use a wireless or wired connection.

[085] While the invention is intended to be able to accept most any natural language question or command, ambiguity may 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 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.

[086] The voice query language may be sensitive to the contents of the context stack, wherein a context defines a set of questions that can be activated or deactivated during a conversation. According to one embodiment, each agent may designate one context to be the root context that defines base algorithms that the agent implements. Thus, follow-up questions can be asked using an abbreviated grammar, since keywords and criteria can be inherited from the context stack. For example, the user can simply ask about another keyword if the criteria of the question remain constant.

[087] 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 users 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 users 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.

[088] 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

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

[089] According to one embodiment of the invention, users 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 bye").

[090] According to another embodiment of the invention, the system 90 may employ a speech recognition engine 120 that gains improved word recognition accuracy using data from context description grammar 112, user profiles 110, and the agents 106, among other components. At the same time, the fuzzy set possibilities or prior probabilities for the words in the context description grammar 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, among other criteria.

[091] 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.

[092] Alternatively, when a user submits 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 spell the word. The speech recognition engine 120 determines this condition based on confidence level for the

scoring process. The word may be looked up in a dictionary 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. Through this process, the speech recognition engine learns with time and improves in 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.

[093] 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.

[094] The parser 118 uses a scoring system to determine the most likely context or domain for a user's question and/or command. The score is determined from weighing 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.

[095] 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.

[096] 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 may make use of the criteria handlers 152 supplied by the system agent 150. The criteria handlers 152 may provide context sensitive procedures for extracting the criteria or parameters from the user's questions or commands. 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, 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.

[097] 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 one-hundred and flight twenty also, flight one-hundred and flight twenty-two, flight one-hundred and twenty-two, and the like.

[098] 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
- changing a place or other name to a commonly used standard abbreviation.

[099] 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.

[0100] 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.

[0101] 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.

[0102] 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, if multiple results are

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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.

[0103] 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, adaptors, known 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, 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.

[0104] 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.

[0105] 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 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.

[0106] In any case, the domain agent 156 may continue to make requests and evaluate results until a satisfactory response is constructed. In doing so, the agent can start several 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.

[0107] 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, scraping criteria 152 may be created using the services of the system agent 150. The scraping criteria may use format specific scraping methods including, tables, lists, text, and other 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 scraping process removes extraneous information, such as graphics, which need not be further processed or stored, improving system performance.

[0108] 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 may be varied by the agent 156. The domain agent 156 may also select the presentation personality 108 to be used.

[0109] 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 templates 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.

[0110] 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;

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

[0111] 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.

[0112] 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.

[0113] Figure 3 illustrates 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.

[0114] A user created query and/or command may require that multiple requests and/or commands may be needed in order to generate the desired response or action. Further, depending upon the context in which the query and/or command has been submitted (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), a specific format for the query and/or command may be required. For instance, each of the domain agents 156 may require that requests and/or commands be formatted in a specific manner. Thus at 306, one or more properly formatted queries and/or commands may be generated. Operations 304 and 306 may 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.

[0115] 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.

[0116] Figure 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 speech recognition operating in a variety of real-world environments at 402. Once the utterance is captured, it is parsed and interpreted to determine the query and/or command that is contained in the utterance at 404. Next, the query and/or command are reviewed to 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 may require that multiple queries and/or commands be generated.

[0117] 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.

[0118] Queries may be sent to these domain agents or sources in order to obtain the desired data. Thus, at operation 408, one or more queries may be formulated and sent to one or more local and/or network data sources and/or appropriate commands may be sent 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.

[0119] 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, any required formatting is performed. At operation 418, variable substitutions and transformations may be used to modify the results. Finally, at operation 420, the compound results may be presented to the user in a useful and expected manner through the text to speech engine 124. 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.

[0120] 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.

[0121] Figure 4B illustrates 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 speech recognition operating in a variety of real-world environments at 452. Once the utterance is captured, it is parsed and interpreted to determine the command that is contained in the utterance at operation 454.

[0122] Next, at operation 456, the command is reviewed to determine the domain for the command and context and invoke the proper resources, including agents. 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 recording 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, 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 operation 458, one or more queries may be formulated that are to be sent to one or more local and/or network data sources. Appropriate commands may be sent to local or remote devices or the system itself. Next, at operation 460, the generated commands may be routed to the appropriate system[s] and/or external devices. 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 operation 464.

[0123] Some of the operations depicting in Figure 4A may be performed using multiple steps that may be repetitive. For instance, in operation 404, the user's utterance is parsed and interpreted in order to determine the meaning of the utterance. System 90 may make an initial interpretation of the utterance based the data stored in, for example, the context description grammar module 112, user profiles 110, agents 106 and the databases 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.

[0124] Figure 5 illustrates a process 500 for correctly interpreting a user's utterance according to one embodiment of the invention. The process 500 generally represents operations 402 and 404 of process 400. Initially the user's utterance is inputted into the system 90 at operation

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, the confidence level of the interpretation may be analyzed to determine if it is satisfactory at operation 508. In other words, the determination relates to 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 operation 502. If, on the other hand, the user is satisfied with the interpretation, then the process 400 for receiving natural language speech-based queries and/or commands, and generating a response, may continue at operation 516. 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.

[0125] Figure 6 illustrates a process 600 for determining the proper domain agent[s] to invoke and the proper formatting of queries and/or commands that are submitted to the agents 106, as generally depicted in steps 406-408 of Figure 4A. 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, operations 404 and 454 of Figures 4A and 4B, is parsed at operation 602.

[0126] 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.

[0127] 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 one-hundred and flight twenty also, flight one-hundred and flight twenty-two, flight 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.

[0128] After selecting the agents 106, at operation 608, a properly formatted query and/or command that will be submitted to the agents 106 may be determined. 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.

[0129] While specific embodiments of the invention have been described above, it will be appreciated that the invention may be practiced otherwise than as described. For example, the

invention may take the form of a computer program containing one or more sequences of machine-readable instructions describing a method as disclosed above, or a data storage medium (e.g., semiconductor memory, magnetic or optical disk) having such a computer program stored therein.

[0130] The descriptions above are intended to be illustrative, not limiting. Thus, it will be apparent to one skilled in the art that modifications may be made to the invention as described without departing from the scope of the claims set out below.

CLAIMS

What is claimed is:

1. A system for processing speech and non-speech communications, comprising:

a terminal device that receives the speech and the non-speech communications;

a transcription module that transcribes the speech and the non-speech communications to create a speech-based textual message and a non-speech-based textual message;

a merging module that merges the speech-based textual message and the non-speech-based textual message to generate a query;

a search module that searches the query for text combinations;

a comparison module that compares the text combinations to entries in a context description grammar;

a plurality of domain agents that are associated with the context description grammar;

a scoring module that provides relevance scores based on results from the comparison module;

a domain agent selector that selects domain agents based on results from the scoring module; and

a response generating module that communicates with the selected domain agents to obtain content that is gathered by the selected domain agents and that generates a response from the content, wherein the content is arranged in a selected order based on results from the scoring module.

2. The system according to claim 1, wherein the response generating module generates an aggregate response that includes the content gathered by the selected domain agents.

3. The system according to claim 1, wherein the terminal device includes (i) a personal digital assistant, (ii) a cellular telephone, (iii) a portable computer, (iv) a desktop computer, or any combination of (i) to (iv).

4. The system according to claim 1, wherein the terminal device receives follow-up speech and non-speech communications and wherein the transcription module transcribes the follow-up speech and non-speech communications to create a follow-up speech-based textual message and a follow-up non-speech-based textual message.

5. The system according to claim 5, wherein the merging module merges the follow-up speech-based textual message and the follow-up non-speech-based textual message to generate a follow-up query.

6. The system according to claim 1, further comprising a personality module that facilitates formatting the response.

7. The system according to claim 1, further comprising a context stack that includes one or more contexts that are selected based on the query.

8. The system according to claim 7, wherein the scoring module determines the one or more contexts based on at least applying prior probabilities or fuzzy possibilities to (i) keyword matching, (ii) user profiles, (iii) a dialog history, or any combination of (i) to (iii).

9. The system according to claim 1, wherein at least one of the domain agents creates and directs a request to at least one of a local information source and a network information source.

10. The system according to claim 1, wherein at least one of the domain agents creates and directs a command to a remote or local device.

11. The system according to claim 5, wherein at least one of the domain agents evaluates multiple queries from multiple sources.

12. The system according to claim 5, wherein the follow-up query is associated with a same context as the query.

13. A method of processing speech and non-speech communications, comprising:

receiving the speech and non-speech communications;

transcribing the speech and non-speech communications to create a speech-based textual message and a non-speech-based textual message;

merging the speech-based textual message and the non-speech-based textual message to generate a query;

searching the query for text combinations;

comparing the text combinations to entries in a context description grammar;

accessing a plurality of domain agents that are associated with the context description grammar;

generating a relevance score based on results from comparing the text combinations to entries in the context description grammar;

selecting one or more domain agents based on results from the relevance score;

obtaining content that is gathered by the selected domain agents; and

generating a response from the content, wherein the content is arranged in a selected order based on results from the relevance score.

14. The method according to claim 13, further comprising generating an aggregate response that includes the content that is gathered by the selected domain agents.

15. The method according to claim 13, further comprising:

receiving a follow-up speech and non-speech communications;

transcribing the follow-up speech and non-speech communications to create a follow-up speech-based textual message and a follow-up non-speech-based textual message; and

merging the follow-up speech-based textual message and the follow-up non-speech-based textual message to generate a follow-up query.

16. The method according to claim 13, further comprising a personality module that communicates the response to a user.

17. The method according to claim 13, further comprising generating a context stack that includes one or more contexts that are selected based on the query.

18. The method according to claim 17, wherein the one or more contexts are generated based on applying prior probabilities or fuzzy possibilities to (i) keyword matching, (ii) user profiles, (iii) a dialog history, or any combination of (i) to (iii).

19. A multimodal system for processing speech and non-speech communications, comprising:

a terminal device that receives one or more types of input;

a transcription module that transcribes the one or more types of input into one or more textual messages;

a merging module that merges the one or more textual messages to generate a query;

a search module that searches the query for text combinations;

a comparison module that compares the text combinations to entries in a context description grammar;

a plurality of domain agents that are associated with the context description grammar;

a scoring module that provides relevance scores based on results from the comparison module;

a domain agent selector that selects domain agents based on results from the scoring module; and

a response generating module that communicates with the selected domain agents to obtain content that is gathered by the selected domain agents and that generates a response from the content, wherein the content is arranged in a selected order based on results from the scoring module;

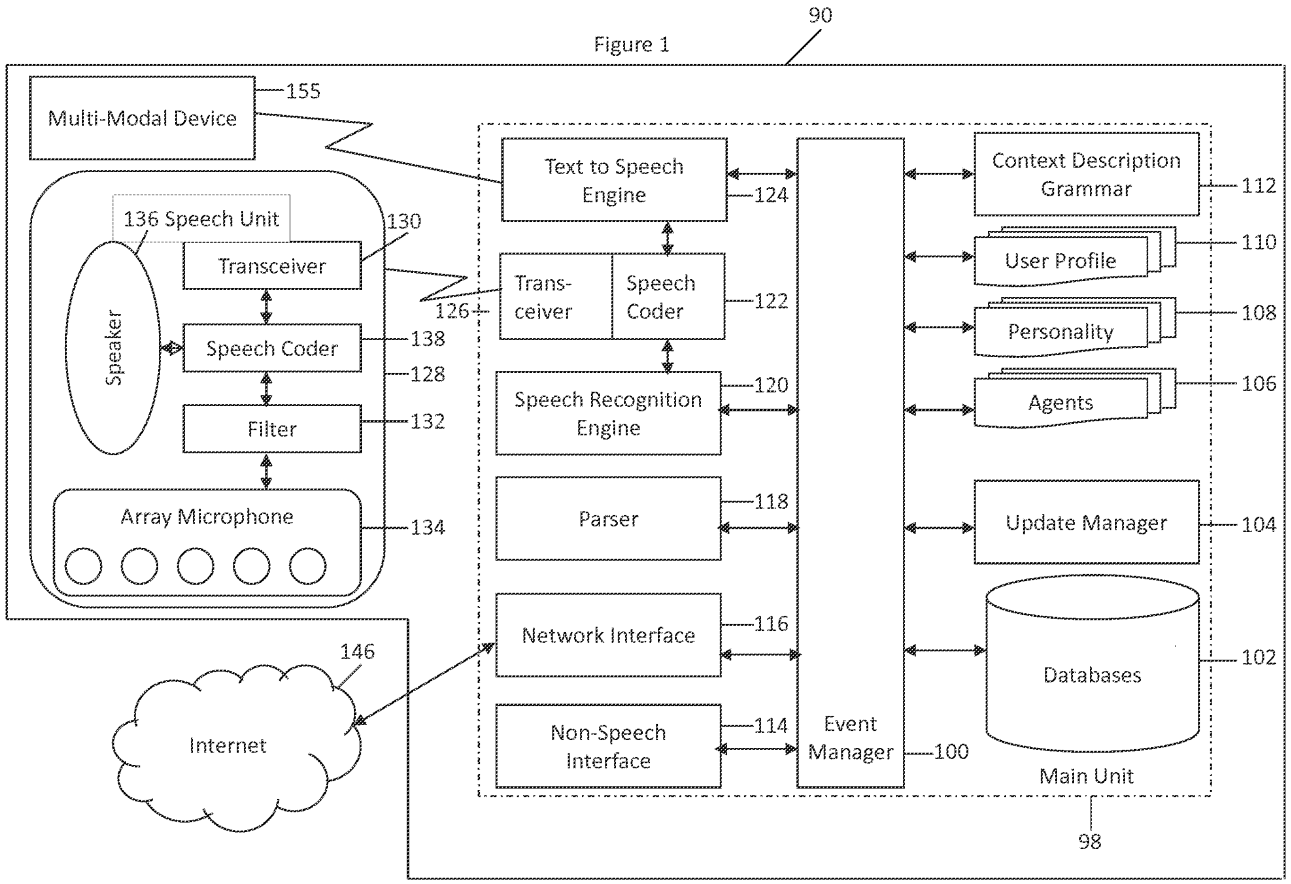
wherein the terminal device delivers the response using one or more types of output.

20. The multimodal system according to claim 19, wherein the one or more types of input includes (i) speech, (ii) text, (iii) digital audio files, or any combination of (i) to (iii).

ABSTRACT

Systems and methods are provided for receiving speech and non-speech communications of natural language questions and/or commands, transcribing the speech and non-speech communications to textual messages, and executing the questions and/or commands. The invention applies context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for one or more users presenting questions or commands across multiple domains. The systems and methods creates, stores and uses extensive personal profile information for each user, thereby improving the reliability of determining the context of the speech and non-speech communications and presenting the expected results for a particular question or command.

Figure 1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Multi-Modal Device
155
136 Speech Unit
130
Transceiver
Speaker
Speech Coder
138
128
Filter
132
Array Microphone
134
126
Text to Speech Engine
124
Trans-ceiver
Speech Coder
122
Speech Recognition Engine
120
Parser
118
Network Interface
116
Non-Speech Interface
114
Event Manager
100
Context Description Grammar
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Personality
108
Agents
106
Update Manager
104
Databases
102
Main Unit
98
146
Internet

Figure 2

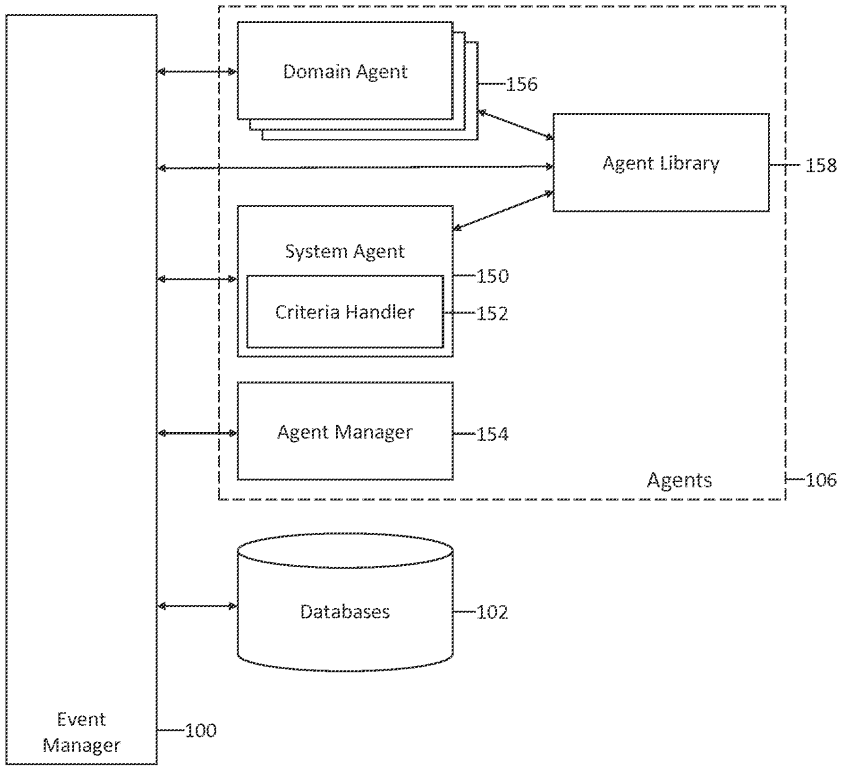

Domain Agent
156
Agent Library
158
System Agent
150
Criteria Handler
152
Agent Manager
154
Agents
106
Databases
102
Event Manager
100

Figure 3

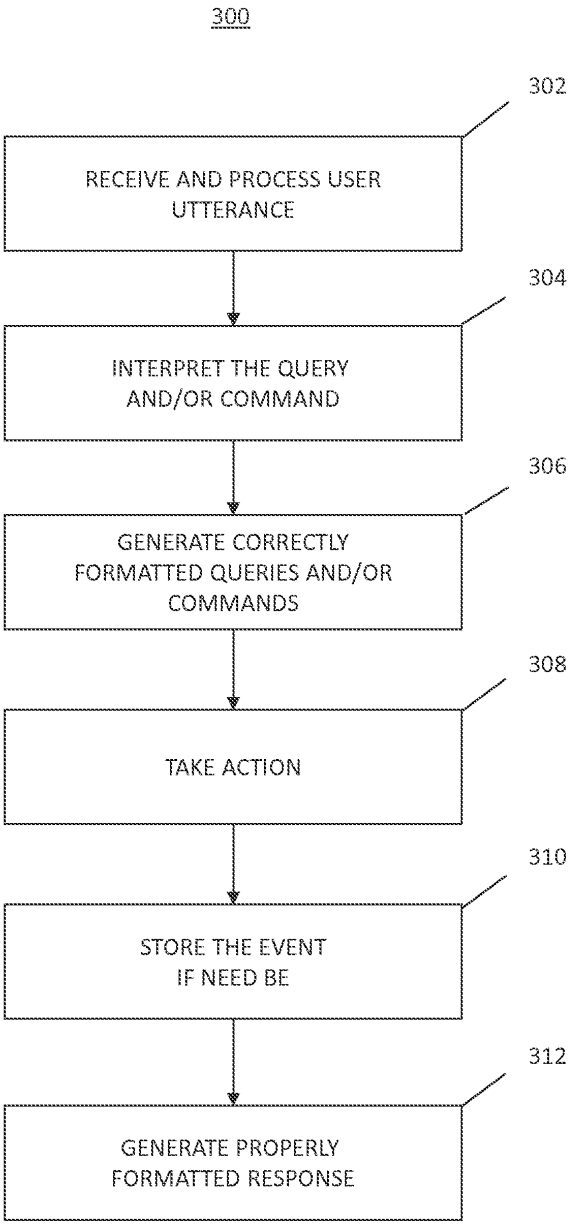

300
302
RECEIVE AND PROCESS USER UTTERANCE
304
INTERPRET THE QUERY AND/OR COMMAND
306
GENERATE CORRECTLY FORMATTED QUERIES AND/OR COMMANDS
308
TAKE ACTION
310
STORE THE EVENT IF NEED BE
312
GENERATE PROPERLY FORMATTED RESPONSE

Figure 4A

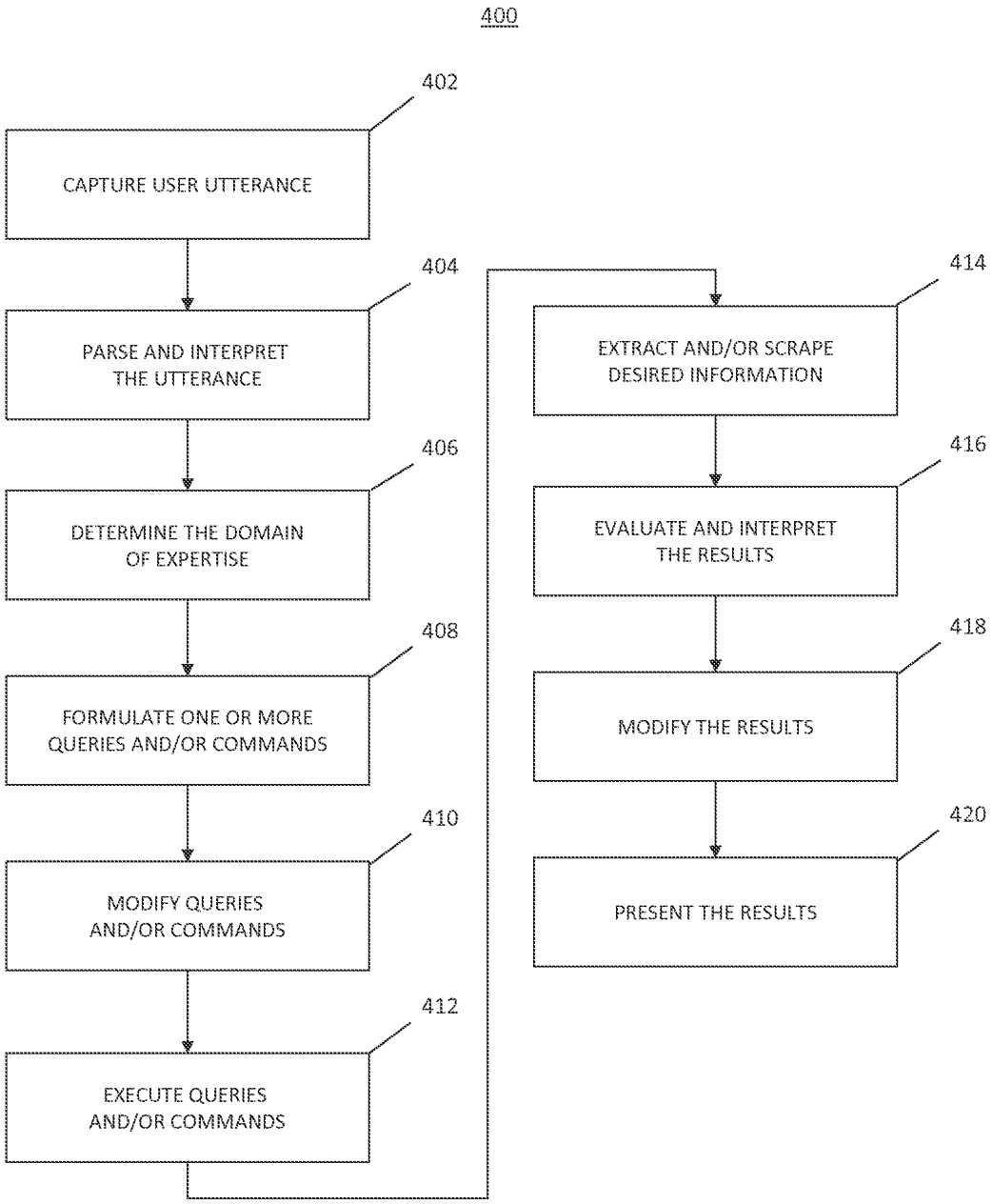

400
402
CAPTURE USER UTTERANCE
404
PARSE AND INTERPRET THE UTTERANCE
406
DETERMINE THE DOMAIN OF EXPERTISE
408
FORMULATE ONE OR MORE QUERIES AND/OR COMMANDS
410
MODIFY QUERIES AND/OR COMMANDS
412
EXECUTE QUERIES AND/OR COMMANDS
414
EXTRACT AND/OR SCRAPE DESIRED INFORMATION
416
EVALUATE AND INTERPRET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

Figure 4B

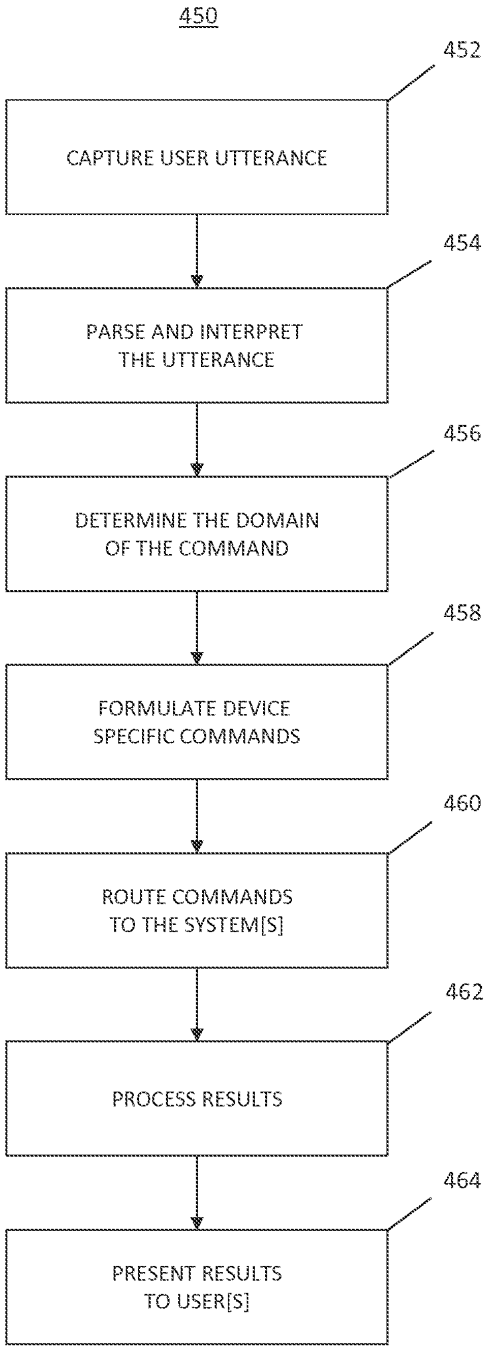

450
452
CAPTURE USER UTTERANCE
454
PARSE AND INTERPRET THE UTTERANCE
456
DETERMINE THE DOMAIN OF THE COMMAND
458
FORMULATE DEVICE SPECIFIC COMMANDS
460
ROUTE COMMANDS TO THE SYSTEM[S]
462
PROCESS RESULTS
464
PRESENT RESULTS TO USER[S]

Figure 5

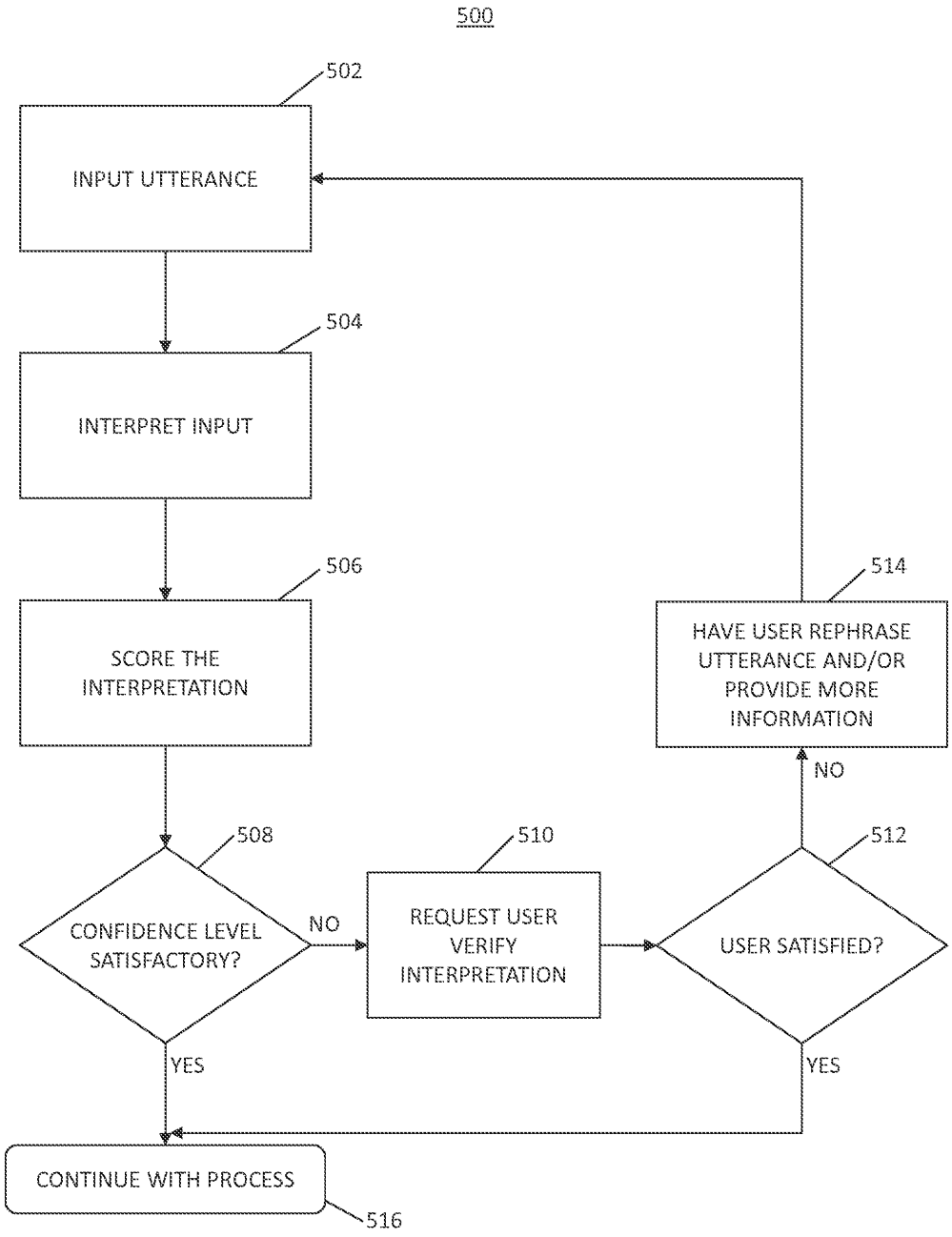

500
502
INPUT UTTERANCE
504
INTERPRET INPUT
506
SCORE THE INTERPRETATION
508
CONFIDENCE LEVEL SATISFACTORY?
NO
YES
510
REQUEST USER VERIFY INTERPRETATION
512
USER SATISFIED?
NO
YES
514
HAVE USER REPHRASE UTTERANCE AND/OR PROVIDE MORE INFORMATION
CONTINUE WITH PROCESS
516

Figure 6

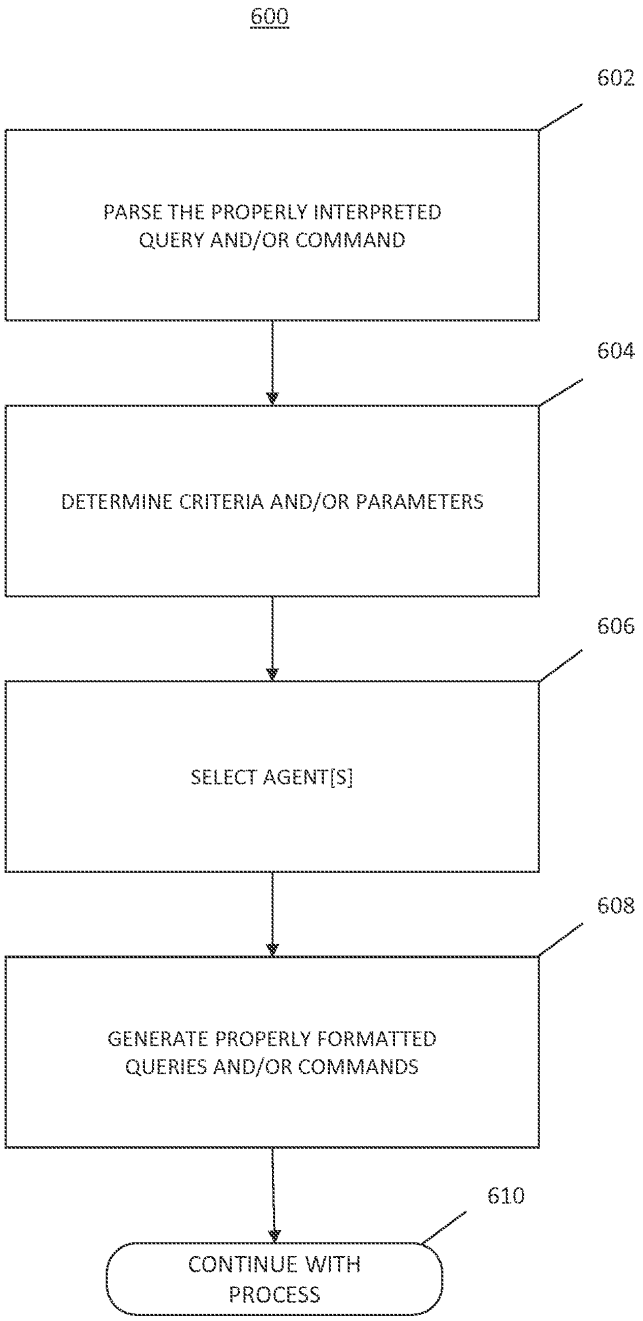
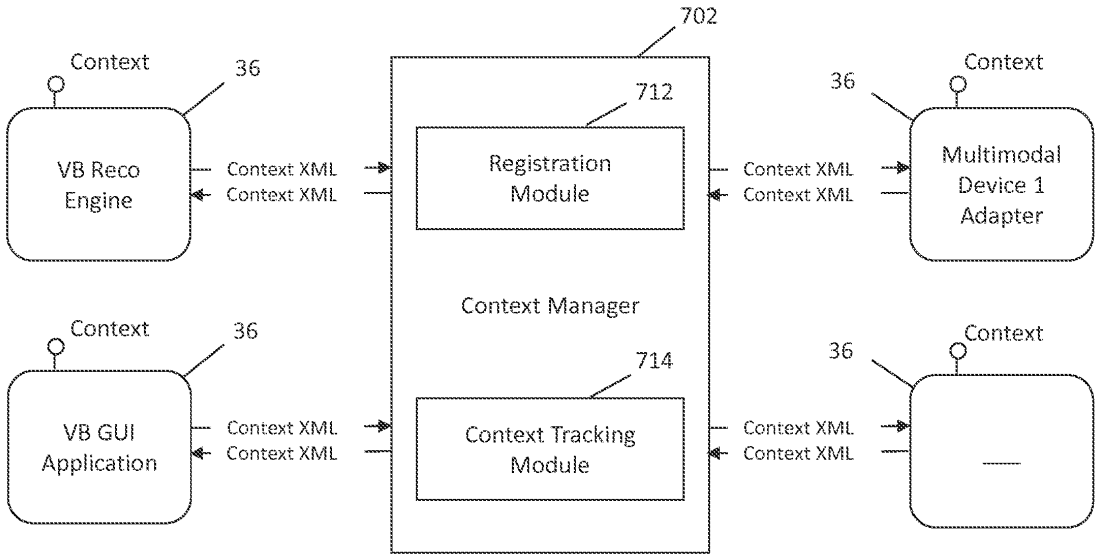

600
602
PARSE THE PROPERLY INTERPRETED QUERY AND/OR COMMAND
604
DETERMINE CRITERIA AND/OR PARAMETERS
606
SELECT AGENT[S]
608
GENERATE PROPERLY FORMATTED QUERIES AND/OR COMMANDS
610
CONTINUE WITH PROCESS

Figure 7


700
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Context
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VB Reco Engine
Context XML
Context XML
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Registration Module
Context Manager
714
Context Tracking Module
Context
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VB GUI Application
Context XML
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Context XML
Context XML
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Multimodal Device 1 Adapter
Context XML
Context XML
36
Context
Context XML
Context XML

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:	Philippe DI CRISTO
Filer:	Ngai Bing Zhang/Monet Noel
Attorney Docket Number:	090611-0434304
Filed as Small Entity	

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**730**

Electronic Acknowledgement Receipt	
EFS ID:	20277208
Application Number:	14500723
International Application Number:	
Confirmation Number:	6048
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Philippe DI CRISTO
Customer Number:	909
Filer:	Ngai Bing Zhang/Monet Noel
Filer Authorized By:	Ngai Bing Zhang
Attorney Docket Number:	090611-0434304
Receipt Date:	29-SEP-2014
Filing Date:	
Time Stamp:	19:13:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$730
RAM confirmation Number	6303
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)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)

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	Transmittal of New Application	0434304_TRANS.pdf	632536 f760ebc542ad7f3f3efbfc06ae7a77794a0a114a	no	3
Warnings:					
Information:					
2	Application Data Sheet	0434304_ADS.pdf	1562023 181cd8de0a0e83250f032472a47fed2a2637ca0d	no	8
Warnings:					
Information:					
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Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73.	0434304_Assignment4.pdf	149043 dfc42e8cfb6e8173b310a9666eb3d7ca8e2ca44a	no	4
Warnings:					
Information:					
5	Assignee showing of ownership per 37 CFR 3.73.	0434304_Assignment2.pdf	1322233 2e928e90103d15c18b2696af181c10d52708c0e3	no	23
Warnings:					
Information:					
6	Power of Attorney	0434304_POA.pdf	88043 86cbcdaf50ddd40146b390860da8f042bcb34e51	no	1
Warnings:					
Information:					
7	Assignee showing of ownership per 37 CFR 3.73.	0434304_373c.pdf	463329 91f081f333f68bcdeb7546609af1a6b7a8e1c08d	no	3
Warnings:					
Information:					
8	Transmittal Letter	0434304_IDS.pdf	518456 9f0714c9ac434e45b05b1ea78beb11a7a0686d37	no	2

Warnings:					
Information:					
9	Information Disclosure Statement (IDS) Form (SB08)	0434304_1449.pdf	695452 75db16e806d91b763303e367f97b1f133fb1608b	no	29
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
10		0434304_SPEC52.pdf	708583 06283e5d7c44833be6296958104f20d808158226	yes	52
	Multipart Description/PDF files in .zip description				
	Document Description		**Start**	**End**	
	Specification		1	46	
	Claims		47	51	
	Abstract		52	52	
Warnings:					
Information:					
11	Drawings-only black and white line drawings	0434304_Drawings8.pdf	468320 3da0b404dbb95108c6dc6add4c0b0ae4d32f370c	no	8
Warnings:					
Information:					
12	Fee Worksheet (SB06)	fee-info.pdf	32994 623b79308e6e9c63a276fa44f4f0244b54707863	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	9225016		

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[■] Practitioners associated with Customer Number: 00909

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[■] The address associated with Customer Number: 00909

OR

[ ]

Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address: VoiceBox Technologies Corporation
11980 NE 24th Street, Suite 100
Bellevue, Washington 98005

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record
The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Todd Kenck	Date	5/13/14
Name	Todd Kenck	Telephone	425.968.7907
Title	Chief Financial Officer of VoiceBox Technologies Corporation		

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 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 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.

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)

Applicant/Patent Owner: VoiceBox Technologies Corporation

Application No./Patent No.: New Filed/Issue Date: September 29, 2014

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

VoiceBox Technologies Corporation, a corporation

(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: Inventors To: VoiceBox Technologies, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel 031715, Frame 0575, 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 031715, Frame 0696, 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.

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: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. 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.

5. 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.

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.

/Ngai B. Zhang/	2014-09-29
Signature	Date
Ngai B. Zhang	65,473
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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS :	Philippe DI CRISTO *et al.*	CONFIRMATION No.:	To be Determined
SERIAL NUMBER :	To be Determined	EXAMINER:	To be Determined
FILING DATE :	Herewith (September 29, 2014)	ART UNIT:	To be Determined
FOR :	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE		

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, Applicant hereby makes of record in the above-identified application the documents listed on the attached Form PTO-1449.

Applicant has 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.

Applicant reserves 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.

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).

The Foreign Patent Documents and the non-patent literature ("Other Documents") were cited by or submitted to the Office in Application No. 13/690,895, filed November 30, 2012, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus copies of these documents are not attached. 37 C.F.R. § 1.98(d).

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 /Ngai B. Zhang/

Ngai B. Zhang
Registration No.: 65,473

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Customer No.
00909

Dated: September 29, 2014

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/500,723

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	70		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	300		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 40 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	730		TOTAL	

APPLICATION AS AMENDED - PART II

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/500,723	09/29/2014	2658	730	090611-0434304	20	3

CONFIRMATION NO. 6048

FILING RECEIPT

909
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

OC000000071161481

Date Mailed: 10/07/2014

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**

Inventor(s)

Philippe DI CRISTO, Bellevue, WA;
Min KE, Bothell, WA;
Robert A. KENNEWICK, Seattle, WA;
Lynn Elise ARMSTRONG, Woodinville, WA;

Applicant(s)

VoiceBox Technologies Corporation, Bellevue, WA

Assignment For Published Patent Application

VoiceBox Technologies Corporation

Power of Attorney: The patent practitioners associated with Customer Number 00909

Domestic Priority data as claimed by applicant

This application is a CON of 13/690,895 11/30/2012 PAT 8849670
which is a CON of 13/019,834 02/02/2011 PAT 8326634
which is a CON of 12/617,506 11/12/2009 PAT 7917367
which is a CON of 11/197,504 08/05/2005 PAT 7640160

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 10/03/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/500,723**

Projected Publication Date: 01/15/2015

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Preliminary Class

704

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/500,723	09/29/2014	Philippe DI CRISTO	090611-0434304

CONFIRMATION NO. 6048

PUBLICATION NOTICE

909
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

OC000000072869406

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

Publication No.US-2015-0019217-A1
Publication Date:01/15/2015

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

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

PTO/AIA/80 (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[x] Practitioners associated with the Customer Number: 91337

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned **only** to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[x] The address associated with Customer Number: 91337

OR

[ ] Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address:

Nuance Communications, Inc.
One Wayside Road
Burlington, Massachusetts 01803

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record
The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	11/8/2012
Name	Leanne J. Fitzgerald, Esq.	Telephone	781 565-4792
Title	Associate General Counsel		

2887608.1

Electronic Acknowledgement Receipt

EFS ID:	22065445
Application Number:	14500723
International Application Number:	
Confirmation Number:	6048
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Philippe DI CRISTO
Customer Number:	909
Filer:	Richard F. Giunta/Jeanne Chub
Filer Authorized By:	Richard F. Giunta
Attorney Docket Number:	090611-0434304
Receipt Date:	15-APR-2015
Filing Date:	29-SEP-2014
Time Stamp:	11:23:09
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	Miscellaneous Incoming Letter	N0484-71160US04-TRN-RFG.pdf	57288 cfccdd137e6d2c9e070e0667ec926ac8dc2616cc	no	1

Warnings:

Information:

2	Assignee showing of ownership per 37 CFR 3.73	N0484-71160US04-373c-RFG.pdf	117275 71d4f18156414d1a097d122573b2377ad7118d76	no	2
Warnings:					
Information:					
3	Power of Attorney	N0484-71160US04-POA-RFG.pdf	61788 183fe79363c71b3e5f690d0d8549593d50413205	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	236351	

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

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	4

Application Number	14/500,723-Conf. #6048
Filing Date	September 29, 2014
First Named Inventor	Philippe Di Cristo
Art Unit	2657
Examiner Name	B. L. Albertalli
Attorney Docket Number	N0484.71160US04

ENCLOSURES *(Check all that apply)*

- [ ] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [x] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

Statement Under 37 CFR 3.73(c)

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature			
Printed name	Richard F. Giunta		
Date	April 15, 2015	Reg. No.	36,149

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated April 15, 2015 Signature: _____ (Jeanne W. Chub)

3984989.1

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Nuance Communications, Inc.

Application No./Patent No.: 14/500,723 Filed/Issue Date: September 29, 2014

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

Nuance Communications, Inc. (Name of Assignee), a Corporation (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. [X] 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. [X] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Philippe Di Cristo To: VoiceBox Technologies, Inc.
   The document was recorded in the United States Patent and Trademark Office at Reel 031715, Frame 0575, or for which a copy thereof is attached.
2. From: Min Ke To: VoiceBox Technologies, Inc.
   The document was recorded in the United States Patent and Trademark Office at Reel 031715, Frame 0575, or for which a copy thereof is attached.

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: Robert A. Kennewick To: VoiceBox Technologies, Inc.
   The document was recorded in the United States Patent and Trademark Office at
   Reel 031715 , Frame 0575 , or for which a copy thereof is attached.
4. From: Lynn Elise Armstrong To: VoiceBox Technologies, Inc.
   The document was recorded in the United States Patent and Trademark Office at
   Reel 031715 , Frame 0575 , or for which a copy thereof is attached.
5. From: VoiceBox Technologies, Inc. To: VoiceBox Technologies Corporation
   The document was recorded in the United States Patent and Trademark Office at
   Reel 031715 , Frame 0696 , or for which a copy thereof is attached.
6. 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.

☐ 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.

Signature	April 15, 2015 Date
Richard F. Giunta Printed or Typed Name	36,149 Title or Registration Number

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: April 15, 2015 Signature: _____ (Jeanne W. Chub)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/500,723	09/29/2014	Philippe DI CRISTO	090611-0434304

CONFIRMATION NO. 6048

POWER OF ATTORNEY NOTICE

909
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

OC000000074693968

Date Mailed: 04/21/2015

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/15/2015.

- 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).

/qtran/

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

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/500,723	09/29/2014	Philippe DI CRISTO	N0484.71160US04

CONFIRMATION NO. 6048

POA ACCEPTANCE LETTER

91337
Nuance Communications, Inc.
c/o Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

OC000000074693991

Date Mailed: 04/21/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/15/2015.

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.

/qtran/

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

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

91337 7590 10/26/2015
Nuance Communications, Inc.
c/o Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

EXAMINER
ALBERTALLI, BRIAN LOUIS

ART UNIT	PAPER NUMBER
2657	

DATE MAILED: 10/26/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/500,723	09/29/2014	Philippe DI CRISTO	N0484.71160US04	6048

TITLE OF INVENTION: SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	01/26/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 02/11)

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)

91337 7590 10/26/2015
Nuance Communications, Inc.
c/o Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

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.
14/500,723	09/29/2014	Philippe DI CRISTO	N0484.71160US04	6048

TITLE OF INVENTION: SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	01/26/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
ALBERTALLI, BRIAN LOUIS	2657	704-235000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1_____
2_____
3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.
(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
❑ Issue Fee
❑ Publication Fee (No small entity discount permitted)
❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
❑ A check is enclosed.
❑ Payment by credit card. Form PTO-2038 is attached.
❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. 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.
14/500,723	09/29/2014	Philippe DI CRISTO	N0484.71160US04	6048

91337 7590 10/26/2015
Nuance Communications, Inc.
c/o Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

EXAMINER
ALBERTALLI, BRIAN LOUIS

ART UNIT	PAPER NUMBER
2657	

DATE MAILED: 10/26/2015

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/500,723	Applicant(s) DI CRISTO ET AL.	
	Examiner BRIAN ALBERTALLI	Art Unit 2657	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *29 September 2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/BRIAN ALBERTALLI/
Primary Examiner, Art Unit 2657

DETAILED ACTION

Allowable Subject Matter

Claims 1-20 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record does not disclose or suggest the combination of a comparison module that compares text combinations to entries in a context description grammar, a scoring module that provides relevance scores based on the results from the comparison module, a domain agent selector that selects domain agents based on results from the scoring module, and a response generating module that generates a response from the content, wherein the content is arranged in a selected order based on results from the scoring module, as required by independent claim 1. Independent claims 13 and 19 recite similar limitations, and are allowed for similar reasons as claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN ALBERTALLI whose telephone number is

(571)272-7616. The examiner can normally be reached on Monday-Friday, 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David 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.

BLA 10/15/15
/BRIAN ALBERTALLI/
Primary Examiner, Art Unit 2657

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BIB DATA SHEET

CONFIRMATION NO. 6048

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/500,723	09/29/2014 RULE	704	2657	N0484.71160US04

APPLICANTS
VoiceBox Technologies Corporation, Bellevue, WA;

INVENTORS
Philippe DI CRISTO, Bellevue, WA;
Min KE, Bothell, WA;
Robert A. KENNEWICK, Seattle, WA;
Lynn Elise ARMSTRONG, Woodinville, WA;

**** CONTINUING DATA ***************************
This application is a CON of 13/690,895 11/30/2012 PAT 8849670
which is a CON of 13/019,834 02/02/2011 PAT 8326634
which is a CON of 12/617,506 11/12/2009 PAT 7917367
which is a CON of 11/197,504 08/05/2005 PAT 7640160

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **
10/03/2014

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and Acknowledged / BRIAN L ALBERTALLI / Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		WA	8	20	3

ADDRESS
Nuance Communications, Inc.
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600 Atlantic Avenue
Boston, MA 02210-2206
UNITED STATES

TITLE
SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

FILING FEE RECEIVED		
730	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

BIB (Rev. 05/07).

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	160	(G10L$/$.cpc. or 704/$.ccls.) and (domain$5 near2 agent$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 09:50
L2	60	l1 not voicebox$5.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 10:05
L3	67	(G10L$/$.cpc. or 704/$.ccls.) and (select$5 with domain$5 with agent$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 10:39
L4	14	l3 not voicebox$5.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 10:41
L5	2	13/690895.app.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 10:49
L6	2	13/019834.app.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 10:49
L7	4	"7917367".pn. "7640160".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/10/15 10:50

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L8	770	(select$5 with domain$5 with agent$5).clm.	US-PGPUB; USPAT	OR	OFF	2015/10/15 10:54
L9	23	l8 and (speech$5 or voice$5).clm.	US-PGPUB; USPAT	OR	OFF	2015/10/15 10:55

10/15/2015 10:55:41 AM
C:\Users\balbertalli\Documents\EAST\Workspaces\14500723.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14500723	DI CRISTO ET AL.
	Examiner	**Art Unit**
	BRIAN ALBERTALLI	2657

CPC- SEARCHED		
Symbol	**Date**	**Examiner**
G10L 15/18	10/15/15	BA

CPC COMBINATION SETS - SEARCHED		
Symbol	**Date**	**Examiner**

US CLASSIFICATION SEARCHED			
Class	**Subclass**	**Date**	**Examiner**

SEARCH NOTES		
Search Notes	**Date**	**Examiner**
Updated EAST Search from parent applications	10/15/15	BA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	**US Subclass / CPC Group**	**Date**	**Examiner**
	Interference Search	10/15/15	BA

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	43	"704"/$.ccls. and agent$5 with grammar$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 15:13
S2	123	agent$5 with grammar$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 14:56
S3	80	S2 not S1	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 14:56
S4	14	S3 and ((speech or voice) near2 recogni$10)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 14:57
S5	209	"704"/$.ccls. and agent$5 with select$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 15:15
S6	46	"704"/$.ccls. and agent$5 with domain$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 15:17
S7	1202	"704"/$.ccls. and agent$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/07 15:17
S8	69	merg$5 with (speech or voice) with text$5	US-PGPUB;	OR	OFF	2007/08/08

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			13:24
S9	2407	"704"/$.ccls. and ((speech or voice) with text$5 with input$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 12:59
S10	320	"704"/$.ccls. and personalit$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:00
S11	107	S10 and agent$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:04
S12	61	"704"/$.ccls. and multimodal$5.ab.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:06
S13	46	"704"/$.ccls. and (multi near2 modal$5).ab.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:07
S14	122	"704"/$.ccls. and (multimodal$5 or (multi near2 modal$5)) and agent$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:08
S15	689	quer$5 with (speech or voice) with text$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:13
S16	179	S15 and "704"/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2007/08/08 13:14

			IBM_TDB			
S17	196	S15 and agent$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:14
S18	57	S17 and "704"/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:14
S19	6	(quer$5 with (speech or voice) with text$5 with (merg$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:29
S20	206	"704"/$.ccls. and (quer$5 with grammar$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:34
S21	801	"704"/$.ccls. and (quer$5 with (speech or voice))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/08 13:34
S22	4460	text$5 with (speech or voice) with (merg$5 or combine$2 or combining or concatenat$5 or converg$5 or fus$5 or meld$5 or connect$3 or incorporat$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/09 12:19
S23	1234	S22 and "704"/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/09 10:42
S24	264	(text$5 with (speech or voice) with (merg$5 or combine$2 or combining or concatenat$5 or converg$5 or fus$5 or meld$5 or connect$3 or incorporat$5)) same (quer$5 or search$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/09 10:47
S25	100	S24 and "704"/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2007/08/09 11:45

			EPO; JPO; DERWENT; IBM_TDB			
S26	20	("4579533" | "4612416" | "5027406" | "5265014" | "5500920" | "5559940" | "5583965" | "5625748" | "5638425" | "5878423" | "5924070" | "5956706" | "5999595" | "6138100" | "6240448" | "6438523" | "6556963" | "6581055" | "6701162").PN. OR ("6996531").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/08/09 11:04
S27	47	("4401855" | "4689761" | "4748674" | "5157384" | "5177685" | "5208786" | "5377303" | "5404524" | "5459798" | "5463696" | "5502774" | "5528726" | "5546538" | "5546565" | "5583542" | "5583946" | "5592589" | "5600765" | "5606702" | "5615299" | "5621809" | "5621857" | "5625749" | "5633954" | "5655148" | "5666139" | "5668573" | "5687221" | "5701393" | "5712957" | "5781179" | "5855000").PN. OR ("6438523").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/08/09 11:05
S28	164	S24 not S25	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/09 11:45
S29	69	text$5 with (speech or voice) with (merg$5 or combine$2 or combining or concatenat$5 or converg$5 or fus$5 or meld$5 or connect$3 or incorporat$5) same grammar$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/09 12:19
S30	96	context with description with grammar$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/13 12:39
S31	123	agent$5 with grammar$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/13 12:39
S32	11	agent$5 with grammar$5 with context$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/13 12:42
S33	3600	context$5 with stack$5	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2007/08/13 12:42

			EPO; JPO; DERWENT; IBM_TDB			
S34	22	context$5 with stack$5 with quer$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/13 13:14
S35	1	(multi and modal and shell).ti.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2007/08/13 13:14
S36	11	(agent$5 with command$5) and (agent$5 with request$5) and (agent$5 with multiple$5 with quer$5)	USPAT	OR	OFF	2007/08/15 12:58
S37	31	(agent$5 with command$5) and (agent$5 with request$5) and (agent$5 with multiple$5 with quer$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/02/19 10:06
S38	152	"704"/$.ccls. and (multipass$5 or (multi near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/02/19 10:07
S39	698	"704"/$.ccls. and (knowledge$5 with recogni$10)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/02/19 10:07
S40	10	S39 and (context$5 with stack$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/02/19 10:07
S41	67	"704"/$.ccls. and agent$5 with grammar$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/16 14:13
S42	64	"704"/$.ccls. and (context$5 with stack$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2008/09/16 14:15

			IBM_TDB			
S43	9	S41 and S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/16 14:19
S44	33	"704"/$.ccls. and decoy$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/16 14:31
S45	64	"704"/$.ccls. and (context$5 with stack$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/17 10:17
S46	22	S45 and agent$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/17 10:17
S47	3	"704"/$.ccls. and (multipass$5 or (multi near2 pass$3)) and (decoy$5 or imposter$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/18 11:02
S48	5	"704"/$.ccls. and (multipass$5 or (multi near2 pass$3)) and (decoy$5 or impostor$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/18 11:06
S50	44	"704"/$.ccls. and (multipass$5 or (multi near2 pass$3)) and (large near2 vocabular$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/18 17:10
S51	3	"704"/$.ccls. and (transcrib$5 with filler$5 with word$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2008/09/25 12:46
S52	44	"704"/$.ccls. and (multipass$5 or (multi near2 pass$3)) and (large near2 vocabular$5)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2009/01/30 15:50

			EPO; JPO; DERWENT; IBM_TDB			
S53	72	"704"/$.ccls. and (context$5 with stack$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/01/30 15:50
S54	26	S53 and agent$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/01/30 15:50
S55	176	"704"/$.ccls. and (multipass$5 or (multi near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/01/30 15:51
S56	9	US-6513006-$.DID. OR US-6631346-$.DID. OR US-6643620-$.DID. OR US-6795808-$.DID. OR US-6944594-$.DID. OR US-7398209-$.DID. OR US-7424431-$.DID. OR US-20010041980-$.DID. OR US-20020049805-$.DID.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/01/30 15:55
S57	2	"20020198714"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/01/30 15:56
S58	7	(((speech or voice) near2 recogni$10) and (multipass$5 or (multi near2 pass$2))).clm.	US-PGPUB	OR	OFF	2009/03/25 17:48
S59	4	(((speech or voice) near2 recogni$10) and (context$10 with stack$5)).clm.	US-PGPUB	OR	OFF	2009/03/25 17:49
S60	16	(((speech or voice) near2 recogni$10) and ((out near2 vocabular$5) or oov)).clm.	US-PGPUB	OR	OFF	2009/03/25 17:50
S61	76	"704"/$.ccls. and (context$5 with stack$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/03/25 17:50
S62	180	"704"/$.ccls. and (multipass$5 or (multi near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/03/25 17:50
S63	5	S61 and S62	US-PGPUB; USPAT;	OR	OFF	2009/03/25 17:51

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S64	22	US-4430669-$.DID. OR US-5274560-$.DID. OR US-5377350-$.DID. OR US-5500920-$.DID. OR US-5774859-$.DID. OR US-5902347-$.DID. OR US-6598018-$.DID. OR US-7376645-$.DID. OR US-20020065568-$.DID. OR US-20020082911-$.DID. OR US-20020120609-$.DID. OR US-20020124050-$.DID. OR US-20030014261-$.DID. OR US-20040025115-$.DID. OR US-20040166832-$.DID. OR US-20040199375-$.DID. OR US-20050021334-$.DID. OR US-20050114116-$.DID. OR US-20070033005-$.DID. OR US-20070038436-$.DID. OR US-20070050191-$.DID. OR US-20080091406-$.DID.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/07/02 17:22
S65	22	US-4430669-$.DID. OR US-5274560-$.DID. OR US-5377350-$.DID. OR US-5500920-$.DID. OR US-5774859-$.DID. OR US-5902347-$.DID. OR US-6598018-$.DID. OR US-7376645-$.DID. OR US-20020065568-$.DID. OR US-20020082911-$.DID. OR US-20020120609-$.DID. OR US-20020124050-$.DID. OR US-20030014261-$.DID. OR US-20040025115-$.DID. OR US-20040166832-$.DID. OR US-20040199375-$.DID. OR US-20050021334-$.DID. OR US-20050114116-$.DID. OR US-20070033005-$.DID. OR US-20070038436-$.DID. OR US-20070050191-$.DID. OR US-20080091406-$.DID.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/08/19 15:27
S66	6	US-5892813-$.DID. OR US-6742021-$.DID. OR US-6990513-$.DID. OR US-7146319-$.DID. OR US-7493559-$.DID. OR US-20050033574-$.DID.	US-PGPUB; USPAT; USOCR	OR	OFF	2009/10/05 11:29
S67	1	("7640160").PN.	USPAT	OR	OFF	2010/10/14 13:26

EAST Search History (Interference)

<This search history is empty>

10/15/2015 10:58:19 AM
C:\Users\balbertalli\Documents\EAST\Workspaces\11197504.wsp

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14500723	DI CRISTO ET AL.
	Examiner	**Art Unit**
	BRIAN ALBERTALLI	2657

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	10/15/2015								
	1	=								
	2	=								
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	4	=								
	5	=								
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	20	=								

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14500723	DI CRISTO ET AL.
	Examiner	**Art Unit**
	BRIAN ALBERTALLI	2657

CPC					
Symbol				**Type**	**Version**
G10L		15	/	1822	F	2013-01-01
G06F		17	/	279	I	2013-01-01
G06F		17	/	30654	I	2013-01-01
G06F		17	/	30699	I	2013-01-01
G10L		15	/	18	A	2013-01-01
G10L		15	/	22	I	2013-01-01
G06F		17	/	2785	I	2013-01-01
G10L		15	/	19	I	2013-01-01
G10L		15	/	26	I	2013-01-01
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CPC Combination Sets							
Symbol				**Type**	**Set**	**Ranking**	**Version**
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			/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/BRIAN ALBERTALLI/ Primary Examiner.Art Unit 2657	10/15/15	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20151015

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14500723	DI CRISTO ET AL.
	Examiner	**Art Unit**
	BRIAN ALBERTALLI	2657

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
		G 1 0 L 15 / 18 (2013.01.01)	

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

NONE (Assistant Examiner) (Date)		Total Claims Allowed: 20	
/BRIAN ALBERTALLI/ Primary Examiner.Art Unit 2657 (Primary Examiner)	10/15/15 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office

Part of Paper No. 20151015

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14500723	DI CRISTO ET AL.
	Examiner	**Art Unit**
	BRIAN ALBERTALLI	2657

☒ **Claims renumbered in the same order as presented by applicant** ☐ **CPA** ☐ **T.D.** ☐ **R.1.47**

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/BRIAN ALBERTALLI/ Primary Examiner.Art Unit 2657	10/15/15	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20151015

INFORMATION DISCLOSURE CITATION IN AN APPLICATION	Docket Number	Application Number
	090611-0434304	*To be Determined*
	Applicant(s)	
	Philippe DI CRISTO *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	Herewith (September 29, 2014)	*To be Determined*

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	4,821,027	04/11/1989	Mallory *et al.*	340	521	
	1C	4,829,423	05/09/1989	Tennant *et al.*	364	200	
	1D	4,910,784	03/20/1990	Doddington *et al.*	381	43	
	1E	5,027,406	06/25/1991	Roberts *et al.*	381	43	
	1F	5,155,743	10/13/1992	Jacobs	375	28	
	1G	5,164,904	11/17/1992	Sumner	364	436	
	1H	5,208,748	05/04/1993	Flores *et al.*	364	419	
	1I	5,274,560	12/28/1993	LaRue	364	444	
	1J	5,357,596	10/18/1994	Takebayashi *et al.*	395	2.84	
	1K	5,377,350	12/27/1994	Skinner	395	600	
	1L	5,386,556	01/31/1995	Hedin et al.	395	600	
	1M	5,424,947	06/13/1995	Nagao et al.	364	419.08	
	1N	5,471,318	11/28/1995	Ahuja et al.	358	400	
	1O	5,475,733	12/12/1995	Eisdorfer et al.	379	52	
	1P	5,488,652	01/30/1996	Bielby *et al.*	379	88	
	1Q	5,499,289	03/12/1996	Bruno et al.	379	220	
	1R	5,500,920	03/19/1996	Kupiec	395	2.79	
	1S	5,517,560	05/14/1996	Greenspan	379	114	
	1T	5,533,108	07/02/1996	Harris et al.	379	201	
	1U	5,537,436	07/16/1996	Bottoms et al.	375	222	
	1V	5,539,744	07/23/1996	Chu et al.	370	60	
	1W	5,557,667	09/17/1996	Bruno et al.	379	201	

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	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	1X	1 320 043 A2	06/18/2003	Europe				
	1Y	1 646 037	04/12/2006	Europe				
	1Z	WO 99/46763	09/16/1999	International				
	1AA	WO 00/21232	04/13/2000	International				
	1BB	WO 00/46792	08/10/2000	International				

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

	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.

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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /BA/

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	090611-0434304	*To be Determined*
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	Philippe DI CRISTO *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	Herewith (September 29, 2014)	*To be Determined*

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2A	5,559,864	09/24/1996	Kennedy, Jr.	379	59	
	2B	5,563,937	10/08/1996	Bruno et al.	379	201	
	2C	5,577,165	11/19/1996	Takebayashi et al.	395	2.84	
	2D	5,590,039	12/31/1996	Ikeda et al.	395	759	
	2E	5,608,635	03/04/1997	Tamai	364	449.3	
	2F	5,617,407	04/01/1997	Bareis	369	275.3	
	2G	5,633,922	05/27/1997	August et al.	379	220	
	2H	5,634,086	05/27/1997	Rtischev *et al.*	395	2.79	
	2I	5,652,570	07/29/1997	Lepkofker	340	573	
	2J	5,675,629	10/07/1997	Raffel et al.	379	58	
	2K	5,696,965	12/09/1997	Dedrick	395	610	
	2L	5,708,422	01/13/1998	Blonder et al.	340	825.34	
	2M	5,721,938	02/24/1998	Stuckey	395	754	
	2N	5,722,084	02/24/1998	Chakrin et al.	455	551	
	2O	5,740,256	04/14/1998	Castello Da Costa *et al.*	361	94.7	
	2P	5,742,763	04/21/1998	Jones	395	200.3	
	2Q	5,748,841	05/05/1998	Morin *et al.*	395	2.66	
	2R	5,748,974	05/05/1998	Johnson	395	759	
	2S	5,752,052	05/12/1998	Richardson et al.	395	759	
	2T	5,754,784	05/19/1998	Garland et al.	395	200.49	
	2U	5,761,631	06/02/1998	Nasukawa	704	9	
	2V	5,774,841	06/30/1998	Salazar *et al.*	704	225	
	2W	5,774,859	06/30/1998	Houser *et al.*	704	275	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	2X	WO 01/78065	10/18/2001	International				
	2Y	WO 2004/072954	08/26/2004	International				
	2Z	WO 2007/019318	02/15/2007	International				
	2AA	WO 2007/021587	02/22/2007	International				
	2BB	WO 2007/027546	03/08/2007	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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	Philippe DI CRISTO *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	Herewith (September 29, 2014)	*To be Determined*

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	3A	5,794,050	08/11/1998	Dahlgren et al.	395	708	
	3B	5,794,196	08/11/1998	Yegnanarayanan *et al.*	704	255	
	3C	5,797,112	08/18/1998	Komatsu *et al.*	701	201	
	3D	5,799,276	08/25/1998	Komissarchik *et al.*	704	251	
	3E	5,802,510	09/01/1998	Jones	707	2	
	3F	5,832,221	11/03/1998	Jones	375	200.36	
	3G	5,839,107	11/17/1998	Gupta *et al.*	704	270	
	3H	5,848,396	12/08/1998	Gerace	705	10	
	3I	5,855,000	12/29/1998	Waibel *et al.*	704	235	
	3J	5,867,817	02/02/1999	Catallo *et al.*	704	255	
	3K	5,878,385	03/02/1999	Bralich *et al.*	704	9	
	3L	5,878,386	03/02/1999	Coughlin	704	10	
	3M	5,892,813	04/06/1999	Morin *et al.*	379	88.01	
	3N	5,892,900	04/06/1999	Ginter *et al.*	395	186	
	3O	5,895,464	04/20/1999	Bhandari *et al.*	707	3	
	3P	5,895,466	04/20/1999	Goldberg et al.	707	5	
	3Q	5,897,613	04/27/1999	Chan	704	210	
	3R	5,902,347	05/11/1999	Backman *et al.*	701	200	
	3S	5,911,120	06/08/1999	Jarett et al.	455	417	
	3T	5,918,222	06/29/1999	Fukui *et al.*	707	1	
	3U	5,926,784	07/20/1999	Richardson et al.	704	9	
	3V	5,933,822	08/03/1999	Braden-Harder et al.	707	5	
	3W	5,950,167	09/07/1999	Yaker	704	275	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	3X	WO 2007/027989	03/08/2007	International				
	3Y	WO 2008/098039	08/14/2008	International				
	3Z	WO 2008/118195	10/02/2008	International				
	3AA	WO 2009/075912	06/18/2009	International				
	3BB	WO 2009/145796	12/03/2009	International				

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

	3CC	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.
	3DD	ZHAO, Yilin, "Telematics: Safe and Fun Driving", IEEE Intelligent Systems, Volume 17, Issue 1, 2002, pages 10-14.

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U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	4A	5,953,393	09/14/1999	Culbreth et al.	379	88.25	
	4B	5,960,397	09/28/1999	Rahim	704	244	
	4C	5,960,399	09/28/1999	Barclay *et al.*	704	270	
	4D	5,960,447	09/28/1999	Holt *et al.*	707	500	
	4E	5,963,894	10/05/1999	Richardson et al.	704	9	
	4F	5,963,940	10/05/1999	Liddy et al.	707	5	
	4G	5,987,404	11/16/1999	Della Pietra et al.	704	9	
	4H	5,991,721	11/23/1999	Asano et al.	704	257	
	4I	5,995,119	11/30/1999	Cosatto et al.	345	473	
	4J	5,995,928	11/30/1999	Nguyen *et al.*	704	251	
	4K	6,009,382	12/28/1999	Martino et al.	704	1	
	4L	6,014,559	01/11/2000	Amin	455	413	
	4M	6,018,708	01/25/2000	Dahan *et al.*	704	244	
	4N	6,021,384	02/01/2000	Gorin et al.	704	1	
	4O	6,028,514	02/22/2000	Lemelson *et al.*	340	539	
	4P	6,035,267	03/07/2000	Watanabe *et al.*	704	1	
	4Q	6,044,347	03/28/2000	Abella et al.	704	272	
	4R	6,049,602	04/11/2000	Foladare et al.	379	265	
	4S	6,049,607	04/11/2000	Marash *et al.*	379	410	
	4T	6,058,187	05/02/2000	Chen	380	21	
	4U	6,067,513	05/23/2000	Ishimitsu	704	233	
	4V	6,076,059	06/13/2000	Glickman *et al.*	704	260	
	4W	6,078,886	06/20/2000	Dragosh et al.	704	270	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES	Translations NO
	4X	WO 2010/096752	08/26/2010	International				
	4Y	2006-146881	06/08/2006	Japan				
	4Z	2008-027454	02/07/2008	Japan				
	4AA	2008-139928	06/19/2008	Japan				

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	4BB	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.
	4CC	CHEYER *et al.*, "Multimodal Maps: An Agent-Based Approach", International Conference on Cooperative Multimodal Communication (CMC/95), May 24-26, 1995, pages 111-121.
	4DD	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.

EXAMINER	DATE CONSIDERED

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	Applicant(s)	
	Philippe DI CRISTO *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	Herewith (September 29, 2014)	*To be Determined*

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5A	6,081,774	06/27/2000	De Hita et al.	704	9	
	5B	6,085,186	07/04/2000	Christianson *et al.*	707	3	
	5C	6,101,241	08/08/2000	Boyce et al.	379	88.01	
	5D	6,108,631	08/22/2000	Ruhl	704	270	
	5E	6,119,087	09/12/2000	Kuhn et al.	704	270	
	5F	6,122,613	09/19/2000	Baker	704	235	
	5G	6,134,235	10/17/2000	Goldman et al.	370	352	
	5H	6,144,667	11/07/2000	Doshi et al.	370	401	
	5I	6,144,938	11/07/2000	Surace *et al.*	704	257	
	5J	6,154,526	11/28/2000	Dahlke *et al.*	379	88.03	
	5K	6,160,883	12/12/2000	Jackson et al.	379	230	
	5L	6,167,377	12/26/2000	Gillick *et al.*	704	240	
	5M	6,173,266	01/09/2001	Marx *et al.*	704	270	
	5N	6,173,279	01/09/2001	Levin et al.	707	5	
	5O	6,175,858	01/16/2001	Bulfer *et al.*	709	206	
	5P	6,185,535	02/06/2001	Hedin *et al.*	704	270	
	5Q	6,188,982	02/13/2001	Chiang	704	256	
	5R	6,192,110	02/20/2001	Abella *et al.*	379	88.01	
	5S	6,192,338	02/20/2001	Haszto *et al.*	704	257	
	5T	6,195,634	02/27/2001	Dudemaine *et al.*	704	231	
	5U	6,195,651	02/27/2001	Handel *et al.*	707	2	
	5V	6,199,043	03/06/2001	Happ	704	272	
	5W	6,208,964	03/27/2001	Sabourin	704	244	

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	5X	TURUNEN, "Adaptive Interaction Methods in Speech User Interfaces", Conference on Human Factors in Computing Systems, Seattle, Washington, 2001, pages 91-92.
	5Y	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.
	5Z	VANHOUCKE, Vincent, "Confidence Scoring and Rejection Using Multi-Pass Speech Recognition", Nuance Communications, Menlo Park, CA, 2005, 4 pages.

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	6A	6,208,972	03/27/2001	Grant *et al.*	704	275	
	6B	6,219,346	04/17/2001	Maxemchuk	370	338	
	6C	6,219,643	04/17/2001	Cohen *et al.*	704	257	
	6D	6,226,612	05/01/2001	Srenger *et al.*	704	256	
	6E	6,233,556	05/15/2001	Teunen *et al.*	704	250	
	6F	6,233,559	05/15/2001	Balakrishnan	704	275	
	6G	6,233,561	05/15/2001	Junqua *et al.*	704	277	
	6H	6,236,968	05/22/2001	Kanevsky *et al.*	704	275	
	6I	6,246,981	06/12/2001	Papineni *et al.*	704	235	
	6J	6,246,990	06/12/2001	Happ	704	275	
	6K	6,266,636	07/24/2001	Kosaka *et al.*	704	244	
	6L	6,269,336	07/31/2001	Ladd *et al.*	704	270	
	6M	6,272,455	08/07/2001	Hoshen *et al.*	704	1	
	6N	6,275,231	08/14/2001	Obradovich	345	349	
	6O	6,278,377	08/21/2001	DeLine *et al.*	340	815.4	
	6P	6,278,968	08/21/2001	Franz *et al.*	704	3	
	6Q	6,288,319	09/11/2001	Catona	84	609	
	6R	6,292,767	09/18/2001	Jackson *et al.*	704	1	
	6S	6,301,560	10/09/2001	Masters	704	251	
	6T	6,308,151	10/23/2001	Smith	704	235	
	6U	6,311,159	10/30/2001	Van Tichelen *et al.*	704	275	
	6V	6,314,402	11/06/2001	Monaco et al.	704	275	
	6W	6,321,196	11/20/2001	Franceschi	704	243	

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	6X	WENG, Fuliang, *et al.*, "Efficient Lattice Representation and Generation", Speech Technology and Research Laboratory, SRI International, Menlo Park, CA, 1998, 4 pages.
	6Y	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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	7A	6,356,869	03/12/2002	Chapados *et al.*	704	275	
	7B	6,362,748	03/26/2002	Huang	340	901	
	7C	6,366,882	04/02/2002	Bijl *et al.*	704	235	
	7D	6,366,886	04/02/2002	Dragosh et al.	704	270.1	
	7E	6,374,214	04/16/2002	Friedland *et al.*	704	235	
	7F	6,377,913	04/23/2002	Coffman *et al.*	704	8	
	7G	6,381,535	04/30/2002	Durocher *et al.*	701	202	
	7H	6,385,596	05/07/2002	Wiser *et al.*	705	51	
	7I	6,385,646	05/07/2002	Brown et al.	709	217	
	7J	6,393,403	05/21/2002	Majaniemi	704	275	
	7K	6,393,428	05/21/2002	Miller et al.	707	102	
	7L	6,397,181	05/28/2002	Li *et al.*	704	256	
	7M	6,404,878	06/11/2002	Jackson et al.	379	221.01	
	7N	6,405,170	06/11/2002	Phillips *et al.*	704	270	
	7O	6,408,272	06/18/2002	White *et al.*	704	270.1	
	7P	6,411,810	06/25/2002	Maxemchuk	455	453	
	7Q	6,411,893	06/25/2002	Ruhl	701	207	
	7R	6,415,257	07/02/2002	Junqua *et al.*	704	275	
	7S	6,418,210	07/09/2002	Sayko	379	142.15	
	7T	6,420,975	07/16/2002	DeLine *et al.*	340	815.4	
	7U	6,429,813	08/06/2002	Feigen	342	357.13	
	7V	6,430,285	08/06/2002	Bauer et al.	379	265.01	
	7W	6,430,531	08/06/2002	Polish	704	257	

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	7X	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.
	7Y	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.

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	8A	6,434,523	08/13/2002	Monaco	704	257	
	8B	6,434,524	08/13/2002	Weber	704	257	
	8C	6,434,529	08/13/2002	Walker *et al.*	704	275	
	8D	6,442,522	08/27/2002	Carberry et al.	704	257	
	8E	6,446,114	09/03/2002	Bulfer et al.	709	206	
	8F	6,453,153	09/17/2002	Bowker et al.	455	67.4	
	8G	6,453,292	09/17/2002	Ramaswamy et al.	704	235	
	8H	6,456,711	09/24/2002	Cheung et al.	379	265.09	
	8I	6,456,974	09/24/2002	Baker *et al.*	704	270.1	
	8J	6,466,654	10/15/2002	Cooper *et al.*	379	88.01	
	8K	6,466,899	10/15/2002	Yano *et al.*	704	1	
	8L	6,470,315	10/22/2002	Netsch *et al.*	704	256	
	8M	6,487,494	11/26/2002	Odinak *et al.*	701	202	
	8N	6,487,495	11/26/2005	Gale *et al.*	701	209	
	8O	6,498,797	12/24/2002	Anerousis et al.	370	522	
	8P	6,499,013	12/24/2002	Weber	704	257	
	8Q	6,501,833	12/31/2002	Phillips *et al.*	379	88.07	
	8R	6,501,834	12/31/2002	Milewski et al.	379	93.24	
	8S	6,505,155	01/07/2003	Vanbuskirk *et al.*	704	246	
	8T	6,510,417	01/21/2003	Woods *et al.*	704	275	
	8U	6,513,006	01/28/2003	Howard *et al.*	704	257	
	8V	6,522,746	02/18/2003	Marchok *et al.*	379	406.03	
	8W	6,523,061	02/18/2003	Halverson et al.	709	202	

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	8X	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.
	8Y	"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.

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	9A	6,532,444	03/11/2003	Weber	704	257	
	9B	6,539,348	03/25/2003	Bond et al.	704	9	
	9C	6,549,629	04/15/2003	Finn *et al.*	381	92	
	9D	6,553,372	04/22/2003	Brassell et al.	707	5	
	9E	6,556,970	04/29/2003	Sasaki *et al.*	704	257	
	9F	6,556,973	04/29/2003	Lewin	704	277	
	9G	6,560,576	05/06/2003	Cohen et al.	704	270	
	9H	6,560,590	05/06/2003	Shwe *et al.*	706	55	
	9I	6,567,778	05/20/2003	Chao Chang et al.	704	257	
	9J	6,567,797	05/20/2003	Schuetze *et al.*	707	2	
	9K	6,570,555	05/27/2003	Prevost *et al.*	345	156	
	9L	6,570,964	05/27/2003	Murveit et al.	379	67.1	
	9M	6,571,279	05/27/2003	Herz *et al.*	709	217	
	9N	6,574,597	06/03/2003	Mohri *et al.*	704	251	
	9O	6,574,624	06/03/2003	Johnson et al.	707	5	
	9P	6,578,022	06/10/2003	Foulger *et al.*	706	45	
	9Q	6,581,103	06/17/2003	Dengler	709	231	
	9R	6,584,439	06/24/2003	Geilhufe *et al.*	704	270	
	9S	6,587,858	07/01/2003	Strazza	707	102	
	9T	6,591,239	07/08/2003	McCall *et al.*	704	275	
	9U	6,594,257	07/15/2003	Doshi et al.	370	352	
	9V	6,594,367	07/15/2003	Marash *et al.*	381	92	
	9W	6,598,018	07/22/2003	Junqua	704	251	

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	10B	6,604,075	08/05/2003	Brown *et al.*	704	270.1	
	10C	6,604,077	08/05/2003	Dragosh et al.	704	270.1	
	10D	6,606,598	08/12/2003	Holthouse *et al.*	704	275	
	10E	6,611,692	08/26/2003	Raffel et al.	455	552	
	10F	6,614,773	09/02/2003	Maxemchuk	370	337	
	10G	6,615,172	09/02/2003	Bennett *et al.*	704	257	
	10H	6,622,119	09/16/2003	Ramaswamy *et al.*	704	9	
	10I	6,629,066	09/30/2003	Jackson et al.	704	9	
	10J	6,631,346	10/07/2003	Karaorman *et al.*	704	9	
	10K	6,631,351	10/07/2003	Ramachandran *et al.*	704	270	
	10L	6,633,846	10/14/2003	Bennett *et al.*	704	257	
	10M	6,636,790	10/21/2003	Lightner *et al.*	701	33	
	10N	6,643,620	11/04/2003	Contolini *et al.*	704	270	
	10O	6,647,363	11/11/2003	Claassen	704	1	
	10P	6,650,747	11/18/2003	Bala et al.	379	265.06	
	10Q	6,658,388	12/02/2003	Kleindienst *et al.*	704	275	
	10R	6,678,680	01/13/2004	Woo	707	6	
	10S	6,681,206	01/20/2004	Gorin *et al.*	704	243	
	10T	6,691,151	02/10/2004	Cheyer et al.	709	202	
	10U	6,701,294	03/02/2004	Ball *et al.*	704	257	
	10V	6,704,396	03/09/2004	Parolkar *et al.*	379	88.17	
	10W	6,704,576	03/09/2004	Brachman *et al.*	455	503	

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	11B	6,707,421	03/16/2004	Drury *et al.*	342	357.1	
	11C	6,708,150	03/16/2004	Hirayama *et al.*	704	243	
	11D	6,721,001	04/13/2004	Berstis	348	231.3	
	11E	6,721,633	04/13/2004	Funk *et al.*	701	1	
	11F	6,721,706	04/13/2004	Strubbe *et al.*	704	275	
	11G	6,726,636	04/27/2004	Der Ghazarian *et al.*	600	532	
	11H	6,735,592	05/11/2004	Neumann *et al.*	707	101	
	11I	6,739,556	05/25/2004	Langston	244	189	
	11J	6,741,931	05/25/2004	Kohut *et al.*	701	209	
	11K	6,742,021	05/25/2004	Halverson *et al.*	709	218	
	11L	6,745,161	06/01/2004	Arnold *et al.*	704	7	
	11M	6,751,591	06/15/2004	Gorin *et al.*	704	257	
	11N	6,751,612	06/15/2004	Schuetze *et al.*	707	4	
	11O	6,754,485	06/22/2004	Obradovich *et al.*	455	414.1	
	11P	6,754,627	06/22/2004	Woodward	704	235	
	11Q	6,757,544	06/29/2004	Rangarajan *et al.*	455	456.1	
	11R	6,757,718	06/29/2004	Halverson *et al.*	709	218	
	11S	6,795,808	09/21/2004	Strubbe *et al.*	704	275	
	11T	6,801,604	10/05/2004	Maes *et al.*	379	88.17	
	11U	6,801,893	10/05/2004	Backfried *et al.*	704	257	
	11V	6,813,341	11/02/2004	Mahoney	379	88.01	
	11W	6,829,603	12/07/2004	Chai *et al.*	707	5	

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	12B	6,833,848	12/21/2004	Wolff *et al.*	345	719	
	12C	6,850,603	02/01/2005	Eberle *et al.*	379	88.16	
	12D	6,856,990	02/15/2005	Barile *et al.*	707	10	
	12E	6,865,481	03/08/2005	Kawazoe *et al.*	701	211	
	12F	6,868,380	03/15/2005	Kroeker	704	240	
	12G	6,868,385	03/15/2005	Gerson	704	275	
	12H	6,873,837	03/29/2005	Yoshioka *et al.*	455	321	
	12I	6,877,001	04/05/2005	Wolf *et al.*	707	3	
	12J	6,877,134	04/05/2005	Fuller *et al.*	715	500.1	
	12K	6,901,366	05/31/2005	Kuhn *et al.*	704	275	
	12L	6,910,003	06/21/2005	Arnold *et al.*	704	4	
	12M	6,912,498	06/28/2005	Stevens *et al.*	704	235	
	12N	6,915,126	07/05/2005	Mazzara, Jr.	455	411	
	12O	6,928,614	08/09/2005	Everhart	715	728	
	12P	6,934,756	08/23/2005	Maes	709	227	
	12Q	6,937,977	08/30/2005	Gerson	704	201	
	12R	6,937,982	08/30/2005	Kitaoka *et al.*	704	252	
	12S	6,941,266	09/06/2005	Gorin *et al.*	704	257	
	12T	6,944,594	09/13/2005	Busayapongchai *et al.*	704	275	
	12U	6,950,821	09/27/2005	Faybishenko *et al.*	707	10	
	12V	6,954,755	10/11/2005	Reisman	707	10	
	12W	6,959,276	10/25/2005	Droppo *et al.*	704	226	

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	13B	6,963,759	11/08/2005	Gerson	455	563	
	13C	6,964,023	11/08/2005	Maes *et al.*	715	811	
	13D	6,968,311	11/22/2005	Knockeart *et al.*	704	270	
	13E	6,973,387	12/06/2005	Masclet *et al.*	701	211	
	13F	6,975,993	12/13/2005	Keiller	704	275	
	13G	6,980,092	12/27/2005	Turnbull *et al.*	340	425.5	
	13H	6,983,055	01/03/2006	Luo	381	313	
	13I	6,990,513	01/24/2006	Belfiore *et al.*	709	203	
	13J	6,996,531	02/07/2006	Korall *et al.*	704	270	
	13K	7,003,463	02/21/2006	Maes *et al.*	704	270.1	
	13L	7,016,849	03/21/2006	Arnold *et al.*	704	275	
	13M	7,020,609	03/28/2006	Thrift *et al.*	704	270.1	
	13N	7,024,364	04/04/2006	Guerra *et al.*	704	270	
	13O	7,027,586	04/11/2006	Bushey *et al.*	379	265.09	
	13P	7,027,975	04/11/2006	Pazandak *et al.*	704	9	
	13Q	7,035,415	04/25/2006	Belt *et al.*	381	92	
	13R	7,036,128	04/25/2006	Julia *et al.*	719	317	
	13S	7,043,425	05/09/2006	Pao	704	211	
	13T	7,054,817	05/30/2006	Shao	704	270	
	13U	7,058,890	06/06/2006	George *et al.*	715	728	
	13V	7,062,488	06/13/2006	Reisman	707	8	
	13W	7,069,220	06/27/2006	Coffman *et al.*	704	275	

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	Filing Date	Group Art Unit
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U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	14A	7,072,834	07/04/2006	Zhou	704	244	
	14B	7,076,362	07/11/2006	Ohtsuji *et al.*	701	211	
	14C	7,082,469	07/25/2006	Gold *et al.*	709	231	
	14D	7,085,708	08/01/2006	Manson	704	9	
	14E	7,092,928	08/15/2006	Elad *et al.*	706	60	
	14F	7,107,210	09/12/2006	Deng *et al.*	704	226	
	14G	7,107,218	09/12/2006	Preston	704	270	
	14H	7,110,951	09/19/2006	Lemelson *et al.*	704	270	
	14I	7,127,395	10/24/2006	Gorin *et al.*	704	257	
	14J	7,127,400	10/24/2006	Koch	704	270.1	
	14K	7,130,390	10/31/2006	Abburi	379	88.17	
	14L	7,136,875	11/14/2006	Anderson *et al.*	707	104.1	
	14M	7,137,126	11/14/2006	Coffman *et al.*	719	328	
	14N	7,143,037	11/28/2006	Chestnut	704	251	
	14O	7,143,039	11/28/2006	Stifelman *et al.*	704	270	
	14P	7,146,319	12/05/2006	Hunt	704	254	
	14Q	7,149,696	12/12/2006	Shimizu *et al.*	705	1	
	14R	7,165,028	01/16/2007	Gong	704	233	
	14S	7,170,993	01/30/2007	Anderson *et al.*	379	265.09	
	14T	7,171,291	01/30/2007	Obradovich	701	29	
	14U	7,174,300	02/06/2007	Bush	704	275	
	14V	7,177,798	02/13/2007	Hsu *et al.*	704	9	
	14W	7,184,957	02/27/2007	Brookes *et al.*	704	246	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	15A	7,190,770	03/13/2007	Ando *et al.*	379	88.01	
	15B	7,197,069	03/27/2007	Agazzi *et al.*	375	233	
	15C	7,197,460	03/27/2007	Gupta *et al.*	704	270.1	
	15D	7,203,644	04/10/2007	Anderson *et al.*	704	246	
	15E	7,206,418	04/17/2007	Yang *et al.*	381	92	
	15F	7,207,011	04/17/2007	Mulvey *et al.*	715	812	
	15G	7,215,941	05/08/2007	Beckmann *et al.*	455	404.1	
	15H	7,228,276	06/05/2007	Omote *et al.*	704	243	
	15I	7,231,343	06/12/2007	Treadgold *et al.*	704	9	
	15J	7,236,923	06/26/2007	Gupta	704	9	
	15K	7,254,482	08/07/2007	Kawasaki *et al.*	701	211	
	15L	7,272,212	09/18/2007	Eberle *et al.*	379	88.17	
	15M	7,277,854	10/02/2007	Bennett *et al.*	704	257	
	15N	7,283,829	10/16/2007	Christenson *et al.*	455	461	
	15O	7,283,951	10/16/2007	Marchisio *et al.*	704	9	
	15P	7,289,606	10/30/2007	Sibal *et al.*	379	52	
	15Q	7,299,186	11/20/2007	Kuzunuki *et al.*	704	270.1	
	15R	7,301,093	11/27/2007	Sater *et al.*	84	615	
	15S	7,305,381	12/04/2007	Poppink *et al.*	1	1	
	15T	7,321,850	01/22/2008	Wakita	704	10	
	15U	7,328,155	02/05/2008	Endo *et al.*	704	251	
	15V	7,337,116	02/26/2008	Charlesworth *et al.*	704	254	
	15W	7,340,040	03/04/2008	Saylor *et al.*	379	67.1	

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	16A	7,366,285	04/29/2008	Parolkar *et al.*	379	88.17	
	16B	7,366,669	04/29/2008	Nishitani *et al.*	704	256	
	16C	7,376,645	05/20/2008	Bernard	707	3	
	16D	7,386,443	06/10/2008	Parthasarathy *et al.*	704	201	
	16E	7,398,209	07/08/2008	Kennewick *et al.*	704	255	
	16F	7,406,421	07/29/2008	Odinak *et al.*	704	275	
	16G	7,415,414	08/19/2008	Azara *et al.*	704	270	
	16H	7,421,393	09/02/2008	Di Fabbrizio *et al.*	704	275	
	16I	7,424,431	09/09/2008	Greene *et al.*	704	270	
	16J	7,447,635	11/04/2008	Konopka *et al.*	704	275	
	16K	7,451,088	11/11/2008	Ehlen *et al.*	704	270.1	
	16L	7,454,608	11/18/2008	Gopalakrishnan *et al.*	713	100	
	16M	7,461,059	12/02/2008	Richardson *et al.*	707	5	
	16N	7,472,020	12/30/2008	Brulle-Drews	701	211	
	16O	7,472,060	12/30/2008	Gorin *et al.*	704	240	
	16P	7,472,075	12/30/2008	Odinak *et al.*	705	26	
	16Q	7,477,909	01/13/2009	Roth	455	466	
	16R	7,478,036	01/13/2009	Shen *et al.*	704	9	
	16S	7,487,088	02/03/2009	Gorin *et al.*	704	240	
	16T	7,487,110	02/03/2009	Bennett *et al.*	705	26	
	16U	7,493,259	02/17/2009	Jones *et al.*	704	257	
	16V	7,493,559	02/17/2009	Wolff *et al.*	715	727	
	16W	7,502,672	03/10/2009	Kolls	701	29	

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	17A	7,502,738	03/10/2009	Kennewick *et al.*	704	257	
	17B	7,516,076	04/07/2009	Walker *et al.*	704	275	
	17C	7,529,675	05/05/2009	Maes	704	270.1	
	17D	7,536,297	05/19/2009	Byrd *et al.*	704	10	
	17E	7,536,374	05/19/2009	Au	706	55	
	17F	7,542,894	06/02/2009	Murata	704	9	
	17G	7,546,382	06/09/2009	Healey *et al.*	709	246	
	17H	7,548,491	06/16/2009	Macfarlane	367	198	
	17I	7,552,054	06/23/2009	Stifelman *et al.*	704	270	
	17J	7,558,730	07/07/2009	Davis *et al.*	704	235	
	17K	7,574,362	08/11/2009	Walker *et al.*	704	275	
	17L	7,577,244	08/18/2009	Taschereau	379	218.01	
	17M	7,606,708	10/20/2009	Hwang	704	257	
	17N	7,620,549	11/17/2009	Di Cristo *et al.*	704	257	
	17O	7,634,409	12/15/2009	Kennewick *et al.*	704	257	
	17P	7,640,006	12/29/2009	Portman *et al.*	455	412.1	
	17Q	7,640,160	12/29/2009	Di Cristo *et al.*	704	257	
	17R	7,640,272	12/29/2009	Mahajan *et al.*	707	104.1	
	17S	7,676,365	03/09/2010	Hwang *et al.*	704	240	
	17T	7,676,369	03/09/2010	Fujimoto *et al.*	704	270	
	17U	7,684,977	03/23/2010	Morikawa	704	211	
	17V	7,693,720	04/06/2010	Kennewick *et al.*	704	275	
	17W	7,729,916	06/01/2010	Coffman *et al.*	704	270	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	18A	7,729,918	06/01/2010	Walker *et al.*	704	275	
	18B	7,729,920	06/01/2010	Chaar *et al.*	704	275	
	18C	7,734,287	06/08/2010	Ying	455	423	
	18D	7,748,021	06/29/2010	Obradovich	725	105	
	18E	7,788,084	08/31/2010	Brun *et al.*	704	7	
	18F	7,801,731	09/21/2010	Odinak *et al.*	704	275	
	18G	7,809,570	10/05/2010	Kennewick *et al.*	704	257	
	18H	7,818,176	10/19/2010	Freeman *et al.*	704	270	
	18I	7,831,426	11/09/2010	Bennett	704	252	
	18J	7,831,433	11/09/2010	Belvin *et al.*	704	275	
	18K	7,856,358	12/21/2010	Ho	704	270	
	18L	7,873,519	01/18/2011	Bennett	704	257	
	18M	7,873,523	01/18/2011	Potter *et al.*	704	275	
	18N	7,873,654	01/18/2011	Bernard	707	769	
	18O	7,881,936	02/01/2011	Longe *et al.*	704	257	
	18P	7,890,324	02/15/2011	Bangalore *et al.*	704	231	
	18Q	7,894,849	02/22/2011	Kass *et al.*	455	550.1	
	18R	7,902,969	03/08/2011	Obradovich	340	439	
	18S	7,917,367	03/29/2011	Di Cristo *et al.*	704	270.1	
	18T	7,920,682	04/05/2011	Byrne *et al.*	379	88.18	
	18U	7,949,529	05/24/2011	Weider *et al.*	704	270	
	18V	7,949,537	05/24/2011	Walker *et al.*	704	275	
	18W	7,953,732	05/31/2011	Frank *et al.*	707	724	

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	19A	7,974,875	07/05/2011	Quilici *et al.*	705	14.4	
	19B	7,983,917	07/19/2011	Kennewick *et al.*	704	257	
	19C	7,984,287	07/19/2011	Gopalakrishnan *et al.*	713	100	
	19D	8,005,683	08/23/2011	Tessel *et al.*	704	275	
	19E	8,015,006	09/06/2011	Kennewick *et al.*	704	236	
	19F	8,060,367	11/15/2011	Keaveney	704	247	
	19G	8,069,046	11/29/2011	Kennewick *et al.*	704	257	
	19H	8,073,681	12/06/2011	Baldwin *et al.*	704	9	
	19I	8,077,975	12/13/2011	Ma *et al.*	382	187	
	19J	8,082,153	12/20/2011	Coffman *et al.*	704	270	
	19K	8,086,463	12/27/2011	Ativanichayaphong *et al.*	704	275	
	19L	8,112,275	02/07/2012	Kennewick *et al.*	704	240	
	19M	8,140,327	03/20/2012	Kennewick *et al.*	704	226	
	19N	8,140,335	03/20/2012	Kennewick *et al.*	704	257	
	19O	8,145,489	03/27/2012	Freeman *et al.*	704	257	
	19P	8,150,694	04/03/2012	Kennewick *et al.*	704	257	
	19Q	8,155,962	04/10/2012	Kennewick *et al.*	704	257	
	19R	8,170,867	05/01/2012	Germain	704	9	
	19S	8,195,468	06/05/2012	Weider *et al.*	704	275	
	19T	8,219,399	07/10/2012	Lutz *et al.*	704	270	
	19U	8,219,599	07/10/2012	Tunstall-Pedoe	707	955	
	19V	8,224,652	07/17/2012	Wang *et al.*	704	275	
	19W	8,255,224	08/28/2012	Singleton *et al.*	704	275	

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	20A	8,326,627	12/04/2012	Kennewick *et al.*	704	257	
	20B	8,326,634	12/04/2012	Di Cristo *et al.*	704	270.1	
	20C	8,326,637	12/04/2012	Baldwin *et al.*	704	275	
	20D	8,332,224	12/11/2012	Di Cristo *et al.*	704	257	
	20E	8,370,147	02/05/2013	Kennewick *et al.*	704	257	
	20F	8,447,607	05/21/2013	Weider *et al.*	704	250	
	20G	8,452,598	05/28/2013	Kennewick *et al.*	704	257	
	20H	8,509,403	08/13/2013	Chiu *et al.*	379	114.13	
	20I	8,515,765	08/20/2013	Baldwin et al.	704	275	
	20J	8,527,274	09/03/2013	Freeman *et al.*	704	257	
	20K	8,589,161	11/19/2013	Kennewick *et al.*	704	252	
	20L	8,620,659	12/31/2013	Di Cristo et al.	704	257	
	20M	8,719,009	05/06/2014	Baldwin et al.	704	9	
	20N	8,719,026	05/06/2014	Kennewick *et al.*	704	257	
	20O	8,738,380	05/27/2014	Baldwin *et al.*	704	257	
	20P	2001/0041980	11/15/2001	Howard *et al.*	704	270	
	20Q	2001/0049601	12/06/2001	Kroeker *et al.*	704	254	
	20R	2001/0054087	12/20/2001	Flom *et al.*	709	218	
	20S	2002/0015500	02/07/2002	Belt *et al.*	381	66	
	20T	2002/0022927	02/21/2002	Lemelson *et al.*	701	301	
	20U	2002/0029261	03/07/2002	Shibata	709	219	
	20V	2002/0032752	03/14/2002	Gold *et al.*	709	218	
	20W	2002/0035501	03/21/2002	Handel *et al.*	705	10	

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	21A	2002/0040297	04/04/2002	Tsiao *et al.*	704	257	
	21B	2002/0049535	04/25/2002	Rigo *et al.*	701	211	
	21C	2002/0049805	04/25/2002	Yamada *et al.*	709	202	
	21D	2002/0059068	05/16/2002	Rose *et al.*	704	246	
	21E	2002/0065568	05/30/2002	Silfvast *et al.*	700	94	
	21F	2002/0067839	06/06/2002	Heinrich	381	110	
	21G	2002/0069059	06/06/2002	Smith	704	257	
	21H	2002/0069071	06/06/2002	Knockeart et al.	704	275	
	21I	2002/0082911	06/27/2002	Dunn *et al.*	705	14	
	21J	2002/0087312	07/04/2002	Lee *et al.*	704	251	
	21K	2002/0087326	07/04/2002	Lee *et al.*	704	270.1	
	21L	2002/0087525	07/04/2002	Abbott *et al.*	707	3	
	21M	2002/0107694	08/08/2002	Lerg	704	273	
	21N	2002/0120609	08/29/2002	Lang *et al.*	707	1	
	21O	2002/0124050	09/05/2002	Middeljans	709	203	
	21P	2002/0133354	09/19/2002	Ross *et al.*	704	275	
	21Q	2002/0133402	09/19/2002	Faber *et al.*	705	14	
	21R	2002/0135618	09/26/2002	Maes et al.	345	767	
	21S	2002/0138248	09/26/2002	Corston-Oliver *et al.*	704	1	
	21T	2002/0143532	10/03/2002	McLean *et al.*	704	235	
	21U	2002/0143535	10/03/2002	Kist *et al.*	704	251	
	21V	2002/0161646	10/31/2002	Gailey *et al.*	705	14	
	21W	2002/0173333	11/21/2002	Buchholz *et al.*	455	527	

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	22A	2002/0173961	11/21/2002	Guerra	704	258	
	22B	2002/0184373	12/05/2002	Maes	709	228	
	22C	2002/0188602	12/12/2002	Stubler *et al.*	707	3	
	22D	2002/0198714	12/26/2002	Zhou	704	252	
	22E	2003/0014261	01/16/2003	Kageyama	704	275	
	22F	2003/0016835	01/23/2003	Elko *et al.*	381	92	
	22G	2003/0046346	03/06/2003	Mumick *et al.*	709	205	
	22H	2003/0064709	04/03/2003	Gailey *et al.*	455	412	
	22I	2003/0065427	04/03/2003	Funk *et al.*	701	1	
	22J	2003/0069734	04/10/2003	Everhart	704	275	
	22K	2003/0088421	05/08/2003	Maes *et al.*	704	270.1	
	22L	2003/0097249	05/22/2003	Walker *et al.*	704	1	
	22M	2003/0110037	06/12/2003	Walker *et al.*	704	257	
	22N	2003/0112267	06/19/2003	Belrose	345	728	
	22O	2003/0115062	06/19/2003	Walker *et al.*	704	258	
	22P	2003/0120493	06/26/2003	Gupta	704	270.1	
	22Q	2003/0135488	07/17/2003	Amir *et al.*	707	3	
	22R	2003/0144846	07/31/2003	Denenberg *et al.*	704	277	
	22S	2003/0158731	08/21/2003	Falcon *et al.*	704	231	
	22T	2003/0161448	08/28/2003	Parolkar *et al.*	379	88.17	
	22U	2003/0182132	09/25/2003	Niemoeller	704	275	
	22V	2003/0204492	10/30/2003	Wolf *et al.*	707	3	
	22W	2003/0206640	11/06/2003	Malvar *et al.*	381	93	

FOREIGN PATENT DOCUMENTS

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	090611-0434304	*To be Determined*
	Applicant(s)	
	Philippe DI CRISTO *et al.*	
	Filing Date	Group Art Unit
Form PTO-1449	Herewith (September 29, 2014)	*To be Determined*

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	23A	2003/0212550	11/13/2003	Ubale	704	215	
	23B	2003/0212558	11/13/2003	Matula	704	260	
	23C	2003/0212562	11/13/2003	Patel *et al.*	704	275	
	23D	2003/0225825	12/04/2003	Healey *et al.*	709	203	
	23E	2003/0236664	12/25/2003	Sharma	704	251	
	23F	2004/0006475	01/08/2004	Ehlen *et al.*	704	270.1	
	23G	2004/0010358	01/15/2004	Oesterling *et al.*	701	49	
	23H	2004/0025115	02/05/2004	Sienel *et al.*	715	513	
	23I	2004/0044516	03/04/2004	Kennewick *et al.*	704	5	
	23J	2004/0098245	05/20/2004	Walker *et al.*	704	1	
	23K	2004/0117179	06/17/2004	Balasuriya	704	231	
	23L	2004/0117804	06/17/2004	Scahill *et al.*	719	320	
	23M	2004/0122674	06/24/2004	Bangalore *et al.*	704	276	
	23N	2004/0140989	07/22/2004	Papageorge	345	700	
	23O	2004/0158555	08/12/2004	Seedman *et al.*	707	3	
	23P	2004/0166832	08/26/2004	Portman *et al.*	455	412.1	
	23Q	2004/0167771	08/26/2004	Duan *et al.*	704	10	
	23R	2004/0172258	09/02/2004	Dominach *et al.*	704	277	
	23S	2004/0193408	09/30/2004	Hunt	704	209	
	23T	2004/0193420	09/30/2004	Kennewick *et al.*	704	257	
	23U	2004/0199375	10/07/2004	Ehsani *et al.*	704	4	
	23V	2004/0205671	10/14/2004	Sukehiro *et al.*	715	532	
	23W	2004/0243417	12/02/2004	Pitts, III *et al.*	704	276	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	24A	2005/0015256	01/20/2005	Kargman	704	272	
	24B	2005/0021334	01/27/2005	Iwahashi	704	240	
	24C	2005/0021470	01/27/2005	Martin *et al.*	705	51	
	24D	2005/0021826	01/27/2005	Kumar	709	232	
	24E	2005/0021331	01/27/2005	Huang *et al.*	704	231	
	24F	2005/0033574	02/10/2005	Kim *et al.*	704	251	
	24G	2005/0033582	02/10/2005	Gadd *et al.*	704	277	
	24H	2005/0043940	02/24/2005	Elder	704	9	
	24I	2005/0114116	05/26/2005	Fiedler	704	201	
	24J	2005/0125232	06/09/2005	Gadd	704	270.1	
	24K	2005/0131673	06/16/2005	Koizumi *et al.*	704	2	
	24L	2005/0137850	06/23/2005	Odell	704	4	
	24M	2005/0137877	06/23/2005	Oesterling *et al.*	704	275	
	24N	2005/0143994	06/30/2005	Mori *et al.*	704	235	
	24O	2005/0144013	06/30/2005	Fujimoto *et al.*	704	277	
	24P	2005/0216254	09/29/2005	Gupta *et al.*	704	9	
	24Q	2005/0234727	10/20/2005	Chiu	704	270.1	
	24R	2005/0246174	11/03/2005	DeGolia	704	270	
	24S	2005/0283752	12/22/2005	Fruchter *et al.*	717	100	
	24T	2006/0041431	02/23/2006	Maes	704	270.1	
	24U	2006/0047509	03/02/2006	Ding *et al.*	704	231	
	24V	2006/0074671	04/06/2006	Farmaner *et al.*	704	257	
	24W	2006/0206310	09/14/2006	Ravikumar *et al.*	704	9	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	25A	2006/0217133	09/28/2006	Christenson *et al.*	455	461	
	25B	2006/0285662	12/21/2006	Yin *et al.*	379	88.16	
	25C	2007/0033005	02/08/2007	Cristo *et al.*	704	9	
	25D	2007/0033020	02/08/2007	(Kelleher) Francois *et al.*	704	226	
	25E	2007/0038436	02/15/2007	Cristo *et al.*	704	9	
	25F	2007/0038445	02/15/2007	Helbing *et al.*	704	235	
	25G	2007/0043569	02/22/2007	Potter, III *et al.*	704	270	
	25H	2007/0043574	02/22/2007	Coffman *et al.*	704	275	
	25I	2007/0043868	02/22/2007	Kumar *et al.*	709	226	
	25J	2007/0050191	03/01/2007	Weider *et al.*	704	275	
	25K	2007/0055525	03/08/2007	Kennewick *et al.*	704	257	
	25L	2007/0061067	03/15/2007	Zeinstra *et al.*	701	200	
	25M	2007/0061735	03/15/2007	Hoffberg *et al.*	715	744	
	25N	2007/0073544	03/29/2007	Millett *et al.*	704	277	
	25O	2007/0078708	04/05/2007	Yu *et al.*	705	14	
	25P	2007/0078709	04/05/2007	Rajaram	705	14	
	25Q	2007/0094003	04/26/2007	Huang *et al.*	704	3	
	25R	2007/0118357	05/24/2007	Kasravi *et al.*	704	10	
	25S	2007/0135101	06/14/2007	Ramati *et al.*	455	414.1	
	25T	2007/0146833	06/28/2007	Satomi *et al.*	358	537	
	25U	2007/0162296	07/12/2007	Altberg *et al.*	705	1	
	25V	2007/0179778	08/02/2007	Gong *et al.*	704	9	
	25W	2007/0186165	08/09/2007	Maislos *et al.*	715	728	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	26A	2007/0198267	08/23/2007	Jones *et al.*	704	257	
	26B	2007/0203736	08/30/2007	Ashton	705	1	
	26C	2007/0214182	09/13/2007	Rosenberg	707	104.1	
	26D	2007/0250901	10/25/2007	McIntire *et al.*	725	146	
	26E	2007/0265850	11/15/2007	Kennewick *et al.*	704	257	
	26F	2007/0299824	12/27/2007	Pan *et al.*	707	3	
	26G	2008/0034032	02/07/2008	Healey *et al.*	709	203	
	26H	2008/0065386	03/13/2008	Cross *et al.*	704	270	
	26I	2008/0091406	04/17/2008	Baldwin *et al.*	704	4	
	26J	2008/0103761	05/01/2008	Printz *et al.*	704	9	
	26K	2008/0109285	05/08/2008	Reuther *et al.*	705	7	
	26L	2008/0115163	05/15/2008	Gilboa *et al.*	725	34	
	26M	2008/0133215	06/05/2008	Sarukkai	704	2	
	26N	2008/0140385	06/12/2008	Mahajan *et al.*	704	9	
	26O	2008/0147410	06/19/2008	Odinak	704	270.1	
	26P	2008/0154604	06/26/2008	Sathish *et al.*	704	257	
	26Q	2008/0177530	07/24/2008	Cross *et al.*	704	4	
	26R	2008/0189110	08/07/2008	Freeman *et al.*	704	251	
	26S	2008/0235023	09/25/2008	Kennewick *et al.*	704	257	
	26T	2008/0235027	09/25/2008	Cross	704	270.1	
	26U	2008/0319751	12/25/2008	Kennewick *et al.*	704	257	
	26V	2009/0052635	02/26/2009	Jones *et al.*	379	88.02	
	26W	2009/0067599	03/12/2009	Agarwal *et al.*	379	114.21	

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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	27A	2009/0076827	03/19/2009	Bulitta *et al.*	704	275	
	27B	2009/0106029	04/23/2009	DeLine *et al.*	704	275	
	27C	2009/0117885	05/07/2009	Roth	455	414.3	
	27D	2009/0144271	06/04/2009	Richardson *et al.*	707	5	
	27E	2009/0150156	06/11/2009	Kennewick *et al.*	704	257	
	27F	2009/0171664	07/02/2009	Kennewick *et al.*	704	257	
	27G	2009/0216540	08/27/2009	Tessel *et al.*	704	275	
	27H	2009/0271194	10/29/2009	Davis *et al.*	704	235	
	27I	2009/0273563	11/05/2009	Pryor	345	157	
	27J	2009/0276700	11/05/2009	Anderson *et al.*	715	700	
	27K	2009/0299745	12/03/2009	Kennewick *et al.*	704	257	
	27L	2009/0307031	12/10/2009	Winkler *et al.*	705	7	
	27M	2009/0313026	12/17/2009	Coffman *et al.*	704	275	
	27N	2010/0023320	01/28/2010	Di Cristo *et al.*	704	9	
	27O	2010/0029261	02/04/2010	Mikkelsen *et al.*	455	419	
	27P	2010/0049501	02/25/2010	Kennewick *et al.*	704	9	
	27Q	2010/0049514	02/25/2010	Kennewick *et al.*	704	233	
	27R	2010/0057443	03/04/2010	Di Cristo *et al.*	704	9	
	27S	2010/0063880	03/11/2010	Atsmon *et al.*	705	14.53	
	27T	2010/0036967	02/11/2010	Caine *et al.*	709	236	
	27U	2010/0185512	07/22/2010	Borger *et al.*	705	14.49	
	27V	2010/0145700	06/10/2010	Kennewick *et al.*	704	257	
	27W	2010/0204986	08/12/2010	Kennewick *et al.*	704	226	

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	28A	2010/0204994	08/12/2010	Kennewick *et al.*	704	257	
	28B	2010/0217604	08/26/2010	Baldwin *et al.*	704	275	
	28C	2010/0286985	11/11/2010	Kennewick *et al.*	704	257	
	28D	2010/0299142	11/25/2010	Freeman *et al.*	704	9	
	28E	2010/0312566	12/09/2010	Odinak *et al.*	704	275	
	28F	2011/0112827	05/12/2011	Kennewick *et al.*	704	9	
	28G	2011/0112921	05/12/2011	Kennewick *et al.*	705	26.1	
	28H	2011/0131036	06/02/2011	Di Cristo *et al.*	704	9	
	28I	2011/0131045	06/02/2011	Cristo *et al.*	704	249	
	28J	2011/0231182	09/22/2011	Weider *et al.*	704	9	
	28K	2011/0231188	09/22/2011	Kennewick *et al.*	704	236	
	28L	2012/0022857	01/26/2012	Baldwin *et al.*	704	9	
	28M	2012/0101809	04/26/2012	Kennewick *et al.*	704	9	
	28N	2012/0101810	04/26/2012	Kennewick *et al.*	704	9	
	28O	2012/0109753	05/03/2012	Kennewick *et al.*	705	14.58	
	28P	2012/0150636	06/14/2012	Freeman *et al.*	705	14.49	
	28Q	2012/0278073	11/01/2012	Weider et al.	704	235	
	28R	2013/0054228	02/28/2013	Baldwin *et al.*	704	9	
	28S	2013/0080177	03/28/2013	Chen	704	275	
	28T	2013/0211710	08/15/2013	Kennewick *et al.*	701	419	
	28U	2013/0253929	09/26/2013	Weider *et al.*	704	235	
	28V	2013/0297293	11/07/2013	Di Cristo *et al.*	704	9	
	28W	2013/0304473	11/14/2013	Baldwin *et al.*	704	257	

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	29A	2013/0339022	12/19/2013	Baldwin *et al.*	704	257	
	29B	2014/0012577	01/09/2014	Freeman *et al.*	704	249	
	29C	2014/0108013	04/17/2014	Di Cristo *et al.*	704	254	
	29D	2014/0156278	06/05/2014	Kennewick *et al.*	704	254	
	29E	2014/0249821	09/04/2014	Kennewick *et al.*	704	257	
	29F	2014/0249822	09/04/2014	Baldwin *et al.*	704	257	
	29G	2014/0288934	09/25/2014	Kennewick *et al.*	704	254	

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	28	"704"/$.ccls. and (multipass$5 or (multi near2 pass$5)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 10:24
S2	36	"704"/$.ccls. and voicebox.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 10:26
S3	630	"704"/$.ccls. and (multipass$5 or (multi near2 pass$2) or (multiple$5 near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 10:32
S4	1	S2 and (ordered near2 list$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:02
S5	12	S2 and (ordered near2 list$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:03
S6	6	S2 and phonetic$5.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:05
S7	17	S2 and subsequent$5.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:21
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		context$5)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			11:33
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S10	37	((sync$5 or synchroni$10) with context$5 with event$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:06
S11	336	((sync$5 or synchroni$10) with context$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:08
S12	12	S11 and "704"/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:08
S13	386	"704"/$.ccls. and (context$5 near2 chang$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:15
S14	48	"704"/$.ccls. and (context$5 near2 chang$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:16
S15	212	"704"/$.ccls. and ((sync$5 or synchroni$10) with device$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:25
S16	1265	704/270.1.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2012/02/28 12:38

			IBM_TDB			
S17	306	S16 and ((sync$5 or synchroni$10))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:38
S18	54	S16 and ((sync$5 or synchroni$10)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:39
S19	87	"704"/$.ccls. and ((sync$5 or synchroni$10) with recogni$10).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:03
S20	15	("20010021909" | "20020046030" | "20020080927" | "20020161627" | "20030078779" | "20040098263" | "20050033582" | "20050091057" | "20080162145" | "6167377" | "6418431" | "6510417" | "6665644" | "7099825" | "7584102").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/02/28 13:07
S21	1059	"704"/$.ccls. and ((sync$5 or synchroni$10) with device$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:15
S22	467	S21 and context$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:16
S23	406	"704"/$.ccls. and ((sync$5 or synchroni$10) same context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:17
S24	114	S21 and S23	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:17
S25	153	"704"/$.ccls. and (context$5 with (stack$5 or queue$5))	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2012/02/28 14:29

			EPO; JPO; DERWENT; IBM_TDB			
S26	60	"704"/$.ccls. and ((context$5 with (stack$5 or queue$5)) same (grammar$5 or vocabular$5 or lexicon$5 or dictionar$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 14:36
S27	46	US-5892900-$.DID. OR US-6076059-$.DID. OR US-6199043-$.DID. OR US-6236968-$.DID. OR US-6246990-$.DID. OR US-6301560-$.DID. OR US-6393403-$.DID. OR US-6571279-$.DID. OR US-6578022-$.DID. OR US-6601026-$.DID. OR US-6631351-$.DID. OR US-6704396-$.DID. OR US-6745161-$.DID. OR US-6850603-$.DID. OR US-7027586-$.DID. OR US-7107218-$.DID. OR US-7130390-$.DID. OR US-7143039-$.DID. OR US-7190770-$.DID. OR US-7272212-$.DID. OR US-7283829-$.DID. OR US-7283951-$.DID. OR US-7299186-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:37
S28	46	US-7321850-$.DID. OR US-7366285-$.DID. OR US-7454608-$.DID. OR US-7529675-$.DID. OR US-7542894-$.DID. OR US-7546382-$.DID. OR US-7640006-$.DID. OR US-7640272-$.DID. OR US-7684977-$.DID. OR US-7729916-$.DID. OR US-7748021-$.DID. OR US-7801731-$.DID. OR US-7831426-$.DID. OR US-7873519-$.DID. OR US-7881936-$.DID. OR US-7894849-$.DID. OR US-7953732-$.DID. OR US-7984287-$.DID. OR US-8005683-$.DID. OR US-8077975-$.DID. OR US-8082153-$.DID. OR US-8170867-$.DID. OR US-8219599-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:38
S29	46	US-8224652-$.DID. OR US-20010054087-$.DID. OR US-20020029261-$.DID. OR US-20020032752-$.DID. OR US-20020173961-$.DID. OR US-20020184373-$.DID. OR US-20030065427-$.DID. OR US-20030161448-$.DID. OR US-20030212558-$.DID. OR US-20030212562-$.DID. OR US-20030225825-$.DID. OR US-20040117804-$.DID. OR US-20040140989-$.DID. OR US-20040158555-$.DID. OR US-20050125232-$.DID. OR US-20050234727-$.DID. OR US-20050283752-$.DID. OR US-20060041431-$.DID. OR US-20060217133-$.DID. OR US-20060285662-$.DID. OR US-20070043868-$.DID. OR US-20070135101-$.DID. OR US-20070146833-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:38
S30	14	US-20070198267-$.DID. OR US-20080034032-$.DID. OR US-20080147410-$.DID. OR US-20090052635-$.DID. OR US-20090106029-$.DID. OR US-20090273563-$.DID. OR US-20090313026-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:38
S31	147	S27 S28 S29 S30	US-PGPUB; USPAT; USOCR;	OR	OFF	2012/10/26 08:39

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S32	0	S31 and (multipass$5 or (multi near2 pass$5)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:40
S33	3	S31 and (multipass$5 or (multi near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:40
S34	9	S31 and (grammar$5 or vocabular$5 or dictionar$5 or lexicon$5) with available$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:41
S35	7	S31 and (context$5 with (stack$5 or queue$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:43
S36	4	US-20050216254-$.DID. OR US-20060047509-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:44

EAST Search History (Interference)

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10/15/2015 10:57:06 AM
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	28	"704"/$.ccls. and (multipass$5 or (multi near2 pass$5)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 10:24
S2	36	"704"/$.ccls. and voicebox.as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 10:26
S3	630	"704"/$.ccls. and (multipass$5 or (multi near2 pass$2) or (multiple$5 near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 10:32
S4	1	S2 and (ordered near2 list$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:02
S5	12	S2 and (ordered near2 list$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:03
S6	6	S2 and phonetic$5.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:05
S7	17	S2 and subsequent$5.clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:21
S8	103	"704"/$.ccls. and (subscri$10 with	US-PGPUB;	OR	OFF	2012/02/28

		context$5)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			11:33
S9	138	"704"/$.ccls. and ((sync$5 or synchroni$10) with context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 11:35
S10	37	((sync$5 or synchroni$10) with context$5 with event$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:06
S11	336	((sync$5 or synchroni$10) with context$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:08
S12	12	S11 and "704"/$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:08
S13	386	"704"/$.ccls. and (context$5 near2 chang$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:15
S14	48	"704"/$.ccls. and (context$5 near2 chang$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:16
S15	212	"704"/$.ccls. and ((sync$5 or synchroni$10) with device$5).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:25
S16	1265	704/270.1.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2012/02/28 12:38

			IBM_TDB			
S17	306	S16 and ((sync$5 or synchroni$10))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:38
S18	54	S16 and ((sync$5 or synchroni$10)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 12:39
S19	87	"704"/$.ccls. and ((sync$5 or synchroni$10) with recogni$10).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:03
S20	15	("20010021909" | "20020046030" | "20020080927" | "20020161627" | "20030078779" | "20040098263" | "20050033582" | "20050091057" | "20080162145" | "6167377" | "6418431" | "6510417" | "6665644" | "7099825" | "7584102").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2012/02/28 13:07
S21	1059	"704"/$.ccls. and ((sync$5 or synchroni$10) with device$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:15
S22	467	S21 and context$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:16
S23	406	"704"/$.ccls. and ((sync$5 or synchroni$10) same context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:17
S24	114	S21 and S23	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 13:17
S25	153	"704"/$.ccls. and (context$5 with (stack$5 or queue$5))	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2012/02/28 14:29

			EPO; JPO; DERWENT; IBM_TDB			
S26	60	"704"/$.ccls. and ((context$5 with (stack$5 or queue$5)) same (grammar$5 or vocabular$5 or lexicon$5 or dictionar$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/02/28 14:36
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S28	46	US-7321850-$.DID. OR US-7366285-$.DID. OR US-7454608-$.DID. OR US-7529675-$.DID. OR US-7542894-$.DID. OR US-7546382-$.DID. OR US-7640006-$.DID. OR US-7640272-$.DID. OR US-7684977-$.DID. OR US-7729916-$.DID. OR US-7748021-$.DID. OR US-7801731-$.DID. OR US-7831426-$.DID. OR US-7873519-$.DID. OR US-7881936-$.DID. OR US-7894849-$.DID. OR US-7953732-$.DID. OR US-7984287-$.DID. OR US-8005683-$.DID. OR US-8077975-$.DID. OR US-8082153-$.DID. OR US-8170867-$.DID. OR US-8219599-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:38
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S30	14	US-20070198267-$.DID. OR US-20080034032-$.DID. OR US-20080147410-$.DID. OR US-20090052635-$.DID. OR US-20090106029-$.DID. OR US-20090273563-$.DID. OR US-20090313026-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:38
S31	147	S27 S28 S29 S30	US-PGPUB; USPAT; USOCR;	OR	OFF	2012/10/26 08:39

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S32	0	S31 and (multipass$5 or (multi near2 pass$5)).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:40
S33	3	S31 and (multipass$5 or (multi near2 pass$2))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:40
S34	9	S31 and (grammar$5 or vocabular$5 or dictionar$5 or lexicon$5) with available$5	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:41
S35	7	S31 and (context$5 with (stack$5 or queue$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2012/10/26 08:43
S36	4	US-20050216254-$.DID. OR US-20060047509-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2012/10/26 08:44
S37	2	"8326634".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/20 13:31
S38	149	"704"/$.ccls. and (synchroni$10 with context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/20 13:46
S39	19	S38 and (register$5 with librar$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/20 13:46
S40	90	"704"/$.ccls. and (context near2 stack$5)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2013/11/20 13:47

			EPO; JPO; DERWENT; IBM_TDB			
S41	28	"704"/$.ccls. and (virtual near2 dictation near2 grammar$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/20 13:48
S42	23	US-4821027-$.DID. OR US-4910784-$.DID. OR US-5164904-$.DID. OR US-5559864-$.DID. OR US-5652570-$.DID. OR US-5774841-$.DID. OR US-5855000-$.DID. OR US-6028514-$.DID. OR US-6122613-$.DID. OR US-6278377-$.DID. OR US-6321196-$.DID. OR US-6356869-$.DID. OR US-6487494-$.DID. OR US-6487495-$.DID. OR US-6505155-$.DID. OR US-6584439-$.DID. OR US-6636790-$.DID. OR US-6704576-$.DID. OR US-6739556-$.DID. OR US-6754627-$.DID. OR US-6813341-$.DID. OR US-6868385-$.DID. OR US-6873837-$.DID.	US-PGPUB; USOCR; DERWENT	OR	OFF	2014/02/10 10:32
S43	23	US-6937982-$.DID. OR US-6961700-$.DID. OR US-7036128-$.DID. OR US-7085708-$.DID. OR US-7149696-$.DID. OR US-7177798-$.DID. OR US-7197460-$.DID. OR US-7215941-$.DID. OR US-7254482-$.DID. OR US-7421393-$.DID. OR US-7451088-$.DID. OR US-7472075-$.DID. OR US-7487110-$.DID. OR US-7502672-$.DID. OR US-7734287-$.DID. OR US-7873654-$.DID. OR US-7890324-$.DID. OR US-7920682-$.DID. OR US-8219399-$.DID. OR US-8255224-$.DID. OR US-8326627-$.DID. OR US-8326634-$.DID. OR US-8326637-$.DID.	US-PGPUB; USOCR; DERWENT	OR	OFF	2014/02/10 10:34
S44	31	US-8332224-$.DID. OR US-8370147-$.DID. OR US-8447607-$.DID. OR US-8452598-$.DID. OR US-8515765-$.DID. OR US-8527274-$.DID. OR US-8589161-$.DID. OR US-20020049535-$.DID. OR US-20020067839-$.DID. OR US-20020087326-$.DID. OR US-20020107694-$.DID. OR US-20020143532-$.DID. OR US-20040117179-$.DID. OR US-20050021470-$.DID. OR US-20070061067-$.DID. OR US-20070061735-$.DID. OR US-20090076827-$.DID. OR US-20090276700-$.DID. OR US-20090307031-$.DID.	US-PGPUB; USOCR; DERWENT	OR	OFF	2014/02/10 10:35
S45	8	"20130054228".DID. "20130211710".DID. "20130253929".DID. "20130304473".DID.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/02/10 10:36
S46	84	S42 S43 S44 S45	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2014/02/10 10:36

			EPO; JPO; DERWENT; IBM_TDB			
S47	6	S46 and subscri$10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/02/10 10:36
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S50	151	"704"/$.ccls. and (subscri$10 with context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/24 10:58
S51	190	"704"/$.ccls. and ((sync$5 or synchroni$10) with context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/06/24 10:58
S57	2	US-20040122674-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2014/08/29 14:28
S58	6	US-8738380-$.DID. OR US-20080154604-$.DID. OR US-20140156278-$.DID.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2014/08/29 14:32
S59	192	"704"/$.ccls. and ((sync$5 or synchroni$10) with context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/08/29 15:06
S60	158	"704"/$.ccls. and (subscri$10 with	US-PGPUB;	OR	OFF	2014/08/29

		context$5)	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			15:06

EAST Search History (Interference)

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S52	732	(subscri$10 with context$5).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/06/24 10:58
S53	460	((sync$5 or synchroni$10) with context$5).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/06/24 10:58
S54	17	S52 and S53	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/06/24 10:59
S55	15	S53 and librar$5.clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/06/24 11:02
S56	79	S53 and (context$5 with event$5).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/06/24 11:03
S61	467	((sync$5 or synchroni$10) with context$5).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/08/29 15:06
S62	15	S61 and librar$5.clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2014/08/29 15:06
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10/15/2015 10:56:22 AM
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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	822	context near2 xml	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/14 13:30
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S6	902	"704"/$.ccls. and (mobile$5).ab.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/14 14:03
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S9	83	S8 and (speech or voice)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 12:18
S10	578	"704"/$.ccls. and synchroni$10.ab.	US-PGPUB;	OR	OFF	2010/10/15

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S12	17	S11 and S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 12:23
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S15	64	S13 and S14	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 12:34
S16	69	"704"/$.ccls. and (synchroni$10 with ((language$5 near2 model$5) or grammar$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 12:54
S17	1082	704/270.1.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 13:07
S18	255	S17 and synchroni$10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2010/10/15 13:07

			IBM_TDB			
S19	207	S18 and ((language$5 near2 model$5) or grammar$5 or context$5 or (natural near2 language$5))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 13:08
S20	181	S18 and context$10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/10/15 13:10
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S37	491	(S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36)	US-PGPUB; USPAT; USOCR;	OR	OFF	2010/12/13 09:54

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S38	208	S37 and (context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/12/13 09:54
S39	70	S37 and (context$5).ab.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/12/13 09:54
S40	7	S37 and ((sync$5 or synchroni$10) with context$5)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2010/12/13 09:56

EAST Search History (Interference)

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S22	273	(synchroni$10 with context$5).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2010/10/22 11:56
S23	24	(synchroni$10 with ((language$5 near2 model$5) or grammar$5)).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2010/10/22 11:57
S24	38	S22 and (speech or voice or language$5).clm.	US-PGPUB; USPAT; * No UPAD	OR	OFF	2010/10/22 11:57

10/15/2015 10:57:36 AM
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/500,723	09/29/2014	Philippe DI CRISTO	N0484.71160US04	6048

91337 7590 11/13/2015
Nuance Communications, Inc.
c/o Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

EXAMINER
ALBERTALLI, BRIAN LOUIS

ART UNIT	PAPER NUMBER
2657	

NOTIFICATION DATE	DELIVERY MODE
11/13/2015	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):

Patents_eOfficeAction@wolfgreenfield.com
N0484_eOfficeAction@WolfGreenfield.com
IP.Inbox@nuance.com

PTOL-90A (Rev. 04/07)

Supplemental Notice of Allowability	Application No. 14/500,723	Applicant(s) DI CRISTO ET AL.	
	Examiner BRIAN ALBERTALLI	Art Unit 2657	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *29 September 2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-20*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/BRIAN ALBERTALLI/
Primary Examiner, Art Unit 2657

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the claims:

5. (Currently amended) The system according to claim ~~5~~ 4, wherein the merging module merges the follow-up speech-based textual message and the follow-up non-speech-based textual message to generate a follow-up query.

Conclusion

The preceding amendment is submitted to correct a minor clerical error in the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN ALBERTALLI whose telephone number is (571)272-7616. The examiner can normally be reached on Monday-Friday, 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David 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.

BLA 11/9/15
/BRIAN ALBERTALLI/
Primary Examiner, Art Unit 2657

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)

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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.

Jeanne W. Chub	(Depositor's name)
	(Signature)
January 6, 2016 VIA EFS WEB	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/500,723	09/29/2014	Philippe Di Cristo	N0484.71160US04	6048

TITLE OF INVENTION: SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960.00			$960.00	01/26/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
B. L. Albertalli	2657	

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 Wolf, Greenfield & Sacks, P.C.
   2
   3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Nuance Communications, Inc.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Burlington, MA

Please check the appropriate assignee category or categories (will not be printed on the patent): [ ] Individual [X] Corporation or other private group entity [ ] Government

4a. The following fee(s) are submitted:
- [X] 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.
- [X] 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 23/2825 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- [ ] Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- [ ] Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- [ ] Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date January 6, 2016

Typed or printed name Richard F. Giunta Registration No. 36,149

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

4508717.1

Electronic Patent Application Fee Transmittal

Application Number:	14500723
Filing Date:	29-Sep-2014
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Philippe DI CRISTO
Filer:	Richard F. Giunta/Jeanne Chub
Attorney Docket Number:	N0484.71160US04

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**960**

Electronic Acknowledgement Receipt	
EFS ID:	24540978
Application Number:	14500723
International Application Number:	
Confirmation Number:	6048
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Philippe DI CRISTO
Customer Number:	91337
Filer:	Richard F. Giunta/Jeanne Chub
Filer Authorized By:	Richard F. Giunta
Attorney Docket Number:	N0484.71160US04
Receipt Date:	06-JAN-2016
Filing Date:	29-SEP-2014
Time Stamp:	13:14:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$960
RAM confirmation Number	10069
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	N0484-71160US04-TRN-RFG.pdf	59916 91c108528a77e24827b23f38ca21a71c07bea35f	no	1
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	N0484-71160US04-IFEE-RFG.pdf	106697 718cbec9659ee983f39e429634b9626d4334b0c9	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30617 dfbf175f1975c8cbab854bb01493cf8e8a0c46c1	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	197230		

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

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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

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

Doc Code: TRAN.LET
Document Description: Transmittal Letter

USED IN LIEU OF PTO/SB/21 (07-09)

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	2

Application Number	14/500,723-Conf. #6048
Filing Date	September 29, 2014
First Named Inventor	Philippe Di Cristo
Art Unit	2657
Examiner Name	B. L. Albertalli
Attorney Docket Number	N0484.71160US04

ENCLOSURES *(Check all that apply)*

- [X] Fee Transmittal Form
  - [X] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	WOLF, GREENFIELD & SACKS, P.C.		
Signature			
Printed name	Richard F. Giunta		
Date	January 12, 2016	Reg. No.	36,149

Certificate of Electronic Filing Under 37 CFR 1.8

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 CFR § 1.6(a)(4).

Dated: January 12 2016 Signature: _____ (Jeanne W. Chub)

4508716.1

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/500,723	02/16/2016	9263039	N0484.71160US04	6048

91337 7590 01/27/2016

Nuance Communications, Inc.
c/o Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, MA 02210-2206

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 0 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):

Philippe DI CRISTO, Bellevue, WA;
VoiceBox Technologies Corporation, Bellevue, WA;
Min KE, Bothell, WA;
Robert A. KENNEWICK, Seattle, WA;
Lynn Elise ARMSTRONG, Woodinville, WA;

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IR103 (Rev. 10/09)

PAGE 1/2 * RCVD AT 8/16/2019 8:39:38 AM [Eastern Daylight Time] * SVR:W-FTOFAX-001/44 * DNIS:2736500 * CSID: * ANI:4989943850411 * DURATION (mm-ss):00-36

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f +49 89 943 850 41

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www.ipan-associates.com

Fax Message

To :	**USPTO**	**From :**	**IPAN GmbH**
	Maintenance Fee Branch		
	Office of Finance		
	001-571-273-6500	**Pages : 1 + 2**	
		Date :	**August 16th 2019**

Attached: Petition pursuant § 1.27

geschäftsführer: anton bory, anton wallner, christoph mann · münchen hrb 152740 · ust.-idnr. de 235527546
bank account: kreissparkasse münchen · iban de97025015000105064 42 · swift/bic bylademlkms;
deutsche bank · de85700700100203901400 · swift/bic deutdemmxxx

we mind.

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Current Date: August 13th, 2019

Application No.: 14/500723
Filed: 29.09.2014

Patent No.: 9263039
Issued: 16.02.2016

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

By Fax: 001-571-273-6500

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.

Respectfully submitted,

Signature
Printed Name: Scott Ouellette
TITLE: Senior Director IP Attorney

506653633 05/10/2021

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

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

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

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
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 - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Patent Number	9263039
Issue Date	02/16/16
First Named Inventor	Di Cristo, Philippe
Title	Systems and methods for responding to natural language speech utterance
Attorney Docket No.	9032-0027

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.

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☐ 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)
Approved for use through 01/31/2013. OMB 0651-0031
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.: 9263039 Filed/Issue Date: 02/16/16

Titled: Systems and methods for responding to natural language speech utterance

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: Di Cristo, Philippe et al. To: VoiceBox Technologies, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel 033844, Frame 0168, 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 033844, Frame 0206, 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 052088, Frame 0443, 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.
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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.
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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:	47602373
Application Number:	14500723
International Application Number:	
Confirmation Number:	6048
Title of Invention:	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE
First Named Inventor/Applicant Name:	Philippe DI CRISTO
Customer Number:	91337
Filer:	David Alexander Gerasimow
Filer Authorized By:	
Attorney Docket Number:	N0484.71160US04
Receipt Date:	28-FEB-2023
Filing Date:	29-SEP-2014
Time Stamp:	11:37:31
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	Power of Attorney	9263039.pdf	206849 6095ca0e184754d16a251df285d9db3f03a3e5e6	no	2

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	9263039-aia0096.pdf	203242 b73b68ee145d86354657233 3fcc57ae63b4f1a49	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	410091	

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

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.
National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.
New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/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	9263039
Issue Date	02/16/16
First Named Inventor	Di Cristo, Philippe
Title	Systems and methods for responding to natural language speech utterance
Attorney Docket No.	9032-0027

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.
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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.
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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.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
14/500,723	**11/27/2023 03:34:26 PM Z ET**	**N0484.71160US04**

Title of Invention

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	9263039
CONFIRMATION #	6048	FILED BY	David Gerasimow
PATENT CENTER #	63385360	FILING DATE	09/29/2014
CUSTOMER #	91337	FIRST NAMED INVENTOR	Philippe DI CRISTO
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
9263039.pdf	2	Power of Attorney	208 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
9263039.pdf	2402EA7068A8DEE579F2B9C1513F682302EC35E7709B2A4578EB3739EF49DAD5809B1D84CCA7D50C95D08D73FE392884CCA05C1ECE8C5500E83190195C34DC0A

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

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.

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/500,723	09/29/2014	Philippe DI CRISTO	N0484.71160US04

CONFIRMATION NO. 6048

POWER OF ATTORNEY NOTICE

OC000000065477475

91337
Nuance Communications, Inc.
One Wayside Road
Burlington, MA 01803

Date Mailed: 12/07/2023

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/28/2023.

- 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**.

/ytdemisse/

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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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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/500,723	09/29/2014	Philippe DI CRISTO	9032-0027

CONFIRMATION NO. 6048

POA ACCEPTANCE LETTER

OC000000065477708

174899
The Law Offices of David A. Gerasimow, P.C.
211 W. Wacker Dr.
Ste. 1717
Chicago, IL 60606

Date Mailed: 12/07/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/28/2023.

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**.

/ytdemisse/

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PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
14/500,723	**12/14/2023 03:31:46 PM Z ET**	**9032-0027**

Title of Invention

SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	9263039
CONFIRMATION #	6048	FILED BY	David Gerasimow
PATENT CENTER #	63619198	FILING DATE	09/29/2014
CUSTOMER #	174899	FIRST NAMED INVENTOR	Philippe DI CRISTO
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	-

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
sb0047 - 9263039.pdf	2	Maintenance Fee Address Change	293 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
sb0047 - 9263039.pdf	88CB0A54BA002B61454BFD1D0FF9488490F93E49B243557C8B711289752D659A951C1C470121722501B70E0BABF7C8A2B2C4A01CC6A939DFA07F69CD81390659

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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

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

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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.

Doc Code: MFEE.C.AD
Document Description: Maintenance Fee Address Change

PTO/SB/47 (11-21)
Approved for use through 11/30/2024. OMB 0651-0016
U.S. Patent and Trademark Office; U.S. Department of Commerce
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"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop Maintenance Fee
Director of the United States
Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

-OR-

Fax to: 571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application.
When to check the first box below: If you have a Customer Number to represent the fee address.
When to check the second box below: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see section 403 of the Manual of Patent Examining Procedure (MPEP).

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

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OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
9263039	14/500,723

Completed by (check one):

☐ Applicant/Inventor — /David A. Gerasimow/ (Signature)

☑ Attorney or agent of record — 57,512 (Reg. No.) — David A. Gerasimow (Typed or printed name)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) (Form PTO/SB/96) is enclosed or was filed on _____ (Date) — (312) 919-4254 (Requester's telephone number)

12/11/2023 (Date)

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. If the assignee is a juristic entity, this form must be signed by a patent practitioner (attorney or agent) of record. Submit multiple forms if more than one signature is required (see below*).

☐ *Total of _____ PTO/SB/47 forms are submitted

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