

UTILITY PATENT APPLICATION TRANSMITTAL

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

Attorney Docket No.	090611-0393260
First Inventor	Chris Weider, et al.
Title	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
Express Mail Label No.	

APPLICATION ELEMENTS See MPEP chapter 600 concerning utility patent application contents.	ADDRESS TO: Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450
1. ☐ Fee Transmittal Form (e.g., PTO/SB/17) 2. ☒ Applicant claims small entity status. See 37 CFR 1.27. 3. ☒ Specification [Total Pages 67] Both the claims and abstract must start on a new page (For information on the preferred arrangement, see MPEP 608.01(a)) 4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 8] 5. Oath or Declaration [Total Sheets 2] a. ☐ Newly executed (original or copy) b. ☒ A copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed) i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b). 6. ☒ Application Data Sheet. See 37 CFR 1.76 7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix) ☐ Landscape Table on CD 8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. - c. are required) a. ☐ Computer Readable Form (CRF) b. Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies	ACCOMPANYING APPLICATION PARTS 9. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 10. ☐ 37 CFR 3.73(b) Statement ☒ Power of Attorney (when there is an assignee) 11. ☐ English Translation Document (if applicable) 12. ☒ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached 13. ☐ Preliminary Amendment 14. ☐ Return Receipt Postcard (MPEP 503) (Should be specifically itemized) 15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 16. ☐ Nonpublication Request under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 17. ☐ Other: _____

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

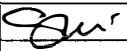
☐ Continuation ☒ Divisional ☐ Continuation-in-part (CIP) of prior application No.: 11/212,693

Prior application information: Examiner Eric L. Yen Art Unit: 2626

19. CORRESPONDENCE ADDRESS

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

Name	PILLSBURY WINTHROP SHAW PITTMAN LLP				
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City	McLean	State	VA	Zip Code	22102
Country	US	Telephone	(703) 770-7900	Email	

Signature		Date	April 11, 2011
Name (Print/Type)	Syed Jafar Ali	Registration No. (Attorney/Agent)	58780

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Christ Weider, *et al.*

Application No.:	New	Confirmation No.:	Unassigned
Filed:	April 11, 2011	Group No.:	Unassigned
		Examiner:	Unassigned
For:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		

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

APPLICATION DATA SHEET
37 CFR § 1.76

BIBLIOGRAPHIC DATA

1. Applicant information

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Second Applicant:

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Third Applicant:

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Middle Name: Elise

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Residence: 19807 183rd Place, N.E., Woodinville, Washington 98077.

2. Correspondence information

Correspondence for this application should be addressed as follows:

Customer No.: 00909

3. Application information

Title of the Invention: MOBILE SYSTEMS AND METHODS OF SUPPORTING
NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

Attorney Docket Number: 090611-0393260 Small Entity Status Claimed ☒

Total number of drawing
sheets: 8

Type of application: Utility

4. Representative information.

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

Customer No.: 00909

5. Domestic Priority information.

Domestic priority for this application is claimed as follows:

35 U.S.C. § 121:

Application No.	Filed	Status	Relationship
11/212,693	August 29, 2005	Pending	Parent

6. Assignee information

The assignee of this application is:

VoiceBox Technologies, Inc.
10505 N.E. 38th Place
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United States of America

Extent of interest of assignee in application: Entire right, title and interest.

Date: April 11, 2011



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Customer No. 00909

**FOR UTILITY
DECLARATION**

**SUPPLEMENTAL DECLARATION
UNDER RULE 67 (37 C.F.R. 1.67)**

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS**, the specification of which was filed on August 29, 2005 as U.S. Application No. 11/212,693.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. 1.56. Except as noted below, I hereby claim foreign priority benefits under 35 U.S.C. 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate filed by me or my assignee disclosing the subject matter claimed in this application and having a filing date (1) before that of the application on which priority is claimed, or (2) if no priority claimed, before the filing date of this application:

PRIOR FOREIGN APPLICATION(S)

Number	Country	Filed	Date first Laid-open or Published	Date Patented or Granted	Priority Claimed

Except as noted below, I hereby claim domestic priority benefit under 35 U.S.C. 119(e) or 120 and/or 365(c) of the indicated United States applications listed below and PCT international applications listed above or below and, if this is a continuation-in-part (CIP) application, insofar as the subject matter disclosed and claimed in this application is in addition to that disclosed in such prior applications, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of each such prior application and the national or PCT international filing date of this application:

PRIOR U.S. PROVISIONAL, NONPROVISIONAL AND/OR PCT APPLICATION(S)

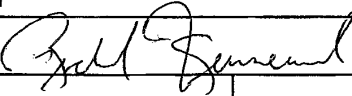
Application Number	Filed	Status	Priority Claimed

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

INVENTOR'S SIGNATURE: 

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Date: 4/16/07

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(include Zip Code)	98077		

Attorney Reference: 090611-0316779

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION					Docket Number		Application Number	
					090611-0393260		To be Determined	
					Applicant(s)			
					Chris WEIDER <i>et al.</i>			
					Filing Date		Group Art Unit	
Form PTO-1449					Herewith (April 11, 2011)		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	5,155,743	10/13/1992	Jacobs	375	28		
	1C	5,274,560	12/28/1993	LaRue	364	444		
	1D	5,377,350	12/27/1994	Skinner	395	600		
	1E	5,386,556	01/31/1995	Hedin et al.	395	600		
	1F	5,424,947	06/13/1995	Nagao et al.	364	419.08		
	1G	5,471,318	11/28/1995	Ahuja et al.	358	400		
	1H	5,475,733	12/12/1995	Eisdorfer et al.	379	52		
	1I	5,488,652	01/30/1996	Bielby et al.	379	88		
	1J	5,499,289	03/12/1996	Bruno et al.	379	220		
	1K	5,500,920	03/19/1996	Kupiec	395	2.79		
	1L	5,517,560	05/14/1996	Greenspan	379	114		
	1M	5,533,108	07/02/1996	Harris et al.	379	201		
	1N	5,537,436	07/16/1996	Bottoms et al.	375	222		
	1O	5,539,744	07/23/1996	Chu et al.	370	60		
	1P	5,557,667	09/17/1996	Bruno et al.	379	201		
	1Q	5,563,937	10/08/1996	Bruno et al.	379	201		
	1R	5,590,039	12/31/1996	Ikeda et al.	395	759		
	1S	5,617,407	04/01/1997	Bareis	369	275.3		
	1T	5,633,922	05/27/1997	August et al.	379	220		
	1U	5,675,629	10/07/1997	Raffel et al.	379	58		
	1V	5,696,965	12/09/1997	Dedrick	395	610		
	1W	5,708,422	01/13/1998	Blonder et al.	340	825.34		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	1X	1 646 037	04/12/2006	Europe				
	1Y	WO 99/46763	09/16/1999	International				
	1Z	WO 00/21232	04/13/2000	International				
	1AA	WO 00/46792	08/10/2000	International				
	1BB	WO 01/78065	10/18/2001	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, <i>et al.</i> , "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.								

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				090611-0393260		To be Determined		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
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Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	2A	5,721,938	02/24/1998	Stuckey	395	754		
	2B	5,722,084	02/24/1998	Chakrin <i>et al.</i>	455	551		
	2C	5,742,763	04/21/1998	Jones	395	200.3		
	2D	5,748,841	05/05/1998	Morin <i>et al.</i>	395	2.66		
	2E	5,752,052	05/12/1998	Richardson <i>et al.</i>	395	759		
	2F	5,754,784	05/19/1998	Garland <i>et al.</i>	395	200.49		
	2G	5,761,631	06/02/1998	Nasukawa	704	9		
	2H	5,774,859	06/30/1998	Houser <i>et al.</i>	704	275		
	2I	5,794,050	08/11/1998	Dahlgren <i>et al.</i>	395	708		
	2J	5,794,196	08/11/1998	Yegnanarayanan <i>et al.</i>	704	255		
	2K	5,797,112	08/18/1998	Komatsu <i>et al.</i>	701	201		
	2L	5,799,276	08/25/1998	Komissarchik <i>et al.</i>	704	251		
	2M	5,802,510	09/01/1998	Jones	707	2		
	2N	5,832,221	11/03/1998	Jones	375	200.36		
	2O	5,867,817	02/02/1999	Catallo <i>et al.</i>	704	255		
	2P	5,878,385	03/02/1999	Bralich <i>et al.</i>	704	9		
	2Q	5,878,386	03/02/1999	Coughlin	704	10		
	2R	5,892,813	04/06/1999	Morin <i>et al.</i>	379	88.01		
	2S	5,895,464	04/20/1999	Bhandari <i>et al.</i>	707	3		
	2T	5,895,466	04/20/1999	Goldberg <i>et al.</i>	707	5		
	2U	5,902,347	05/11/1999	Backman <i>et al.</i>	701	200		
	2V	5,911,120	06/08/1999	Jarett <i>et al.</i>	455	417		
	2W	5,918,222	06/29/1999	Fukui <i>et al.</i>	707	1		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	2X	WO 2004/072954	08/26/2001	International				
	2Y	WO 2007/019318	02/15/2007	International				
	2Z	WO 2007/021587	02/22/2007	International				
	2AA	WO 2007/027546	03/08/2007	International				
	2BB	WO 2007/027989	03/08/2007	International				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	2CC	KUHN, Thomas, <i>et al.</i> , "Hybrid In-Car Speech Recognition for Mobile Multimedia Applications", Vehicular Technology Conference, IEEE, July 1999, pages 2009-2013.						
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.								

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Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	3A	5,926,784	07/20/1999	Richardson et al.	704	9		
	3B	5,933,822	08/03/1999	Braden-Harder et al.	707	5		
	3C	5,953,393	09/14/1999	Culbreth et al.	379	88.25		
	3D	5,963,894	10/05/1999	Richardson et al.	704	9		
	3E	5,963,940	10/05/1999	Liddy et al.	707	5		
	3F	5,987,404	11/16/1999	Della Pietra et al.	704	9		
	3G	5,991,721	11/23/1999	Asano et al.	704	257		
	3H	5,995,119	11/30/1999	Cosatto et al.	345	473		
	3I	6,009,382	12/28/1999	Martino et al.	704	1		
	3J	6,014,559	01/11/2000	Amin	455	413		
	3K	6,021,384	02/01/2000	Gorin et al.	704	1		
	3L	6,044,347	03/28/2000	Abella et al.	704	272		
	3M	6,049,602	04/11/2000	Foladare et al.	379	265		
	3N	6,058,187	05/02/2000	Chen	380	21		
	3O	6,078,886	06/20/2000	Dragosh et al.	704	270		
	3P	6,081,774	06/27/2000	De Hita et al.	704	9		
	3Q	6,101,241	08/08/2000	Boyce et al.	379	88.01		
	3R	6,119,087	09/12/2000	Kuhn et al.	704	270		
	3S	6,134,235	10/17/2000	Goldman et al.	370	352		
	3T	6,144,667	11/07/2000	Doshi et al.	370	401		
	3U	6,144,938	11/07/2000	Surace <i>et al.</i>	704	257		
	3V	6,154,526	11/28/2000	Dahlke <i>et al.</i>	379	88.03		
	3W	6,160,883	12/12/2000	Jackson et al.	379	230		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	3X	WO 2008/098039	08/14/2008	International				
	3Y	WO 2008/118195	10/02/2008	International				
	3Z	WO 2009/075912	06/18/2009	International				
	3AA	WO 2009/145796	12/03/2009	International				
	3BB	WO 2010/096752	08/26/2010	International				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	3CC	BELVIN, Robert, <i>et al.</i> , "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.						

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.	

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U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	4A	6,173,279	01/09/2001	Levin <i>et al.</i>	707	5	
	4B	6,175,858	01/16/2001	Bulfer <i>et al.</i>	709	206	
	4C	6,185,535	02/06/2001	Hedin <i>et al.</i>	704	270	
	4D	6,192,110	02/20/2001	Abella <i>et al.</i>	379	88.01	
	4E	6,192,338	02/20/2001	Haszto <i>et al.</i>	704	257	
	4F	6,195,634	02/27/2001	Dudemaine <i>et al.</i>	704	231	
	4G	6,195,651	02/27/2001	Handel <i>et al.</i>	707	2	
	4H	6,208,972	03/27/2001	Grant <i>et al.</i>	704	275	
	4I	6,219,346	04/17/2001	Maxemchuk	370	338	
	4J	6,219,643	04/17/2001	Cohen <i>et al.</i>	704	257	
	4K	6,226,612	05/01/2001	Srenger <i>et al.</i>	704	256	
	4L	6,233,556	05/15/2001	Teunen <i>et al.</i>	704	250	
	4M	6,233,559	05/15/2001	Balakrishnan	704	275	
	4N	6,246,981	06/12/2001	Papineni <i>et al.</i>	704	235	
	4O	6,272,455	08/07/2001	Hoshen <i>et al.</i>	704	1	
	4P	6,288,319	09/11/2001	Catona	84	609	
	4Q	6,292,767	09/18/2001	Jackson <i>et al.</i>	704	1	
	4R	6,308,151	10/23/2001	Smith	704	235	
	4S	6,314,402	11/06/2001	Monaco <i>et al.</i>	704	275	
	4T	6,366,886	04/02/2002	Dragosh <i>et al.</i>	704	270.1	
	4U	6,374,214	04/16/2002	Friedland <i>et al.</i>	704	235	
	4V	6,377,913	04/23/2002	Coffman <i>et al.</i>	704	8	
	4W	6,381,535	04/30/2002	Durocher <i>et al.</i>	701	202	
FOREIGN PATENT DOCUMENTS							
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
	4X	LIND, R., <i>et al.</i> , "The Network Vehicle—A Glimpse into the Future of Mobile Multi-Media", <u>IEEE Aerosp. Electron. Systems Magazine</u> , Volume 14, No. 9, September 1999, pages 27-32.					
	4Y	ZHAO, Yilin, "Telematics: Safe and Fun Driving", <u>IEEE Intelligent Systems</u> , Volume 17, Issue 1, 2002, pages 10-14.					

EXAMINER	DATE CONSIDERED
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				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	5A	6,385,596	05/07/2002	Wiser <i>et al.</i>	705	51		
	5B	6,385,646	05/07/2002	Brown <i>et al.</i>	709	217		
	5C	6,393,428	05/21/2002	Miller <i>et al.</i>	707	102		
	5D	6,404,878	06/11/2002	Jackson <i>et al.</i>	379	221.01		
	5E	6,408,272	06/18/2002	White <i>et al.</i>	704	270.1		
	5F	6,411,810	06/25/2002	Maxemchuk	455	453		
	5G	6,415,257	07/02/2002	Junqua <i>et al.</i>	704	275		
	5H	6,418,210	07/09/2002	Sayko	379	142.15		
	5I	6,420,975	07/16/2002	DeLine <i>et al.</i>	340	815.4		
	5J	6,430,285	08/06/2002	Bauer <i>et al.</i>	379	265.01		
	5K	6,430,531	08/06/2002	Polish	704	257		
	5L	6,434,523	08/13/2002	Monaco	704	257		
	5M	6,434,524	08/13/2002	Weber	704	257		
	5N	6,442,522	08/27/2002	Carberry <i>et al.</i>	704	257		
	5O	6,446,114	09/03/2002	Bulfer <i>et al.</i>	709	206		
	5P	6,453,153	09/17/2002	Bowker <i>et al.</i>	455	67.4		
	5Q	6,453,292	09/17/2002	Ramaswamy <i>et al.</i>	704	235		
	5R	6,456,711	09/24/2002	Cheung <i>et al.</i>	379	265.09		
	5S	6,466,654	10/15/2002	Cooper <i>et al.</i>	379	88.01		
	5T	6,466,899	10/15/2002	Yano <i>et al.</i>	704	1		
	5U	6,470,315	10/22/2002	Netsch <i>et al.</i>	704	256		
	5V	6,498,797	12/24/2002	Anerousis <i>et al.</i>	370	522		
	5W	6,499,013	12/24/2002	Weber	704	257		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>								
	5X	CHAI <i>et al.</i> , "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.						
	5Y	CHEYER <i>et al.</i> , "Multimodal Maps: An Agent-Based Approach", International Conference on Cooperative Multimodal Communication (CMC/95), May 24-26, 1995, pages 111-121.						

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	6A	6,501,833	12/31/2002	Phillips <i>et al.</i>	379	88.07		
	6B	6,501,834	12/31/2002	Milewski <i>et al.</i>	379	93.24		
	6C	6,513,006	01/28/2003	Howard <i>et al.</i>	704	257		
	6D	6,523,061	02/18/2003	Halverson <i>et al.</i>	709	202		
	6E	6,532,444	03/11/2003	Weber	704	257		
	6F	6,539,348	03/25/2003	Bond <i>et al.</i>	704	9		
	6G	6,553,372	04/22/2003	Brassell <i>et al.</i>	707	5		
	6H	6,556,970	04/29/2003	Sasaki <i>et al.</i>	704	257		
	6I	6,556,973	04/29/2003	Lewin	704	277		
	6J	6,560,576	05/06/2003	Cohen <i>et al.</i>	704	270		
	6K	6,567,778	05/20/2003	Chao Chang <i>et al.</i>	704	257		
	6L	6,567,797	05/20/2003	Schuetze <i>et al.</i>	707	2		
	6M	6,570,555	05/27/2003	Prevost <i>et al.</i>	345	156		
	6N	6,570,964	05/27/2003	Murveit <i>et al.</i>	379	67.1		
	6O	6,574,597	06/03/2003	Mohri <i>et al.</i>	704	251		
	6P	6,574,624	06/03/2003	Johnson <i>et al.</i>	707	5		
	6Q	6,581,103	06/17/2003	Dengler	709	231		
	6R	6,594,257	07/15/2003	Doshi <i>et al.</i>	370	352		
	6S	6,598,018	07/22/2003	Junqua	704	251		
	6T	6,604,075	08/05/2003	Brown <i>et al.</i>	704	270.1		
	6U	6,604,077	08/05/2003	Dragosh <i>et al.</i>	704	270.1		
	6V	6,611,692	08/26/2003	Raffel <i>et al.</i>	455	552		
	6W	6,614,773	09/02/2003	Maxemchuk	370	337		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	6X	ELIO <i>et al.</i> , "On Abstract Task Models and Conversation Policies" in Workshop on Specifying and Implementing Conversation Policies, Autonomous Agents '99, Seattle, 1999, 10 pages.						
	6Y	TURUNEN, "Adaptive Interaction Methods in Speech User Interfaces", Conference on Human Factors in Computing Systems, Seattle, Washington, 2001, pages 91-92.						
EXAMINER				DATE CONSIDERED				
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	7A	6,615,172	09/02/2003	Bennett <i>et al.</i>	704	257		
	7B	6,622,119	09/16/2003	Ramaswamy <i>et al.</i>	704	9		
	7C	6,629,066	09/30/2003	Jackson <i>et al.</i>	704	9		
	7D	6,631,346	10/07/2003	Karaorman <i>et al.</i>	704	9		
	7E	6,643,620	11/04/2003	Contolini <i>et al.</i>	704	270		
	7F	6,650,747	11/18/2003	Bala <i>et al.</i>	379	265.06		
	7G	6,658,388	12/02/2003	Kleindienst <i>et al.</i>	704	275		
	7H	6,678,680	01/13/2004	Woo	707	6		
	7I	6,681,206	01/20/2004	Gorin <i>et al.</i>	704	243		
	7J	6,691,151	02/10/2004	Cheyser <i>et al.</i>	709	202		
	7K	6,701,294	03/02/2004	Ball <i>et al.</i>	704	257		
	7L	6,704,708	03/09/2004	Pickering	704	235		
	7M	6,708,150	03/16/2004	Hirayama <i>et al.</i>	704	243		
	7N	6,721,001	04/13/2004	Berstis	348	231.3		
	7O	6,721,706	04/13/2004	Strubbe <i>et al.</i>	704	275		
	7P	6,735,592	05/11/2004	Neumann <i>et al.</i>	707	101		
	7Q	6,741,931	05/25/2004	Kohut <i>et al.</i>	701	209		
	7R	6,742,021	05/25/2004	Halverson <i>et al.</i>	709	218		
	7S	6,751,591	06/15/2004	Gorin <i>et al.</i>	704	257		
	7T	6,751,612	06/15/2004	Schuetze <i>et al.</i>	707	4		
	7U	6,757,718	06/29/2004	Halverson <i>et al.</i>	709	218		
	7V	6,795,808	09/21/2004	Strubbe <i>et al.</i>	704	275		
	7W	6,801,604	10/05/2004	Maes <i>et al.</i>	379	88.17		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	7X	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.						
	7Y	VANHOUCHE, Vincent, "Confidence Scoring and Rejection Using Multi-Pass Speech Recognition", Nuance Communications, Menlo Park, CA, 2005, 4 pages.						
EXAMINER				DATE CONSIDERED				
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U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	8A	6,801,893	10/05/2004	Backfried <i>et al.</i>	704	257		
	8B	6,829,603	12/07/2004	Chai <i>et al.</i>	707	5		
	8C	6,832,230	12/14/2004	Ziliacus <i>et al.</i>	707	203		
	8D	6,833,848	12/21/2004	Wolff <i>et al.</i>	345	719		
	8E	6,856,990	02/15/2005	Barile <i>et al.</i>	707	10		
	8F	6,865,481	03/08/2005	Kawazoe <i>et al.</i>	701	211		
	8G	6,877,134	04/05/2005	Fuller <i>et al.</i>	715	500.1		
	8H	6,901,366	05/31/2005	Kuhn <i>et al.</i>	704	275		
	8I	6,937,977	08/30/2005	Gerson	704	201		
	8J	6,944,594	09/13/2005	Busayapongchai <i>et al.</i>	704	275		
	8K	6,950,821	09/27/2005	Faybishenko <i>et al.</i>	707	10		
	8L	6,954,755	10/11/2005	Reisman	707	10		
	8M	6,973,387	12/06/2005	Masclet <i>et al.</i>	701	211		
	8N	6,980,092	12/27/2005	Turnbull <i>et al.</i>	340	425.5		
	8O	6,990,513	01/24/2006	Belfiore <i>et al.</i>	709	203		
	8P	6,996,531	02/07/2006	Korall <i>et al.</i>	704	270		
	8Q	7,003,463	02/21/2006	Maes <i>et al.</i>	704	270.1		
	8R	7,016,849	03/21/2006	Arnold <i>et al.</i>	704	275		
	8S	7,020,609	03/28/2006	Thrift <i>et al.</i>	704	270.1		
	8T	7,027,975	04/11/2006	Pazandak <i>et al.</i>	704	9		
	8U	7,062,488	06/13/2006	Reisman	707	8		
	8V	7,082,469	07/25/2006	Gold <i>et al.</i>	709	231		
	8W	7,092,928	08/15/2006	Elad <i>et al.</i>	706	60		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES NO	
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	8X	WENG, Fuliang, <i>et al.</i> , "Efficient Lattice Representation and Generation", Speech Technology and Research Laboratory, SRI International, Menlo Park, CA, 1998, 4 pages.						
	8Y	EL MELIANI <i>et al.</i> , "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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	9A	7,127,400	10/24/2006	Koch	704	270.1		
	9B	7,136,875	11/14/2006	Anderson <i>et al.</i>	707	104.1		
	9C	7,137,126	11/14/2006	Coffman <i>et al.</i>	719	328		
	9D	7,146,319	12/05/2006	Hunt	704	254		
	9E	7,203,644	04/10/2007	Anderson <i>et al.</i>	704	246		
	9F	7,228,276	06/05/2007	Omote <i>et al.</i>	704	243		
	9G	7,231,343	06/12/2007	Treadgold <i>et al.</i>	704	9		
	9H	7,277,854	10/02/2007	Bennett <i>et al.</i>	704	257		
	9I	7,289,606	10/30/2007	Sibal <i>et al.</i>	379	52		
	9J	7,301,093	11/27/2007	Sater <i>et al.</i>	84	615		
	9K	7,340,040	03/04/2008	Saylor <i>et al.</i>	379	67.1		
	9L	7,376,645	05/20/2008	Bernard	707	3		
	9M	7,386,443	06/10/2008	Parthasarathy <i>et al.</i>	704	201		
	9N	7,398,209	07/08/2008	Kennewick <i>et al.</i>	704	255		
	9O	7,415,414	08/19/2008	Azara <i>et al.</i>	704	270		
	9P	7,424,431	09/09/2008	Greene <i>et al.</i>	704	270		
	9Q	7,461,059	12/02/2008	Richardson <i>et al.</i>	707	5		
	9R	7,472,060	12/30/2008	Gorin <i>et al.</i>	704	240		
	9S	7,487,088	02/03/2009	Gorin <i>et al.</i>	704	240		
	9T	7,493,559	02/17/2009	Wolff <i>et al.</i>	715	727		
	9U	7,502,738	03/10/2009	Kennewick <i>et al.</i>	704	257		
	9V	7,620,549	11/17/2009	Di Cristo <i>et al.</i>	704	257		
	9W	7,634,409	12/15/2009	Kennewick <i>et al.</i>	704	257		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	9X	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.						

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	10A	7,640,160	12/29/2009	Di Cristo <i>et al.</i>	704	257		
	10B	7,693,720	04/06/2010	Kennewick <i>et al.</i>	704	275		
	10C	7,809,570	10/05/2010	Kennewick <i>et al.</i>	704	257		
	10D	7,818,176	10/19/2010	Freeman <i>et al.</i>	704	270		
	10E	7,917,367	03/29/2011	Di Cristo <i>et al.</i>	704	270.1		
	10F	2001/0041980	11/15/2001	Howard <i>et al.</i>	704	270		
	10G	2002/0035501	03/21/2002	Handel <i>et al.</i>	705	10		
	10H	2002/0049805	04/25/2002	Yamada <i>et al.</i>	709	202		
	10I	2002/0065568	05/30/2002	Silfvast <i>et al.</i>	700	94		
	10J	2002/0069059	06/06/2002	Smith	704	257		
	10K	2002/0082911	06/27/2002	Dunn <i>et al.</i>	705	14		
	10L	2002/0087525	07/04/2002	Abbott <i>et al.</i>	707	3		
	10M	2002/0120609	08/29/2002	Lang <i>et al.</i>	707	1		
	10N	2002/0124050	09/05/2002	Middeljans	709	203		
	10O	2002/0138248	09/26/2002	Corston-Oliver <i>et al.</i>	704	1		
	10P	2002/0143535	10/03/2002	Kist <i>et al.</i>	704	251		
	10Q	2002/0188602	12/12/2002	Stubler <i>et al.</i>	707	3		
	10R	2002/0198714	12/26/2002	Zhou	704	252		
	10S	2003/0014261	01/16/2003	Kageyama	704	275		
	10T	2003/0046346	03/06/2003	Mumick <i>et al.</i>	709	205		
	10U	2003/0064709	04/03/2003	Gailey <i>et al.</i>	455	412		
	10V	2003/0088421	05/08/2003	Maes <i>et al.</i>	704	270.1		
	10W	2003/0097249	05/22/2003	Walker <i>et al.</i>	704	1		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	10X	BAZZI, Issam <i>et al.</i> , "Heterogeneous Lexical Units for Automatic Speech Recognition: Preliminary Investigations", <u>Processing of the IEEE International Conference on Acoustics, Speech, and Signal Processing</u> , Volume 3, June 5-9, 2000, XP010507574, pages 1257-1260.						
	10Y	O'SHAUGHNESSY, Douglas, "Interacting with Computers by Voice: Automatic Speech Recognition and Synthesis", <u>Proceedings of the IEEE</u> , Volume 91, No. 9, September 1, 2003, XP011100665, pages 1272-1305.						

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	11A	2003/0112267	06/19/2003	Belrose	345	728		
	11B	2003/0135488	07/17/2003	Amir <i>et al.</i>	707	3		
	11C	2003/0182132	09/25/2003	Niemoeller	704	275		
	11D	2003/0236664	12/25/2003	Sharma	704	251		
	11E	2004/0006475	01/08/2004	Ehlen <i>et al.</i>	704	270.1		
	11F	2004/0025115	02/05/2004	Sienel <i>et al.</i>	715	513		
	11G	2004/0044516	03/04/2004	Kennewick <i>et al.</i>	704	5		
	11H	2004/0166832	08/26/2004	Portman <i>et al.</i>	455	412.1		
	11I	2004/0193408	09/30/2004	Hunt	704	209		
	11J	2004/0193420	09/30/2004	Kennewick <i>et al.</i>	704	257		
	11K	2004/0199375	10/07/2004	Ehsani <i>et al.</i>	704	4		
	11L	2004/0243417	12/02/2004	Pitts, III <i>et al.</i>	704	276		
	11M	2005/0015256	01/20/2005	Kargman	704	272		
	11N	2005/0021334	01/27/2005	Iwahashi	704	240		
	11O	2005/0021826	01/27/2005	Kumar	709	232		
	11P	2005/0033574	02/10/2005	Kim <i>et al.</i>	704	251		
	11Q	2005/0043940	02/24/2005	Elder	704	9		
	11R	2005/0114116	05/26/2005	Fiedler	704	201		
	11S	2005/0137850	06/23/2005	Odell	704	4		
	11T	2005/0246174	11/03/2005	DeGolia	704	270		
	11U	2006/0206310	09/14/2006	Ravikumar <i>et al.</i>	704	9		
	11V	2007/0033005	02/08/2007	Cristo <i>et al.</i>	704	9		
	11W	2007/0038436	02/15/2007	Cristo <i>et al.</i>	704	9		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	11X	"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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U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	12A	2007/0043574	02/22/2007	Coffman <i>et al.</i>	704	275		
	12B	2007/0050191	03/01/2007	Weider <i>et al.</i>	704	275		
	12C	2007/0055525	03/08/2007	Kennewick <i>et al.</i>	704	257		
	12D	2007/0179778	08/02/2007	Gong <i>et al.</i>	704	9		
	12E	2007/0186165	08/09/2007	Maislos <i>et al.</i>	715	728		
	12F	2007/0214182	09/13/2007	Rosenberg	707	104.1		
	12G	2007/0250901	10/25/2007	McIntire <i>et al.</i>	725	146		
	12H	2007/0265850	11/15/2007	Kennewick <i>et al.</i>	704	257		
	12I	2007/0299824	12/27/2007	Pan <i>et al.</i>	707	3		
	12J	2008/0091406	04/17/2008	Baldwin <i>et al.</i>	704	4		
	12K	2008/0103761	05/01/2008	Printz <i>et al.</i>	704	9		
	12L	2008/0115163	05/15/2008	Gilboa <i>et al.</i>	725	34		
	12M	2008/0133215	06/05/2008	Sarukkai	704	2		
	12N	2008/0140385	06/12/2008	Mahajan <i>et al.</i>	704	9		
	12O	2008/0177530	07/24/2008	Cross <i>et al.</i>	704	4		
	12P	2008/0189110	08/07/2008	Freeman <i>et al.</i>	704	251		
	12Q	2008/0235023	09/25/2008	Kennewick <i>et al.</i>	704	257		
	12R	2008/0235027	09/25/2008	Cross	704	270.1		
	12S	2008/0319751	12/25/2008	Kennewick <i>et al.</i>	704	257		
	12T	2009/0117885	05/07/2009	Roth	455	414.3		
	12U	2009/0144271	06/04/2009	Richardson <i>et al.</i>	707	5		
	12V	2009/0150156	06/11/2009	Kennewick <i>et al.</i>	704	257		
	12W	2009/0171664	07/02/2009	Kennewick <i>et al.</i>	704	257		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
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(54) **Method and apparatus for enhancing speech recognition accuracy by using geographic data to filter a set of words**

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

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

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

EP 1 646 037 B1

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Description

FIELD OF THE INVENTION

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

BACKGROUND OF THE INVENTION

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

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

[0004] *Lexical Model:* A lexical model breaks down in-

dividual words of a syntactic model (defined hereinafter) into a sequence of phonemes (also defined hereinafter).

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

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

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

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

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

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

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

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

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

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

SUMMARY OF THE INVENTION

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

[0015] Other aspects and features of the present invention will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the

drawings are designed solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims. It should be further understood that, unless otherwise indicated, the drawings are merely intended to conceptually illustrate the structures and procedures described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In the drawings:

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

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

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

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

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

DETAILED DESCRIPTION OF THE DRAWINGS

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

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

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

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

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

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

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

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

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

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

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

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

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

municipal subdivision, standard USGS (United States Geological Survey) grids, locations within a fixed range of latitude and longitude, or locations within a specified geometric boundary.

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

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

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

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

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

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

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

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

and the second set of (x,y) coordinates. Such a segment is used, for example, to define a street that extends from the first set of (x,y) coordinates to the second set of (x,y) coordinates.

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

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

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

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

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

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

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

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

relative to prior art designs. Speech recognition mechanism 103 can be implemented by a server or by a mobile handset.

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

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

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

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

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

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

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

although element database 500 and location-based service 203 are shown as separate elements, those skilled in the relevant art will easily recognize that element database 500 could, but need not, be incorporated into location-based service 203.

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

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

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

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

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

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

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

[0060] Speech recognition mechanism 103 may be implemented at server 240 or at mobile device 250. In cases where speech recognition is performed at mobile device 250, the output from word filtering mechanism 102 (illustratively in the form of a stream of words corresponding to grammar subset list 600, FIG. 3) is sent from server 240 to mobile device 250. Word subset list 600 is then compiled by the recognition model compiler 213 at mobile device 250 to provide a speech recognition model for use by a speech recognition mechanism 103 responsive to

the acoustic input mechanism 104. Speech recognition mechanism 103 then forwards recognized speech to the output mechanism 105 for generating an electronic output signal representing the recognized speech. Such an arrangement is advantageous because it reduces the burden on wireless communication resources. Transmissions between the server and the mobile device are reduced because only word subset list 600 needs to be communicated to the mobile device. The speech recognition steps can be performed at the mobile device with reference to word subset list 600, thereby enhancing the speed and efficiency of the speech recognition process.

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

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

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

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

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

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

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

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

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

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

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

[0072] The following operational sequence is performed:

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

mences at mechanism 202. Location-based service also determines geographic position of the user, an area of uncertainty with respect to the user's position, and one or more associated zip codes.

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

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

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

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

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

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

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

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

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

mobile device 250.

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

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

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

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

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

Claims

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

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

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

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

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

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

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

6. A speech recognition system comprising:

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

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

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

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

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

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

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

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

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

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

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

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

further subset of words.

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

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

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

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

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

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

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

and wherein:

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

Patentansprüche

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

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

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

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

2. Verfahren nach Anspruch 1, wobei die bestimmten geographischen Daten Positionsdaten des globalen Navigationssystems (GPS) und/oder Daten der Zellenidentität (Cell-ID) und/oder Daten der Anruferidentifikation (Caller ID) und/oder Städtenamendaten und/oder Postleitzahldaten umfassen.
3. Verfahren nach Anspruch 1, wobei die geographischen Daten aus einem aus dem mobilen Handapparat empfangenen Signal abgeleitet werden, wobei das Signal eine aktuelle Position des mobilen Handapparats oder eine in den mobilen Handapparat eingegebene manuelle Eingabe betrifft.
4. Verfahren nach einem der vorhergehenden Ansprüche, wobei die Elemente Straßennamen und/oder Unternehmen und/oder Händler und/oder interessierende Punkte und/oder Transporteinrichtungen und/oder individuelle Haushalte und/oder Aktivitäten und/oder Sehenswürdigkeiten umfassen.
5. Verfahren nach einem der vorhergehenden Ansprüche, wobei der mobile Handapparat die Teilmenge von Wörtern von dem abgesetzten Server empfängt und auf der Basis der empfangenen Teilmenge von Wörtern die Spracherkennungsprozedur ausführt und **dadurch** die Benutzung des Kommunikationsnetzes und des abgesetzten Servers reduziert.
6. Spracherkennungssystem, umfassend:
 - einen mobilen Handapparat, der dafür ausgestattet ist, über ein drahtloses Netz mit einem abgesetzten Server zu kommunizieren,
 - einen Datenbeschaffungsmechanismus (101) zum Bestimmen von geographischen Daten für den mobilen Handapparat nach einer Anforderungseingabe und
 - einen Auswahlmechanismus (102) zum Verwenden der bestimmten geographischen Daten zum automatischen Auswählen einer Teilmen-

ge von Wörtern (106) zur Verwendung mit einer Spracherkennungsprozedur;

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

7. Spracherkennungssystem nach Anspruch 6, wobei die geographischen Daten aus einem aus dem mobilen Handapparat empfangenen Signal abgeleitet werden, wobei das Signal eine aktuelle Position des mobilen Handapparats oder eine in den mobilen Handapparat eingegebene manuelle Eingabe betrifft.
8. Spracherkennungssystem nach Anspruch 6, wobei die bestimmten geographischen Daten Positionsdaten des globalen Navigationssystems (GPS) und/oder Daten der Zellenidentität (Cell-ID) und/oder Daten der Anruferidentifikation (Caller ID) und/oder Städtenamendaten und/oder Postleitzahldaten umfassen.
9. Spracherkennungssystem nach einem der Ansprüche 6 bis 8, wobei die Elemente Straßennamen und/oder Unternehmen und/oder Händler und/oder interessierende Punkte und/oder Transporteinrichtungen und/oder individuelle Haushalte und/oder Aktivitäten und/oder Sehenswürdigkeiten umfassen.
10. Spracherkennungssystem zum Assoziieren von empfangener Sprache mit aus einer Elementdatenbank abgerufenen Wörtern, wobei das System folgendes umfaßt:

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

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

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

sis des interessierenden geographischen Gebiets; wobei die Mittel den Server umfassen, der dafür programmiert ist, aus der Elementdatenbank nur Wörter zu extrahieren, die mit dem interessierenden geographischen Gebiet assoziiert sind und

Mittel zum Assoziieren der empfangenen Sprache mit aus der Teilmenge von Wörtern ausgewählten Wörtern, wobei die Mittel auf dem mobilen Handapparat implementiert sind.

11. Spracherkennungssystem nach Anspruch 10, ferner umfassend:

Mittel zum Annehmen eines Signals von mindestens einer graphischen Benutzeroberfläche zum Auswählen eines Teils des bestimmten interessierenden geographischen Gebiets, um **dadurch** ein weiter eingeschränktes interessierendes geographisches Gebiet zu spezifizieren und

Mittel zum weiteren Reduzieren der Teilmenge von Wörtern gemäß dem weiter eingeschränkten interessierenden geographischen Gebiet, um eine weitere Teilmenge von Wörtern zu erzeugen, dergestalt, daß die Mittel zum Assoziieren empfangener Sprache mit Wörtern nur Wörter aus der weiteren Teilmenge von Wörtern auswählen.

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

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

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

Mittel zum Empfangen einer Anforderung;
Mittel zum Bereitstellen eines Signals, das ein interessierendes geographisches Gebiet repräsentiert, nach der Anforderung;
Mittel zum Senden des Signals zu einem abgesetzten Server und zum Empfangen einer Teilmenge von Wörtern aus der abgesetzten Da-

tenbank von dem abgesetzten Server auf der Basis des interessierenden geographischen Gebiets und

Mittel zum Assoziieren der empfangenen Sprache mit aus der Teilmenge von Wörtern ausgewählten Wörtern.

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

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

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

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

30 Revendications

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

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

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

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

- données d'identification d'appelant (identifiant d'appelant), des données de nom de lieu ou des données de code postal.
3. Procédé selon la revendication 1 dans lequel les données géographiques sont déduites d'un signal reçu du combiné mobile, ledit signal étant lié à une position actuelle dudit combiné mobile ou à une entrée manuelle entrée dans ledit combiné mobile.
4. Procédé selon une revendication précédente quelconque dans lequel les éléments comprennent au moins un parmi des noms de rues, des entreprises, des commerçants, des centres d'intérêt, des installations de transport, des maisons individuelles, des activités ou des points de repère.
5. Procédé selon une revendication précédente quelconque dans lequel le combiné mobile reçoit le sous-ensemble de mots du serveur distant et exécute la procédure de reconnaissance vocale sur la base du sous-ensemble reçu de mots, réduisant de ce fait l'utilisation du réseau de communication et du serveur distant.
6. Système de reconnaissance vocale comprenant :
- un combiné mobile équipé pour communiquer avec un serveur distant sur un réseau sans fil ; un mécanisme d'acquisition de données (101) pour déterminer des données géographiques pour le combiné mobile suite à une entrée de demande ; et un mécanisme de sélection (102) pour utiliser les données géographiques déterminées afin de sélectionner automatiquement un sous-ensemble de mots (106) pour une utilisation avec une procédure de reconnaissance vocale ;
- dans lequel le sous-ensemble de mots est sélectionné par le serveur distant à partir d'une base de données d'éléments (500) à laquelle ledit serveur distant a accès, ladite base de données d'éléments comprenant des mots qui décrivent des éléments pour chacun d'une pluralité d'emplacements définis géographiquement, réduisant de ce fait le nombre de mots utilisés dans la procédure de reconnaissance vocale.
7. Système de reconnaissance vocale selon la revendication 6 dans lequel les données géographiques sont déduites d'un signal reçu du combiné mobile, ledit signal étant lié à une position actuelle dudit combiné mobile ou à une entrée manuelle entrée dans ledit combiné mobile.
8. Système de reconnaissance vocale selon la revendication 6 dans lequel les données géographiques
- déterminées comprennent au moins une parmi des données de position du système de positionnement mondial (GPS), des données d'identité de cellule (identifiant de cellule), des données d'identification d'appelant (identifiant d'appelant), des données de nom de lieu ou des données de code postal.
9. Système de reconnaissance vocale selon l'une quelconque des revendications 6 à 8 dans lequel les éléments comprennent au moins un parmi des noms de rues, des entreprises, des commerçants, des centres d'intérêt, des installations de transport, des maisons individuelles, des activités ou des points de repère.
10. Système de reconnaissance vocale pour associer une voix reçue à des mots récupérés d'une base de données d'éléments, le système comprenant :
- des moyens pour déterminer une zone géographique d'intérêt suite à une demande dans laquelle une voix doit être reçue, lesdits moyens comprenant en outre :
- (i) un mécanisme de détermination d'emplacement de portable associé à un combiné mobile pour générer un signal d'indication révélateur d'un emplacement géographique actuel, et
- (ii) un serveur, en communication avec le mécanisme de détermination d'emplacement de portable, programmé pour déterminer une zone géographique d'intérêt à partir du signal d'indication ;
- des moyens pour sélectionner un sous-ensemble de mots parmi la base de données d'éléments sur la base de la zone géographique d'intérêt ; lesdits moyens comprenant le serveur programmé pour extraire de la base de données d'éléments seulement des mots qui sont associés à la zone géographique d'intérêt ; et des moyens pour associer la voix reçue à des mots sélectionnés parmi le sous-ensemble de mots, lesdits moyens étant mis en oeuvre sur le combiné mobile.
11. Système de reconnaissance vocale selon la revendication 10 comprenant en outre :
- des moyens pour accepter un signal d'au moins une interface utilisateur graphique pour sélectionner une partie de la zone géographique d'intérêt déterminée afin de spécifier de ce fait une zone géographique d'intérêt limitée supplémentaire ; et des moyens pour réduire en outre le sous-ensemble de mots selon la zone géographique

d'intérêt limitée supplémentaire afin de générer un sous-ensemble supplémentaire de mots, de telle sorte que les moyens pour associer une voix reçue à des mots sélectionnent seulement des mots parmi le sous-ensemble supplémentaire de mots. 5

12. Système de reconnaissance vocale selon la revendication 11 dans lequel les moyens pour accepter un signal comprennent : 10

un affichage électronique pour afficher une carte de la zone géographique d'intérêt déterminée ; et
un mécanisme de traitement pour combiner le signal accepté avec la carte de la zone géographique d'intérêt déterminée de façon à provoquer un affichage de la zone géographique d'intérêt limitée supplémentaire sur l'affichage électronique. 15 20

13. Combiné mobile (250) comprenant des moyens de reconnaissance vocale pour une association d'une voix reçue à des mots reçus d'une base de données distante, le combiné mobile comprenant : 25

des moyens pour recevoir une demande ;
des moyens pour fournir un signal représentant une zone géographique d'intérêt suite à ladite demande ; 30
des moyens pour transmettre ledit signal à un serveur distant et recevoir du serveur distant un sous-ensemble de mots provenant de la base de données distante sur la base de la zone géographique d'intérêt ; et 35
des moyens pour associer la voix reçue à des mots sélectionnés parmi le sous-ensemble de mots.

14. Combiné mobile selon la revendication 13 dans lequel les moyens pour fournir un signal comprennent des moyens pour déterminer une zone géographique d'intérêt dans laquelle une voix doit être reçue. 40

15. Combiné mobile selon la revendication 13 ou 14 comprenant en outre: 45

des moyens (201) pour accepter au moins une entrée utilisée pour déterminer une zone géographique affinée d'intérêt dans la zone géographique d'intérêt ; 50
des moyens (205) pour réduire le sous-ensemble de mots selon la zone géographique affinée d'intérêt; 55

et dans lequel :

les moyens pour associer la voix reçue sont

agencés pour une association d'une voix seulement avec le sous-ensemble réduit de mots.

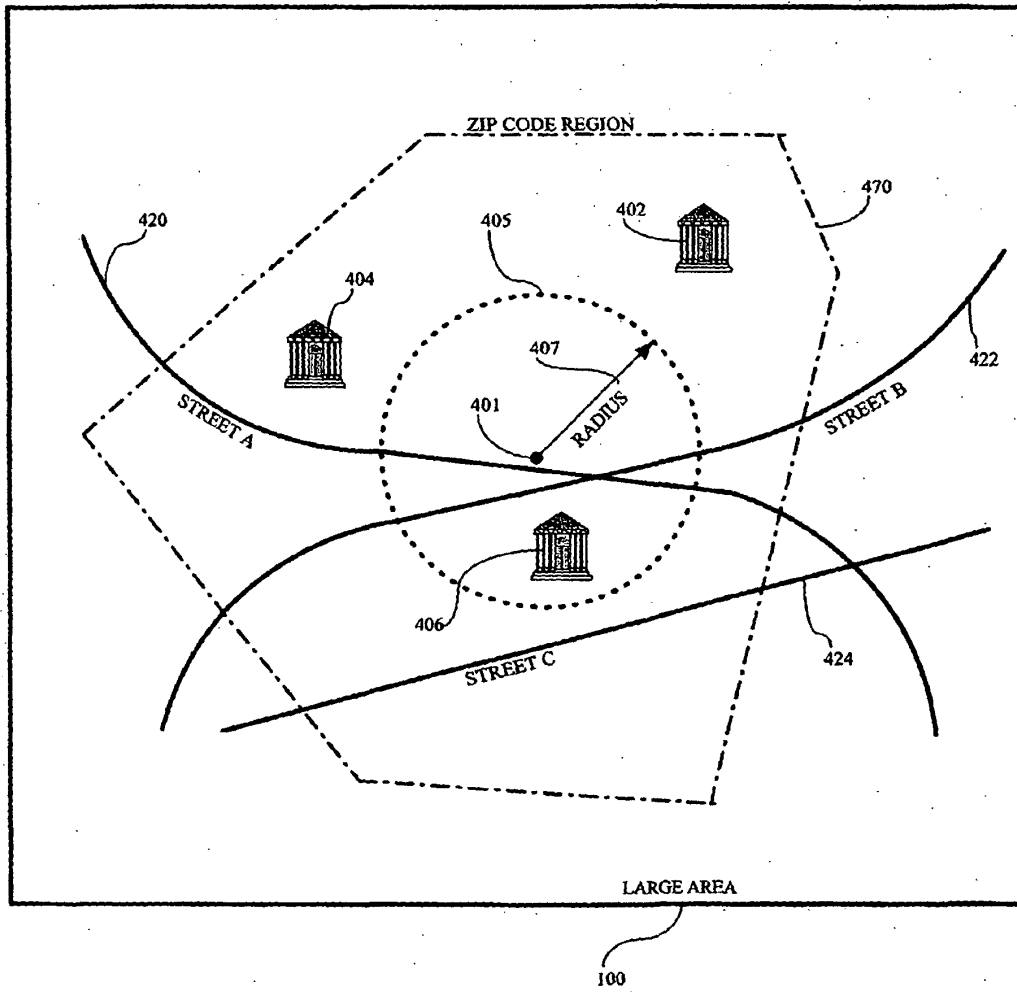


FIG. 1

500

ELEMENT DATABASE

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

FIG. 2

600

WORD SUBSET LIST

ELEMENT NAME FIELD 601
FIRST BUILDING
STREET A
STREET B

FIG. 3

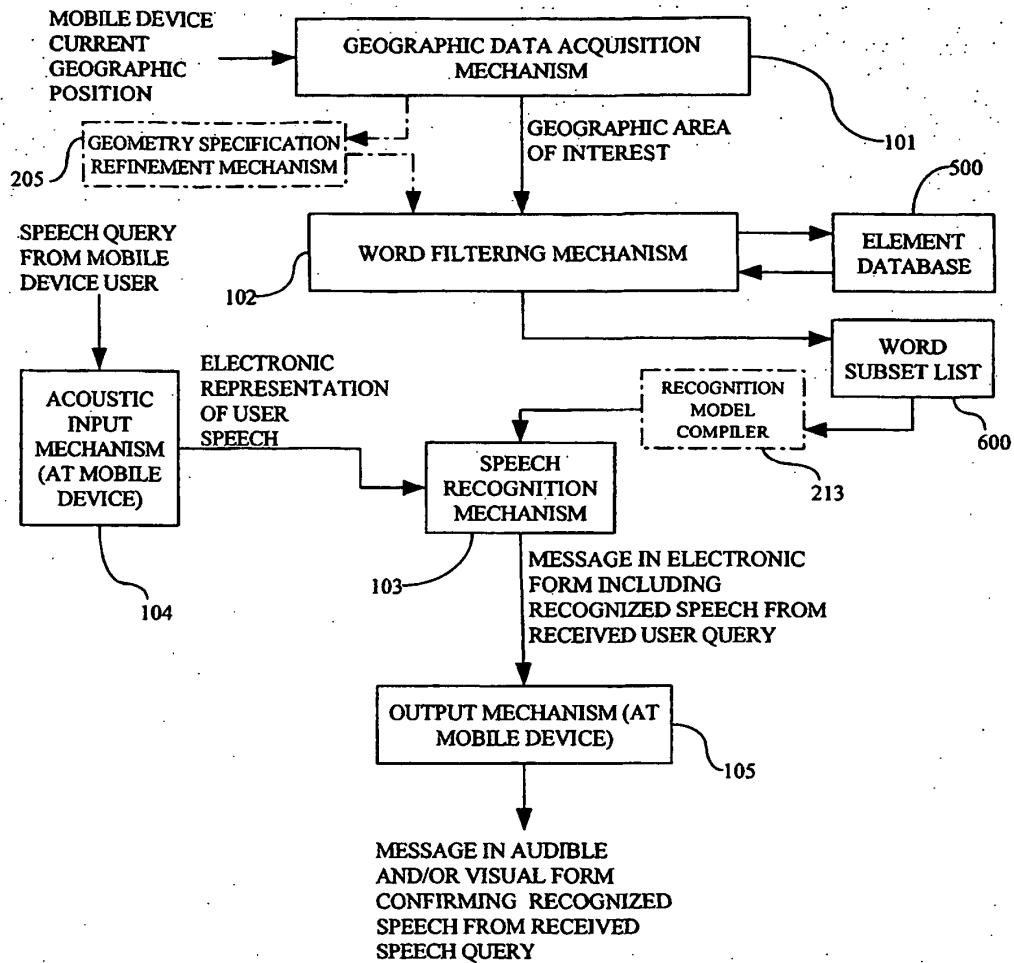


FIG. 4

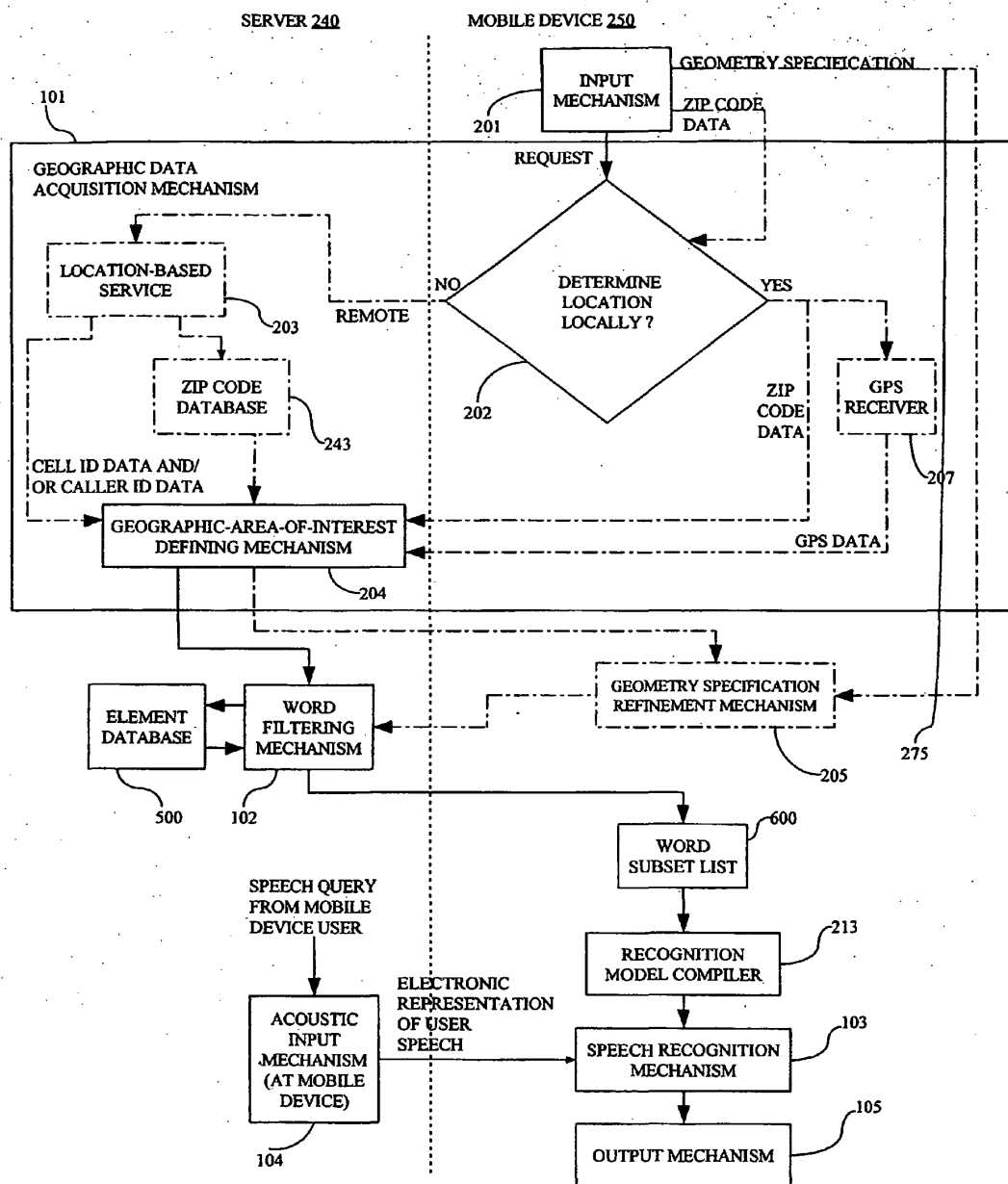


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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

MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] This application is a divisional of U.S. Patent Application Serial No. 11/212,693, entitled "Mobile Systems and Methods of Supporting Natural Language Human-Machine Interactions," filed August 29, 2005, the contents of which are hereby incorporated by reference in their entirety.

FIELD OF THE INVENTION

[002] The invention provides mobile devices having a speech interface and/or a combination of a speech interface and a non-speech interface to enable natural language human-machine interactions. More specifically, the invention enables mobile users to submit natural language speech and/or non-speech questions or commands in a wide range of domains. The mobile device is configured to present responses in a natural manner.

BACKGROUND OF THE INVENTION

[003] Telematic systems are systems that bring human-computer interfaces to mobile environments. Conventional computer interfaces use some combination of keyboards, keypads, point and click techniques and touch screen displays. These conventional interface techniques are generally not suitable for a mobile environments, due at least in part to the speed of interaction and the inherent danger and distraction. Therefore, speech interfaces are being adopted in many telematic applications.

[004] However, creating a natural language speech interface that is suitable for use in the mobile environment has proved difficult. A general-purpose telematics system should accommodate commands and requests from a wide range of domains and from many users with diverse preferences and needs. Further, multiple mobile users may want to use such systems, often simultaneously. Finally, most mobile environments are relatively noisy, making speech recognition inherently difficult.

[005] Retrieval of both local and network hosted online information and processing of commands in a natural manner remains a difficult problem in any environment, especially a mobile environment. 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 requests (a request may be a question, a command, 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 requests that are extracted from the verbal communications may be fundamentally incompatible. Yet the ability to allow a person to make natural language speech-based requests remains a desirable goal.

[006] Research has been performed on multiple fields of natural language processing and speech recognition. Speech recognition has steadily improved in accuracy and today is successfully used in a wide range of applications. Natural language processing has previously been applied to the parsing of speech queries. Yet, a limited number of systems have been developed that provide a complete environment for users to make natural language speech requests and/or commands and receive natural sounding responses in a mobile environment. There remain a number of significant barriers to creation of a complete natural language verbal and/or textual-based query and response environment.

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

[008] Even once a question is asked, parsed and interpreted, machine processable requests and commands must be formulated. Depending on the nature of the question, there may not be a simple set of requests that return an adequate response. Several requests may need to be

initiated and even these requests may need to be chained or concatenated to achieve a complete result. Further, no single available source may include the entire set of results required. Thus, multiple requests, perhaps with several parts, may need to be made to multiple data sources, which can be located both locally or remotely. Not all of these sources and requests may return useful results or any results at all.

[009] In a mobile environment, the use of wireless communications may further reduce the chances that requests will be complete or that successful results will be returned. Useful results that are returned are often embedded in other information and may need to be extracted therefrom. For example, a few key words or numbers often need to be “scraped” from a larger amount of other information in a text string, table, list, page, or other information. At the same time, other extraneous information such as graphics or pictures may need to be removed to process the response in speech. In any case, the multiple results should be evaluated and combined to form the best possible answer, even in the case where some requests do not return useful results or fail entirely. In cases where the question is ambiguous or the result inherently subjective, determining the best result to present is a complex process. Finally, to maintain a natural interaction, responses should be returned rapidly to the user. Managing and evaluating complex and uncertain requests, while maintaining real-time performance, is a significant challenge.

[010] These and other drawbacks exist in existing systems.

SUMMARY OF THE INVENTION

[011] The invention overcomes these and other drawbacks of prior telematic systems.

[012] According to one aspect of the invention, speech-based and non-speech-based systems are provided that act on commands and retrieve information. The invention uses context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for users that submit requests and/or commands in multiple domains. At each step in the process, accommodation may be made for full or partial failure and graceful recovery. The robustness to partial failure may be 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.

[013] According to another aspect of the invention, the interactive natural language system (herein “the system”) may be incorporated into mobile devices or may be connected to the mobile device via a wired or wireless connection. The mobile device may interface with computers or other electronic control systems through wired or wireless links. The mobile device may also operate independently of a mobile structure and may be used to remotely control devices through a wireless local area connection, a wide area wireless connection or through other communication links.

[014] According to one aspect of the invention, software may be installed onto the mobile device that includes an input module that captures the user input; a parser that parses the input, a text to speech engine module for converting text to speech; a network interface for enabling the device to interface with one or more networks; a non-speech interface module, an event manager for managing events and/or other modules. In some embodiments, the event manager may be in communication with a context description grammar, a user profile module that enables user profiles to be created, modified and/or accessed, a personality module that enables various personalities to be created and/or used, an agent module, an update manager and one or more databases. It will be understood that this software may be distributed in any way between a mobile device, a computer attached to a mobile structure, a desktop computer or a server without altering the function, features, scope, or intent of the invention.

[015] According to one aspect of the invention, the system may include a speech unit interface device that receives spoken natural language requests, commands and/or other utterances from users, and a computer device or system that receives input from the speech unit and processes the input and responds to the user with a natural language speech response.

[016] According to another aspect of the invention, the system may be interfaced by wired or wireless connections to one or more other systems. The other systems may themselves be distributed between electronic controls or computers that are attached to a mobile structure or are located external to the mobile structure. The other systems may include, electronic control systems, entertainment devices, navigation equipment, measurement equipment or sensors, or

other systems. External systems may also be provided with features that include payment systems, emergency assistance networks, remote ordering systems, automated or attended customer service functions, or other features.

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

[018] According to one embodiment of the invention, processing may be performed at the mobile devices. The commands may be processed on-board to enable the mobile devices to control themselves and/or to control other mobile devices, fixed computers, mobile telephones, and other devices. Additionally, mobile devices may track context.

[019] According to one embodiment of the invention, infrastructure may be provided to maintain context information during multimodal interactions, such as speech and/or non-speech interactions. According to one exemplary embodiment of the invention, context information may be maintained in a multimodal environment by providing communication channels between mobile device, or multimodal devices, and the system. The communication channels allow the system to receive multimodal input such as text-based commands and questions and/or voice-based commands and questions. According to another embodiment of the invention, the multimodal 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 mobile devices and the speech-based units. In order to send a response to the corresponding mobile device, the system may track the source and send the response to the corresponding speech interface or the non-speech interface.

[020] 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 mobile devices and to provide output to multiple mobile devices. According to one embodiment, the mobile 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 mobile 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), or other information sources, that are specific to multimodal devices.

[021] 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.

[022] According to another embodiment of the invention, mobile devices may be configured to allow verbal annotations of objects stored thereon. Mobile devices may transcribe the verbal annotation to text and store the textual annotation with the object. Alternatively, mobile devices may be configured to enable users to manually input textual descriptions that are stored along with the objects. According to one embodiment of the invention, the textual annotations and/or textual descriptions may be classified and searched. In an alternative embodiment, mobile devices may classify and search the verbal annotations rather than textual annotations. However, classifying and searching verbal annotations may be considerably more difficult than classifying and searching textual annotations and/or textual descriptions.

[023] According to one embodiment of the invention, the textual annotations and textual descriptions may be communicated using a short message service on the mobile telephone or other device. Short message service is a text message service that enables sending and receiving of short textual messages. The textual messages may be stored at data centers for forwarding to intended recipients. Other configurations may be used.

[024] 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 that are typically directed to a specific domain of applications. 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 may 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.

[025] 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.

[026] 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.

[027] The invention may be applied as a user interface to telematics systems in a wide variety of environments. These environments may include, but are not limited to, the following: 1) personal automobiles, rented automobiles, or fleet automobiles; 2) motorcycles, scooters, and other two wheeled or open-air vehicles; 3) commercial long-haul and short haul trucks; 4) delivery service vehicles; 5) fleet service vehicles; 6) industrial vehicles; 7) agricultural and construction machinery; 8) water-borne vehicles; 9) aircraft; and, 10) specialized military, law enforcement and emergency vehicles.

[028] 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 "tune in my favorite radio station." A request is processed to determine the name, the channel, and time for the users favorite radio station. If the programming on that station is of a type the user generally does not listen to, the system can suggest using an alternative option, such as listening to a CD more likely to please the user. A command must be executed to set a tune the radio station.

[029] The invention can be used for generalized local or network information query, retrieval and presentation in a mobile environment. For each user utterance, including a question or query or set of questions or queries, the system may perform multiple steps possibly including: 1) capturing the user's question or query through speech recognition operating in a variety of real-world environments; 2) parsing and interpreting the question or query; 3) determining the domain of expertise required and the context to invoke the proper resources, including agents; 4) formulating one or more queries to one or more local and/or network data sources or sending appropriate commands to local or remote devices or the system itself; 5) performing required formatting, variable substitutions and transformations to modify the queries to a form most likely to yield desired results from the available sources; 6) executing the multiple queries or commands in an asynchronous manner and dealing gracefully with failures; 7) 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; 8) evaluating and interpreting the results, including processing of errors, gathered and combine them into a single best result judged to be "best" even if the results are ambiguous, incomplete, or conflicting; 9) performing required formatting, variable substitutions and transformations to modify the results to a form most easily understood by the user; 10) presenting the compound result, through a text to speech engine or multimodal interface, to the user in a useful and/or expected manner; 11) optionally, providing a response to users indicating the success or failure of the command, and possibly including state information; or other steps.

[030] 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.

[031] 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.

[032] 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.

[033] 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.

[034] 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.

[035] 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.

[036] 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.

[037] In order to make the responses to user's questions and commands seem more natural, the system may employ one or more dynamically invokeable personalities 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, responses obtained from the sources.

[038] 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.

[039] 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.

[040] 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.

[041] Since the invention may operate in many environments, including mobile environments with background noise, point noise sources and people holding conversations, filtering of speech input may be advantageous. The invention may use, for example, either one-dimensional or two-dimensional array microphones (or other devices) 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. Alternatively, microphones may be placed at particular locations within

the mobile environment near where occupants are likely to use the system. These microphones can be single microphones, directional microphones or an array of microphones. Speech received at the microphones may then be processed with analog or digital filters to optimize the bandwidth, cancel echoes, notch-out narrow band noise sources, or perform other functions. 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.

[042] The invention can be applied to a wide range of telematics applications. General applications areas can include, but are not limited to remote or local vehicle control, information query, retrieval and presentation from local or network sources, safety applications, and security applications.

[043] The system may provide local or remote control functions for the system, including devices that are located on the mobile structure or off the mobile structure. Users may initiate commands locally or remotely. Typically, remote operation may be conducted through an IP connection, a telephone connection, or other connections. The user may address spoken commands to a mobile device or desktop unit, which may send the commands to controllers on the vehicle over wireless links. Other remote command techniques may be used. The system may process commands in a nearly identical manner to a request. One difference being that the result of the command is generally an action rather than a response. In many cases, the system may give the user a cue or response to indicate that the command has been successfully executed or has failed. In cases of failure, an interactive session may be started to allow the user to resolve the difficulty or formulate a command more likely to succeed.

[044] The invention provides users, including mobile structure operators, with the capability to control most any mobile system functions using interactive speech and non-speech commands and/or requests. Generally, controls of a critical nature, or having safety implications, may employ fail-safe checks that, before execution, verify that a command will not create a hazardous condition. Manual overrides may also be provided as an extra precaution. The invention may provide built in help and user guidance for the devices under control. This

guidance may include step-by-step training for operators that are learning to use the features of the mobile structure. The system can provide extensive interactive guidance when commands cannot be executed or when commands fail. This advice may include suggestions to reformulate the command to succeed, suggestions to work around a failure, suggestions for alternative commands that may achieve a similar function, or other suggestions. Examples of control functions that can be performed from local or remote locations by the invention include:

1. Control of mobile structure multimedia entertainment electronics, such as radio, CD player, or video player. This control can be based on user specified play lists and may be sensitive to user profile information including, preferences history, or other information. The invention may include the ability to control multiple or individual multimedia entertainment stations.
2. Control of communications devices such as cell phones, voice mail systems, fax systems, text or instant messaging systems, call and message forwarding systems, email systems and other communication devices. This control includes controlling features such as, address books, phone books, call forwarding, conference calling, and voice mail, among others.
3. Local or remote control of mobile structure systems. Most any device on the mobile structure may be controlled including, door locks, window controls, interior temperature controls, shifting of the transmission, turn signals, lights, safety equipment, engine ignition, cruise control, fuel tank switches, seat adjustments, specialized equipment such as winches, lifting systems or loading systems, and other mobile structure systems.
4. Systems that are located external to the mobile structure typically may be controlled through wireless links including, garage door openers, gate controllers, mobile structure entry security passes, automated toll collection systems, and mobile structure weighing systems and other external systems.

5. Mobile structure power management and systems control. The invention may provide the mobile structure operator with information on limitations and on tips for better power management or fuel utilization or other systems control.
6. Diagnostic information management. The invention may provide diagnostic information announcements and warnings for the mobile structure operator. These announcements and warnings may be interactive allowing the operator to request additional information or to suggest various courses of action. The invention may mediate a solution to the problem, including providing access to a scheduling service, summoning help or providing instructions for remedial action until a permanent solution can be achieved. The system can ask the operator to authorize the ordering of needed parts and may provide cost estimates. The system may receive data for these announcements and warnings from a wide range of sources including sensors and vehicle control computers. Sensors may include fuel level sensors, coolant temperature sensors, oil temperature sensors, axle temperature sensors, tire pressure sensors, and other sensors.
7. System status inquiry. Mobile structure operators may use the interactive natural language interface of the invention to query and receive reports on the status of systems that are located on the mobile structure including, fuel level, interior temperature, outside temperature, engine or other mobile structure system status. The operator can further query the system to receive more information or determine a course of action if problem is detected.
8. Vehicle service history. The invention can provide the vehicle operator or other personnel with interactive access to the vehicle service history. The invention can provide announcements or warnings as the time for service draws near. The user can interact with the system to schedule the required service, order required parts, receive cost estimates, or update the service history. Users may customize the nature of this interaction to suit their desires or policies.
9. Diagnostic and service history. The invention may provide diagnostic and service history information to service personnel. This information may include vehicle fault

codes and other information for devices that are under control of or measured by the system. Alternatively, the invention may receive information on the state and history of vehicle operation from other control computers. The invention may provide interactive service information and history. The service history may be queried and presented through the speech interface or the non-speech interface. The system may prompt service personnel for more information if the record is deemed incomplete. In other cases, the invention may prompt service personnel for information on their actions if a change is detected in system status, such as replacement of a part.

[045] The invention can provide users or operators of a mobile structure with specialized safety functions through the interactive speech interface and/or non-speech interface. The invention may use a dynamically evocable personality that is capable of creating announcements that are appropriate for the severity of the situation. The announcements and personalities may be under user control and configuration. Some examples of these safety applications can include:

1. The invention can provide automated detection and reporting of accident situations through the wireless communications link. Information on an accident situation can be gathered from airbag control systems or other sensors. Once an accident situation has been detected the invention may use the interactive speech interface and/or non-speech interface to determine the nature of the accident and/or the condition of victims. This information, along with location information and other relevant information, may be reported over the wireless link. Alternatively, the invention may establish voice channel communications or other communications between occupants of the vehicle and emergency personnel.
2. The invention can be used to store and retrieve medical information on vehicle occupants. Following an accident, emergency personnel may query the system for this information. Alternatively, the system may annunciate a warning to emergency personnel if a person has a special medical condition. The system maintains the security of medical information through a number of techniques, including not annunciating

medical information unless an accident is detected, or not annunciating medical information unless that person or another authorized person gives permission.

3. Occupants of the vehicle can summon help in the event of a crime using the speech interface and/or non-speech interface. Typical crimes may include robberies and hijackings. The invention allows vehicle occupants to set panic or emergency words or phrases that indicate to the system a crime is occurring.

4. The invention can provide the vehicle operator with safety announcements if an unsafe or potentially unsafe situation is detected. The operator can use the interactive speech interface and/or non-speech interface to obtain more information on the situation or dismiss the alert. The operator can annunciate or otherwise provide commands to remedy or mitigate the situation during this dialog. Conditions that can be announced include, following another vehicle too closely, too great a speed for the road or conditions, obstruction on roadway, a fire in some part of the vehicle, high cargo pressure or temperature, leaks, and other information.

5. The interactive speech interface and non-speech interface of the invention can provide the operator with real-time assistance. This assistance may include, aid in parking or backing a vehicle, aid with complex maneuvers, aid with optimal operation of the vehicle, and other operations. The operator can ask the system for advice or assistance with a planned maneuver or operation. Alternatively, the invention can proactively offer assistance if certain situations are detected.

6. The interactive speech interface and non-speech interface may be used to improve vehicle security. Voiceprints or voice authentication can be used to gain access to the vehicle or start the vehicle. Alternatively or in addition, a password or passphrase can be used. In another alternative speech security can be used as a supplement to other vehicle security techniques.

7. The invention can provide measurement of operator fatigue and alert the operator or remote personnel if unacceptable levels of fatigue are detected. The interactive speech interface and/or non-speech interface can be used to query the operator to detect fatigue. Alternatively, or in addition, other measurements of

operator fatigue can be used. If a fatigue situation is detected the invention may initiate a dialog with the operator to determine the extent of the problem and if required, ask the operator to cease operation.

[046] The invention can offer vehicle operators and occupants a variety of services that are useful while in the vehicle and/or while arriving at a destination. Further, users can employ the interactive natural language interface to customize these services to suit each individual. Some examples of services that can be supported by the natural-language interactive speech interface of the invention, include:

1. Providing vehicle operators with interactive directions to a destination or waypoint, wherein the user can specify a desired destination and any preferred waypoints. A destination can be specified in any manner including providing the name of a place, an address, a name of a person, a name of a business, or other type of information. As the trip progresses the system may provide the operator with continued directions and warnings if a mistake has been made. The operator can query the system for additional information or request less information. Generally, the system is interfaced with one or more navigation sensors and local or remote map databases. The invention may provide operators or passengers with alerts of upcoming points of interest, exits or stops, hazards, or other conditions. The users can query the system for more specific information. Alternatively, the invention can provide operators and occupants of the vehicle with an interactive guided tour. The system's information query, retrieval and presentation capability can be employed by users to receive additional information or points or items of interest during the tour and may take into account stored personal profile information for a user.
2. The invention can provide the operator of a vehicle with interactive dynamic routing information. The routing can be updated based on traffic conditions, weather conditions, facilities availability, and information provided by the operator. Generally, the system is interfaced with one or more navigation sensors, local or remote map databases, and sources of traffic, weather, and facilities use data.

3. The direction, routing and communications capabilities of the invention can be combined in an interactive system that helps one or more operators rendezvous at a predetermined destination or any other convenient midpoint. The operators may use the interactive natural language interface to communicate with the system to arrange the rendezvous, to receive directions as they travel to the rendezvous point and/or to communicate with the other operators.

4. The navigational capabilities of the invention may be used to place limits on where a vehicle is allowed to go and/or for how long. The system may employ the interactive natural language speech interface and/or non-speech interface to inform the operator when the vehicle is approaching or has exceeded a limit. The operator can query the system to determine the best course of action to return to limits or prevent exceeding them. Alternatively, the system can query the operator to determine why they are exceeding the limits or to mediate a negotiation to extend the limits if this is required by circumstances. This capability is useful in several situations including, keeping a delivery or passenger vehicle on a regular route, setting and enforcing use limits on teenagers, preventing an operator from using the vehicle in an unauthorized manner, or other situations.

5. The interactive natural language interface of the invention can be used to provide Customer Relationship Management (CRM) services to vehicle operators and passengers. The user can interact with the services offered via data networks, video signals, or audio. The interaction can be performed with automated services or a live Customer Service Representative. Interactions with the customer service representatives can be through any combination of possible techniques, such as, live audio, live video, electronic messaging or email, instant messaging, and other techniques. These services can be offered by a number of entities including, vehicle manufacturers, vehicle dealers, vehicle service organizations, automobile or travel clubs, wireless carriers, travel service organizations, or other organizations. The services offered can be personalized to the occupants of the vehicle using a variety of information including, user profile information, history, location, paths traveled, time of

day, day of week, or other information. In addition, the system can offer customized services based on information about the vehicle, including paths traveled, distance, service history, type of equipment on vehicle. These services can be accessed while a person is an occupant in a vehicle, while the person is not an occupant but are using a wireless or wired network equipped mobile device or while using a wired or wireless network desktop system, among other situations. Examples of these services include:

- a. Location based marketing programs wherein occupants of the vehicle receive promotional offers from merchants along a route of travel. Occupants can query the system for offers and promotions for goods, services, or other information, along the travel route. The system may apply other available information to form a response, including, the user profile, history, location, or other information. The system can provide optimized interactive routing assistance to the vehicle operator. Alternatively, the system can provide interactive offers and promotions for goods and services along the route, or in advance of a particular trip. Promotions can be offered for goods and services can include but are not limited to, travel services, groceries, prepared foods, vehicle service, fuel, entertainment, or other goods and services.
- b. Remote ordering and payment for goods and services. The system can interactively present the menu or product catalog using the list and table presentation capabilities of the invention. The system may facilitate remote ordering by using location information, customer preferences, customer order history, etc. The system can manage a secure payment wallet for the users. Voiceprints, spoken passwords, and non-speech security methods (i.e. PIN pad, etc.) can be combined to create the appropriate level of security.
- c. Travel services for occupants of the vehicle. These services can include, directories of travel and entertainment services, or reservations for entertainment restaurants, hotels and other accommodation. The system may present directories, lists and menus using its interactive list and table presentation capabilities. The travel service capability can be used in

conjunction with the remote ordering and payment capabilities and the dynamic interactive routing capability.

d. Answer specialized travel related questions in areas such as vehicle registration, taxes, safety laws, required inspections, weight limits, insurance coverage requirements, insurance policy provisions, or other areas.

6. The invention can provide an operator or other occupant of a vehicle with an interactive location sensitive shopping list or a location and time sensitive task reminder list using the natural language interface. Users can create the list while in the vehicle, while on foot using a mobile device, or at a fixed location using a handheld or desktop device. A user may grant permission to other users to add tasks or shopping items to their lists. Once in the vehicle, the system may provide occupants with routing assistance to optimize travel time and may provide reminders of items to be purchased and tasks to be completed as the vehicle comes in close proximity to a particular location, type of merchant or other service provider, or when a set time has been reached, among other criteria.

7. Automatic interactive dispatch and reporting for fleet vehicles having vehicle operators or other vehicle occupants that use the speech interface and/or non-speech interface to interact with these services. These services can include, dynamic optimal routing, inventory of parts and other materials, ordering of required parts and materials, work orders, receipt generation, payments, or other services.

8. Sales force automation, sales reporting, contact database management, calendar management, and call routing. The system may employ its interactive list and table presentation capabilities to supply catalog and pricing information or other information. These services can use local or network data. Additional services can include, memos, reminders, activity lists, or other information.

[047] Vehicle operators and other occupants can use the interactive natural language interactive interface of the invention to perform many types of information query, retrieval and presentation operations. Using the natural language interactive interface, users can modify the parameters of queries or specify the presentation formats for results. Data used to create a

response can be from any combination of local and remote data sources. User specific data can be synchronized between systems fixed to one or more vehicles, mobile structures and desktop systems. Some examples of information query, retrieval and presentation applications for the invention include, but are not limited to the following:

1. White pages and yellow pages lookups to find, email addresses, telephone numbers, street addresses and other information for businesses and individuals. These services can be used in conjunction with other services, including remote ordering and payment, offers and promotions, mapping, and driving directions;
2. Management and access to personal address book, calendars and reminders for users;
3. Automatic telephone dialing, reading and sending emails, pages, instant messaging by voice, text or video and other communications control functions;
4. Selection, schedules and play list management for television, satellite broadcast, radio or other entertainment schedule. The available information can include reviews and other information on programming. The system may provide device control for users;
5. Weather information for the local area or other locations;
6. 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, or other information;
7. 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;
8. Sports scores, news stories, schedules, alerts, statistics, background and history information, or other information;
9. The 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;
10. Rights management for information or content that is used or published;

11. Horoscopes, daily jokes and comics, crossword puzzle retrieval and display and related entertainment or diversions;
12. Interactive educational programs using local and network material, with lesson material level that is set based on user's profile, location of the vehicle, planned route of the vehicle, planned activities during the trip and including, interactive multimedia lessons, religious instruction, calculator, dictionary and spelling, geographic information, instruction for specialized tasks planned during the trip, language training, foreign language translation, presentation of technical manuals, and encyclopedias and other reference material.

[048] 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

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

[050] Figure 1 is an overall block diagram of the system according to a first embodiment of the invention;

[051] Figure 2 is an overall block diagram of the system according to a second embodiment of the invention;

[052] Figure 3 is an overall block diagram of a mobile device according to an embodiment of the invention;

[053] Figure 4 is an overall block diagram of a fixed computer according to an embodiment of the invention;

[054] Figure 5 is an overall diagrammatic view of the interactive natural language processing system according to an embodiment of the invention;

[055] Figure 6 is a schematic block diagram showing the agent architecture according to an embodiment of the invention;

[056] Figure 7 illustrates a diagram for centrally maintaining context, according to one embodiment of the invention; and

[057] Figure 8 illustrates a system diagram for an enhanced conversational voice user interface according to one embodiment of the invention.

DETAILED DESCRIPTION

[058] The following detailed description refers to the accompanying drawings, and describes exemplary embodiments of the invention. Other embodiments are contemplated 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.

[059] According to one embodiment of the invention, a telematic natural language speech interface and non-speech interface are provided for use in mobile environments and telematic applications. The system, or portions thereof, may be used in vehicles, while on foot or at a fixed location such as an office or home, or at other locations. An overall block diagram of one embodiment of the invention is illustrated in Figure 1.

[060] A speech unit 128 and/or a keypad 14 may be integrally coupled to a mobile structure 10 or may be part of mobile devices 36, fixed home or office computer systems 44, or other devices. Mobile devices 36 may include mobile telephones, personal digital assistants, digital radios, compact disk players, navigation systems, or other mobile devices. The mobile devices 36 may be configured to integrate with set-top boxes, alarm clocks, radios, or other electronic components. The speech unit 128 and/or keypad 14 may be interfaced to a Telematics Control Unit (TCU) 28 through one or more data interfaces 26. According to some embodiments, the main speech-processing unit 98 may be embedded in one or more TCU 28. In some embodiments, the components of the speech unit 128 may also be distributed between one or more TCUs.

[061] A speech-processing unit may be built into mobile devices 36 and may be coupled with the data interfaces 26 through a wireless, or wired, handheld interface 20. Other user interface peripherals may be connected to the TCU through the data interfaces and may include displays

18, such as touch screen displays for displaying text, graphics and video; keypads 14 for receiving textual data input; video cameras 16 for receiving multimedia communications or conferences; a pointing device or stylus, or other user interface peripherals. Other devices may be connected to the TCU through the data interfaces including wide-area RF transceivers 24, navigation system components 22, or other devices. The navigation system may include several components such as, Global Positioning System (GPS) receivers or other radiolocation system receivers, gyroscopes or other inertial measurement equipment, distance measurement sensors, such as odometers, or other components. Radiolocation equipment may receive coded signals from one or more satellites or terrestrial sources 40. The one or more location service servers 48 may assist the navigation system. Other systems that can connect to the TCU through the data interfaces may include automotive control computers, digital control interfaces for devices such as media players or other electronic systems, measurement sensors, or other specialized electronic equipment.

[062] The control and device interfaces 30 may connect the TCU 28 to various devices 32 within the mobile structure 10. The control and device interfaces 30 may be used to execute local or remote commands from users of the natural language interface. In some cases, the control and device interfaces 30 may include specialized hardware for interacting with different types of devices. The hardware interfaces may include analog or digital signal interfaces for device control, along with analog or digital interfaces for measurements that may control devices 32. These interfaces may also include specialized software that encapsulates or abstracts specific behavior of the devices 32. The interface software may include one or more drivers that are specific to the hardware interface and to one or more agents. The domain agents may include the specialized software behavior and data required to control a particular device or class of devices. New or updated behavior may be added to the system by updating data managers that are associated with specific devices or class of devices. The devices 32 may include manual controls or manual overrides 34. For safety reasons, the control and device interfaces 30 may incorporate fail-safe systems that, for example, may verify operating limits before changing settings, ensuring that commands do not conflict with settings from manual controls, and will not, in some combination with other commands or device settings, create an

unsafe situation. The software behavior and data that ensures safe operations may be included within the domain agent that is specific to the device or class of devices. Examples of devices and system that can be controlled through the control and device interfaces 30 include, power management systems, measurement sensors, door locks, window controls, interior temperature controls, shifting of the transmission, turn signals, lights, safety equipment, engine ignition, cruise control, fuel tank switches, seat adjustments, specialize equipment such as winches, lifting systems or loading system, and other systems.

[063] The wide-area RF transceiver 24 may communicate with one or more wide-area wireless networks 38, which may be connected to data networks 42, including the Internet, the Public Switched Telephone Network (PSTN) 42 or other data networks. The wide-area wireless networks can be of any suitable terrestrial or satellite based type. Mobile devices 36 may communicate with one or more local or wide-area wireless networks. Home or office systems 44, equipped with wired or wireless network interfaces, may communicate through the data networks or PSTN.

[064] According to one embodiment of the invention, data and agents may be stored and synchronized in mobile structures 10, mobile devices 36 and/or fixed systems 44 having one or more main speech-processing units 98. The synchronization between these different systems can occur on the wide area wireless network 38, the data network 42, through the handheld interface 20, or other local data connections. The synchronization may be performed automatically when any two or more of the computers are connected to these networks. Alternatively, the synchronization may be performed on demand under user control. The synchronization process attempts to determine which version of a data element or an agent are the newest or most up-to-date and propagates that element. Thus, synchronization is an incremental change processes. In some cases, a complete replacement of a database, a portion of the database or of one or more agents may be performed rather than performing a series of incremental updates.

[065] The wide-area wireless networks 38, the data networks 42 or PSTN, may connect mobile structures 10, mobile devices 36 and fixed computers 44 to one or more servers that provide one of more services. According to one embodiment of the invention, an interactive natural

language user interface may be provided that supports a transfer of data or transmission of speech, text, video and other formats. For data centric applications, a standardized data transfer format may be used including, for example, Hypertext Markup Language over Hypertext Transfer Protocol (HTTP), Extensible Markup Language (XML), and other data formats or schemas, over HTTP or other transfer protocol, Electronic Data Interchange formats over a variety of transport protocols, etc. It will be understood that the exact configuration of the servers may be determined on a case-by-case basis with consideration being given to the exact combinations of services being offered, the service providers providing the services, the contractual relationships between the service provider, and other factors. The invention supports any suitable configuration. In each case these servers may themselves be distributed over one or more public or private networks. Some examples of servers that may be used to deliver these services, are given below:

1. One or more payment service providers 56 that supply payment capabilities to users. These payment services may include electronic wallet capabilities for one or more payment accounts and may include payment security information, payment account information, transaction histories, account balance information, and other information. Exemplary payment types include, stored value accounts, promotional accounts, credit accounts, telecommunications billing accounts, debit accounts, or other payment types that are accessed using online or offline methods. Payments can be computed in any manner including payment for a specific good or service, subscription payment, metered payment, or other payments. The payment services can be distributed in a number of ways. Examples of computers and servers used to store and process payment transaction information include, smart cards, main speech processing units 128, mobile devices 36, TCUs 28, fixed personal computers 44, payment gateways, payment servers 56, or other systems.
2. One or more Customer Relationship Management (CRM) systems 52 may supply any number of consumer and business customer services as discussed above. The CRM system can supply automated services or services that are partly or completely manual. For manual services one or more customer service representatives may use one or more

service representative workstations 54. The CRM system and the service representative workstation may be connected to one or more data networks 42 or the PSTN. Any other servers may also have connections to one or more service representative workstations, which may be in common or independent of each other.

3. One or more specialized service servers 50 may support specialized consumer and business services.

4. One or more location service servers 48 may supply location information and location based services. The location data is used as a data input to the location services that may then be distributed in any suitable manner including, on main speech processing units 128, mobile devices 36, TCUs 28, fixed personal computers 44, other servers (i.e. 46, 50, 52, 56) or the one or more location services servers 48.

5. One or more emergency services servers 46 may supply both public and private emergency services to the users.

[066] Main speech processing unit 98, speech unit 128 and keyboard 14 may be distributed in mobile devices 36 in a number of ways. For example, these units may be attached to the mobile devices 36 as independent components or as a single integrated component. In another embodiment of the invention, some or all of the main speech processing unit 98 and speech unit 128 may be embedded in one or more of the TCUs 28, mobile devices 36, fixed computer systems 44, or other devices.

[067] Figure 2 illustrates an alternative block diagram of a second embodiment of the invention. In this embodiment, the main speech processing unit 98 and speech unit 128 are external to the TCU 28. These components may be housed in one or more packages or may be included in a single integrated package.

[068] In all other respects, the second embodiment resembles the first embodiment illustrated in Figure 1. It will be understood that the exact distribution and packaging of the main speech processing unit 98 and speech unit 128 may be determined by the details of the deployment situation and should not change the functionality, capabilities or spirit of the invention in any way.

[069] Figure 3 illustrates a block diagram of one embodiment of the mobile devices 36 that include main speech processing unit 98 and speech unit 128 embedded in the mobile device 36, mobile telephone or other mobile device. The main speech processing unit may interface to one or more processing units 70 located in the mobile device 36. The processing units 70 may include one or more central processing units, one or more data and address busses, data interfaces, volatile memory, or other components. The processing units 70 may use one of more types of nonvolatile memory 80 for software and data storage. Suitable types of nonvolatile memory 80 may include flash memory and hard disk drives. In some embodiments, the main speech processing unit 98 may be integrated with the one or more processing units 70.

[070] According to one embodiment, users may interact with the mobile device 36 through the speech unit 128, the keypad 74 or keyboard, a display 72 that displays text, graphics, video, or other peripheral. In some embodiments the display may be a touch screen type. Alternatively, a pointing device (not shown) may be used, among other devices.

[071] The mobile device 36 may connect to one or more wired or wireless wide-area or local-area networks through one or more interfaces. A wide-area network transceiver 78 may connect to the wide-area wireless network 38 or the data network 42 using a wireless or wired connection, including an IP connection, a dial-up PSTN network connection or other connections. The local-area network transceiver 76 may connect to wired or wireless local area networks. These networks may include the handheld interface 20 or connections to fixed computer systems 44. In both mobile device environments and fixed computer environments, communications between humans and machines may not provide accurate results at least because natural language commands may be incomplete in their definition. The occurrence of inaccurate results may be reduced by leveraging context of previous utterances, knowledge of the domain and/or the user's history of interests and preferences or other factors.

[072] According to one embodiment of the invention, processing may be performed at the mobile devices 36. Alternatively, the processing may be performed on the server side. In yet another embodiment, the processing may occur on both the mobile devices 36 and the server side. The commands may be processed on-board the mobile devices 36 to enable the mobile

devices 36 to control themselves and/or to control other mobile devices 36, fixed computers 44, mobile telephones, or other devices. Additionally, mobile devices 36 may track context. According to another embodiment of the invention illustrated in FIG. 7, a context manager 702 may be centrally maintained to allow input to and output from 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 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), object code, or other data that may be specific to the mobile device 36.

[073] 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 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.

[074] 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.

[075] 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.

[076] According to another embodiment of the invention, mobile devices 36 may be configured to allow speech annotations of objects stored thereon. The objects may include photographs, calendar entries, email messages, instant messages, phonebook entries, voice mail entries, digital movies or other objects. Mobile devices 36 may transcribe the speech annotations to textual annotations and store the textual annotations with the object.

Alternatively, mobile devices 36 may be configured to enable users to input non-speech annotations, such as textual descriptions, that are stored along with the objects.

[077] According to one embodiment of the invention, the annotated objects may be stored on a server side, a client side, a combination of server side and client side, or according to other configurations. The invention further contemplates collaboratively exchanging and sharing the annotated objects among distributed workgroups that may include centralized servers having shared workspaces for providing common object storage and retrieval facilities. The shared workspaces may be implemented on the centralized servers and may be accessed from different platforms using the mobile devices 36. The system may include a peer-to-peer system for accessing the annotated objects.

[078] According to one embodiment of the invention, the non-speech annotations may be classified and searched. In an alternative embodiment, the speech annotations may be classified and searched. However, classifying and searching speech annotations may be considerably more difficult than classifying and searching non-speech annotations.

[079] According to another embodiment of the invention, the textual annotations and/or textual descriptions that are associated with the objects may be stored as metadata, thereby enabling searching for the objects using the metadata. The metadata may include GPS information, environmental information, geographic information, or other information. For example, proximity to famous landmarks may be determined using GPS information, environmental information, geographic information, or other information, and this information may be integrated into the metadata associated with the objects. According to one embodiment of the invention, GPS coordinates may be stored in the metadata associated with the objects and users may search for selected objects based on the GPS coordinates. A user may provide a speech command such as "show me all the photos of Greece." In this case, the system would limit the type of object to photographs and would determine the GPS coordinates of Greece. The system would then search the metadata for objects that correspond to photographs and that also satisfy GPS coordinates for Greece. According to another embodiment of the invention, including GPS coordinates in the metadata of objects enables post-processing of the objects based on the GPS coordinates. For example, the objects

may be subjected to an initial sort based on generalized GPS coordinates that are stored in the metadata and may be subjected to additional sorting based on more particular criteria for the GPS coordinates. Thus, a user may initially search for object metadata that corresponds to a location near a famous landmark and may use image matching to label the objects with the searchable metadata (i.e., textual descriptions). For example, using the GPS coordinates stored in the metadata, users may first determine that photographs were taken at the Jefferson Memorial and may use this information to label the photographs with searchable metadata (i.e., textual descriptions) including "photo of the Jefferson Memorial." One of ordinary skill in the art will readily appreciate that metadata may include various types of information and may be searched using the various types of information.

[080] According to one embodiment of the invention, the textual annotations may be communicated using a short message service on the mobile telephone or other device. Short message service is a text message service that enables sending and receiving of short textual messages. The textual messages may be stored at data centers for forwarding to intended recipients. Other configurations may be used.

[081] According to another embodiment of the invention, the mobile devices 36 may support multi-modal communications that enable displaying of non-speech search results on a graphical interface and receipt of speech commands to provide a follow-up search, among other configurations. For example, the user may be presented with textual search results corresponding to a name of a famous person and the user may provide a speech command to find a biography of the famous person. The system may maintain the context of the textual search results to find the biography associated with the famous person. By contrast, known systems may perform a follow-up search on the term "biography" and may present a dictionary definition of the term "biography."

[082] Figure 4 illustrates an embodiment that uses a fixed computer 44. In some embodiments, the main speech processing unit 98 and speech unit 128 may be embedded into the fixed computer 44. The main speech processing unit may interface with one or more processing units 84 that are associated with the fixed computer. The processing units may include one or more central processing units, one or more data and address busses, data

interfaces, volatile memory, or other components. The processing unit may use one of more types of nonvolatile memory 94 for software and data storage. Suitable types of nonvolatile memory include, for example, flash memory and hard disk drives. In some embodiments, the main speech processing unit 98 may be integrated with the one or more processing units 84. According to one embodiment of the invention, processing may be performed at the fixed computers 44. The commands may be processed on-board to enable the fixed computers 44 to control themselves and/or to control other fixed computers 44, mobile devices 36, mobile telephones, or other devices. Additionally, fixed computers 44 may track context as described above.

[083] According to another embodiment of the invention, fixed computers 44 may be configured to allow verbal annotations of objects stored thereon. Fixed computers 44 may transcribe the verbal annotation to text and store the textual annotation with the object. Alternatively, fixed computers 44 may be configured to enable users to manually input textual descriptions that are stored along with the objects. According to one embodiment of the invention, the textual annotations and/or textual descriptions may be classified and searched. In an alternative embodiment, fixed computers 44 may classify and search the verbal annotations rather than textual annotations. However, classifying and searching verbal annotations may be considerably more difficult than classifying and searching textual annotations and/or textual descriptions.

[084] In another embodiment of the invention, users may interact with fixed computers 44 using speech unit 128, the keyboard 88 or keypad, a display 86 for displaying text, graphics, video, or other peripherals. According to some embodiments of the invention, the display may be a touch screen type. Alternatively, a pointing device (not shown) may be used, along with other devices. Fixed computers 44 may be coupled to one or more wired or wireless wide-area or local-area networks through one or more interfaces. A wide-area transceiver 92 may connect to the wide-area wireless network 38 or the data network 42, using a wireless or wired connection, including an IP network, a dial-up PSTN network connection, or other connections. The local-area network transceiver 90 may connect to wired or wireless local area networks. These networks may include connections to mobile devices 36.

[085] In order for devices to properly respond to requests and/or commands that are submitted in a natural language form, machine processable requests and/or 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 requests or commands, there may not be a simple set of requests and/or algorithms that will return an adequate response. Several requests and algorithms may need to be initiated and even these requests 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 requests and/or algorithms, perhaps with several parts, may be generated to access multiple data sources that are located both locally or remotely. Not all of the data sources, requests and/or algorithms may return useful results or any results at all. 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 key words 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 requests do not return useful results or fail to produce results entirely. In cases where the command 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 should be returned to the user rapidly. Managing and evaluating complex and uncertain requests, while maintaining real-time performance, is a significant challenge.

[086] The invention provides a complete speech-based command generation, information query, retrieval, processing and presentation environment or a combination of speech-based and non-speech-based command generation, information query, retrieval, processing and presentation environment for telematic applications. 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 command, algorithm and response environment or a combination of speech-based and non-speech-based command, algorithm and response environment may be created.

[087] The telematic natural language interface may be deployed as part of, or a peripheral to a TCU or other mobile devices 36, as part of a mobile device interfaced to vehicle computers and other mobile system through wired, wireless, optical, or other types of connections or fixed computers interfaced to the vehicle computers or other systems through a combination of wired, wireless, optical and/or other types of connections. Alternatively, the components of the interactive natural language telematic interface may be distributed in any suitable manner between these multiple computing platforms.

[088] Figure 5 illustrates one exemplary schematic diagram view of a system 90 according to an embodiment of the invention. The system 90 may include a main unit 98, speech units 128, and multi-modal devices 155. In an alternative embodiment, the system 98 may include completely separate systems for main unit 98, speech units 128 and multi-modal devices 155. The event manager 100 may mediate interactions between components of 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 to maintain real-time response capabilities.

[089] FIG. 8 illustrates one exemplary embodiment of an enhanced conversational user interface 800 that receives multi-modal input from users 802 and communicates with a conversational speech analyzer 804. The conversational speech analyzer 804 may be coupled to several components, including a general cognitive model 806, an environmental model 808, a personalized cognitive model 810, and an adaptive misrecognition analysis engine 812 or other components. According to one embodiment of the invention, the conversational speech analyzer 804 may include one or more speech recognition engines that transcribe utterances to textual messages. The transcription may be performed using one or more conversational grammars, a context description grammar 112, or other transcription methods. According to one embodiment of the invention, data that is entered in a text format may be merged with

data that is transcribed to a textual format from the utterance. Conversational speech analyzer 804 also may include a semantic knowledge-based model that analyzes the textual message and detects command components.

[090] According to one embodiment of the invention, personalized cognitive model 810 is a model derived from a user's interaction pattern with the system and may be used to predict what actions the user may take next in time, thus assisting with speech recognition and/or question or command recognition. Personalized cognitive model 810 may track actions performed by the user. When the system is attempting to predict user behavior, the personalized cognitive model may be consulted first. The system may have multiple personalized cognitive models, wherein one may correspond to each user.

[091] According to another embodiment of the invention, general cognitive model 806 is a statistical abstract that corresponds to interaction patterns with the system for multiple users. Data stored within general cognitive model 806 may be used to predict a user's next action, thus assisting with speech recognition and/or question or command recognition. The general cognitive model 806 may also track what actions a particular user has performed and may be used when the user interacts with the system in a way that is not handled in the personalized cognitive model.

[092] According to one embodiment of the invention, the environmental model 808 may include information associated with the user's environment and surroundings. The information may include the type of environment that a user is in (e.g., quiet or noisy); details of a microphone and/or speaker system; the user's current global position and movement, as may be determined by GPS; current system status, such as what song/movie is playing, is the system in the midst of retrieving something, or other system status; details on all voice-enabled devices in the immediate vicinity, such as a presence of a voice-enabled TV, stereo, and DVD player in the same room; a user's credit card information, such as numbers and current balances, wherein the user may ask a mobile telephone to download and pay for a video and the system may respond that there are insufficient funds; or other information. The information may be accessed to invoke a context, domain knowledge, preferences, and/or other cognitive qualities that enhance the interpretation of questions and/or commands.

[093] The conversational speech analyzer 804 may also access the general cognitive model 806 and/or the personalized cognitive model 810 to further refine a context, domain knowledge, preferences, and/or other cognitive qualities to enhance the interpretation of questions and/or commands. Based on information received from general cognitive model 806, environmental model 808 and/or the personalized cognitive model 810, the system may enhance responses to commands and questions by including a prediction of user behavior.

[094] Adaptive Misrecognition Analysis Engine 812 may analyze and store textual messages, including transcribed utterances, that are identified as being unrecognized or incorrectly recognized by conversational speech analyzer 804. Upon a determination that text is unrecognized, the system may generate an unrecognized event. For example, an unrecognized event may result from not finding a match to text and/or the transcribed utterance.

[095] According to one embodiment of the invention, the system may implement one or more techniques to determine that textual messages are incorrectly recognized. For example, the user may command the system to play a specific song title and the system may misrecognize the requested song title and provide a song having a different title, the system may misrecognize an incorrect song title and provide a song having a different than requested title, the system may misrecognize a correct song title and provide a song having an invalid song title, among other variations. When the system misrecognizes a request, the user typically provides immediate feedback such as, overriding the command in a time shorter than the expected execution time of the command, repeating the original request, issuing a stop command, or taking other action, wherein the action may be presented verbally, non-verbally by pushing a selected button on a cell phone or remote control, or both, among other configurations. According to one embodiment of the invention, the system may detect the user action and may prompt the user to re-phrase the request to enable the system to modify words in the query. The user's actions may be analyzed in a statistical model to determine a frequency occurrence of misrecognitions for particular commands, with the results being used to update the corresponding personalized cognitive model 810.

[096] According to another embodiment of the invention, the conversational speech analyzer 804 may access the personalized cognitive model 810 to proactively select a next best (or nth

best) match for the received text. A match may be confirmed by user action that include the user not immediately canceling the command or taking other action. The misrecognitions may also be analyzed to potentially determine personalized tuning parameters for the speech recognition components of the system. For example, the system may, over time, tune the speech recognition engine to increase recognition by analyzing how the speech recognition engine misrecognizes the utterance.

[097] The event manager 100 may mediate interactions between other components of the invention. The event manager can provide a multi-threaded environment allowing the system to operate on multiple commands or questions from multiple user sessions without conflict and in an efficient manner, maintaining real-time response capabilities.

[098] Agents 106 may include a collection of grammars, criteria handlers, and algorithms that are accessible to respond to a set of requests and/or commands. Agents 106 may further 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 include 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 include personality characteristics for agents. 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.

[099] 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 may transmit 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.

[0100] 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.

[0101] 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, the 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 may 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.

[0102] According to one embodiment of the invention, coded speech received at the transceiver 126 on the main unit 98 is passed to the speech coder 122 for decoding and decompression. The decoded speech 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 requests 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.

[0103] 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 requests, 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 may generate 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.

[0104] 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 complement to the speech interface. For example, non-speech interface 114 may be used to present and interact with non-speech (e.g., graphical or tabular) information in a manner more easily understood by the user. According to one embodiment of the invention, multimodal 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 multimodal devices 155 and the main user interface system 90 to allow multimodal devices 155 to input text commands and questions. According to another embodiment of the invention, multimodal 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 multimodal 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.

[0105] 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.

[0106] According to another embodiment of the invention, system 90 may include different types of agents 106. In some embodiments of the invention, generic and domain specific behavior and information may be organized into domain agents 156. The system agent, on the other hand, may provide default functionality and basic services. The domain specific agents may provide complete, convenient and re-distributable packages or modules for each application area. In other words, the domain agents may 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 access a plurality of sources that may provide various services. Domain agents may use the services of other, typically more specialized, data managers and system agent. Agents are distributed and redistributed in a number of ways including on removable storage media, transfer over networks or attached to emails and other messages. The invention may provide license management capability allowing the sale of data managers by third parties to one or more users on a one time or subscription basis. In addition, users with particular expertise can create data managers, update existing data managers by adding new behaviors and information and making these data managers available to other users. A block diagram of the agent architecture according to an embodiment of the invention is shown in Figure 6.

[0107] 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.

[0108] 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.

[0109] 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.

[0110] 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.

[0111] 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 IP networks and 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.

[0112] 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 through 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.

[0113] 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.

[0114] 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. This process may be triggered, for example, when a query is made in a domain for which an agent is not available, when a new device is added to a mobile structure, or when the behavior of a mobile device is updated. 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.

[0115] 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.

[0116] The data used to configure data driven agents 156 may be structured in a manner to facilitate efficient evaluation and to help developers with organization. This data is used not only by the agent, but also in 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 may include questions or commands. Each command or question or group of commands or questions may include contexts used for creation of one or more requests. The domain agent 156 may pass 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 includes a grammar for the management and evaluation of the context stack.

2. Parameters and other operating data on devices that are under control of the natural language speech interface. The domain agent 156 may use this data and parameters to determine how to execute a command, how to formulate the command string for the parser 118, determine if the command is feasible, and determine if the command can be executed within safety and operating limits.

3. Page lists or pointers to other local or network content sources. For each page or content source, there may be a pointer (e.g. URL, URI, or other pointer) to the page or source. Each page may have specific scraping information used to extract the data of interest. The scraping information may include, for example, matching patterns, HTML or other format parsing information.

4. 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 may 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 be dependent on thresholds or probabilistic or fuzzy weights for the variables.

5. Substitution lists that include variable substitutions and transformations, often applied by the agents 150, 156 in the formatting of requests 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 HTML formatted page parsing and evaluation.

6. Personalities used for responses. Personalities can be 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.

7. 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 included in the user profile 110.

[0117] Commands and questions are interpreted, requests formulated, responses created and results presented can be based on the user's 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, domains of interest, or other factors. The personal profile data can 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, alerts or other preferences. User profile data can be manually entered by the user and/or can be learned by the system based on user behavior. User profile values can include: 1) spelling preferences; 2) date of birth for user, family and friends; 3) income level; 4) gender; 5) occupation; 6) location information such as, home address, neighborhood, and business address, paths traveled, locations visited; 7) vehicle type or types; 8) vehicle operator certifications, permits or special certificates; 9) history of commands and queries; 10) telecommunications and other service providers and services; 11) financial and investment information; 12) synonyms (i.e., a nick name for someone, different terms for the same item); 13) special spelling; 14) keywords; 15) transformation or substitution variables; 16) domains of interest; or, 17) other values.

[0118] End users may use the data driven agent 156 extension and modification facilities and values stored in user profiles 110 to create special reports, packages of queries, alerts and output formats. A single alert or report can be configured to use multiple data sources and other variables (i.e., time, location, measured value) value to determine when alerts should be sent. For example, an alert can be generated by sampling a stock price every 15 minutes and sending an alert if the price drops below some value. In another example, an alert may be

generated when a particular condition or combination of conditions occur for the vehicles. Alerts and reports can be directed to a local or remote output.

[0119] To create a report, the user may first specify a set of commands or questions. Next, the user can create or select a format for the report. Finally the user may name the report. A report can have variable parameters. For example, a user may create a company stock report and execute the report by stating its name and the company name, which gives the user selected information in a specified format for that company. In another example, a user can create a “morning” report, which presents selected multimedia information from different sources (news, sports, traffic, weather) in the order and formats desired. In yet another example, the user can create a report on the status of one or more vehicle systems. Alerts and reports can be created using only voice commands and responses, commands and responses through the graphical user interface 114, or a combination of the two. Reports can be run locally or remotely with respect to the vehicle. To create a report, alert, or other specialized behavior, the user performs a number of steps including: 1) specifying the command to run a report or alert; 2) specifying the question or questions, including keywords, used for a query; 3) setting the criteria for running the report such as on command or when a particular condition is met; 4) defining preferred information sources; 5) defining preferences for order of result evaluation by source, value, and other parameters; 6) specifying 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, 7) specifying the preferred format for the report, such as information to be presented, order of information to be presented, preferred abbreviations or other variable substitutions.

[0120] Filtering and noise elimination may be important in facilitating the various functionalities of system 90 and may improve operation in noisy mobile environments. 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 one 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.

[0121] Some embodiments of the invention may use one or more arrays 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 through 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 or from another user talking and detection of the user's speech.

[0122] The invention may use an analog or digital filter 132 between the array microphone or conventional microphone 134 and the speech coder 138. The pass band of the filter can be 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. One embodiment employs adaptive echo cancellation in the filter. The echo cancellation helps prevent cross talk between output from the text to speech engine and detection of the user's speech as well as suppression of environmentally caused echoes. Algorithms comparing the background noise to the signal received from the users speech may be used to optimize the band-shaping parameters of the adaptive filter.

[0123] 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 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 is optimized to preserve only the components of the speech signal required for optimal recognition.

Further, the lossy compression algorithms that may be used are designed to prevent even momentary gaps in the signal stream, which can cause 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.

[0124] The microphone can be complemented with an analog or digital (i.e., Voice over IP) speech interface. This interface allows a remote user to connect to the system and interact with it in the same manner possible if they were physically present.

[0125] In an alternative embodiment, the array microphone can be replaced by a set of physically distributed microphones or headsets worn by the users. The distributed microphones can be placed in different parts of a vehicle, different parts of a room or in different rooms of a building. The distributed microphones can create a three-dimensional array to improve signal to noise ratio. The headset can use a wireless or wired connection.

[0126] 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 can support a voice query language. The language may be structured to allow a variety of queries and commands 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 can provide a grammar to clearly specify the keyword used to determine the context and present a set of one or criteria or parameters. A user asking a question or stating a command in the voice query language may nearly always be guaranteed to receive a response.

[0127] 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-on questions can be asked using an abbreviated grammar, since key words 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.

[0128] The system 90, may provide built in training capabilities to help users 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.

[0129] 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.

[0130] 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").

[0131] According to another embodiment of the invention, the system 90 may employ a speech recognition engine 124 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.

[0132] For uncommon words or new vocabulary words, the user may be given the option to spell the words. The spelling can 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.

[0133] 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.

[0134] Once the words and phrases have been recognized by the speech recognition engine 120, the tokens and user identification may be passed to the parser 118. The parser examines the tokens for the questions or commands, context and criteria. The parser may determine a context for an utterance by applying prior probabilities or fuzzy possibilities to keyword matching, user profile 110, dialog history, and context stack contents. The context of a question or command may determine the domain and, thereby, the domain agent 156, if any, to be invoked. For example, a question with the keywords "temperature" implies a context value of weather for the question. Within a different dialog, the keyword "temperature" can imply a context for a measurement. 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.

[0135] 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.

[0136] 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.

[0137] 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 will preferably 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 may make use of the criteria handlers 152 supplied by the system agent. The criteria handlers can provide context sensitive procedures for extracting the criteria or parameters from the user's question or command. Some criteria may be determined by executing algorithms in the agent, while others may be determined by applying probabilistic or fuzzy reasoning to tables of possible values. Prior probabilities or fuzzy possibilities and associated values may be received from a number of sources including, for example, the history of the dialog, the user profile 110, and the agent. Based on user responses, the prior probabilities or fuzzy possibilities may be 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.

[0138] The criteria handlers 152 can operate iteratively or recursively on the criteria extracted to eliminate ambiguity. This processing may help reduce the ambiguity in the user's question or command. For example, if the user has a place name (or other proper noun) in their utterance the parser 118 can use services of the domain agent 156 to look up tables in the databases 102 for place names or can attempt to determine which word is the proper noun from the syntax of the utterance. In another example, the user asks, "what about flight one hundred and twenty too?" The parser and domain agent use flight information in the database and network information along with context to determine the most plausible interpretation among; flight 100 and flight 20 also, flight 100 and flight 22, flight 122, etc.

[0139] 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: 1) substituting a stock symbol for a company name or abbreviation; 2) substituting a numerical value for a word or words; 3) adding a zip code to an address; and, 4) changing a place or other name to a commonly used standard abbreviation.

[0140] 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 can evoke the correct agent to process the question or command.

[0141] Commands can be directed to the system 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.

[0142] Specific questions may be generally directed to one of the domain agents 156. The real-time selection of the correct agent allows the invention to dynamically switch contexts. Based on the question, command or context and the parameters or criteria, the domain agent may create 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 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.

[0143] 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 may be 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 can be 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 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, measurement data from sensors using various formats, device 32 setting parameters, entertainment audio, video and game files including MP3, databases using query languages and structured responses such as SQL, and other data sources.

[0144] 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. In other cases, local information can be obtained from vehicle system settings or measurement devices. Network information sources can be connected to, the control and device interfaces 30, the data interfaces 26, the Internet 42 or other network and accessed through a series of plug-ins or adaptors, known a pluggable sources, in the network interface 116. The pluggable sources are capable of executing the protocols and interpreting the data formats for the data sources of interest. The pluggable source provides information scrapping forms 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 appropriate interface.

[0145] The domain agent 156 can evaluate the results of the one or more queries as they arrive. The domain agent may score 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 may be 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.

[0146] Based on the on-going scoring processes, the domain agent 156 may determine if a single best answer can be extracted. For most questions, the desired result may include a set of tokens that may 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 may 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 include all the required information. Information sources to queries can be inferred from the results already obtained (i.e., links in an HTML document or measurements or settings from other devices 32) 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.

[0147] In any case, the domain agent 156 may continue to make queries and evaluate results until a satisfactory response is constructed. In doing so, the agent can start several 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.

[0148] The domain agent 156 may apply conditional scraping operations to each query response as it is received. The conditional scraping actions may depend on the context, the criteria, user profile 110, and domain agent coding and data. For each token to be extracted a scraping criteria 152 can 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 methods. One or more scraping criteria can be applied to a page or results set. Once additional results are received, the domain agent 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.

[0149] Specific commands are generally directed to one of the domain agents 156. The real-time selection of the correct agent allows the invention to dynamically switch contexts. Command oriented domain agents 156 evaluate the command and the state of vehicle systems, system capabilities, and measurements to determine if the command can be executed at all or if doing so will exceed operating or safety limits. If the command is ambiguous or cannot be executed for some other reason, the system may ask the user for more information or may suggest what the problem is and a likely approach to the solution. The domain agent may format the command for the specific device 32 and control and device interface 30. This formatting may involve variable substitution, inference of missing values and other formatting. Variable substitution and inference depends on the command context, the user profile 110, command history, state of vehicle systems and measured values, and other factors. A complex command can result in more atomic commands being sent to multiple devices, perhaps in a sequence. The sequence and nature of subsequent commands may depend on the previous commands, results of previous commands, device settings and other measurements. As a command is executed, measurements are made and results collected to determine if the execution was correct and the desired state or states were reached.

[0150] Once the domain agent 156 has created a satisfactory response to a question, or to a command, the agent may format that response for presentation. Typically, the domain agent

can format the response into the markup format used by the text to speech engine 124. The domain agent may format the result presentation using available format templates and based on the context, the criteria, and the user profile 110. The domain agent may perform variable substitutions and transformations to produce a response best understood and most natural to the user. The domain agent may vary the order of presentation of tokens and the exact terminology used to create a more natural response to the user. The domain agent may also select the presentation personality 108 to be used.

[0151] For both command and query responses, 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 can completely specify the presentation format or can be used to select and then modify an existing presentation format. Selection and formatting of presentation template can also depend on the presentation personality 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.

[0152] The domain agent 156 may apply a number of transformations to the tokens before presentation to the user. These variable substitutions and transformations may be derived from a number of sources including, domain information carried by the agent, the context, the token values, the criteria, the personality 108 to be used, and the user profile 110. Examples of variable substitutions and transformations include: 1) substitution of words for numbers; 2) substitution of names for acronyms or symbols (i.e., trading symbols); 3) use of formatting information derived from the information sources (i.e., HTML tags); 4) nature of the response including, text, long text, list, table; 5) possible missing information or errors; 6) units for measurement (i.e., English or metric); and, 7) preferred terminology from the user profile or presentation personality 108.

[0153] 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 can provide special criteria handlers 152 for presentation and user commands for large results sets. The presentation templates used by the domain agents 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 provide users with the capability to browse large results sets. Commands provided by the criteria handlers for large results sets include, stop, pause, skip, rewind, start, and forward.

[0154] Some information, in formats such as video, pictures and graphics, may be best presented in a displayed format. The domain agents 156 apply suitable presentation templates in these cases and present the information through the non-speech interface 114. The system agent 150 provides special criteria handlers 152 for presentation and user commands for display presentation and control.

[0155] Although particular embodiments of the invention have been shown and described, it will be understood that it is not intended to limit the invention to the embodiments that are disclosed and it will be obvious to those skilled in the art that various changes and modifications may be made without departing from the spirit and scope of the invention. Thus, the invention is intended to cover alternatives, modifications, and equivalents, which may be included within the spirit and scope of the invention as defined by the claims.

CLAIMS

What is claimed is:

1. A mobile device for processing multi-modal natural language inputs, comprising:
 - a conversational voice user interface that receives a multi-modal natural language input from a user, the multi-modal natural language input including a natural language utterance and a non-speech input, the conversational voice user interface coupled to a transcription module that transcribes the non-speech input to create a non-speech-based transcription;
 - a conversational speech analysis engine that identifies the user that provided the multi-modal natural language input, the conversational speech analysis engine using a speech recognition engine and a semantic knowledge-based model to create a speech-based transcription of the natural language utterance, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the identified user and the mobile device, a general cognitive model derived from one or more prior interactions between a plurality of users and the mobile device, and an environmental model derived from an environment of the identified user and the mobile device;
 - a merging module that merges the speech-based transcription and the non-speech-based transcription to create a merged transcription;
 - a knowledge-enhanced speech recognition engine that identifies one or more entries in a context stack matching information contained in the merged transcription and determines a most likely context for the multi-modal natural language input based on the identified entries; and
 - a response generating module that identifies a domain agent associated with the most likely context for the multi-modal input, communicates a request to the identified domain agent, and generates a response to the user from content provided by the identified domain agent as a result of processing the request.

2. The mobile device of claim 1, wherein the response includes an aggregation of content gathered when the identified domain agent processes the request.
3. The mobile device of claim 1, wherein the conversational speech analysis engine supports interactions with the plurality of users during an overlapping session.
4. The mobile device of claim 1, wherein the conversational speech analysis engine supports interactions with the plurality of users during an interleaved session.
5. The mobile device of claim 4, wherein the mobile device processes queries in an order of receipt during the interleaved session.
6. The mobile device of claim 4, wherein the mobile device processes queries in an order determined by a length of the queries during the interleaved session.
7. The mobile device of claim 1, wherein the conversational speech analysis engine identifies the user based on at least one of voiceprint matching, password matching, or pass-phrase matching.
8. The mobile device of claim 1, wherein the conversational voice user interface subsequently receives one or more follow-up multi-modal inputs, the follow-up multi-modal inputs including at least one of a follow-up natural language utterance or a follow-up non-speech input.
9. The mobile device of claim 8, wherein the identified domain agent updates the context stack and the semantic knowledge-based model in response to processing the request.

10. The mobile device of claim 9, wherein the knowledge-enhanced speech recognition engine determines a most likely context for the follow-up multi-modal input using the updated context stack.

11. The mobile device of claim 9, wherein the conversational speech analysis engine creates a speech-based transcription of the follow-up natural language utterance using the updated semantic knowledge-based model.

12. The mobile device of claim 1, wherein the identified domain agent processes the request by querying one or more local or network information sources.

13. The mobile device of claim 12, wherein one or more of the local or network information sources includes an Internet browsing service.

14. The mobile device of claim 1, wherein the identified domain agent processes the request by directing a command to one or more local or remote devices.

15. A system for processing multi-modal natural language inputs, comprising:
a plurality of mobile devices that support multi-modal natural language interactions with a user;
a context manager communicatively coupled to the plurality of mobile devices, wherein the context manager synchronizes a semantic knowledge-based model and a context stack among the plurality of mobile devices, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the user and one or more of the mobile devices, a general cognitive model derived from one or more prior interactions between a plurality of users and one or more of the mobile devices, and an environmental model derived from an environment of the user and one or more of the mobile devices;

a conversational voice user interface communicatively coupled to one or more of the plurality of mobile devices, wherein the conversational voice user interface receives a multi-modal natural language input from the user that includes at least a natural language utterance;

a conversational speech analysis engine that identifies the user that provided the multi-modal input, the conversational speech analysis engine using a speech recognition engine and the semantic knowledge-based model to create a speech-based transcription of the natural language utterance;

a knowledge-enhanced speech recognition engine that identifies one or more entries in a context stack matching information contained in the speech-based transcription and determines a most likely context for the multi-modal natural language input based on the identified entries; and

a response generating module that identifies a domain agent associated with the most likely context for the multi-modal input, communicates a request to the identified domain agent, and generates a response to the user from content provided by the identified domain agent as a result of processing the request.

16. The system of claim 15, wherein the plurality of mobile devices register with the context manager and subscribe to one or more events that the context manager broadcasts.

17. The system of claim 16, wherein the context module receives an input from one or more of the mobile devices that updates at least one of the semantic knowledge-based model or the context stack.

18. The system of claim 17, wherein the context module broadcasts an event relating to the received input to the subscribed mobile devices.

19. A method for processing multi-modal natural language inputs, comprising:
- receiving a multi-modal natural language input at a conversational voice user interface, the multi-modal input including a natural language utterance and a non-speech input provided by a user, wherein a transcription module coupled to the conversational voice user interface transcribes the non-speech input to create a non-speech-based transcription;
 - identifying the user that provided the multi-modal input;
 - creating a speech-based transcription of the natural language utterance using a speech recognition engine and a semantic knowledge-based model, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the identified user and the conversational voice user interface, a general cognitive model derived from one or more prior interactions between a plurality of users and the conversational voice user interface, and an environmental model derived from an environment of the identified user and the conversational voice user interface;
 - merging the speech-based transcription and the non-speech-based transcription to create a merged transcription;
 - identifying one or more entries in a context stack matching information contained in the merged transcription;
 - determining a most likely context for the multi-modal input based on the identified entries;
 - identifying a domain agent associated with the most likely context for the multi-modal input;
 - communicating a request to the identified domain agent; and
 - generating a response to the user from content provided by the identified domain agent as a result of processing the request.

20. The method of claim 19, wherein the generated response includes an aggregation of content gathered when the identified domain agent processes the request.
21. The method of claim 19, wherein the conversational voice user interface supports interactions with the plurality of users during an overlapping session.
22. The method of claim 19, wherein the conversational voice user interface supports interactions with the plurality of users during an interleaved session.
23. The method of claim 22, wherein queries are processed in an order of receipt during the interleaved session.
24. The method of claim 23, wherein queries are processed in an order determined by a length of the queries during the interleaved session.
25. The method of claim 19, further comprising verifying an identity of the user based on voiceprint matching, password matching, or pass-phrase matching.
26. The method of claim 19, further comprising receiving one or more follow-up multi-modal inputs at the conversational voice user interface, the follow-up multi-modal inputs including at least one of a follow-up natural language utterance or a follow-up non-speech input.
27. The method of claim 26, wherein the identified domain agent updates the context stack and the semantic knowledge-based model in response to processing the request.

28. The method of claim 27, wherein the knowledge-enhanced speech recognition engine determines a most likely context for the follow-up multi-modal input using the updated context stack.

29. The method of claim 27, wherein the speech recognition engine creates a speech-based transcription of the follow-up natural language utterance using the updated semantic knowledge-based model.

30. The method of claim 19, wherein the identified domain agent processes the request by querying one or more local or network information sources.

31. The method of claim 30, wherein one or more of the local or network information sources includes an Internet browsing service.

32. The method of claim 19, wherein the identified domain agent processes the request by directing a command to one or more local or remote devices.

ABSTRACT

A mobile system is provided that includes speech-based and non-speech-based interfaces for telematics applications. The mobile system identifies and uses context, prior information, domain knowledge, and user specific profile data to achieve a natural environment for users that submit requests and/or commands in multiple domains. The invention creates, stores and uses extensive personal profile information for each user, thereby improving the reliability of determining the context and presenting the expected results for a particular question or command. The invention may organize domain specific behavior and information into agents, that are distributable or updateable over a wide area network.

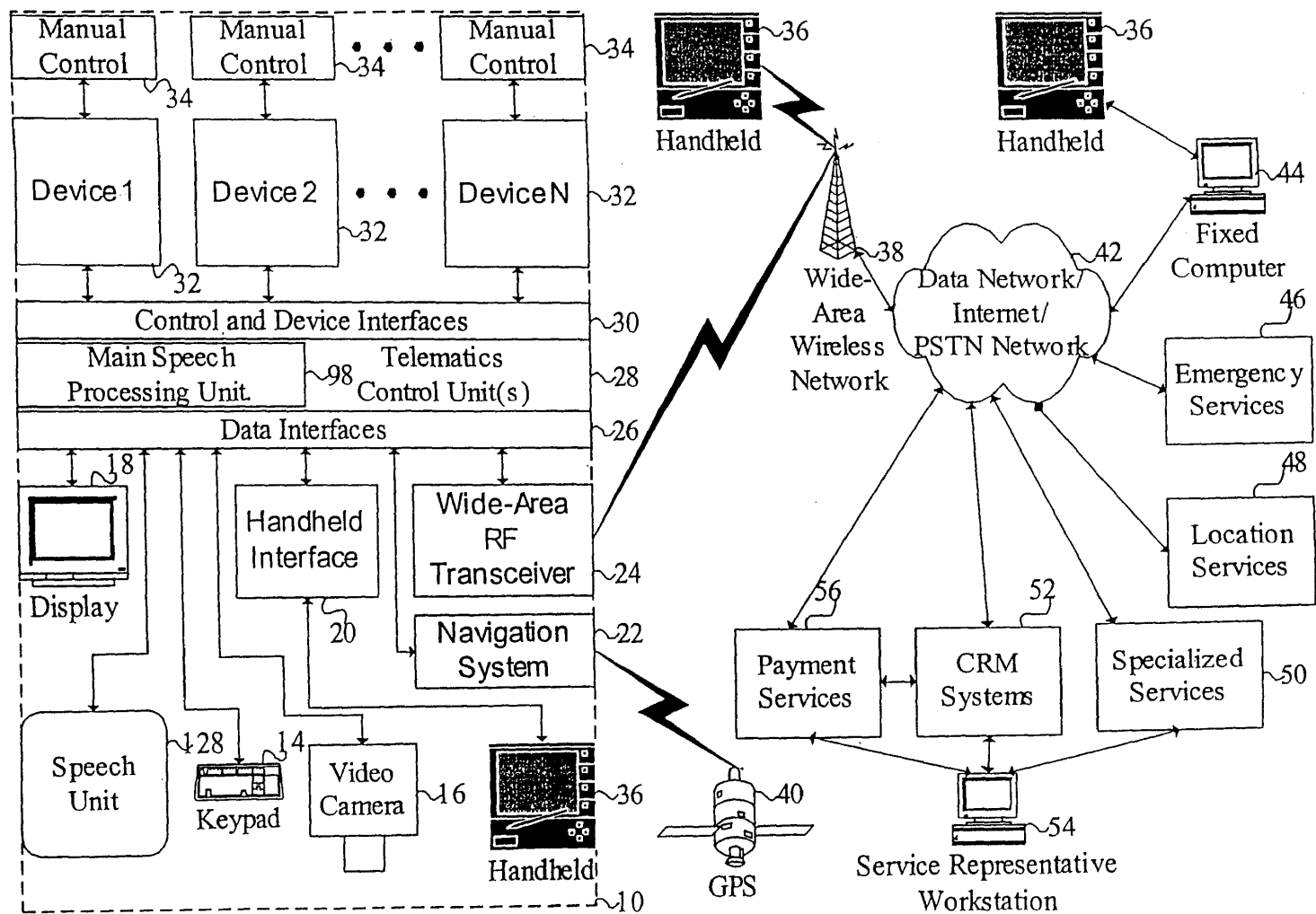


Figure 1

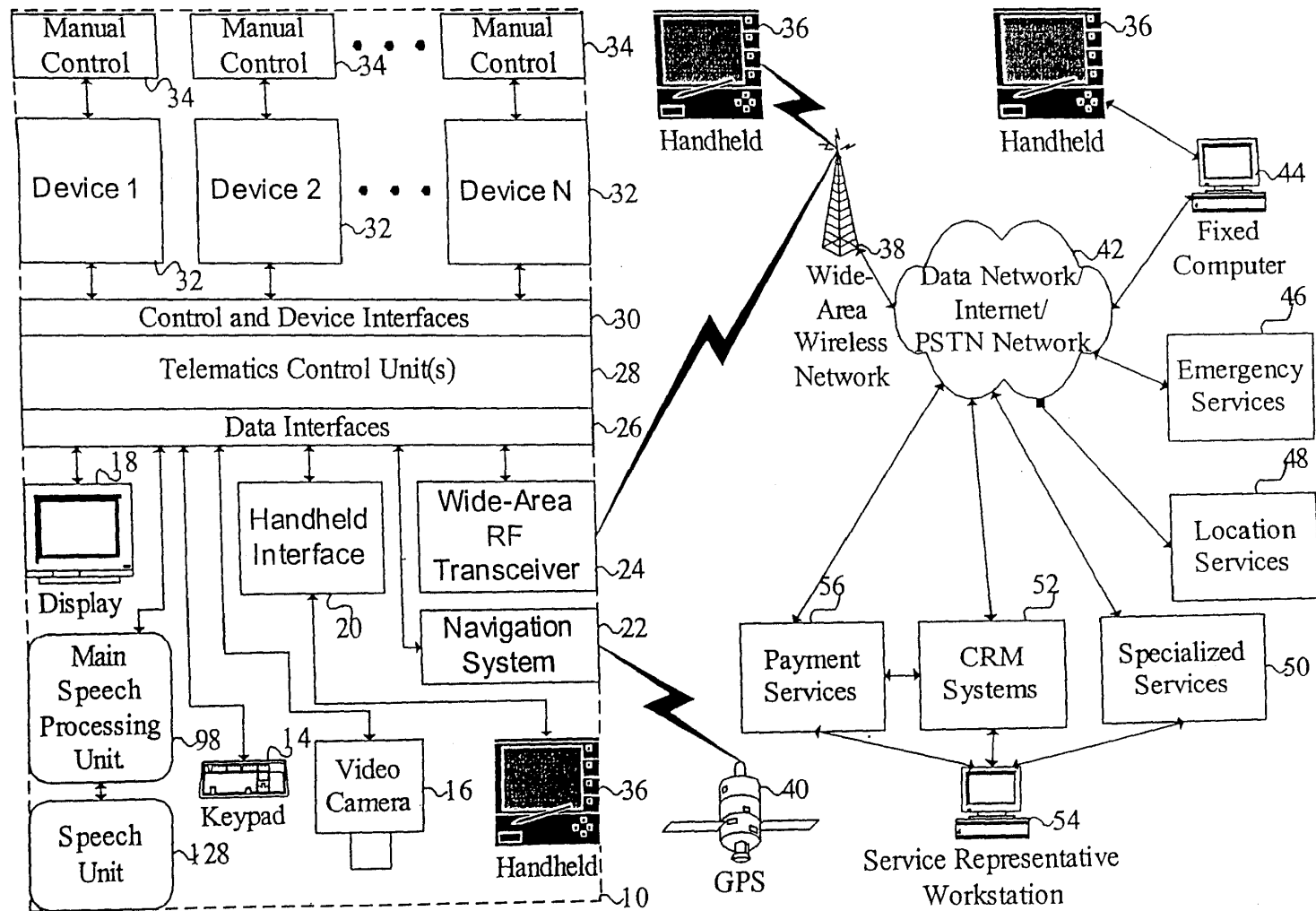


Figure 2

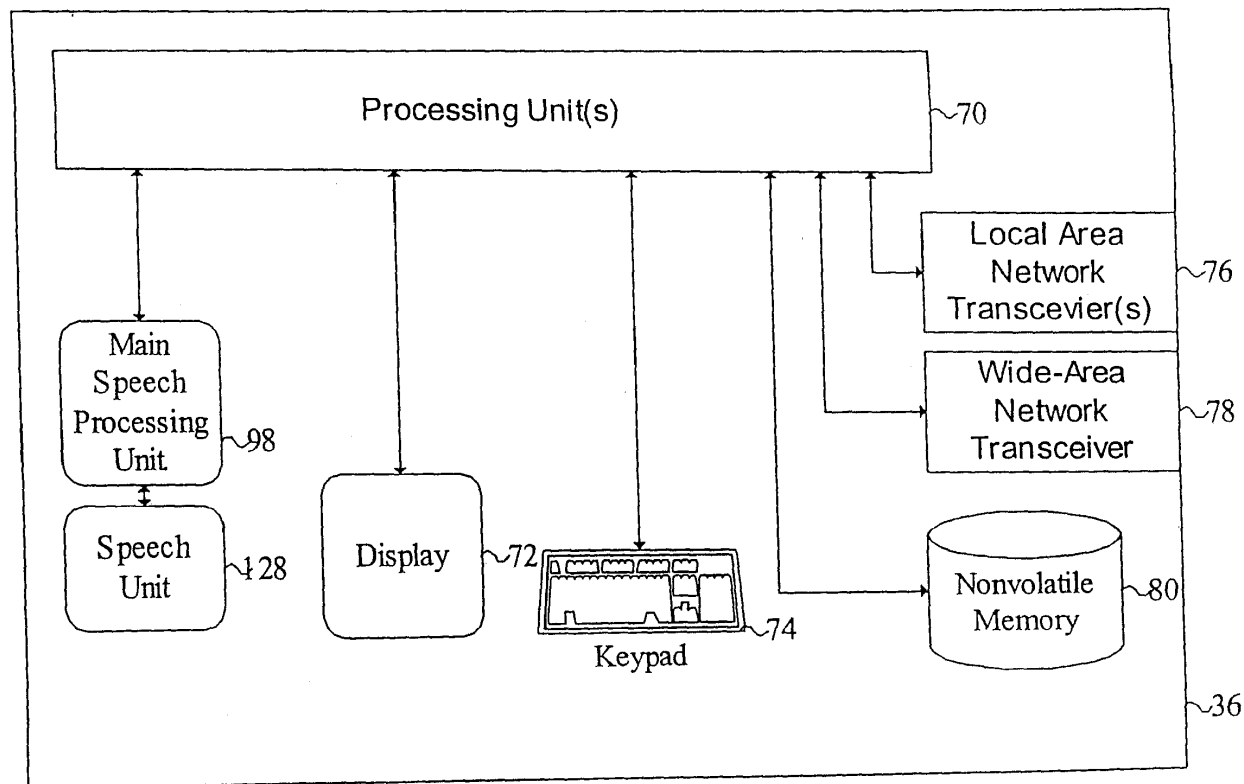


Figure 3.

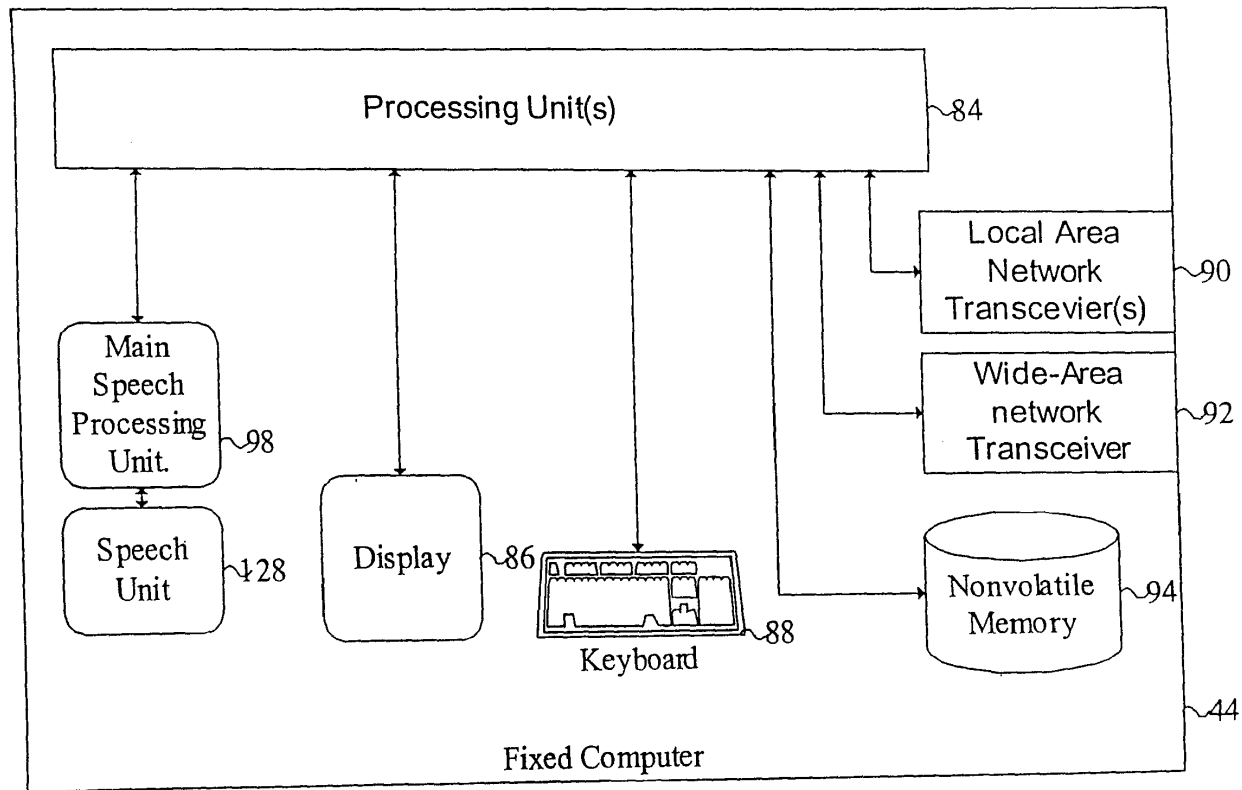


Figure 4

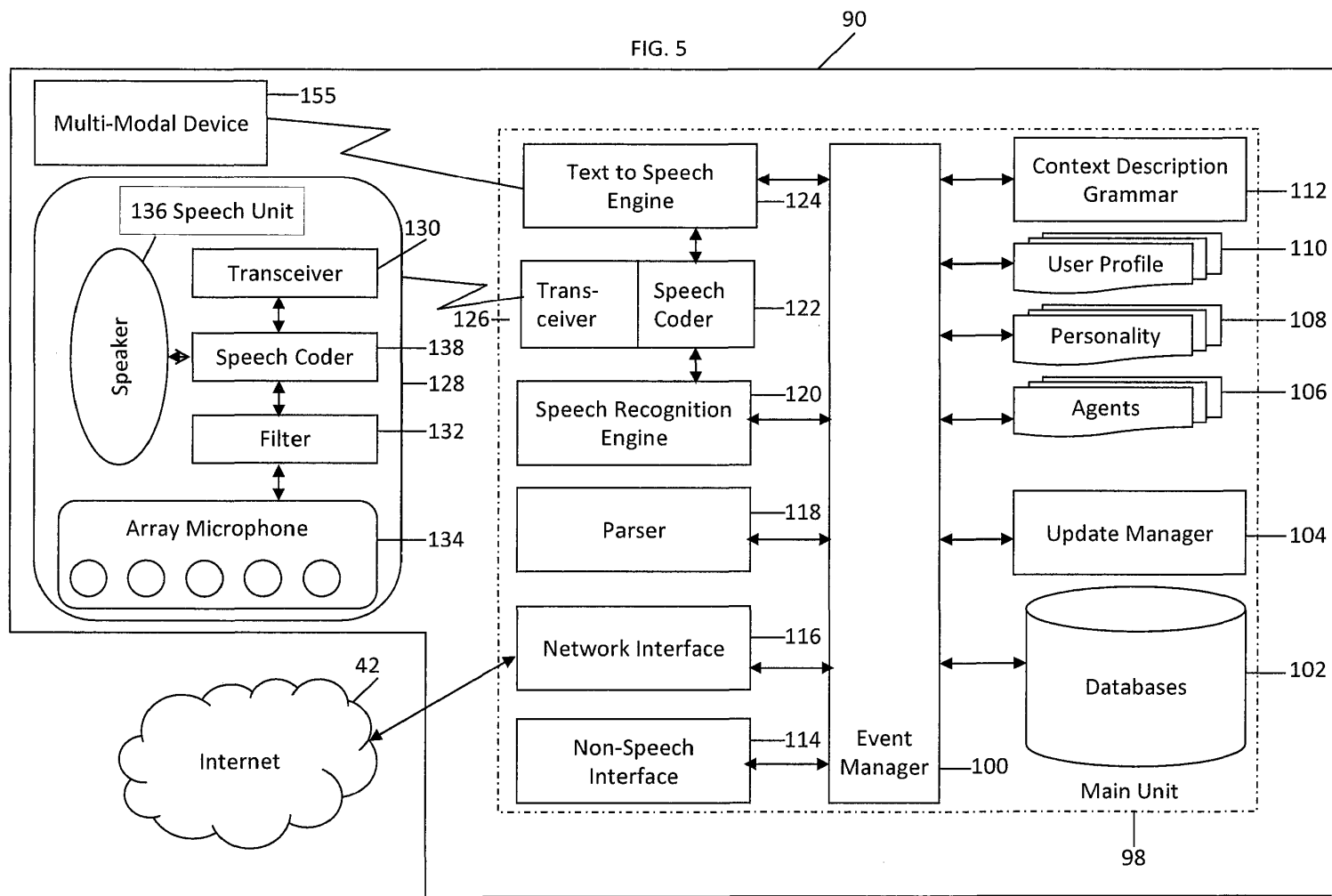


FIG. 6

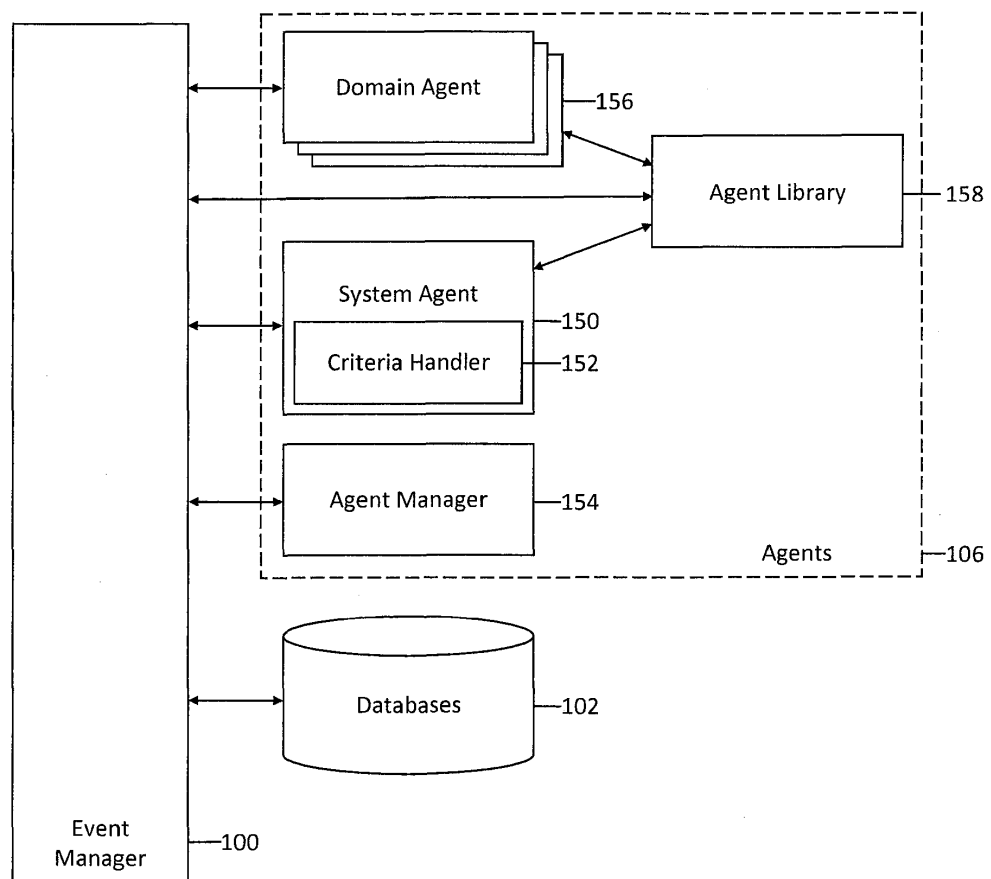
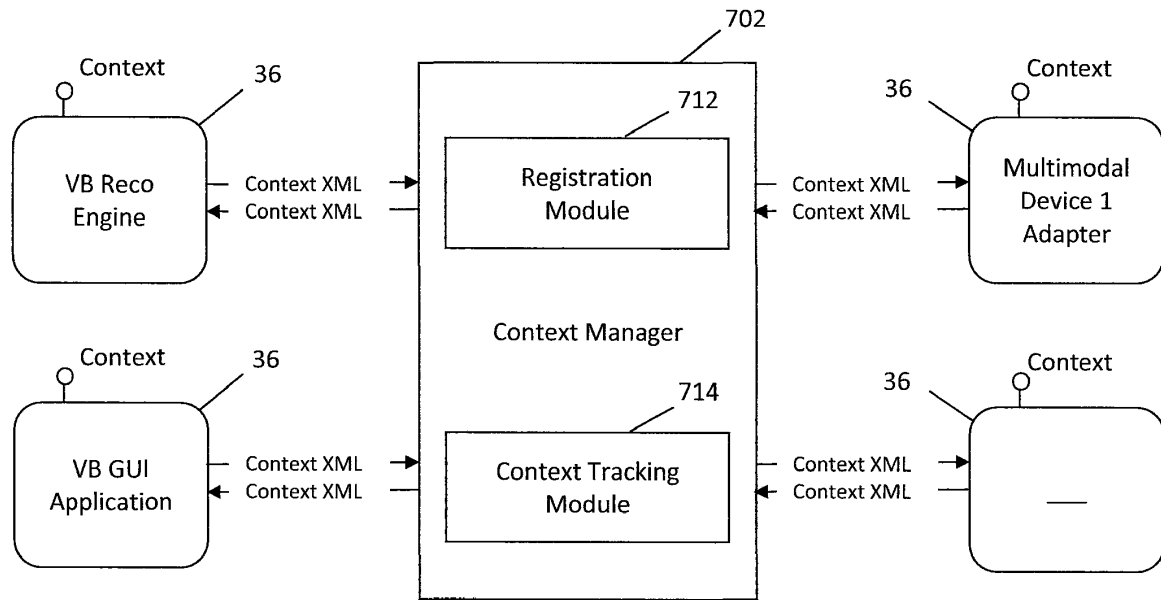


FIG. 7

700



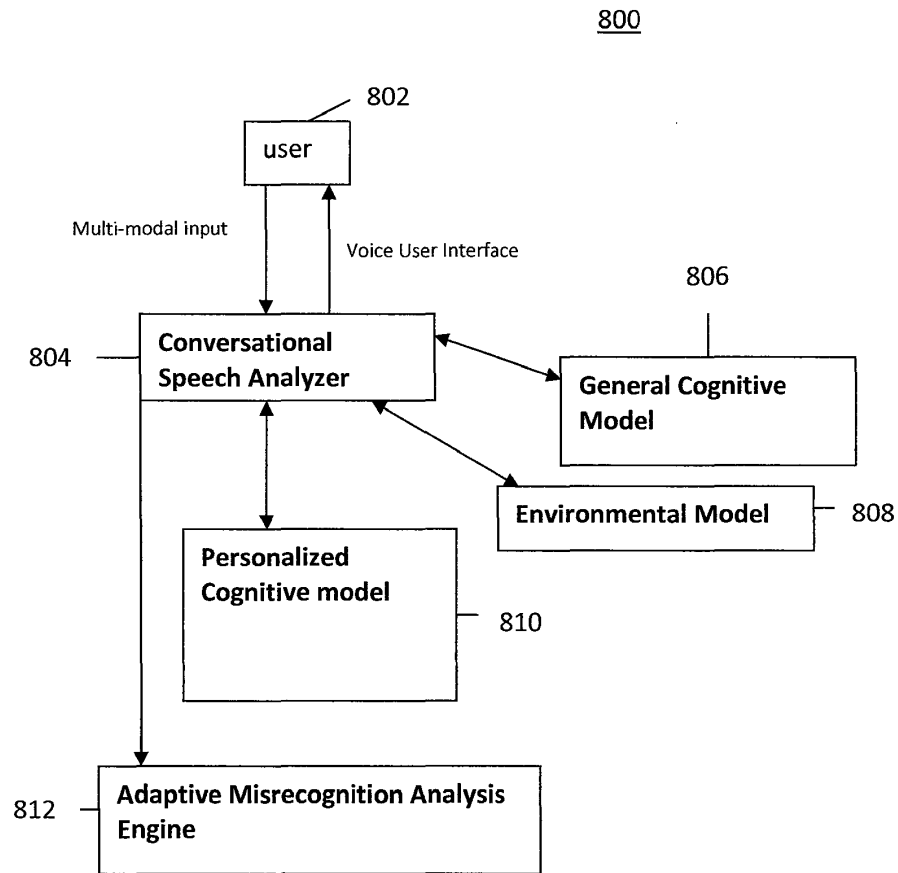


FIGURE 8

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		
First Named Inventor/Applicant Name:		Chris Weider		
Filer:		Syed Jafar Ali/Miriam E. Nelsen		
Attorney Docket Number:		090611-0393260		
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	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Claims in excess of 20	2202	12	26	312
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				774

Electronic Acknowledgement Receipt	
EFS ID:	9854412
Application Number:	13084197
International Application Number:	
Confirmation Number:	9666
Title of Invention:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
First Named Inventor/Applicant Name:	Chris Weider
Customer Number:	00909
Filer:	Syed Jafar Ali/Miriam E. Nelsen
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0393260
Receipt Date:	11-APR-2011
Filing Date:	
Time Stamp:	16:58:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$774
RAM confirmation Number	3878
Deposit Account	033975
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		090611-0393260_ApplicationP apers.pdf	1097422	yes	24
			619a02c6433edbfdc614c1945db7440763a b2c17		
	Multipart Description/PDF files in .zip description				
	Document Description		Start		End
	Transmittal of New Application		1		1
	Application Data Sheet		2		4
	Oath or Declaration filed		5		6
	Power of Attorney		7		9
	Transmittal Letter		10		11
	Information Disclosure Statement (IDS) Filed (SB/08)		12		24
Warnings:					
Information:					
2	Foreign Reference	090611-0393260_EP1646037. pdf	262902	no	20
			56537431a1754beec4b827cf69e772a2da1 4c1a8		
Warnings:					
Information:					
3		090611-0393260_Specification. pdf	3268537	yes	67
			8826395c3ed757254203d073859939f95ef f3ca		
	Multipart Description/PDF files in .zip description				
	Document Description		Start		End
	Specification		1		59
	Claims		60		66
	Abstract		67		67
Warnings:					
Information:					
4	Drawings-only black and white line drawings	090611-0393260_Drawings.pdf	174492	no	8
			41b701ba4879389ba696d6954975208f625 8b944		

Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	36643	no	2
			585fcc085459fce52b5b031d46f2d45403b1492b		
Warnings:					
Information:					
			Total Files Size (in bytes):	4839996	
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.					

Attorney Docket No. 090611-0316779

COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION

As the below named inventors, we hereby declare that:

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

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

**"MOBILE SYSTEMS AND METHODS OF SUPPORTING
NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS"**

the specification of which is attached hereto.

We have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above;

We acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information which is known to us to be material to the patentability of said invention in accordance with 37 C.F.R. § 1.56;

We do not know and do not believe said invention was ever known or used in the United States of America before our invention thereof, or patented or described in any printed publication in any country before our invention thereof or more than one year prior to said application; that said invention was not in public use or on sale in the United States of America more than one year prior to said application; that said invention has not been patented or made the subject of an inventor's certificate issued before the date of said application in any country foreign to the United States of America on any application filed by us or our legal representatives or assigns more than six months prior to said application;

We hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

(Application Number)

(Filing Date) (day, month, year)

Attorney Docket No. 090611-0316779

We hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

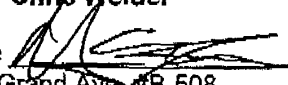
James G. Gatto	Registration No. 32,694
Rick A. Toering	Registration No. 43,195
Bradford C. Blaise	Registration No. 47,429
Sean L. Ingram	Registration No. 48,283

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

00909

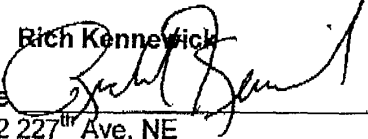
We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment,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

**Full name of
first inventor:** Chris Weider

Inventor's signature 
Residence: 2818 Grand Ave, #B-508
Everett, Washington 98201
Citizen of: United States of America
Post Office Address: Same as residence

Date 8/26/05

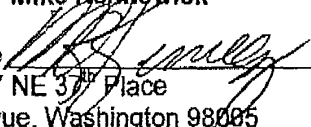
**Full name of
second inventor:** Rich Kennewick

Inventor's signature 
Residence: 14222 227th Ave. NE
Woodinville, Washington 98077
Citizen of: United States of America
Post Office Address: Same as residence

Date 8/26/05

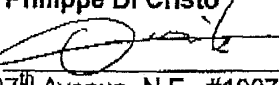
Attorney Docket No. 090611-0316779

Full name of
third inventor: Mike Kennewick

Inventor's signature 
Residence: 13407 NE 37th Place
Bellevue, Washington 98005
Citizen of: United States of America
Post Office Address: Same as residence

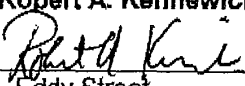
Date 8/24/05

Full name of
fourth inventor: Philippe Di Cristo

Inventor's signature 
Residence: 177 107th Avenue, N.E., #1007
Bellevue, Washington 98004
Citizen of: France
Post Office Address: Same as residence

Date 8/26/05

Full name of
fifth inventor: Robert A. Kennewick

Inventor's signature 
Residence: 2204 S. Eddy Street
Seattle, Washington 98108
Citizen of: United States of America
Post Office Address: Same as residence

Date 8/26/05

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Chris WEIDER <i>et al.</i>	CONFIRMATION No.:	To be Determined
SERIAL NUMBER :	To be Determined	EXAMINER:	To be Determined
FILING DATE :	Herewith (April 11, 2011)	ART UNIT:	To be Determined
FOR :	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		

INFORMATION DISCLOSURE STATEMENT (IDS)

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

Sir:

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

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

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

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).

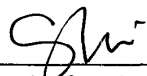
All the foreign patent documents (except Document No. 1X) and all the non-patent literature documents ("Other Documents") were cited by or submitted to the Office in Application No. 11/212,693, filed August 29, 2005, which is relied upon for an earlier filing date under 35 U.S.C. § 120. Thus copies of 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

Customer No.
00909

By 
Syed Jafar Ali
Registration No.: 58,780

P. O. Box 10500
McLean, Virginia 22102
Telephone: (703) 770-7900
Telefax: (703) 770-7901

Dated: April 11, 2011

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/084,197			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)	RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	82	N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A	270	N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	110	N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	32	minus 20 =	*	x 26 =	312	OR			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	*	x 110 =	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 \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				0.00				
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					0.00				
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	774	TOTAL			
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL		ADD'L FEE		TOTAL		ADD'L FEE			
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL		ADD'L FEE		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.									



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
13/084,197	04/11/2011	2626	774	090611-0393260	32	3

CONFIRMATION NO. 9666

909

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

FILING RECEIPT



OC000000047346093

Date Mailed: 04/28/2011

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

Applicant(s)

Chris Weider, Everett, WA;
Richard Kennewick, Woodinville, WA;
Mike Kennewick, Bellevue, WA;
Philippe Di Cristo, Bellevue, WA;
Robert A. Kennewick, Seattle, WA;
Samuel Menaker, Bellevue, WA;
Lynn Elise Armstrong, Woodinville, WA;

Assignment For Published Patent Application

VoiceBox Technologies, Inc., Kirkland, WA

Power of Attorney:

James Gatto--32694
Rick Toering--43195
Bradford Blaise--47429
Sean Ingram--48283

Domestic Priority data as claimed by applicant

This application is a CON of 11/212,693 08/29/2005

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

If Required, Foreign Filing License Granted: 04/25/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/084,197**

Projected Publication Date: Perfected

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

Preliminary Class

704

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.

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

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/084,197			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)	RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	82	N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A		N/A	270	N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	110	N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	32	minus 20 =	*	x 26 =	312	OR			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	*	x 110 =	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 \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				0.00				
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					0.00				
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	774	TOTAL			
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
				TOTAL ADD'L FEE		TOTAL ADD'L FEE			
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		
	Application Size Fee (37 CFR 1.16(s))								
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
				TOTAL ADD'L FEE		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.									



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
13/084,197	04/11/2011	2626	774	090611-0393260	32	3

CONFIRMATION NO. 9666

909

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

FILING RECEIPT



OC000000047346093

Date Mailed: 05/18/2011

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

Applicant(s)

Chris Weider, Everett, WA;
Richard Kennewick, Woodinville, WA;
Mike Kennewick, Bellevue, WA;
Philippe Di Cristo, Bellevue, WA;
Robert A. Kennewick, Seattle, WA;
Samuel Menaker, Bellevue, WA;
Lynn Elise Armstrong, Woodinville, WA;

Assignment For Published Patent Application

VoiceBox Technologies, Inc., Kirkland, WA

Power of Attorney:

James Gatto--32694
Rick Toering--43195
Bradford Blaise--47429
Sean Ingram--48283

Domestic Priority data as claimed by applicant

This application is a CON of 11/212,693 08/29/2005 PAT 7,949,529

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

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/084,197**

page 1 of 3

Projected Publication Date: 08/25/2011

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

Preliminary Class

704

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS :	Chris WEIDER <i>et al.</i>	CONFIRMATION NO. :	9666
SERIAL NUMBER :	13/084,197	EXAMINER :	<i>Unassigned</i>
FILING DATE :	April 11, 2011	ART UNIT :	2626
FOR :	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		

REQUEST FOR CORRECTED FILING RECEIPT

Office of Initial Patent Examination's
Filing Receipt Corrections
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached is a copy of the Official Filing Receipt received from the U.S. Patent and Trademark Office in the above-referenced application for which issuance of a corrected filing receipt is respectfully requested. There is an error with respect to the following data which is inaccurate:

Error in

Domestic Priority data as claimed by applicant

Correct Data

This application is a DIV of 11/212,693 08/29/2005 PAT 7,949,529

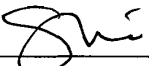
The present application is a **divisional** of Application Serial No. 11/212,693, filed August 29, 2005. However, the Filing Receipt mailed May 18, 2011 incorrectly lists this application as a continuation of Application Serial No. 11/212,693. The Domestic Priority Data should be corrected to recite the fact that the present application is a divisional application.

Although Applicants believe no fee is due in connection with this filing, the Commissioner is authorized to charge any additional fees that may be due to Deposit Account No. 03-3975, Ref. No. 090611-0393260.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

Customer No.
00909

By 
Syed Jafar Ali
Registration No.: 58,780

P. O. Box 10500
McLean, Virginia 22102
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Dated: June 14, 2011

COPY



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CONFIRMATION NO. 9666

FILING RECEIPT



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Assignment For Published Patent Application

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page 1 of 3

Projected Publication Date: 08/25/2011

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

Preliminary Class

704

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Electronic Acknowledgement Receipt	
EFS ID:	10299460
Application Number:	13084197
International Application Number:	
Confirmation Number:	9666
Title of Invention:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
First Named Inventor/Applicant Name:	Chris Weider
Customer Number:	00909
Filer:	Syed Jafar Ali/Susan Trader
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0393260
Receipt Date:	14-JUN-2011
Filing Date:	11-APR-2011
Time Stamp:	14:44:07
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	Request for Corrected Filing Receipt	0393260_Request.pdf	206831 60767eb76934521a116634c54759c7c68c52b9b0	no	5

Warnings:

Information:

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.

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



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CONFIRMATION NO. 9666

CORRECTED FILING RECEIPT

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



OC000000048223948

Date Mailed: 06/16/2011

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Projected Publication Date: 09/22/2011

Non-Publication Request: No

Early Publication Request: No

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/084,197	04/11/2011	Chris Weider	090611-0393260

CONFIRMATION NO. 9666

909

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

PUBLICATION NOTICE



OC000000049977268

Title:MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

Publication No.US-2011-0231182-A1

Publication Date:09/22/2011

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 publicly available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

909 7590 11/03/2011
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

EXAMINER

YEN, ERIC L

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 11/03/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666
TITLE OF INVENTION: MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	02/03/2012

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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

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

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

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or **Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

909 7590 11/03/2011
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666

TITLE OF INVENTION: MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

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nonprovisional	YES	\$870	\$300	\$0	\$1170	02/03/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
YEN, ERIC L	2626	704-226000

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, 1 _____

(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. 2 _____

3 _____

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

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

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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



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.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666
909	7590	11/03/2011	EXAMINER	
Pillsbury Winthrop Shaw Pittman, LLP (NV)			YEN, ERIC L	
PO Box 10500			ART UNIT	PAPER NUMBER
McLean, VA 22102			2626	

DATE MAILED: 11/03/2011

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

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

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

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	13/084,197	WEIDER ET AL.	
	Examiner	Art Unit	
	ERIC YEN	2626	

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

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

1. ☐ This communication is responsive to ____.

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 1-32.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

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

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.

(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application 6. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____ . 7. ☐ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other ____ .
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DETAILED ACTION

Allowable Subject Matter

1. Claims 1-32 are allowed.
2. The following is an examiner's statement of reasons for allowance:

The prior art of record does not teach the combination of limitations in independent claims (1, 15, 19), including multi-modal natural language speech and non-speech input being transcribed and merged, identifying a user with a conversational speech analysis engine which uses a semantic knowledge-based model including a personalized cognitive model derived from one or more prior interactions between the identified user and the mobile device, a general cognitive model derived from one or more prior interactions between a plurality of users and the mobile device, and an environmental model derived from an environment of the identified user and the mobile device, and a knowledge-enhanced speech recognition engine that identifies one or more entries in a context stack matching information contained in the merged transcription and determines a most likely context for the multi-modal natural language input based on the identified entries, and response generation by a domain agent associated with the most likely context identified by the system, where the domain agent receives a request.

Johnson (US 5,748,974) teaches multi-modal inputs by a natural language processor and combining speech and non-speech inputs (col. 3, line 62 - col. 4, line 17)

Rahim (US 5,960,397) teaches speech recognition with an environmental model derived from the environment to adapt and perform parallel model combination to improve recognition in noise.

Kennewick et al. (US 2004/0044516, publication date over 1 year prior to filing date of earliest case) teaches domain agents which correspond to particular contexts used to interact with users (paragraphs 152-153, 155).

Walker et al. (US 7,516,076) teaches discourse history where a natural language system designed to interact with a user takes into account prior dialog exchanges between the system and user, and also a training database that is derived from human users during training (a form of “general” database) (col. 3, lines 49-53).

Takabayashi et al. (US 5,357,596) teaches semantics using a dialog history (“semantic... dialogue history”, col. 11, lines 5-14).

The prior art of record does not teach the combination of all of the teachings in the various references.

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

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC YEN whose telephone number is (571)272-4249. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. 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.

EY 10/23/11
/Eric Yen/
Primary Examiner, Art Unit 2626

Notice of References Cited	Application/Control No. 13/084,197		Applicant(s)/Patent Under Reexamination WEIDER ET AL.	
	Examiner ERIC YEN		Art Unit 2626	Page 1 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,748,974	05-1998	Johnson, David Edward	704/9
*	B	US-5,960,397	09-1999	Rahim, Mazin G.	704/244
*	C	US-6,188,982	02-2001	Chiang, Tung-Hui	704/256.5
*	D	US-6,266,636	07-2001	Kosaka et al.	704/244
*	E	US-7,072,834	07-2006	Zhou, Guojun	704/244
*	F	US-7,043,425	05-2006	Pao, Hongchang	704/211
*	G	US-6,067,513	05-2000	Ishimitsu, Shunsuke	704/233
*	H	US-6,868,380	03-2005	Kroeker, John	704/240
*	I	US-6,959,276	10-2005	Droppo et al.	704/226
*	J	US-7,107,210	09-2006	Deng et al.	704/226
*	K	US-7,165,028	01-2007	Gong, Yifan	704/233
*	L	US-6,377,913	04-2002	Coffman et al.	704/8
*	M	US-7,069,220	06-2006	Coffman et al.	704/275

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 13/084,197		Applicant(s)/Patent Under Reexamination WEIDER ET AL.	
	Examiner ERIC YEN		Art Unit 2626	Page 2 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,137,126	11-2006	Coffman et al.	719/328
*	B	US-2004/0044516	03-2004	Kennewick et al.	704/005
*	C	US-7,516,076	04-2009	Walker et al.	704/275
*	D	US-7,574,362	08-2009	Walker et al.	704/275
*	E	US-7,729,918	06-2010	Walker et al.	704/275
*	F	US-7,949,537	05-2011	Walker et al.	704/275
*	G	US-2003/0097249	05-2003	Walker et al.	704/1
*	H	US-2003/0110037	06-2003	Walker et al.	704/257
*	I	US-2003/0115062	06-2003	Walker et al.	704/258
*	J	US-2004/0098245	05-2004	Walker et al.	704/001
*	K	US-5,357,596	10-1994	Takebayashi et al.	704/275
*	L	US-5,577,165	11-1996	Takebayashi et al.	704/275
*	M	US-6,035,267	03-2000	Watanabe et al.	704/1

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 13/084,197	Applicant(s)/Patent Under Reexamination WEIDER ET AL.	
	Examiner ERIC YEN	Art Unit 2626	Page 3 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,606,708	10-2009	Hwang, Kwangil	704/257
*	B	US-6,510,417	01-2003	Woods et al.	704/275
*	C	US-7,092,928	08-2006	Elad et al.	706/60
*	D	US-7,398,209	07-2008	Kennewick et al.	704/255
*	E	US-7,493,259	02-2009	Jones et al.	704/257
*	F	US-7,502,738	03-2009	Kennewick et al.	704/257
*	G	US-2004/0193420	09-2004	Kennewick et al.	704/257
*	H	US-2005/0137877	06-2005	Oesterling et al.	704/275
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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	P					
	Q					
	R					
	S					
	T					

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	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number		
				090611-0393260		To be Determined		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				Herewith (April 11, 2011)		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	5,155,743	10/13/1992	Jacobs	375	28		
	1C	5,274,560	12/28/1993	LaRue	364	444		
	1D	5,377,350	12/27/1994	Skinner	395	600		
	1E	5,386,556	01/31/1995	Hedin et al.	395	600		
	1F	5,424,947	06/13/1995	Nagao et al.	364	419.08		
	1G	5,471,318	11/28/1995	Ahuja et al.	358	400		
	1H	5,475,733	12/12/1995	Eisdorfer et al.	379	52		
	1I	5,488,652	01/30/1996	Bielby et al.	379	88		
	1J	5,499,289	03/12/1996	Bruno et al.	379	220		
	1K	5,500,920	03/19/1996	Kupiec	395	2.79		
	1L	5,517,560	05/14/1996	Greenspan	379	114		
	1M	5,533,108	07/02/1996	Harris et al.	379	201		
	1N	5,537,436	07/16/1996	Bottoms et al.	375	222		
	1O	5,539,744	07/23/1996	Chu et al.	370	60		
	1P	5,557,667	09/17/1996	Bruno et al.	379	201		
	1Q	5,563,937	10/08/1996	Bruno et al.	379	201		
	1R	5,590,039	12/31/1996	Ikeda et al.	395	759		
	1S	5,617,407	04/01/1997	Bareis	369	275.3		
	1T	5,633,922	05/27/1997	August et al.	379	220		
	1U	5,675,629	10/07/1997	Raffel et al.	379	58		
	1V	5,696,965	12/09/1997	Dedrick	395	610		
	1W	5,708,422	01/13/1998	Blonder et al.	340	825.34		
FOREIGN PATENT DOCUMENTS								
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							YES	NO
	1X	1 646 037	04/12/2006	Europe				
	1Y	WO 99/46763	09/16/1999	International				
	1Z	WO 00/21232	04/13/2000	International				
	1AA	WO 00/46792	08/10/2000	International				
	1BB	WO 01/78065	10/18/2001	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, <i>et al.</i> , "A Distributed Architecture for Cooperative Spoken Dialogue Agents with Coherent Dialogue State and History", ASRU'99, 1999, 4 pages.						
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Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	2A	5,721,938	02/24/1998	Stuckey	395	754		
	2B	5,722,084	02/24/1998	Chakrin <i>et al.</i>	455	551		
	2C	5,742,763	04/21/1998	Jones	395	200.3		
	2D	5,748,841	05/05/1998	Morin <i>et al.</i>	395	2.66		
	2E	5,752,052	05/12/1998	Richardson <i>et al.</i>	395	759		
	2F	5,754,784	05/19/1998	Garland <i>et al.</i>	395	200.49		
	2G	5,761,631	06/02/1998	Nasukawa	704	9		
	2H	5,774,859	06/30/1998	Houser <i>et al.</i>	704	275		
	2I	5,794,050	08/11/1998	Dahlgren <i>et al.</i>	395	708		
	2J	5,794,196	08/11/1998	Yegnanarayanan <i>et al.</i>	704	255		
	2K	5,797,112	08/18/1998	Komatsu <i>et al.</i>	701	201		
	2L	5,799,276	08/25/1998	Komissarchik <i>et al.</i>	704	251		
	2M	5,802,510	09/01/1998	Jones	707	2		
	2N	5,832,221	11/03/1998	Jones	375	200.36		
	2O	5,867,817	02/02/1999	Catallo <i>et al.</i>	704	255		
	2P	5,878,385	03/02/1999	Bralich <i>et al.</i>	704	9		
	2Q	5,878,386	03/02/1999	Coughlin	704	10		
	2R	5,892,813	04/06/1999	Morin <i>et al.</i>	379	88.01		
	2S	5,895,464	04/20/1999	Bhandari <i>et al.</i>	707	3		
	2T	5,895,466	04/20/1999	Goldberg <i>et al.</i>	707	5		
	2U	5,902,347	05/11/1999	Backman <i>et al.</i>	701	200		
	2V	5,911,120	06/08/1999	Jarett <i>et al.</i>	455	417		
	2W	5,918,222	06/29/1999	Fukui <i>et al.</i>	707	1		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	2X	WO 2004/072954	08/26/2001	International				
	2Y	WO 2007/019318	02/15/2007	International				
	2Z	WO 2007/021587	02/22/2007	International				
	2AA	WO 2007/027546	03/08/2007	International				
	2BB	WO 2007/027989	03/08/2007	International				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	2CC	KUHN, Thomas, <i>et al.</i> , "Hybrid In-Car Speech Recognition for Mobile Multimedia Applications", Vehicular Technology Conference, IEEE, July 1999, pages 2009-2013.						
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	3A	5,926,784	07/20/1999	Richardson et al.	704	9		
	3B	5,933,822	08/03/1999	Braden-Harder et al.	707	5		
	3C	5,953,393	09/14/1999	Culbreth et al.	379	88.25		
	3D	5,963,894	10/05/1999	Richardson et al.	704	9		
	3E	5,963,940	10/05/1999	Liddy et al.	707	5		
	3F	5,987,404	11/16/1999	Della Pietra et al.	704	9		
	3G	5,991,721	11/23/1999	Asano et al.	704	257		
	3H	5,995,119	11/30/1999	Cosatto et al.	345	473		
	3I	6,009,382	12/28/1999	Martino et al.	704	1		
	3J	6,014,559	01/11/2000	Amin	455	413		
	3K	6,021,384	02/01/2000	Gorin et al.	704	1		
	3L	6,044,347	03/28/2000	Abella et al.	704	272		
	3M	6,049,602	04/11/2000	Foladare et al.	379	265		
	3N	6,058,187	05/02/2000	Chen	380	21		
	3O	6,078,886	06/20/2000	Dragosh et al.	704	270		
	3P	6,081,774	06/27/2000	De Hita et al.	704	9		
	3Q	6,101,241	08/08/2000	Boyce et al.	379	88.01		
	3R	6,119,087	09/12/2000	Kuhn et al.	704	270		
	3S	6,134,235	10/17/2000	Goldman et al.	370	352		
	3T	6,144,667	11/07/2000	Doshi et al.	370	401		
	3U	6,144,938	11/07/2000	Surace et al.	704	257		
	3V	6,154,526	11/28/2000	Dahlke et al.	379	88.03		
	3W	6,160,883	12/12/2000	Jackson et al.	379	230		
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	3X	WO 2008/098039	08/14/2008	International				
	3Y	WO 2008/118195	10/02/2008	International				
	3Z	WO 2009/075912	06/18/2009	International				
	3AA	WO 2009/145796	12/03/2009	International				
	3BB	WO 2010/096752	08/26/2010	International				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	3CC	BELVIN, Robert, <i>et al.</i> , "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.						

EXAMINER	/E. Yen/	DATE CONSIDERED	10/23/2011
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	4A	6,173,279	01/09/2001	Levin <i>et al.</i>	707	5						
	4B	6,175,858	01/16/2001	Bulfer <i>et al.</i>	709	206						
	4C	6,185,535	02/06/2001	Hedin <i>et al.</i>	704	270						
	4D	6,192,110	02/20/2001	Abella <i>et al.</i>	379	88.01						
	4E	6,192,338	02/20/2001	Haszto <i>et al.</i>	704	257						
	4F	6,195,634	02/27/2001	Dudemaine <i>et al.</i>	704	231						
	4G	6,195,651	02/27/2001	Handel <i>et al.</i>	707	2						
	4H	6,208,972	03/27/2001	Grant <i>et al.</i>	704	275						
	4I	6,219,346	04/17/2001	Maxemchuk	370	338						
	4J	6,219,643	04/17/2001	Cohen <i>et al.</i>	704	257						
	4K	6,226,612	05/01/2001	Srenger <i>et al.</i>	704	256						
	4L	6,233,556	05/15/2001	Teunen <i>et al.</i>	704	250						
	4M	6,233,559	05/15/2001	Balakrishnan	704	275						
	4N	6,246,981	06/12/2001	Papineni <i>et al.</i>	704	235						
	4O	6,272,455	08/07/2001	Hoshen <i>et al.</i>	704	1						
	4P	6,288,319	09/11/2001	Catona	84	609						
	4Q	6,292,767	09/18/2001	Jackson <i>et al.</i>	704	1						
	4R	6,308,151	10/23/2001	Smith	704	235						
	4S	6,314,402	11/06/2001	Monaco <i>et al.</i>	704	275						
	4T	6,366,886	04/02/2002	Dragosh <i>et al.</i>	704	270.1						
	4U	6,374,214	04/16/2002	Friedland <i>et al.</i>	704	235						
	4V	6,377,913	04/23/2002	Coffman <i>et al.</i>	704	8						
	4W	6,381,535	04/30/2002	Durocher <i>et al.</i>	701	202						
FOREIGN PATENT DOCUMENTS												
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations					
							YES	NO				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)												
	4X	LIND, R., <i>et al.</i> , "The Network Vehicle—A Glimpse into the Future of Mobile Multi-Media", <u>IEEE Aerosp. Electron. Systems Magazine</u> , Volume 14, No. 9, September 1999, pages 27-32.										
	4Y	ZHAO, Yilin, "Telematics: Safe and Fun Driving", <u>IEEE Intelligent Systems</u> , Volume 17, Issue 1, 2002, pages 10-14.										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">EXAMINER</td> <td style="width: 40%; text-align: center;">/E. Yen/</td> <td style="width: 20%;">DATE CONSIDERED</td> <td style="width: 20%; text-align: center;">10/23/2011</td> </tr> </table>									EXAMINER	/E. Yen/	DATE CONSIDERED	10/23/2011
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*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	5A	6,385,596	05/07/2002	Wiser <i>et al.</i>	705	51		
	5B	6,385,646	05/07/2002	Brown <i>et al.</i>	709	217		
	5C	6,393,428	05/21/2002	Miller <i>et al.</i>	707	102		
	5D	6,404,878	06/11/2002	Jackson <i>et al.</i>	379	221.01		
	5E	6,408,272	06/18/2002	White <i>et al.</i>	704	270.1		
	5F	6,411,810	06/25/2002	Maxemchuk	455	453		
	5G	6,415,257	07/02/2002	Junqua <i>et al.</i>	704	275		
	5H	6,418,210	07/09/2002	Sayko	379	142.15		
	5I	6,420,975	07/16/2002	DeLine <i>et al.</i>	340	815.4		
	5J	6,430,285	08/06/2002	Bauer <i>et al.</i>	379	265.01		
	5K	6,430,531	08/06/2002	Polish	704	257		
	5L	6,434,523	08/13/2002	Monaco	704	257		
	5M	6,434,524	08/13/2002	Weber	704	257		
	5N	6,442,522	08/27/2002	Carberry <i>et al.</i>	704	257		
	5O	6,446,114	09/03/2002	Bulfer <i>et al.</i>	709	206		
	5P	6,453,153	09/17/2002	Bowker <i>et al.</i>	455	67.4		
	5Q	6,453,292	09/17/2002	Ramaswamy <i>et al.</i>	704	235		
	5R	6,456,711	09/24/2002	Cheung <i>et al.</i>	379	265.09		
	5S	6,466,654	10/15/2002	Cooper <i>et al.</i>	379	88.01		
	5T	6,466,899	10/15/2002	Yano <i>et al.</i>	704	1		
	5U	6,470,315	10/22/2002	Netsch <i>et al.</i>	704	256		
	5V	6,498,797	12/24/2002	Anerousis <i>et al.</i>	370	522		
	5W	6,499,013	12/24/2002	Weber	704	257		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	5X	CHAI <i>et al.</i> , "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.						
	5Y	CHEYER <i>et al.</i> , "Multimodal Maps: An Agent-Based Approach", International Conference on Cooperative Multimodal Communication (CMC/95), May 24-26, 1995, pages 111-121.						

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	6A	6,501,833	12/31/2002	Phillips <i>et al.</i>	379	88.07		
	6B	6,501,834	12/31/2002	Milewski <i>et al.</i>	379	93.24		
	6C	6,513,006	01/28/2003	Howard <i>et al.</i>	704	257		
	6D	6,523,061	02/18/2003	Halverson <i>et al.</i>	709	202		
	6E	6,532,444	03/11/2003	Weber	704	257		
	6F	6,539,348	03/25/2003	Bond <i>et al.</i>	704	9		
	6G	6,553,372	04/22/2003	Brassell <i>et al.</i>	707	5		
	6H	6,556,970	04/29/2003	Sasaki <i>et al.</i>	704	257		
	6I	6,556,973	04/29/2003	Lewin	704	277		
	6J	6,560,576	05/06/2003	Cohen <i>et al.</i>	704	270		
	6K	6,567,778	05/20/2003	Chao Chang <i>et al.</i>	704	257		
	6L	6,567,797	05/20/2003	Schuetze <i>et al.</i>	707	2		
	6M	6,570,555	05/27/2003	Prevost <i>et al.</i>	345	156		
	6N	6,570,964	05/27/2003	Murveit <i>et al.</i>	379	67.1		
	6O	6,574,597	06/03/2003	Mohri <i>et al.</i>	704	251		
	6P	6,574,624	06/03/2003	Johnson <i>et al.</i>	707	5		
	6Q	6,581,103	06/17/2003	Dengler	709	231		
	6R	6,594,257	07/15/2003	Doshi <i>et al.</i>	370	352		
	6S	6,598,018	07/22/2003	Junqua	704	251		
	6T	6,604,075	08/05/2003	Brown <i>et al.</i>	704	270.1		
	6U	6,604,077	08/05/2003	Dragosh <i>et al.</i>	704	270.1		
	6V	6,611,692	08/26/2003	Raffel <i>et al.</i>	455	552		
	6W	6,614,773	09/02/2003	Maxemchuk	370	337		
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							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	6X	ELIO <i>et al.</i> , "On Abstract Task Models and Conversation Policies" in Workshop on Specifying and Implementing Conversation Policies, Autonomous Agents '99, Seattle, 1999, 10 pages.						
	6Y	TURUNEN, "Adaptive Interaction Methods in Speech User Interfaces", Conference on Human Factors in Computing Systems, Seattle, Washington, 2001, pages 91-92.						
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	7A	6,615,172	09/02/2003	Bennett <i>et al.</i>	704	257		
	7B	6,622,119	09/16/2003	Ramaswamy <i>et al.</i>	704	9		
	7C	6,629,066	09/30/2003	Jackson <i>et al.</i>	704	9		
	7D	6,631,346	10/07/2003	Karaorman <i>et al.</i>	704	9		
	7E	6,643,620	11/04/2003	Contolini <i>et al.</i>	704	270		
	7F	6,650,747	11/18/2003	Bala <i>et al.</i>	379	265.06		
	7G	6,658,388	12/02/2003	Kleindienst <i>et al.</i>	704	275		
	7H	6,678,680	01/13/2004	Woo	707	6		
	7I	6,681,206	01/20/2004	Gorin <i>et al.</i>	704	243		
	7J	6,691,151	02/10/2004	Cheyser <i>et al.</i>	709	202		
	7K	6,701,294	03/02/2004	Ball <i>et al.</i>	704	257		
	7L	6,704,708	03/09/2004	Pickering	704	235		
	7M	6,708,150	03/16/2004	Hirayama <i>et al.</i>	704	243		
	7N	6,721,001	04/13/2004	Berstis	348	231.3		
	7O	6,721,706	04/13/2004	Strubbe <i>et al.</i>	704	275		
	7P	6,735,592	05/11/2004	Neumann <i>et al.</i>	707	101		
	7Q	6,741,931	05/25/2004	Kohut <i>et al.</i>	701	209		
	7R	6,742,021	05/25/2004	Halverson <i>et al.</i>	709	218		
	7S	6,751,591	06/15/2004	Gorin <i>et al.</i>	704	257		
	7T	6,751,612	06/15/2004	Schuetze <i>et al.</i>	707	4		
	7U	6,757,718	06/29/2004	Halverson <i>et al.</i>	709	218		
	7V	6,795,808	09/21/2004	Strubbe <i>et al.</i>	704	275		
	7W	6,801,604	10/05/2004	Maes <i>et al.</i>	379	88.17		
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							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	7X	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.						
	7Y	VANHOUCHE, Vincent, "Confidence Scoring and Rejection Using Multi-Pass Speech Recognition", Nuance Communications, Menlo Park, CA, 2005, 4 pages.						

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	8A	6,801,893	10/05/2004	Backfried <i>et al.</i>	704	257		
	8B	6,829,603	12/07/2004	Chai <i>et al.</i>	707	5		
	8C	6,832,230	12/14/2004	Ziliacus <i>et al.</i>	707	203		
	8D	6,833,848	12/21/2004	Wolff <i>et al.</i>	345	719		
	8E	6,856,990	02/15/2005	Barile <i>et al.</i>	707	10		
	8F	6,865,481	03/08/2005	Kawazoe <i>et al.</i>	701	211		
	8G	6,877,134	04/05/2005	Fuller <i>et al.</i>	715	500.1		
	8H	6,901,366	05/31/2005	Kuhn <i>et al.</i>	704	275		
	8I	6,937,977	08/30/2005	Gerson	704	201		
	8J	6,944,594	09/13/2005	Busayapongchai <i>et al.</i>	704	275		
	8K	6,950,821	09/27/2005	Faybishenko <i>et al.</i>	707	10		
	8L	6,954,755	10/11/2005	Reisman	707	10		
	8M	6,973,387	12/06/2005	Masclet <i>et al.</i>	701	211		
	8N	6,980,092	12/27/2005	Turnbull <i>et al.</i>	340	425.5		
	8O	6,990,513	01/24/2006	Belfiore <i>et al.</i>	709	203		
	8P	6,996,531	02/07/2006	Korall <i>et al.</i>	704	270		
	8Q	7,003,463	02/21/2006	Maes <i>et al.</i>	704	270.1		
	8R	7,016,849	03/21/2006	Arnold <i>et al.</i>	704	275		
	8S	7,020,609	03/28/2006	Thrft <i>et al.</i>	704	270.1		
	8T	7,027,975	04/11/2006	Pazandak <i>et al.</i>	704	9		
	8U	7,062,488	06/13/2006	Reisman	707	8		
	8V	7,082,469	07/25/2006	Gold <i>et al.</i>	709	231		
	8W	7,092,928	08/15/2006	Elad <i>et al.</i>	706	60		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	8X	WENG, Fuliang, <i>et al.</i> , "Efficient Lattice Representation and Generation", Speech Technology and Research Laboratory, SRI International, Menlo Park, CA, 1998, 4 pages.						
	8Y	EL MELIANI <i>et al.</i> , "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.						
EXAMINER		/E. Yen/			DATE CONSIDERED			
					10/23/2011			
EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.								

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION Form PTO-1449				Docket Number		Application Number		
				090611-0393260		To be Determined		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
		Herewith (April 11, 2011)		To be Determined				
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	9A	7,127,400	10/24/2006	Koch	704	270.1		
	9B	7,136,875	11/14/2006	Anderson <i>et al.</i>	707	104.1		
	9C	7,137,126	11/14/2006	Coffman <i>et al.</i>	719	328		
	9D	7,146,319	12/05/2006	Hunt	704	254		
	9E	7,203,644	04/10/2007	Anderson <i>et al.</i>	704	246		
	9F	7,228,276	06/05/2007	Omote <i>et al.</i>	704	243		
	9G	7,231,343	06/12/2007	Treadgold <i>et al.</i>	704	9		
	9H	7,277,854	10/02/2007	Bennett <i>et al.</i>	704	257		
	9I	7,289,606	10/30/2007	Sibal <i>et al.</i>	379	52		
	9J	7,301,093	11/27/2007	Sater <i>et al.</i>	84	615		
	9K	7,340,040	03/04/2008	Saylor <i>et al.</i>	379	67.1		
	9L	7,376,645	05/20/2008	Bernard	707	3		
	9M	7,386,443	06/10/2008	Parthasarathy <i>et al.</i>	704	201		
	9N	7,398,209	07/08/2008	Kennewick <i>et al.</i>	704	255		
	9O	7,415,414	08/19/2008	Azara <i>et al.</i>	704	270		
	9P	7,424,431	09/09/2008	Greene <i>et al.</i>	704	270		
	9Q	7,461,059	12/02/2008	Richardson <i>et al.</i>	707	5		
	9R	7,472,060	12/30/2008	Gorin <i>et al.</i>	704	240		
	9S	7,487,088	02/03/2009	Gorin <i>et al.</i>	704	240		
	9T	7,493,559	02/17/2009	Wolff <i>et al.</i>	715	727		
	9U	7,502,738	03/10/2009	Kennewick <i>et al.</i>	704	257		
	9V	7,620,549	11/17/2009	Di Cristo <i>et al.</i>	704	257		
	9W	7,634,409	12/15/2009	Kennewick <i>et al.</i>	704	257		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	9X	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.						

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/E. Yen/	10/23/2011
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INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number		
				090611-0393260		To be Determined		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	10A	7,640,160	12/29/2009	Di Cristo <i>et al.</i>	704	257		
	10B	7,693,720	04/06/2010	Kennewick <i>et al.</i>	704	275		
	10C	7,809,570	10/05/2010	Kennewick <i>et al.</i>	704	257		
	10D	7,818,176	10/19/2010	Freeman <i>et al.</i>	704	270		
	10E	7,917,367	03/29/2011	Di Cristo <i>et al.</i>	704	270.1		
	10F	2001/0041980	11/15/2001	Howard <i>et al.</i>	704	270		
	10G	2002/0035501	03/21/2002	Handel <i>et al.</i>	705	10		
	10H	2002/0049805	04/25/2002	Yamada <i>et al.</i>	709	202		
	10I	2002/0065568	05/30/2002	Silfvast <i>et al.</i>	700	94		
	10J	2002/0069059	06/06/2002	Smith	704	257		
	10K	2002/0082911	06/27/2002	Dunn <i>et al.</i>	705	14		
	10L	2002/0087525	07/04/2002	Abbott <i>et al.</i>	707	3		
	10M	2002/0120609	08/29/2002	Lang <i>et al.</i>	707	1		
	10N	2002/0124050	09/05/2002	Middeljans	709	203		
	10O	2002/0138248	09/26/2002	Corston-Oliver <i>et al.</i>	704	1		
	10P	2002/0143535	10/03/2002	Kist <i>et al.</i>	704	251		
	10Q	2002/0188602	12/12/2002	Stubler <i>et al.</i>	707	3		
	10R	2002/0198714	12/26/2002	Zhou	704	252		
	10S	2003/0014261	01/16/2003	Kageyama	704	275		
	10T	2003/0046346	03/06/2003	Mumick <i>et al.</i>	709	205		
	10U	2003/0064709	04/03/2003	Gailey <i>et al.</i>	455	412		
	10V	2003/0088421	05/08/2003	Maes <i>et al.</i>	704	270.1		
	10W	2003/0097249	05/22/2003	Walker <i>et al.</i>	704	1		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	10X	BAZZI, Issam <i>et al.</i> , "Heterogeneous Lexical Units for Automatic Speech Recognition: Preliminary Investigations", <u>Processing of the IEEE International Conference on Acoustics, Speech, and Signal Processing</u> , Volume 3, June 5-9, 2000, XP010507574, pages 1257-1260.						
	10Y	O'SHAUGHNESSY, Douglas, "Interacting with Computers by Voice: Automatic Speech Recognition and Synthesis", <u>Proceedings of the IEEE</u> , Volume 91, No. 9, September 1, 2003, XP011100665, pages 1272-1305.						

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number		
				090611-0393260		To be Determined		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
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	11A	2003/0112267	06/19/2003	Belrose	345	728		
	11B	2003/0135488	07/17/2003	Amir <i>et al.</i>	707	3		
	11C	2003/0182132	09/25/2003	Niemoeller	704	275		
	11D	2003/0236664	12/25/2003	Sharma	704	251		
	11E	2004/0006475	01/08/2004	Ehlen <i>et al.</i>	704	270.1		
	11F	2004/0025115	02/05/2004	Sienel <i>et al.</i>	715	513		
	11G	2004/0044516	03/04/2004	Kennewick <i>et al.</i>	704	5		
	11H	2004/0166832	08/26/2004	Portman <i>et al.</i>	455	412.1		
	11I	2004/0193408	09/30/2004	Hunt	704	209		
	11J	2004/0193420	09/30/2004	Kennewick <i>et al.</i>	704	257		
	11K	2004/0199375	10/07/2004	Ehsani <i>et al.</i>	704	4		
	11L	2004/0243417	12/02/2004	Pitts, III <i>et al.</i>	704	276		
	11M	2005/0015256	01/20/2005	Kargman	704	272		
	11N	2005/0021334	01/27/2005	Iwahashi	704	240		
	11O	2005/0021826	01/27/2005	Kumar	709	232		
	11P	2005/0033574	02/10/2005	Kim <i>et al.</i>	704	251		
	11Q	2005/0043940	02/24/2005	Elder	704	9		
	11R	2005/0114116	05/26/2005	Fiedler	704	201		
	11S	2005/0137850	06/23/2005	Odell	704	4		
	11T	2005/0246174	11/03/2005	DeGolia	704	270		
	11U	2006/0206310	09/14/2006	Ravikumar <i>et al.</i>	704	9		
	11V	2007/0033005	02/08/2007	Cristo <i>et al.</i>	704	9		
	11W	2007/0038436	02/15/2007	Cristo <i>et al.</i>	704	9		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
	11X	"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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INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number		
				090611-0393260		To be Determined		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				Herewith (April 11, 2011)		To be Determined		
U.S. PATENT DOCUMENTS								
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	12A	2007/0043574	02/22/2007	Coffman <i>et al.</i>	704	275		
	12B	2007/0050191	03/01/2007	Weider <i>et al.</i>	704	275		
	12C	2007/0055525	03/08/2007	Kennewick <i>et al.</i>	704	257		
	12D	2007/0179778	08/02/2007	Gong <i>et al.</i>	704	9		
	12E	2007/0186165	08/09/2007	Maislos <i>et al.</i>	715	728		
	12F	2007/0214182	09/13/2007	Rosenberg	707	104.1		
	12G	2007/0250901	10/25/2007	McIntire <i>et al.</i>	725	146		
	12H	2007/0265850	11/15/2007	Kennewick <i>et al.</i>	704	257		
	12I	2007/0299824	12/27/2007	Pan <i>et al.</i>	707	3		
	12J	2008/0091406	04/17/2008	Baldwin <i>et al.</i>	704	4		
	12K	2008/0103761	05/01/2008	Printz <i>et al.</i>	704	9		
	12L	2008/0115163	05/15/2008	Gilboa <i>et al.</i>	725	34		
	12M	2008/0133215	06/05/2008	Sarukkai	704	2		
	12N	2008/0140385	06/12/2008	Mahajan <i>et al.</i>	704	9		
	12O	2008/0177530	07/24/2008	Cross <i>et al.</i>	704	4		
	12P	2008/0189110	08/07/2008	Freeman <i>et al.</i>	704	251		
	12Q	2008/0235023	09/25/2008	Kennewick <i>et al.</i>	704	257		
	12R	2008/0235027	09/25/2008	Cross	704	270.1		
	12S	2008/0319751	12/25/2008	Kennewick <i>et al.</i>	704	257		
	12T	2009/0117885	05/07/2009	Roth	455	414.3		
	12U	2009/0144271	06/04/2009	Richardson <i>et al.</i>	707	5		
	12V	2009/0150156	06/11/2009	Kennewick <i>et al.</i>	704	257		
	12W	2009/0171664	07/02/2009	Kennewick <i>et al.</i>	704	257		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								
EXAMINER				DATE CONSIDERED				
/E. Yen/				10/23/2011				
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Issue Classification 	Application/Control No. 13084197	Applicant(s)/Patent Under Reexamination WEIDER ET AL.	
	Examiner ERIC YEN	Art Unit 2626	

ORIGINAL						INTERNATIONAL CLASSIFICATION										
CLASS			SUBCLASS			CLAIMED					NON-CLAIMED					
704			275			G	0	6	F	17 / 27 (2006.01.01)						
CROSS REFERENCE(S)						G	1	0	L	15 / 20 (2006.01.01)						
						G	1	0	L	17 / 00 (2006.01.01)						
						G	1	0	L	15 / 18 (2006.01.01)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					G	1	0	L	11 / 00 (2006.01.01)						
704	9	233	250	257	270	G	1	0	L	21 / 00 (2006.01.01)						
704	270.1					G	1	0	L							

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	17	17												
2	2	18	18												
3	3	19	19												
4	4	20	20												
5	5	21	21												
6	6	22	22												
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9	9	25	25												
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13	13	29	29												
14	14	30	30												
15	15	31	31												
16	16	32	32												

NONE		Total Claims Allowed:	
		32	
(Assistant Examiner)	(Date)		
/ERIC YEN/ Primary Examiner.Art Unit 2626	10/23/11	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	8

Search Notes 	Application/Control No. 13084197	Applicant(s)/Patent Under Reexamination WEIDER ET AL.
	Examiner ERIC YEN	Art Unit 2626

SEARCHED			
Class	Subclass	Date	Examiner
704	233, 9, 250, 257, 270, 270.1, 275	10/23/11	EY

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search (attached)	10/23/11	EY

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
704	233, 9, 250, 257, 270, 270.1, 275	10/23/11	EY

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BIB DATA SHEET

CONFIRMATION NO. 9666

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
13/084,197	04/11/2011	704	2626	090611-0393260		
RULE						
APPLICANTS Chris Weider, Everett, WA; Richard Kennewick, Woodinville, WA; Mike Kennewick, Bellevue, WA; Philippe Di Cristo, Bellevue, WA; Robert A. Kennewick, Seattle, WA; Samuel Menaker, Bellevue, WA; Lynn Elise Armstrong, Woodinville, WA;						
** CONTINUING DATA ***** This application is a DIV of 11/212,693 08/29/2005 PAT 7,949,529						
** FOREIGN APPLICATIONS *****						
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED *** SMALL ENTITY ** 04/25/2011						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/ERIC L YEN/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY WA	SHEETS DRAWINGS 8	TOTAL CLAIMS 32	INDEPENDENT CLAIMS 3
ADDRESS Pillsbury Winthrop Shaw Pittman, LLP (NV) PO Box 10500 McLean, VA 22102 UNITED STATES						
TITLE MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS						
FILING FEE RECEIVED 774	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		

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	15	704/270-275.ccls. and (cognitive adj model\$1)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 16:17
L2	12	"704".clas. and (cognitive adj model\$1).clm.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 16:18
L3	1	"704".clas. and (merg\$4 with combin\$4 with non-speech with speech)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 16:40
L4	63	"704".clas. and ((merg\$4 combin\$4) with non-speech with speech)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 16:41
L5	16	"704".clas. and (((merg\$4 combin\$4) with non-speech with speech) same recogni\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 16:42
L6	92	"704".clas. and (parallel adj model)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:13
L7	55	"704".clas. and ((parallel adj model) same environment\$2)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:13
L8	182	"704".clas. and ((clean adj speech) same environment\$2)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:16
L9	12	"704".clas. and ((multi-modal) same (mouse adj click\$1))	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:19
L10	52	"704".clas. and (domain adj agent\$1)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:19
L11	44	"704".clas. and ((domain adj agent\$1) same context\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:20
L12	3	10/258776	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:23
L13	13	10/258776 10/258532 10/258849 10/258851	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:23
L14	13	(10/258776 10/258532 10/258849 10/258851) and discourse\$1	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:26
L15	9	704/270-275.ccls. and (history near5 semantic\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:29
L16	174	704/270-275.ccls. and (dialog\$3 near5 histor\$4)	US-PGPUB; USPAT; USOCR;	OR	OFF	2011/10/23 17:32

EAST Search History

			EPO; JPO			
L17	4	704/270-275.ccls. and ((dialog\$3 near5 histor\$4) with semantic\$4)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:32
L18	359	704/270-275.ccls. and (determin\$4 near5 context\$1)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:35
L19	25	704/270-275.ccls. and ((determin\$4 near5 context\$1) same domain)	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:35
L20	5	"5748974".pn. "5960397".pn. "20040044516".pn. "7516076".pn. "5357596".pn.	US-PGPUB; USPAT; USOCR; EPO; JPO	OR	OFF	2011/10/23 17:51

10/23/2011 5:58:57 PM

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Request for Continued Examination (RCE) Transmittal Address to: Mail Stop RCE Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	13/084,197
	Filing Date	April 11, 2011
	First Named Inventor	CHRIS WEIDER
	Art Unit	2626
	Examiner Name	Eric L. YEN
	Attorney Docket Number	090611-0393260

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a. ☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

ii. ☐ Other _____

b. ☒ Enclosed

i. ☒ Amendment/Reply

iii. ☒ Information Disclosure Statement (IDS)

ii. ☐ Affidavit(s)/ Declaration(s)

iv. ☐ Other _____

2. **Miscellaneous**

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a

a. ☐ period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b. ☐ Other _____

3. **Fees**

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

The Director is hereby authorized to charge the following fees any underpayment of fees or credit any overpayments to

a. ☒ Deposit Account No. 033975.

i. ☒ RCE fee required under 37 CFR 1.17(e)

ii. ☐ Extension of time fee (37 CFR 1.136 and 1.17)

iii. ☐ Other _____

b. ☐ Check in the amount of \$ _____ enclosed

c. ☐ Payment by credit card (Form PTO-2038 enclosed)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

Signature		Date	DEC. 30, 2011
Name (Print/Type)	Syed Jafar Ali	Registration No.	58780

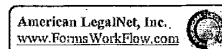
CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Signature		Date	
Name (Print/Type)			

This collection of information is required by 37 CFR 1.114. 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: Mail Stop RCE, 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.



Application Serial No.: 13/084,197
Attorney Docket No.: 090611-0393260
Reply and Amendment Accompanying RCE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Chris WEIDER et al. CONFIRMATION No. : 9666
SERIAL NUMBER : 13/084,197 EXAMINER : Eric L. Yen
FILING DATE : April 11, 2011 ART UNIT : 2626
FOR : MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE
HUMAN-MACHINE INTERACTIONS

**REPLY AND AMENDMENT ACCOMPANYING
REQUEST FOR CONTINUED EXAMINATION**

Mail Stop RCE

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

Dear Sir:

In response to the Notice of Allowance and Notice of Allowability mailed **November 3, 2011** ("Notice of Allowance"), and prior to payment of the Issue Fee, please amend the above-identified application as follows pursuant to 37 C.F.R. § 1.114:

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

Amendments to the Claims begin on page 5 of this paper.

Remarks/Arguments begin on page 13 of this paper.

Applicants believe that no extensions of time or other fees are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned for under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 033975 (**Ref. No. 090611-0393260**).

AMENDMENT

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

- Please amend paragraph [001], which begins on page 1, as follows:

[001] This application is a divisional of U.S. Patent Application Serial No. 11/212,693, entitled "Mobile Systems and Methods of Supporting Natural Language Human-Machine Interactions," filed August 29, 2005, which issued as U.S. Patent No. 7,949,529 on May 24, 2011, the contents of which are hereby incorporated by reference in their entirety.

- Please amend paragraph [003], which begins on page 1, as follows:

[003] Telematic systems are systems that bring human-computer interfaces to mobile environments. Conventional computer interfaces use some combination of keyboards, keypads, point and click techniques and touch screen displays. These conventional interface techniques are generally not suitable for [[a]] mobile environments, due at least in part to the speed of interaction and the inherent danger and distraction. Therefore, speech interfaces are being adopted in many telematic applications.

- Please amend paragraph [028], which begins on page 8, as follows:

[028] 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 "tune in my favorite radio station." A request is processed to determine the name, the channel, and time for the ~~users~~ user's favorite radio station. If the programming on that station is of a type the user generally does not listen to, the system can suggest using an alternative option, such as listening to a CD more likely to please the user. A command must be executed to set a tune the radio station.

- Please amend paragraph [037], which begins on page 11, as follows:

[037] In order to make the responses to user's questions and commands seem more natural, the system may employ one or more dynamically invokeable personalities 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.

- Please amend paragraph [0136], which begins on page 53, as follows:

[0136] 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.

- Please amend paragraph [0144], which begins on page 55, as follows:

[0144] 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. In other cases, local information can be obtained from vehicle system settings or measurement devices. Network information sources can be connected to, the control and device interfaces 30, the data interfaces 26, the Internet 42 or other network and accessed through a series of plug-ins or adaptors, known as pluggable sources, in the network interface 116. The pluggable sources are capable of executing the protocols and interpreting the data formats for the data sources of interest. The pluggable source provides information scrapping forms 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 appropriate interface.

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

LISTING OF CLAIMS:

1. (Original) A mobile device for processing multi-modal natural language inputs, comprising:

a conversational voice user interface that receives a multi-modal natural language input from a user, the multi-modal natural language input including a natural language utterance and a non-speech input, the conversational voice user interface coupled to a transcription module that transcribes the non-speech input to create a non-speech-based transcription;

a conversational speech analysis engine that identifies the user that provided the multi-modal natural language input, the conversational speech analysis engine using a speech recognition engine and a semantic knowledge-based model to create a speech-based transcription of the natural language utterance, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the identified user and the mobile device, a general cognitive model derived from one or more prior interactions between a plurality of users and the mobile device, and an environmental model derived from an environment of the identified user and the mobile device;

a merging module that merges the speech-based transcription and the non-speech-based transcription to create a merged transcription;

a knowledge-enhanced speech recognition engine that identifies one or more entries in a context stack matching information contained in the merged transcription and determines a most likely context for the multi-modal natural language input based on the identified entries; and

a response generating module that identifies a domain agent associated with the most likely context for the multi-modal input, communicates a request to the identified domain agent, and generates a response to the user from content provided by the identified domain agent as a result of processing the request.

2. (Original) The mobile device of claim 1, wherein the response includes an aggregation of content gathered when the identified domain agent processes the request.
3. (Original) The mobile device of claim 1, wherein the conversational speech analysis engine supports interactions with the plurality of users during an overlapping session.
4. (Original) The mobile device of claim 1, wherein the conversational speech analysis engine supports interactions with the plurality of users during an interleaved session.
5. (Original) The mobile device of claim 4, wherein the mobile device processes queries in an order of receipt during the interleaved session.
6. (Original) The mobile device of claim 4, wherein the mobile device processes queries in an order determined by a length of the queries during the interleaved session.
7. (Original) The mobile device of claim 1, wherein the conversational speech analysis engine identifies the user based on at least one of voiceprint matching, password matching, or pass-phrase matching.
8. (Original) The mobile device of claim 1, wherein the conversational voice user interface subsequently receives one or more follow-up multi-modal inputs, the follow-up multi-modal inputs including at least one of a follow-up natural language utterance or a follow-up non-speech input.
9. (Original) The mobile device of claim 8, wherein the identified domain agent updates the context stack and the semantic knowledge-based model in response to processing the request.

10. (Original) The mobile device of claim 9, wherein the knowledge-enhanced speech recognition engine determines a most likely context for the follow-up multi-modal input using the updated context stack.
11. (Original) The mobile device of claim 9, wherein the conversational speech analysis engine creates a speech-based transcription of the follow-up natural language utterance using the updated semantic knowledge-based model.
12. (Original) The mobile device of claim 1, wherein the identified domain agent processes the request by querying one or more local or network information sources.
13. (Original) The mobile device of claim 12, wherein one or more of the local or network information sources includes an Internet browsing service.
14. (Original) The mobile device of claim 1, wherein the identified domain agent processes the request by directing a command to one or more local or remote devices.
15. (Original) A system for processing multi-modal natural language inputs, comprising:
 - a plurality of mobile devices that support multi-modal natural language interactions with a user;
 - a context manager communicatively coupled to the plurality of mobile devices, wherein the context manager synchronizes a semantic knowledge-based model and a context stack among the plurality of mobile devices, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the user and one or more of the mobile devices, a general cognitive model derived from one or more prior interactions between a plurality of users and one or more of the mobile devices, and an environmental model derived from an environment of the user and one or more of the mobile devices;

a conversational voice user interface communicatively coupled to one or more of the plurality of mobile devices, wherein the conversational voice user interface receives a multi-modal natural language input from the user that includes at least a natural language utterance;

a conversational speech analysis engine that identifies the user that provided the multi-modal input, the conversational speech analysis engine using a speech recognition engine and the semantic knowledge-based model to create a speech-based transcription of the natural language utterance;

a knowledge-enhanced speech recognition engine that identifies one or more entries in a context stack matching information contained in the speech-based transcription and determines a most likely context for the multi-modal natural language input based on the identified entries; and

a response generating module that identifies a domain agent associated with the most likely context for the multi-modal input, communicates a request to the identified domain agent, and generates a response to the user from content provided by the identified domain agent as a result of processing the request.

16. **(Original)** The system of claim 15, wherein the plurality of mobile devices register with the context manager and subscribe to one or more events that the context manager broadcasts.

17. **(Original)** The system of claim 16, wherein the context module receives an input from one or more of the mobile devices that updates at least one of the semantic knowledge-based model or the context stack.

18. **(Original)** The system of claim 17, wherein the context module broadcasts an event relating to the received input to the subscribed mobile devices.

19. (Original) A method for processing multi-modal natural language inputs, comprising:
- receiving a multi-modal natural language input at a conversational voice user interface, the multi-modal input including a natural language utterance and a non-speech input provided by a user, wherein a transcription module coupled to the conversational voice user interface transcribes the non-speech input to create a non-speech-based transcription;
 - identifying the user that provided the multi-modal input;
 - creating a speech-based transcription of the natural language utterance using a speech recognition engine and a semantic knowledge-based model, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the identified user and the conversational voice user interface, a general cognitive model derived from one or more prior interactions between a plurality of users and the conversational voice user interface, and an environmental model derived from an environment of the identified user and the conversational voice user interface;
 - merging the speech-based transcription and the non-speech-based transcription to create a merged transcription;
 - identifying one or more entries in a context stack matching information contained in the merged transcription;
 - determining a most likely context for the multi-modal input based on the identified entries;
 - identifying a domain agent associated with the most likely context for the multi-modal input;
 - communicating a request to the identified domain agent; and
 - generating a response to the user from content provided by the identified domain agent as a result of processing the request.

20. **(Original)** The method of claim 19, wherein the generated response includes an aggregation of content gathered when the identified domain agent processes the request.
21. **(Original)** The method of claim 19, wherein the conversational voice user interface supports interactions with the plurality of users during an overlapping session.
22. **(Original)** The method of claim 19, wherein the conversational voice user interface supports interactions with the plurality of users during an interleaved session.
23. **(Original)** The method of claim 22, wherein queries are processed in an order of receipt during the interleaved session.
24. **(Original)** The method of claim 23, wherein queries are processed in an order determined by a length of the queries during the interleaved session.
25. **(Original)** The method of claim 19, further comprising verifying an identity of the user based on voiceprint matching, password matching, or pass-phrase matching.
26. **(Original)** The method of claim 19, further comprising receiving one or more follow-up multi-modal inputs at the conversational voice user interface, the follow-up multi-modal inputs including at least one of a follow-up natural language utterance or a follow-up non-speech input.
27. **(Original)** The method of claim 26, wherein the identified domain agent updates the context stack and the semantic knowledge-based model in response to processing the request.

28. **(Original)** The method of claim 27, wherein the knowledge-enhanced speech recognition engine determines a most likely context for the follow-up multi-modal input using the updated context stack.

29. **(Original)** The method of claim 27, wherein the speech recognition engine creates a speech-based transcription of the follow-up natural language utterance using the updated semantic knowledge-based model.

30. **(Original)** The method of claim 19, wherein the identified domain agent processes the request by querying one or more local or network information sources.

31. **(Original)** The method of claim 30, wherein one or more of the local or network information sources includes an Internet browsing service.

32. **(Original)** The method of claim 19, wherein the identified domain agent processes the request by directing a command to one or more local or remote devices.

33. **(New)** A device for supporting natural language human-machine interactions, wherein the device comprises one or more processors configured to:

receive a multi-modal natural language input that includes a natural language utterance and a non-speech component;

use a speech recognition engine and a semantic knowledge-based model to create a speech-based transcription associated with the natural language utterance, wherein the semantic knowledge-based model includes a personalized cognitive model derived from one or more prior interactions between the device and a user that spoke the natural language utterance, a general cognitive model derived from one or more prior interactions between the device and multiple different users, and an environmental model derived from an environment associated with the device and the user that spoke the natural language utterance;

merge the speech-based transcription associated with the natural language utterance with a non-speech-based transcription associated with the non-speech component to create a merged transcription associated with the multi-modal natural language input;

identify one or more entries in a context stack matching information contained in the merged transcription to determine a most likely context associated with the multi-modal natural language input based on the one or more identified entries;

communicate a request to a domain agent associated with the most likely context; and

generate a response to the multi-modal natural language input, wherein the response to the multi-modal natural language input includes content that the domain agent associated with the most likely context produced to process the request.

REMARKS

Upon entry of the foregoing Amendment, claims 1-33 are pending in the application. No claims have been amended or cancelled. Claim 33 has been newly added. The Specification has been amended to update the status associated with the cross-referenced parent application and correct various minor typographical errors.

Applicants believe that this Amendment does not add new matter. In view of the foregoing Amendment and the following Remarks, Applicants respectfully request that the Examiner allow all the pending claims and issue a new Notice of Allowance.

INFORMATION DISCLOSURE STATEMENT

Applicants submit herewith an Information Disclosure Statement and respectfully request that the Examiner consider the references cited therein and sign the Form PTO-1449 attached thereto in the next Office Action.

ALLOWABLE SUBJECT MATTER

Applicants acknowledge with appreciation that the Examiner has allowed original claims 1-32. As such, Applicants note that original claims 1-32 have not been amended and therefore remain allowable for at least the reasons set forth in the Notice of Allowance. In addition, new independent claim 33 recites features similar to those set forth in allowed independent claims 1, 15, and 19 and therefore recite allowable subject matter for at least the same reasons.

Accordingly, for at least the reason that all the pending claims have either been allowed by the Examiner or recite similar subject matter to the claims that have been allowed by the Examiner, Applicants respectfully request that the Examiner allow all the pending claims.

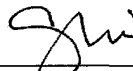
CONCLUSION

Applicants respectfully submit that the application remains in condition for allowance for at least the reasons set forth in the Notice of Allowance and respectfully request notice to that effect. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Date: December 30, 2011

Respectfully submitted,

By:



Syed Jafar Ali

Registration No. 58,780

PILLSBURY WINTHROP SHAW PITTMAN LLP

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Chris WEIDER *et al.* CONFIRMATION No.: 9666
SERIAL NUMBER : 13/084,197 EXAMINER: Eric L. Yen
FILING DATE : April 11, 2011 ART UNIT: 2626
FOR : MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE
INTERACTIONS

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

Sir:

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

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

This Supplemental 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).

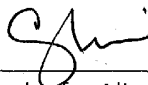
Document 1X was cited in a search report by a foreign patent office in a counterpart foreign application. Submission of an English language version of the search report that indicates the degree of relevance found by the foreign office is provided.

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

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

By


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Dated: December 30, 2011



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- 2 JUN 2011

Date

01.06.11

Reference P109952EPDIV1	Application No./Patent No. 11156294.8 - 1224 / 2325837
Applicant/Proprietor VoiceBox Technologies Inc.	

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the European search report (R. 61 EPC) or the partial European search report/ declaration of no search (R. 63 EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☒ 0 additional set(s) of copies of such documents is (are) enclosed as well.

The following have been approved:

☒ Abstract ☒ Title

☐ The Abstract was modified and the definitive text is attached to this communication.

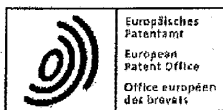
The following figure(s) will be published together with the abstract: 2

Refund of search fee

If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



EPO Form 1507N 08.10



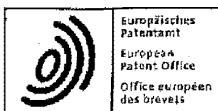
PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 62a and/or 63 of the European Patent Convention. EP 11 15 6294
This report shall be considered, for the purposes of subsequent proceedings, as the European search report

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 320 043 A2 (HEWLETT PACKARD CO [US]) 18 June 2003 (2003-06-18) * abstract; figures 7,8,11 * * paragraphs [0004], [0017], [0025], [0030], [0062], [0063], [0065], [0066] *	1-15	INV. G10L15/22 G06F17/30
X	US 2002/188602 A1 (STUBLER PETER O [US] ET AL) 12 December 2002 (2002-12-12) * abstract; figures 2,4,6,7 * * paragraphs [0026], [0029], [0039] *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			G10L G06F
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out.			
Claims searched completely :			
Claims searched incompletely :			
Claims not searched :			
Reason for the limitation of the search: see sheet C			
Place of search		Date of completion of the search	Examiner
The Hague		26 May 2011	Quélavoine, Régis
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

2
EPO FORM 1503 08/02 (P04E07)



INCOMPLETE SEARCH
SHEET C

Application Number
EP 11 15 6294

Claim(s) not searched:
1-15

Reason for the limitation of the search:

1. The application is not compliant with the requirements of Art.76(1) EPC.

There is not basis in the parent application for the following features:

claim 2: "or a data center located remotely from the mobile device".

claim 3: use the one or more expected contexts for something other than defining the most likely context.

claim 4: determining GPS coordinates from interpreted words or phrases, dynamically update the plurality of entries in the dynamic grammar to include one or more decoy words.

claim 6: a touch screen display configured to receive the non-speech input information

2. Claims 1-15 are not clear or supported by the description and therefore not compliant with the requirements of Art.84 EPC.

In addition to the above remarks in 1., it is not possible to perform a meaningful search on claims 1-15 for the following reasons:

In claim 1:

The term "location information" is unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear. In particular, it is not clear what a location information is when the object is a digital photograph, a calendar entry, an email message, a phonebook entry, a voicemail entry, etc, and how it can be determined. A mobile device cannot contain "natural language utterances", and the claim does not define which means are necessary to determine if the purpose of an input including a natural language utterance is "to annotate an object".

The speech recognition engine can only transcribe "spoken" language utterances into text.

It is not clear how undefined semantic attributes can match undefined metadata which are associated in an undefined manner with the unclear location information. Moreover, it is not clear how these semantic attributes are extracted from the natural language utterance which is supposed to be used to annotate an object.

It is not clear how a processing unit can label an object with annotation data (which are supposed to be used to annotate), and also "post-process" it in an undefined manner with the same data, and further "post-process" it in an undefined manner with the same data.

In claim 2, is the storage device included in the mobile device or not?

It is vaguely associated to the mobile device, or to a server...

In claim 3, 4 and 6, see above 1.

In claim 5, the term "verbal annotation" is unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear (Article 84 EPC). Is it related to the textual annotation of claim 1?

In claim 7, the mobile device does not comprise the textual annotation, the metadata are not defined and it is not clear how they can be "provided" by the textual annotation. It is not clear how they can be associated to the location information. The post-processing is not



INCOMPLETE SEARCH
SHEET C

Application Number
EP 11 15 6294

defined, and the search process is confusing with regard to the use of location information and textual annotation. The same reasoning applies mutatis mutandis to the corresponding method claims 8-14 and system claim 15.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 15 6294

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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26-05-2011

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1320043	A2	18-06-2003	GB 2383247 A	18-06-2003
			GB 2383736 A	02-07-2003
			US 2003112267 A1	19-06-2003
US 2002188602	A1	12-12-2002	NONE	

EPO FORM P459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

The examination is being carried out on the **following application documents**

Description, Pages

1-57 as originally filed

Claims, Numbers

1-15 as originally filed

Drawings, Sheets

1/8-8/8 as originally filed

1. The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

D1 EP 1 320 043 A2 (HEWLETT PACKARD CO [US]) 18 June 2003
(2003-06-18)

D2 US 2002/188602 A1 (STUBLER PETER O [US] ET AL) 12 December
2002 (2002-12-12)

2. In reply to the invitation to file a statement indicating the subject-matter to be searched, the applicant has indicated in his letter 12-05-2011 that [75-79] of the description should be searched.

He argued that the originally filed claims were clear and supported by the description. However, this argumentation cannot be followed because:

- claim 1: the skilled person cannot determine what is an object accessible to the mobile device, its location, and how to store said location with the object, in particular when the object is an email message, an instant message, a calendar entry, etc (claim 2). He cannot determine how to match undefined metadata with a location. He cannot determine which post processing can be performed with undefined textual information.

In claim 2, there is no support in the description [79] stating that the data center is located "remotely" from the mobile device.

In claim 3, the description only supports the use of the most likely context and the dynamic grammar for speech recognition. If all the expected context were used, there would be no point in determining the most likely one.

In claim 4, it is not possible to determine a GPS coordinate for Greece. One could may be vaguely determine if a GPS coordinate is within the borders of Greece, but no enabling teaching is provided (Art.83 EPC). Also, the virtual dictation grammar defined in [72] does not correspond to dynamically update ... to include one or more decoy words...

In claim 6, the description does not provide support for a touch screen display configured to receive the non-speech input information. It is merely stated in [69] that the user can interact with the mobile device through a display of a touch screen type.

In addition, the features of [76] related to collaboratively exchanging and sharing the annotated objects has not been searched because it is non unitary (Art.82 EPC) with the object of [75] which is to allow speech annotation of objects. For the same reason, the features of [79] related to the use of short message services has not been searched. The features of [78] related to determining a GPS coordinate from a recognised word (i.e. Greece) has not been searched because not workable embodiment is described (Art.83 EPC).

The applicant's attention is drawn to the fact that the application will be further prosecuted on the basis of subject-matter for which a search has been carried out and that the claims should be limited to that subject-matter at a later stage of the proceedings (Rule 63(3) EPC), i.e. the subject-matter defined in [75, 77, 78 in part].

3. The present application does not meet the requirements of Article 52(1) EPC, because the subject-matter of the application as above defined is not new in the sense of Article 54(1) and (2) EPC.

3.1 The document D1 is regarded as being the closest prior art to the subject-matter of the application, and discloses (abstract, fig.7,8,11 and accompanying text, in particular [4,17,25,30,62,63,65,66]) the use of a spoken interface to annotate images using automatic speech recognition (ASR). The images can be searched through the annotations using spoken queries and ASR. Date and location are given as available information (i.e. metadata).

3.2 Would the application focus on the particular use of GPS, this would not be deemed inventive because D2, from the same technical field, discloses (abstract, fig. 2,4,6,7 and accompanying text, in particular [2, 29, 39]) the use of GPS to determine a location to be used to annotate a picture.

4. At least some of the objections raised above are such that there appears to be no possibility of overcoming them by amendment. Refusal of the application under Article 97(2) EPC is therefore to be expected.

INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number		
				090611-0393260		13/084,197		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				April 11, 2011		2626		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	1A	5,027,406	06/25/1991	Roberts <i>et al.</i>	381	43		
	1B	5,740,256	04/14/1998	Castello Da Costa <i>et al.</i>	361	94.7		
	1C	5,839,107	11/17/1998	Gupta <i>et al.</i>	704	270		
	1D	5,897,613	04/27/1999	Chan	704	210		
	1E	5,960,399	09/28/1999	Barclay <i>et al.</i>	704	270		
	1F	5,960,447	09/28/1999	Holt <i>et al.</i>	707	500		
	1G	5,995,928	11/30/1999	Nguyen <i>et al.</i>	704	251		
	1H	6,018,708	01/25/2000	Dahan <i>et al.</i>	704	244		
	1I	6,049,607	04/11/2000	Marash <i>et al.</i>	379	410		
	1J	6,085,186	07/04/2000	Christianson <i>et al.</i>	707	3		
	1K	6,108,631	08/22/2000	Ruhl	704	270		
	1L	6,167,377	12/26/2000	Gillick <i>et al.</i>	704	240		
	1M	6,173,266	01/09/2001	Marx <i>et al.</i>	704	270		
	1N	6,208,964	03/27/2001	Sabourin	704	244		
	1O	6,269,336	07/31/2001	Ladd <i>et al.</i>	704	270		
	1P	6,275,231	08/14/2001	Obradovich	345	349		
	1Q	6,278,968	08/21/2001	Franz <i>et al.</i>	704	3		
	1R	6,362,748	03/26/2002	Huang	340	901		
	1S	6,366,882	04/02/2002	Bijl <i>et al.</i>	704	235		
	1T	6,397,181	05/28/2002	Li <i>et al.</i>	704	256		
	1U	6,405,170	06/11/2002	Phillips <i>et al.</i>	704	270		
	1V	6,429,813	08/06/2002	Feigen	342	357.13		
	1W	6,522,746	02/18/2003	Marchok <i>et al.</i>	379	406.03		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	1X	1 320 043 A2	06/18/2003	Europe				
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)								

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

403250466v1

INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number		
				090611-0393260		13/084,197		
				Applicant(s)				
				Chris WEIDER <i>et al.</i>				
				Filing Date		Group Art Unit		
Form PTO-1449				April 11, 2011		2626		
U.S. PATENT DOCUMENTS								
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE	
	2A	6,549,629	04/15/2003	Finn <i>et al.</i>	381	92		
	2B	6,587,858	07/01/2003	Strazza	707	102		
	2C	6,591,239	07/08/2003	McCall <i>et al.</i>	704	275		
	2D	6,594,367	07/15/2003	Marash <i>et al.</i>	381	92		
	2E	6,606,598	08/12/2003	Holthouse <i>et al.</i>	704	275		
	2F	6,633,846	10/14/2003	Bennett <i>et al.</i>	704	257		
	2G	6,754,485	06/22/2004	Obradovich <i>et al.</i>	455	414.1		
	2H	6,910,003	06/21/2005	Arnold <i>et al.</i>	704	4		
	2I	6,912,498	06/28/2005	Stevens <i>et al.</i>	704	235		
	2J	6,934,756	08/23/2005	Maes	709	227		
	2K	6,968,311	11/22/2005	Knockeart <i>et al.</i>	704	270		
	2L	6,975,993	12/13/2005	Keiller	704	275		
	2M	6,983,055	01/03/2006	Luo	381	313		
	2N	7,024,364	04/04/2006	Guerra <i>et al.</i>	704	270		
	2O	7,035,415	04/25/2006	Belt <i>et al.</i>	381	92		
	2P	7,054,817	05/30/2006	Shao	704	270		
	2Q	7,058,890	06/06/2006	George <i>et al.</i>	715	728		
	2R	7,110,951	09/19/2006	Lemelson <i>et al.</i>	704	270		
	2S	7,143,037	11/28/2006	Chestnut	704	251		
	2T	7,197,069	03/27/2007	Agazzi <i>et al.</i>	375	233		
	2U	7,206,418	04/17/2007	Yang <i>et al.</i>	381	92		
	2V	7,236,923	06/26/2007	Gupta	704	9		
	2W	7,305,381	12/04/2007	Poppink <i>et al.</i>	1	1		
FOREIGN PATENT DOCUMENTS								
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
OTHER DOCUMENTS <i>(Including Author, Title, Date, Pertinent Pages, Etc.)</i>								

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.	

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INFORMATION DISCLOSURE CITATION IN AN APPLICATION Form PTO-1449	Docket Number	Application Number
	090611-0393260	13/084,197
	Applicant(s)	
	Chris WEIDER <i>et al.</i>	
	Filing Date	Group Art Unit
	April 11, 2011	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	3A	7,337,116	02/26/2008	Charlesworth <i>et al.</i>	704	254	
	3B	7,366,669	04/29/2008	Nishitani <i>et al.</i>	704	256	
	3C	7,406,421	07/29/2008	Odinak <i>et al.</i>	704	275	
	3D	7,447,635	11/04/2008	Konopka <i>et al.</i>	704	275	
	3E	7,472,020	12/30/2008	Brulle-Drews	701	211	
	3F	7,478,036	01/13/2009	Shen <i>et al.</i>	704	9	
	3G	7,493,259	02/17/2009	Jones <i>et al.</i>	704	257	
	3H	7,536,297	05/19/2009	Byrd <i>et al.</i>	704	10	
	3I	7,536,374	05/19/2009	Au	706	55	
	3J	7,558,730	07/07/2009	Davis <i>et al.</i>	704	235	
	3K	7,676,365	03/09/2010	Hwang <i>et al.</i>	704	240	
	3L	7,788,084	08/31/2010	Brun <i>et al.</i>	704	7	
	3M	7,831,433	11/09/2010	Belvin <i>et al.</i>	704	275	
	3N	7,873,523	01/18/2011	Potter <i>et al.</i>	704	275	
	3O	7,902,969	03/08/2011	Obradovich	340	439	
	3P	7,949,529	05/24/2011	Weider <i>et al.</i>	704	270	
	3Q	7,983,917	07/19/2011	Kennewick <i>et al.</i>	704	257	
	3R	8,015,006	09/06/2011	Kennewick <i>et al.</i>	704	236	
	3S	8,069,046	11/29/2011	Kennewick <i>et al.</i>	704	257	
	3T	8,073,681	12/06/2011	Baldwin <i>et al.</i>	704	9	
	3U	2001/0049601	12/06/2001	Kroeker <i>et al.</i>	704	254	
	3V	2002/0015500	02/07/2002	Belt <i>et al.</i>	381	66	
	3W	2002/0022927	02/21/2002	Lemelson <i>et al.</i>	701	301	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO

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

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(54) **Multi-modal picture**

(57) A system for presenting a multi-modal picture includes picture presentation equipment (37) for displaying an image (38) of the picture and for enabling a user to interact with the picture by selecting specific picture features and asking a specific query relating to the feature. A voice browser system (3) controlled accord-

ing to dialog scripts (46) associated with the picture, determines an appropriate response having regard to the spoken user query and the picture feature being pointed to. Each picture can have multiple narrators associated with it and the can choose which narrator is currently active. Picture authoring apparatus is also provided.

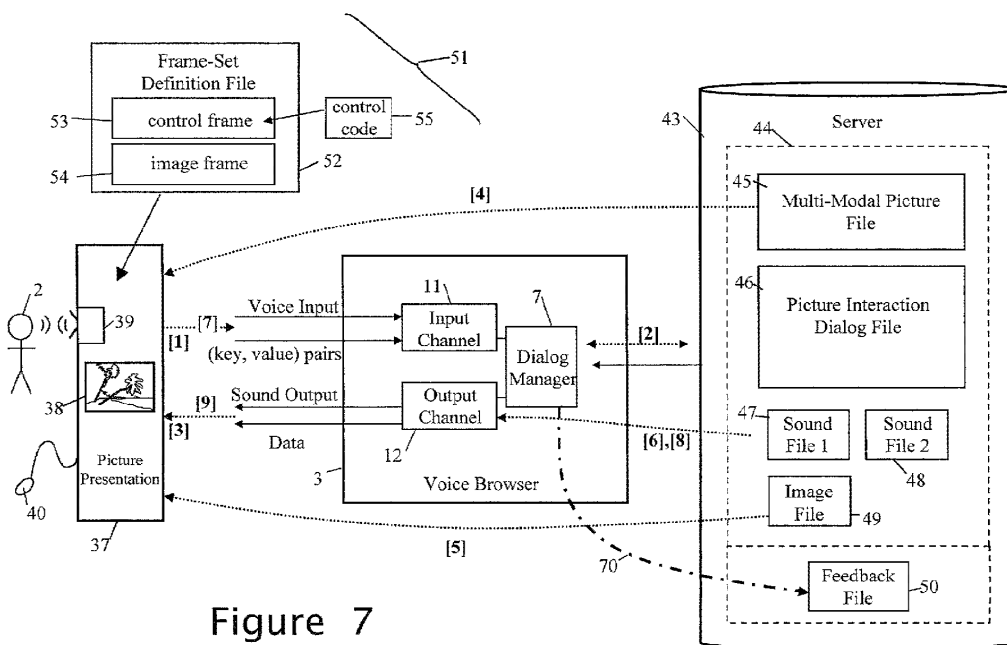


Figure 7

Description**Field of the Invention**

5 [0001] The present invention relates to multi-modal pictures with which a use can interact by spoken dialog exchanges.

Background of the Invention

10 [0002] In recent years there has been an explosion in the number of services available over the World Wide Web on the public internet (generally referred to as the "web"), the web being composed of a myriad of pages linked together by hyperlinks and delivered by servers on request using the HTTP protocol. Each page comprises content marked up with tags to enable the receiving application (typically a GUI browser) to render the page content in the manner intended by the page author; the markup language used for standard web pages is HTML (HyperText Markup Language).

15 [0003] However, today far more people have access to a telephone than have access to a computer with an Internet connection. Sales of cellphones are outstripping PC sales so that many people have already or soon will have a phone within reach where ever they go. As a result, there is increasing interest in being able to access web-based services from phones. "Voice Browsers" offer the promise of allowing everyone to access web-based services from any phone, making it practical to access the Web any time and any where, whether at home, on the move, or at work.

20 [0004] Voice browsers allow people to access the Web using speech synthesis, pre-recorded audio, and speech recognition. Figure 1 of the accompanying drawings illustrates the general role played by a voice browser. As can be seen, a voice browser is interposed between a user 2 and a voice page server 4. This server 4 holds voice service pages (text pages) that are marked-up with tags of a voice-related markup language (or languages). When a page is requested by the user 2, it is interpreted at a top level (dialog level) by a dialog manager 7 of the voice browser 3 and output intended for the user is passed in text form to a Text-To-Speech (TTS) converter 6 which provides appropriate voice output to the user. User voice input is converted to text by speech recognition module 5 of the voice browser 3 and the dialog manager 7 determines what action is to be taken according to the received input and the directions in the original page. The voice input / output interface can be supplemented by keypads and small displays.

25 [0005] In general terms, therefore, a voice browser can be considered as a largely software device which interprets a voice markup language and generate a dialog with voice output, and possibly other output modalities, and / or voice input, and possibly other modalities (this definition derives from a working draft, dated September 2000, of the Voice browser Working Group of the World Wide Web Consortium).

30 [0006] Voice browsers may also be used together with graphical displays, keyboards, and pointing devices (e.g. a mouse) in order to produce a rich "multimodal voice browser". Voice interfaces and the keyboard, pointing device and display maybe used as alternate interfaces to the same service or could be seen as being used together to give a rich interface using all these modes combined.

35 [0007] Some examples of devices that allow multimodal interactions could be multimedia PC, or a communication appliance incorporating a display, keyboard, microphone and speaker/headset, an in car Voice Browser might have display and speech interfaces that could work together, or a Kiosk.

40 [0008] Some services may use all the modes together to provide an enhanced user experience, for example, a user could touch a street map displayed on a touch sensitive display and say "Tell me how I get here?". Some services might offer alternate interfaces allowing the user flexibility when doing different activities. For example while driving speech could be used to access services, but a passenger might used the keyboard.

45 [0009] Figure 2 of the accompanying drawings shows in greater detail the components of an example voice browser for handling voice pages 15 marked up with tags related to four different voice markup languages, namely:

- tags of a dialog markup language that serves to specify voice dialog behaviour;
- tags of a multimodal markup language that extends the dialog markup language to support other input modes (keyboard, mouse, etc.) and output modes (large and small screens);
- 50 - tags of a speech grammar markup language that serve to specify the grammar of user input; and
- tags of a speech synthesis markup language that serve to specify voice characteristics, types of sentences, word emphasis, etc.

55 [0010] When a page 15 is loaded into the voice browser, dialog manager 7 determines from the dialog tags and multimodal tags what actions are to be taken (the dialog manager being programmed to understand both the dialog and multimodal languages 19). These actions may include auxiliary functions 18 (available at any time during page processing) accessible through APIs and including such things as database lookups, user identity and validation, telephone call control etc. When speech output to the user is called for, the semantics of the output is passed, with any

associated speech synthesis tags, to output channel 12 where a language generator 23 produces the final text to be rendered into speech by text-to-speech converter 6 and output to speaker 17. In the simplest case, the text to be rendered into speech is fully specified in the voice page 15 and the language generator 23 is not required for generating the final output text; however, in more complex cases, only semantic elements are passed, embedded in tags of a natural language semantics markup language (not depicted in Figure 2) that is understood by the language generator. The TTS converter 6 takes account of the speech synthesis tags when effecting text to speech conversion for which purpose it is cognisant of the speech synthesis markup language 25.

[0011] User voice input is received by microphone 16 and supplied to an input channel of the voice browser. Speech recogniser 5 generates text which is fed to a language understanding module 21 to produce semantics of the input for passing to the dialog manager 7. The speech recogniser 5 and language understanding module 21 work according to specific lexicon and grammar markup language 22 and, of course, take account of any grammar tags related to the current input that appear in page 15. The semantic output to the dialog manager 7 may simply be a permitted input word or may be more complex and include embedded tags of a natural language semantics markup language. The dialog manager 7 determines what action to take next (including, for example, fetching another page) based on the received user input and the dialog tags in the current page 15.

[0012] Any multimodal tags in the voice page 15 are used to control and interpret multimodal input/output. Such input/output is enabled by an appropriate recogniser 27 in the input channel 11 and an appropriate output constructor 28 in the output channel 12.

[0013] Whatever its precise form, the voice browser can be located at any point between the user and the voice page server. Figures 3 to 5 illustrate three possibilities in the case where the voice browser functionality is kept all together; many other possibilities exist when the functional components of the voice browser are separated and located in different logical/physical locations.

[0014] In Figure 3, the voice browser 3 is depicted as incorporated into an end-user system 8 (such as a PC or mobile entity) associated with user 2. In this case, the voice page server 4 is connected to the voice browser 3 by any suitable data-capable bearer service extending across one or more networks 9 that serve to provide connectivity between server 4 and end-user system 8. The data-capable bearer service is only required to carry text-based pages and therefore does not require a high bandwidth.

[0015] Figure 4 shows the voice browser 3 as co-located with the voice page server 4. In this case, voice input/output is passed across a voice network 9 between the end-user system 8 and the voice browser 3 at the voice page server site. The fact that the voice service is embodied as voice pages interpreted by a voice browser is not apparent to the user or network and the service could be implemented in other ways without the user or network being aware.

[0016] In Figure 5, the voice browser 3 is located in the network infrastructure between the end-user system 8 and the voice page server 4, voice input and output passing between the end-user system and voice browser over one network leg, and voice-page text data passing between the voice page server 4 and voice browser 3 over another network leg. This arrangement has certain advantages; in particular, by locating expensive resources (speech recognition, TTS converter) in the network, they can be used for many different users with user profiles being used to customise the voice-browser service provided to each user.

[0017] It is known to enhance pictures by providing associated speech annotations. It is an object of the present invention to provide further enhancements to such pictures.

Summary of the Invention

[0018] According to one aspect of the present invention, there is provided a system for presenting information concerning a picture to a user, the system comprising:

- a data store for holding responses, specific to said picture, in respect of specific user queries concerning particular picture features;
- a manually-operable feature-selection arrangement for enabling a user to select a feature in a displayed image of the picture, and for providing an output indication regarding what said particular feature, if any, the user has thereby selected;
- a voice dialog input-output subsystem including a speech recogniser for interpreting queries from a user;
- a control arrangement responsive to a user selecting a said particular feature and asking a specific query regarding that feature, to output the corresponding stored response.

[0019] Advantageously, each response is associated with a specified narrator and the user can opt to receive only the response of a selected narrator for either a current query or for all queries.

[0020] Preferably, provision is made for providing feedback to an author of the picture or its associated responses in the event that a user makes a query about a picture feature that is not a said particular picture feature or, although

a query about such a feature, is not a said specific query for which a response is available.

[0021] According to another aspect of the present invention, there is provided a multi-modal picture specified by data held on at least one data carrier, this data comprising:

- 5 - picture image data for displaying a picture image;
- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features of the picture;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature in the displayed image; and
- 10 - second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

[0022] According to a further aspect of the present invention, there is provided a multi-modal picture comprising a hard-copy picture image, and data held on at least one data carrier, this data comprising:

- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features;
- first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature of the image; and
- 20 - second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

[0023] The present invention also encompasses the overall process of generating a multi-modal picture and using it to convey information about particular picture features to a user. Thus, according to a still further aspect of the present invention, there is provided a method of conveying information about particular features in a picture, the method comprising the steps of:

30 (a) creating the following specifically-associated data:

- picture image data for displaying a picture image;
- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features of the picture;
- 35 - first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature in the displayed image; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user, which said response is to be used to reply to the user query;

40 (b) using the image data to display an image of the picture;
 (c) having a user use a manually-operated selection arrangement to select a feature in the displayed image and using the first control data to determine which said particular feature in the picture image, if any, the user is selecting;
 (d) receiving and interpreting a spoken query from the user to determine if a said specific query is being asked; and
 45 (e) using the second control data to determine, on the basis of the said particular feature determined as being selected in step (c) and the said specific query determined as being asked in step (d), which said response is to be used to reply and thereupon using the response data to output the corresponding voice response.

[0024] Similarly, according to a yet further aspect of the present invention, there is provided a method of conveying information about particular features in a hard-copy picture, the method comprising the steps of:

50 (a) creating the following specifically-associated data:

- response data indicative of voice responses intended to be given to specific user queries concerning particular picture features in said picture;
- 55 - first control data for enabling a determination to be made as to which said particular feature in the picture, if any, a user is selecting when using a selection arrangement to indicate a feature of the picture; and
- second control data for determining, on the basis of a spoken user query and on which said particular picture

feature is selected by the user, which said response is to be used to reply to the user query;

- (b) making the picture and data available to a user;
- (c) having the user use a manually-operated selection arrangement to select a feature in the picture and using the first control data to determine which said particular feature in the picture, if any, the user is selecting;
- (d) receiving and interpreting a spoken query from the user to determine if a said specific query is being asked; and
- (e) using the second control data to determine, on the basis of the said particular feature determined as being selected in step (c) and the said specific query determined as being asked in step (d), which said response is to be used to reply and thereupon using the response data to output the corresponding voice response.

[0025] According to another aspect of the present invention, there is provided apparatus for authoring a multi-modal picture, comprising:

- a first tool for defining image hotspots associated with particular picture-image features;
- a second tool with speech recognition capability, for recording user responses input by voice, to user-specified queries each associated with a particular said picture-image feature; and
- means for automatically generating control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by a user, which said response is to be used to reply to the user query.

[0026] With respect to the above-mentioned feature regarding the provision of feedback on user queries for which responses are not available, a further independent aspect of the present invention provides a method of collecting user-interest information regarding a picture, the method comprising the steps of:

- (a) presenting a picture image to a user, particular picture features in the image each having associated information that is presented to the user upon the user requesting such information;
- (b) recognising a user information request, in respect of a picture feature, made by the user at least selecting that picture feature using a feature-selection arrangement; and
- (c) in response to recognition of a user information request in step (b) concerning a picture feature that is other than a said particular picture feature, outputting an identifier of the concerned picture feature independently of the presented image.

[0027] This aspect of the invention may be implemented in the form of a system for collecting user-interest information regarding a picture, the system comprising:

- a data store for holding information concerning particular picture features;
- a feature-selection arrangement for enabling a user to select a feature in a displayed view of the picture, and for providing an output indication regarding what said particular feature, if any, the user has thereby selected;
- an information-output subsystem for outputting information about picture features to the user;
- a control arrangement for recognising a user information request, in respect of a picture feature, made by the user at least selecting that picture feature using the feature-selection arrangement, the control arrangement including:
 - first output means arranged to respond to a user making an information request concerning a said particular feature, by outputting the corresponding stored information via the information-output subsystem; and
 - second output means arranged to respond to a user making an information request concerning a picture feature that is other than a said particular picture feature, by outputting an identifier of the concerned picture feature for informing an author of the picture or its associated information regarding the unsatisfied information request.

Brief Description of the Drawings

[0028] A method and apparatus embodying the invention will now be described, by way of nonlimiting example, with reference to the accompanying diagrammatic drawings, in which:

- . **Figure 1** is a diagram illustrating the role of a voice browser;
- . **Figure 2** is a diagram showing the functional elements of a voice browser and their relationship to different types of voice markup tags;
- . **Figure 3** is a diagram showing a voice service implemented with voice browser functionality located in an end-user system;

- . **Figure 4** is a diagram showing a voice service implemented with voice browser functionality co-located with a voice page server;
- . **Figure 5** is a diagram showing a voice service implemented with voice browser functionality located in a network between the end-user system and voice page server; and
- 5 . **Figure 6** shows an example picture image of a multi-modal picture embodying the invention;
- . **Figure 7** is a diagram of a system for presenting a multi-modal picture to a user;
- . **Figure 8** is a diagram showing constituent dialog blocks of a picture interaction dialog file of the Figure 6 multi-modal picture;
- . **Figure 9** is a diagram of apparatus for authoring a multi-modal picture;
- 10 . **Figure 10** shows, in respect of the Figure 6 image, a user seeking information from two picture features for which there is no associated information; and
- . **Figure 11** shows the Figure 6 picture image enhanced with upper and lower information bars.

Best Mode of Carrying Out the Invention

15 **[0029]** In the following description, voice dialog interaction with a user is described based on a voice page server serving a dialog page with embedded voice markup tags to a multi-modal voice browser. Unless otherwise indicated, the foregoing description of voice browsers, and their possible locations and access methods is to be taken as applying also to the described embodiments of the invention. Furthermore, although voice-browser based forms of voice dialog services are preferred, the present invention in its widest conception, is not limited to these forms of voice dialog service system and other suitable systems will be apparent to persons skilled in the art.

Multi-Modal Picture

25 **[0030]** Figure 6 depicts a multi-modal picture comprising a displayed picture image 30 (here shown as being of a holiday island taken, for example, whilst the author of the picture was on holiday) with which a recipient (referred to below as the "user") can interact using multiple modalities and, in particular, by spoken dialogues and the use of a pointing arrangement, such as a cursor controlled by a mouse, stylus or keyboard keys, a touch-screen detection arrangement, etc. Thus, the user can query the picture using speech input, the query being either a general query about the picture or a specific query about a particular feature (item or area) of the picture indicated by use of the pointing arrangement (for example, the user uses a mouse to move a cursor over a picture feature and then clicks a mouse button). Of course, only certain picture features will have been set up to be queried and in the Figure 6 example, there are three such features, namely a coconut tree 31, a first person 32, and a second person 33; the dashed boxes around these features represent the "hotspot" image areas set up to encompass the features, the dashed lines generally not being visible (though displaying a hotspot boundary can be used as one way of indicating the hotspot to the user - a more typical way would be, in the case of the pointing arrangement being a mouse-controlled cursor, to change the cursor image as it moved into and out of a hotspot).

35 **[0031]** Processing functionality associated with the multi-modal picture is arranged to recognize one or more one or more general queries and, for each picture feature set up for selection, one or more specific queries. For each query set to be recognized, there is a corresponding response which is output to the user when the query is recognized, this output generally being in spoken form, generated using either speech synthesis or pre-recorded audio content. Thus, for example:

45 General Queries - available general queries can include picture location, the date of the picture was taken, and a description of the general subject of the picture. For instance:

User: "Describe the picture"
 System: "This is a picture of the XYZ beach"
 User: "What is the date?"
 50 System: "The picture was taken November last year"
 User: "What is the location?"
 System: "XYZ beach is in Martinique, an island that is part of the French West Indies."

(In this and other dialog examples given in the present specification, the "System" is the functionality used to present the multi-modal picture to the user and to provide for multi-modal interaction).

Specific Queries - typically, the same specific queries are available for all the selectable picture features; example specific queries are: "What it is?", "Any story?", etc. For instance:

User: "What is it?" "
 System: "This is my cousin John".
 User: "Any story?"
 System: "John goes fishing quite often in the Caribbean Sea. One day, he just escaped a white shark attack."

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[0032] The responses from the system can, of course, be more than just a simple single turn response and may involve a multi-turn structured dialog. Provision may also be made for different levels of content, for instance an initial level of public information and a lower level of private information only accessible under password control (or by some other security check procedure). Alternatively, there may be both a brief and a much fuller response .

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[0033] A further possibility is to have responses from more than one narrator. Thus, a user can first obtain a response from one person associated with the picture and then a response from a different person also associated with the picture. For example, the user receives a picture from his/her parents. In the picture, the user's mother appears to be talking to someone, but the user's father looks bored. The user interaction might therefore proceed as follows:

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User: "Mother, who is she?" [User uses pointing arrangement to indicate a person in the picture].
 System: [In pre-recorded voice of user's mother] "This is my colleague from work. We had such a good time."
 User: "Father, can you please describe the picture?"
 System: [In pre-recorded voice of user's father] "We went to this rather boring evening with your mother's colleagues. They ended up talking about clothes all the time."

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[0034] From the foregoing general description of a multi-modal picture, it will be appreciated that the term "multi-modal picture" covers more than just the picture image and includes also the associated dialog and the behaviour of the picture in response to user input.

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Example Implementation

[0035] Figure 7 depicts an example implementation of a system for presenting a multi-modal picture.

[0036] The multi-modal picture is specified by a set 44 of related files held on a server 43, these files specifying both the image associated with the multi-modal picture and also the picture interaction dialogue associated with the picture. At least the dialogue and image files of set 44 are specifically associated with each other- that is, the association of these files is prespecified (in advance of user interaction) with the contents of the dialogue file being specifically tailored to the picture represented by the image file of the same set 44.

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[0037] User 2 has local picture-presentation equipment 37; in the present case, this equipment is standard processing platform, such as a PC or portable computer, arranged to run a graphical web browser such as Microsoft's Internet Explorer. Other implementations of the picture presentation equipment 37 can alternatively be provided such as a mobile phone with a graphical display and suitable programs.

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[0038] The picture-presentation equipment 37 displays the picture image of the multi-modal picture on display 38 and also provides for the input and output audio data via audio functionality 39, this audio input and output being transferred to and from a voice browser 3 (here shown as located separately from the picture picture-presentation equipment - for example, a network-based voice browser - but alternatively, integrated with the picture-presentation equipment 37). The picture-presentation equipment also has an associated pointing arrangement 40 depicted in Figure 7 as a mouse for controlling a cursor movable over the displayed picture image; other forms of pointing arrangements for selecting features of the picture image are, of course, also possible such as the use of touch pads, tracker balls or joysticks for moving an image cursor; touch-sensitive displays and other arrangements (such as a matrix of infra-red beams immediately overlying the display) for enabling a user to use a finger or stylus to point directly at a feature of the displayed image; etc..

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[0039] The voice browser 3 comprises input channel 11, dialog manager 7 and output channel 12. The voice browser provides interactive dialog with the user, via the picture-presentation equipment 37, in respect of the currently-presented multi-modal picture, this dialog being in accordance with picture interaction dialog data retrieved from server 43.

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[0040] The Figure 7 voice browser 3, as well as providing for voice input and output exchanges with the picture-presentation equipment 37, is also arranged to receive input data from the equipment in the form of key.value pairs indicating, for example, the selection of a particular picture feature by the user using the pointing arrangement 40 of the picture-presentation equipment. This data input is used by the dialog manager 7 in determining the course of the dialog with the user. The voice browser 3 can also provide data back to the picture-presentation equipment 37.

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[0041] The picture-presentation equipment 37, voice browser 3 and server 3 inter-communicate via any suitable communications infrastructure or direct links.

[0042] Considering in more detail the files involved in the presentation of a multi-modal picture, these comprise, in addition to the set 44 of files that specify a multi-modal picture, a set of generic files 51. The multi-modal picture files

44 comprise:

- the picture file 45, this file including a source reference for the picture image file 49 to be displayed and map data defining the image hotspots;
- a picture interaction dialog file 46 containing dialog scripts;
- one or more sound files 47, 48 (such as ".wav" files) containing audio data;
- the image file 49 (such as a ".jpg" or ".gif" file) containing the image data to be displayed.

[0043] The generic files 51 can be stored locally in the picture-presentation equipment 37 or retrieved from a remote location such as the server 43. The generic files comprise:

- a frame-set definition file 52 defining two frames 53, 54 into which page files can be independently loaded; one frame 53 is used to hold a file 55 containing control code (the contents of this frame not being visible), and the other frame 54 being used to hold the picture file 45 for the multi-modal picture to be presented.
- the control code file 55 to be loaded into frame 53, the control code being in the form of a number of scripts the main purpose of which is to provide key,value pairs to the voice browser according to events detected by the browser software run by the picture-presentation equipment 37 - in particular, clicking on an image hotspot as defined in file 45 is arranged to trigger a corresponding script in the control code file 55 whereby to cause a corresponding key,value pair to be passed to the voice browser 3 to inform it that a particular picture feature (corresponding to the activated hotspot) has been selected by the user.

[0044] To use the generic files to present a particular multi-modal picture, it is necessary to provide a reference to the multi-modal picture. This reference can, for example, be manually input by the user into an initial form displayed in the image frame 54 and then used by a script to request the loading of a file into frame 54. Alternatively, the multi-modal picture reference can be included as data in a query string attached to the URL of the frame-set definition file 52 (this URL and query string being, for example, provided to the user by the author of the multi-modal picture); in this case, in response to a request for the frame-set definition file 52, server-side code could, for example, extract the data from the query string and place it in the file source reference in the definition line for frame 54 in the frame-set definition file before that file is returned to the user.

[0045] In the present example, the multi-modal picture reference used to initiate presentation of the multi-modal picture is a reference to the picture interaction dialog file 46 to be loaded into the voice browser, rather than a reference to the picture file 45 that is to be loaded into the image frame 54. Thus, the multi-modal picture reference, however obtained, is passed in a key,value pair to the voice browser 3; voice browser 3 thereupon retrieves the picture interaction dialog file 46 to the dialog manager 7 of the voice browser. The file 46 includes a reference to the picture image file 45 to be loaded into the frame 54 and this reference is returned to the picture-presentation equipment 37 where it is used to retrieve the picture file 45. Where the picture-presentation equipment 37 comprises a standard web browser, one way of achieving the above is to have the dialog file reference sent (either as a source reference in the frame-set definition file or by a script in, for example, file 55) to the voice browser in a request for a file to load into frame 54, the voice browser sending back the picture file reference as a redirection.

[0046] It will be appreciated that the multi-modal picture reference passed into the generic files could have been that of the picture file 45, the latter then being retrieved into frame 54 and including an "onLoad" event script for passing to the voice browser a reference to the interaction dialog file.

[0047] The various steps involved in presenting a multi-modal picture according to the Figure 7 implementation are summarized below with reference to the reference numerals in square brackets in Figure 7:

- [1] the generic files 51 have been loaded into the picture-presentation equipment 37 and a multi-modal picture reference has been provided; as a result, a key,value pair including a reference to the picture interaction dialog file 46 is passed to the voice browser 3;
- [2] voice browser retrieves the dialog file 46 from the server 43 and dialog manger 7 uses the file to control further interaction with the user;
- [3] the first action taken by the dialog manager 7 under the control of dialog file 46 is to pass to the equipment the reference for the picture file 45 along with a voice greeting to the user;
- [4] the picture file 45 (including a reference to the image file 49) is retrieved from server 43 and loaded into the image frame 54;
- [5] the image file 49 is retrieved from the server 43 and displayed on display 38;
- [6] meanwhile, the dialog manager 7 causes a sound (in sound file 47) to be played to the user to indicate that the picture is ready to receive user input (this sound can simply be an appropriate background sound such as, for the Figure 6 picture image, the sound of the sea);

[7] the user queries the picture by voice input (and possibly also by pointing to a particular area of the picture, this being indicated by a corresponding key,value pair sent to the voice browser along with the user voice input);

[8] dialog manager 7 acknowledges the receipt of the user query by causing an acknowledgement sound (in sound file 48) to be played back to the user;

[9] the dialog manager 7, having determined the appropriate response to the user query, outputs this response.

Steps [8] and [9] are repeated as many times as required by the user. In due course the user asks to exit and the dialog is terminated by the dialog manager.

[0048] Figure 8 illustrates the contents of the picture interaction dialog file 46. This file contains a number of dialog blocks 60 to 73 that contain dialog elements and/or control structures relating to dialog progression. Thus, dialog block 60 provides the initial greeting and causes the picture file reference to be passed to the equipment 37 (in step [3] above). Block 61 defines the query grammar and represents a waiting state for the dialog pending the receipt of a query from the user.

[0049] Block 62 carries out an analysis of a recognized query to determine whether it is an exit request (if so, an exit dialog block 63 is entered), a generic request, or a specific request; generic and specific requests are further analyzed to determine the nature of the query (that is, what "action" - type of information - is being requested). For a general query, the available actions are, in the present example, "date", "description", and "location"; for a specific query, the action types are, in the present example, "what" and "story". Depending on the outcome of the action analysis, the dialog manager proceeds to one of blocks 64 - 66 (for a general query) or one of blocks 67 and 68 (for a specific query). The analysis carried out by dialog block 62 is on the basis of voice input only.

[0050] If the query was a general one, then block 64 is used to answer a date query, block 65 is used to respond to a description query, and block 66 is used to respond to a location query.

[0051] If the query was a specific "what" query, block 67 determines the identity of the picture feature (object) involved using the key,value pair provided to the voice browser; depending on the object identity, the dialog manager proceeds either to a "what" dialog block 70 for a coconut tree or to a "what" dialog block 71 for a French tourist. Similarly if the query was a specific "story" query, block 68 determines the identity of the picture feature (object) involved using the key,value pair provided to the voice browser; depending on the object identity, the dialog manager proceeds either to a "story" dialog block 72 for a coconut tree or to a "story" dialog block 73 for a French tourist.

[0052] After a response is provided by any one of the dialog blocks 64-66 or 70-73, the dialog manager returns to dialog block 61.

[0053] An example dialog interaction based on the Figure 6 picture and the Figure 8 dialog structure is given below; in this example, there is one narrator called Roger.

Example Interaction:

[0054]

System: "This picture was sent to you by Guillaume. You can talk to Roger to ask for information about it."

User: "Roger, Describe the picture"

System: "This is a picture of the XYZ beach."

User: "What is the location?"

System: "This picture was taken in Martinique, an island located in the French West Indies."

User: "What is it" [and clicks on feature 31]

System: "This is a coconut tree. This kind of trees is very common in the Caribbean."

User: "Any story?"

System: "When I was little, I used to get coconuts from my garden. There is a sweet liquid inside that is very tasty. We use coconut to make ice creams and all sorts of nice desserts."

User: "What is it?" [and clicks on 32]

System: "I guess this is a French tourist"

User: "Any story?"

System: "Tourism is one of the main source of revenue in Martinique. A lot of people come from France when it is winter over there."

User: "Exit"

System: "Thanks for using this digital picture frame."

[0055] The Appendix to the present description includes a detailed script example of the Figure 8 dialog interaction as well as the HTML source of a picture file 45.

Multi-modal picture authoring tool.

[0056] Figure 9 illustrates apparatus for enabling an author 80 to author a multi-modal picture. The apparatus comprises a computing platform 81 providing a graphical user interface and running a tool, such as Microsoft's FrontPage product, for authoring mark-up language pages and for creating image hotspot maps. The apparatus further comprises a speech interface system 82 (here shown as a voice browser though other forms of speech interface system can be used). The speech interface system 82 permits the author 80 to interact with the apparatus by voice and is set up to recognize command words such as "Record".

[0057] Different people, known as narrators, can author different aspects of the same picture. The apparatus keeps a record of narrators known to it.

[0058] The apparatus is arranged to interact with one or more narrators to build up, in memory, the set of files 44 that specify a multi-modal picture, it being assumed that the picture image file 47 around which the multi-modal picture is to be built has already been loaded into memory (for example, from a digital camera) and is displayed via the graphical user interface (GUI) of platform 81. The process of building the required files is controlled by a top-level authoring program 90 that has three main steps 91-93 as will be more fully explained below.

Identifying the narrator - (step 91)

[0059] The first step of the authoring program is to identify the current narrator. The narrator speaks his/her name into the speech interface system 82; if the name is known to the apparatus, the system replies with a recognition greeting. However, if the narrator's name is not already known to the apparatus, the system asks the narrator to create a new profile (basically, input his/her name and any other required information), using appropriate data collection screens displayed on the graphical user interface of the computing platform 81.

[0060] Example: the apparatus knows the following names: "Lawrence" and "Marianne".

Apparatus: "What is your name?"

Narrator: "Steve".

Apparatus: "Sorry, I do not know this name, please write it down."

Narrator: [inputs "Steve" via a data collection screen of the GUI].

[0061] The authoring program uses the narrator's name to customize a greeting dialog block of a template picture interaction dialog file 46.

Adding general information about the picture - (step 92)

[0062] After identification, the narrator can input general information concerning the picture image such as the date, the location or the description, via a spoken dialogue. In the following example, the command words recognized by the speech interface system 82 are shown in bold whilst the nature of information being recorded (corresponding to the query "action" type of Figure 8) is indicated by underlining. The words indicating the nature of the information are either pre-designated to the system (effectively limiting the classification of information to be input) or else the system can be arranged to analyze narrator "Record" commands to determine the nature of the information to be recorded.

Example:

[0063]

Narrator: "**Record** description"

Apparatus: [Plays a beep].

Narrator: "This is a picture of me and John fishing in the Caribbean sea". [The apparatus records this input, either directly as sound data or as a text data after the input has been subject to speech recognition by the system 82]

Narrator: "**Write** date".

Apparatus: [displays date capture screen on GUI].

Narrator: [inputs date information via GUI].

Narrator: "**Record** story"

Apparatus: [Plays a beep.]

Narrator: "This day, John was attacked by a white shark." [The apparatus records this input]

[0064] The authoring program uses the input from the narrator to create corresponding dialog blocks, similar to those described above with reference to Figure 8, in dialog file 46.

Adding specific information - (step 93)

[0065] The narrator can also input information concerning a specific feature of the picture image. To do this, the narrator indicates the picture feature of interest by using the GUI to draw a "hotspot" boundary around the feature. The apparatus responds by asking the narrator to input a label for the feature via an entry screen displayed on the GUI.. The authoring program uses the input from the narrator to create the multi-media picture file 45 holding an image hotspot map with appropriate links to the control code scripts.

[0066] The narrator can then enter further information using the speech interface system or the GUI. The narrator can record or write multiple descriptions or stories for a single area of the picture, for example, to give different level of details.

Narrator: **"Record description".**

Apparatus: [Plays beep.]

Narrator: "It is a whale" [The apparatus records this input]

Narrator: **"Record story"**

Apparatus: [Plays beep.]

Narrator: "We saw this whale on the way to Dominica." [The apparatus records this input]

Narrator: **"Record next"** (indicates that further details for the story are to be recorded).

Narrator: "We were crossing the Guadeloupe channel when we saw it." [The apparatus records this input]

[0067] Again, the authoring program uses the input from the narrator to create corresponding dialog blocks; thus, for the above example, where a "whale" hotspot has been designated by the user, the authoring program generates a set of dialogs blocks: 'whaleDescription', 'whaleStory1', 'whaleStory2', etc.

[0068] After the first narrator has finished inputting information, other narrators can enter information in the same manner.

User Feedback

[0069] It will be appreciated that the authoring of a multi-modal picture, and in particular the adding of the dialog data, can be quite involved. As a result, it is quite likely that the author will not always include information that a recipient may be interested in.

[0070] It is therefore useful to be able to monitor a user's interaction with a multi modal picture to see if the user tries to access missing information. For example, a user receives the Figure 6 multi modal picture from a friend. Two objects 35,36 (a building and an island) in the picture image intrigues the user (see Figure 9) who therefore clicks on each picture feature concerned and asks for more information ("What is it?"). Unfortunately, there are no hotspots associated with either picture feature and therefore in each case the voice browser comes back with the response "Sorry, there is no information about this item."

[0071] However, the coordinates corresponding to each picture feature the user clicked are known to the browser used to display the picture image and the control script (for example, in file 55) can be used to pass the coordinates as key,value pairs to the voice browser 3. At the same time, a user verbal query is also passed to the voice browser. The voice browser first determines whether the query is a general one and if it is, the voice browser ignores the received coordinate values; however, if the voice browser determines that the query is a specific one, then it determines from the key,value pairs received that the user has indicated a picture feature for which there is no corresponding information available. In this case, the voice browser logs the received coordinate values and the associated "action" type (in the example given above, "what" or "story") in a feedback file 50 that forms part of the set 44 of related files associated with the multimodal picture (see arrow 70 in Figure 7). For example, upon the user clicking on the island feature 36 in Figure 9 and asking "what is this?", the data (action='what'; coordx=400;coordy=300) is logged to file 50. Such logging functionality is, for example, provided by a further dialog block of Figure 8. The logged coordinates provide, together with an indication of the picture concerned, a picture-feature identifier that identifies the picture feature about which information has been requested by the user.

[0072] Alternatively or additionally to logging the "desired-information" feedback data in file 50, the author of the multi-modal picture can be sent a message (for example, an e-mail message) explaining the query from the user such as "John wants a description of this object.". This message includes a picture feature identifier that identifies the picture feature concerned. The picture feature identifier can take the form of explicit data items indicative of the picture concerned and the coordinates of the feature in the picture or may more directly indicate the feature by including either

image data representing the relevant portion of the picture image or image data showing the picture image with a marking indicating the position in the image of the feature concerned (both such forms of picture-feature indication can also be included the feedback file 50 additionally or alternatively to the feature coordinates). The picture-feature indication need not be sent to the file 50 (or included in a message to the author) at the time the system detects that the user has asked for information about a non-hotspot picture feature; instead, the indication and related query can be temporarily stored and output, together with other accumulated similar indications and queries, either at a specified time or event (such as termination of viewing of the picture by the user) or upon request from the picture author.

[0073] The author can then decide whether or not to add in further information by adding an additional hotspot and additional dialogs (for example, using the above-described authoring apparatus).

[0074] Of course, the same general feedback process can be used where although a selected picture feature is associated with an existing hotspot, there is no existing query "action" corresponding to a user's query. Furthermore, a similar feedback process can be used where user queries are input by means other than speech (such as, for example, via a keyboard or by a hand-writing or stroke recognition system) and, indeed, where there are no explicit user queries such as when the selecting of picture feature is taken as a request for information about that feature.

15 Variants

[0075] Many variants are, of course, possible to the arrangements described above. For example, Figure 11 illustrates a variant form of the multi-modal picture in which the picture image 30 is accompanied by upper and lower information bars 100 and 101 respectively. The upper information bar 100 indicates the narrators associated with the picture whilst the lower information bar 101 indicates what types of general and specific queries are available for use. These information bars assists the user in appreciating what queries can be put and to whom. To further assist the user, speaking (or clicking on) a narrator's name is preferably arranged to indicate what hotspots are associated with that narrator and where these hotspots are located in the image - thus, in Figure 11, narrator "Vivian" has been selected and hotspot 32 is indicated on the picture image by a dashed hotspot boundary line. Query types used by "Vivian" can also be indicated by highlighting these types (in the Figure 11 example, "Vivian" has used general query type 'description' and specific query types 'what' and 'story'). Preferably, once a narrator has been selected, that narrator remains selected until a different (or all) narrators is subsequently selected, whereby with a narrator selected, only the responses of that narrator will be used in responding to the users' queries. However, it is also possible to arrange for selection of a narrator to be effective only for a single query. In this latter case, a convenient way of providing for user selection of a narrator to answer a query about a particular feature is for a list of narrators of responses about that feature to be displayed whenever the user points to that feature.

[0076] Instead of identifying narrators by name as shown in Figure 11, other forms of identifier can be used such as an image of each narrator.

[0077] As regards the generic control code, this can be provided in the form of a Java applet or any other suitable form and is not limited to the use of client-side scripts of the form described above. Furthermore, rather than the frame-set definition file 52 and control code file 55 being generic in form, they can be made specific to each multi-modal picture.

[0078] As already indicated, picture invocation can be initiated in a variety of ways. As a further example, picture invocation can be arranged to be effected by the creator sending the user a reference to the picture interaction dialog file, the user sending this reference to the voice browser to enable the latter to retrieve the dialog file; the dialog file is arranged to cause the return to the user of the frame-set definition file (or a reference to it) with the latter already including the correct source reference to the picture file as well as to the control code file.

[0079] Persons skilled in the art will appreciate that there are very many ways of implementing multi-modal pictures and the supporting functionality ranging from the multiple file approach described above to having just a single data file containing all the necessary data and arranged to be executed by specifically adapted software. It will also be appreciated that whilst in the described embodiments the course of the system-user interaction is controlled by the control logic embedded in the picture interaction dialog file and interpreted by the dialog manager 7 of the voice browser, it is possible to provide this functionality separate from the voice browser and the response scripts (thus, in general terms, the dialog block 62, 67 and 68 would be used by a separate control arrangement for determining, on the basis of the user voice and pointing-arrangement inputs, which of multiple stored responses is the appropriate one to play back to the user). Furthermore, it is not necessary to explicitly identify a selected feature from the coordinates output by the pointing arrangement as a separate step to choosing an appropriate response to a particular user query; thus, a picture feature could simply be specified in the control logic of the dialog interaction file by its coordinate values (of range of values) whereby this control logic tests coordinate values output by the pointing arrangement against coordinate values of particular features in the course of selecting a response to a user query.

[0080] With respect to the selection of a picture feature of interest to a user, in the described embodiments this has been carried out by means of a user-operated pointing arrangement whereby data input about the picture feature of interest is generated through a manual operation. In addition to the described arrangements for manually effecting

feature selection, it is possible to use an arrangement in which the coordinates of the feature of interest are manually input using a keypad (a coordinate system being displayed as part of the image presented to the user, or being presented around the boundary of the display area). Another possible feature-selection arrangement is one based on specifying, via keypad input, a particular area of the display where either the display is divided into labelled areas or there is a direct mapping between keypad keys and display areas. It is also possible to label each feature of interest in the image with a reference and have the user effect feature selection by keypad input of the appropriate reference.

[0081] Further as regards the determination of which picture feature is being selected by a user, it should be noted that determining the picture feature of interest from the image coordinates or image area identified by whatever selection arrangement is being used, can be done in ways other than that described above in which image coordinates generated by the feature-selection arrangement are mapped to picture features using predetermined mapping data as described above. For example, the image can have data encoded into it that labels particular picture features, the pointing arrangement being arranged to read this label data when over the corresponding picture feature. Technology for embedding auxiliary data in picture image data in a way that does not degrade the image for the average human viewer is already known in the art.

[0082] The picture image can be a hard-copy image carrying markings (such as infra-red ink markings) intended to be read by a sensor of a suitable pointing arrangement whereby to determine what particular picture feature is being pointed to; the markings can be a pattern of markings enabling the pointing arrangement to determine the position of its sensor on the image (in which case, an image map can be used to translate the coordinates into picture features) or the markings can be feature labels appropriately located on the image. Even without special markings added to the image, the image can still be a hard-copy image provided the image is located in a reference position relative to which the pointing arrangement can determine the position of a pointing element (so that an image map can be used to translate pointing-element position into picture features). Other manually-operated selection arrangements, such as those based on explicit coordinate input via a keypad, can also be used.

[0083] Where image map data is used to translate image coordinates to picture features, the image map data can be held separately from the picture file and only accessed when needed; this facilitates updating of the image map data. A reference (e.g. URL) to the image map data can be included in the picture file or, where the image is a hard-copy image, in markings carried by the image.

[0084] Preferably, the described embodiments are applied to pictures of scenes and places in the real world such as a tourist might take with a camera. However, it is also possible to apply the embodiments to topographic pictures that are primarily intended to convey map-type information.

APPENDIX

This Appendix forms an integral part of the description.

5

Example of Multi-Modal Picture file.

The following HTML file was generated using Microsoft FrontPage and is the Multi-Modal Picture file 45 for the picture depicted in Figure 6; the HTML code pulls in image file "beachPicture.jpg" and defines three "hotspots" which when clicked result in a call to a function (method) of the control code file 55 with the passing of a parameter value indicating which hotspot has been clicked on.

15

File Name: MMPicture1.htm

20

```
<html>
```

```
<head>
```

```
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
```

```
<meta name="GENERATOR" content="Microsoft FrontPage 4.0">
```

25

```
<meta name="ProgId" content="FrontPage.Editor.Document">
```

```
<title>Frame Page</title>
```

```
</head>
```

30

```
<body>
```

```
<p><map name="FPMap0">
```

35

```
<area href="http://localhost/mmpic1/dpfBlank.htm"
```

```
onclick="parent.parent.scriptFrame.pushParams('object=coconutTree')"
```

```
target="invisible" coords="128, 84, 253, 236" shape="rect">
```

40

```
<area href="http://localhost/mmpic1/dpfBlank.htm"
```

```
onclick="parent.parent.scriptFrame.pushParams('object=frenchTourist')"
```

```
target="invisible" shape="rect" coords="204, 266, 219, 282">
```

45

```
<area href="http://localhost/mmpic1/dpfBlank.htm"
```

```
onclick="parent.parent.scriptFrame.pushParams('object=frenchTourist')"
```

```
target="invisible" shape="rect" coords="309, 257, 324, 269"></map>
```

50

```
</p>
```

```
</body>
```

55

```
</html>
```

Example of Picture Interaction Dialogue file

[0085] The following is an example implementation of the Figure 8 picture interaction dialog file 46. In this example, there is one narrator called Roger. The user can say things like: "Roger, what is the date?".

5

```

<talkml>
10    <!--variables declaration-->
        <create name="object"          expr="undefined"/>
        <create name="action"          expr="what"/>
15    <create name="type"              expr="generic"/>
        <!-- Specify here the url of the display webserver-->
        <display-server url="localhost"/>
20
        <dialog name="welcome">
25            <say> Welcome to the digital picture frame. </say>
            <!-- Display the Multi Modal picture of beach. -->
            <display-show url="MMPicture1.htm"/>
30            <say>
                This picture was sent to you by Guillaume. You can talk to Roger to
                ask for information about it.
35            </say>
            <goto next="getUserRequest"/>
        </dialog>
40
        <dialog name="getUserRequest">
            <play src="sound1.wav"/>
45            <display-listen wait_after="2000"/>
            <speech wait_after="2000">
50                sentence = narrator question | question | exit {action='exit'};
                question = genericQuestion {type='generic'} | specificQuestion
                           {type='specific'};
55

```

```

narrator = roger {narrator='roger'};
roger    = "roger";
5      genericQuestion = date {action='date'}| location {action='location'}|
                                description {action='description'};

date     = "what is the date";
10      location = "what is the location";
description = "describe the picture";
specificQuestion= what {action='what'} | story {action='story'};
15      what     = "what is it";
story     = "any story";
exit      = "exit";
20      </speech>

<recognised>
25      <play src="sound2.wav"/>
      <goto next="filterRequest"/>
30      </recognised>

<unrecognised>
35      <play src="sound2.wav"/>
      <say> I am sorry, I have some trouble understanding you.</say>
      <retry/>
40      </unrecognised>

</dialog>
45

<dialog name="filterRequest">
50      <if cond="action='exit'">
      <goto next="exit"/>
      </if>
55

```

```

5      <if cond="type='generic'">
        <if cond="action='description'"><goto next="description"/></if>
        <if cond="action='date'"><goto next="date"/></if>
        <if cond="action='location'"><goto next="location"/></if>
10     </if>

    <if cond="type='specific'">
        <if cond="action='what'">    <goto next="what"/> </if>
15     <if cond="action='story'">    <goto next="story"/></if>
        </if>

20 </dialog>

25 <dialog name="description">
    <say>
30         This is a picture of the beach.
    </say>
    <goto next="getUserRequest"/>
35 </dialog>

40 <dialog name="date">
    <say>
        Guillaume took this picture during his last trip home to
45         Martinique last November
    </say>
    <goto next="getUserRequest"/>
50 </dialog>

55 <dialog name="location">

```

5 <say>
 This picture was taken in Martinique, an island located in the
 French West Indies.
 </say>
 <goto next="getUserRequest"/>
 10 </dialog>

15 <dialog name="what">
 <if cond="object='coconutTree'"><goto next="coconutTreeWhat"/></if>
 <if cond="object='frenchTourist'"><goto next="frenchTouristWhat"/></if>
 <say>
 20 Apparently, you did not click on any parts of the picture. Try
 again.
 </say>
 25 <goto next="getUserRequest"/>
 </dialog>

30 <dialog name="story">
 <if cond="object='coconutTree'"><goto next="coconutTreeStory"/></if>
 35 <if cond="object='frenchTourist'"><goto next="frenchTouristStory"/></if>
 <say>
 40 Apparently, you did not click on any parts of the picture. Try
 again.
 </say>
 <goto next="getUserRequest"/>
 45 </dialog>

50 <dialog name="frenchTouristWhat">
 <say>
 I guess this is a French tourist.
 55 </say>

```
<goto next="getUserRequest"/>
</dialog>
```

5

```
<dialog name="coconutTreeWhat">
```

10

```
<say>
```

This is a coconut tree. This kind of trees is very common in the Caribbean.

15

```
</say>
```

```
<goto next="getUserRequest"/>
```

```
</dialog>
```

20

```
<dialog name="frenchTouristStory">
```

25

```
<say>
```

Tourism is one of the main source of revenue in Martinique. A lot of people come from France when it is winter over there.

30

```
</say>
```

```
<goto next="getUserRequest"/>
```

```
</dialog>
```

35

```
<dialog name="coconutTreeStory">
```

40

```
<say>
```

When I was little, I used to get coconuts from my garden. There is a sweet liquid inside that is very tasty. We use coconut to make ice creams and all sorts of nice desserts.

45

```
</say>
```

```
<goto next="getUserRequest"/>
```

50

```
</dialog>
```

55

<dialog name="exit">

<say> Thanks for using this digital picture frame. </say>

</dialog>

</talkml>

Claims

1. A system for presenting information concerning a picture to a user, the system comprising:
 - a data store for holding responses, specific to said picture, in respect of specific user queries concerning particular picture features;
 - a manually-operable feature-selection arrangement for enabling a user to select a feature in a displayed image of the picture, and for providing an output indication regarding what said particular feature, if any, the user has thereby selected;
 - a voice dialog input-output subsystem including a speech recogniser for interpreting queries from a user;
 - a control arrangement responsive to a user selecting a said particular feature and asking a specific query regarding that feature, to output the corresponding stored response.
2. A system according to claim 1, wherein image-map data is associated with the picture image for mapping image coordinates to said particular features, the selection arrangement being arranged to use the image-map data to determine what picture feature is selected by the user.
3. A system according to claim 1, wherein said image includes label data positioned in the region of a said particular picture feature to indicate the identity of that feature, the selection arrangement being arranged to read the label data to determine what picture feature is selected by the user.
4. A system according to any one of claims 1 to 3, further comprising a display subsystem for displaying said image provided to it in the form of digital image data.
5. A system according to any one of claims 1 to 3, wherein the picture image is a hard-copy image.
6. A system according to any one of the preceding claims, wherein the data store is arranged also to hold responses concerning general queries that are not associated with any particular picture feature, the control arrangement being arranged to respond to the user voice input of a general query by returning the appropriate response.
7. A system according to any one of the preceding claims, wherein the voice interface subsystem and control arrangement are arranged to cooperate in recognising multiple different queries in respect of a particular picture feature selected by the user.
8. A system according to claim 1, wherein each of at least some of the responses is associated with a specified narrator, the system being arranged to permit a user to receive only the response of a user-selected narrator in respect of at least one query.
9. A system according to claim 8, wherein user selection of a narrator is arranged to be effected by voice input, the control arrangement being arranged to respond to the selection of a particular specified narrator by user voice input, by using only the said responses associated with that narrator in providing a response to a user query.
10. A system according to claim 9, further comprising means for displaying, along with said picture image, identifiers of narrators associated with the picture.
11. A system according to claim 9, further comprising a display subsystem for displaying said image provided to it in

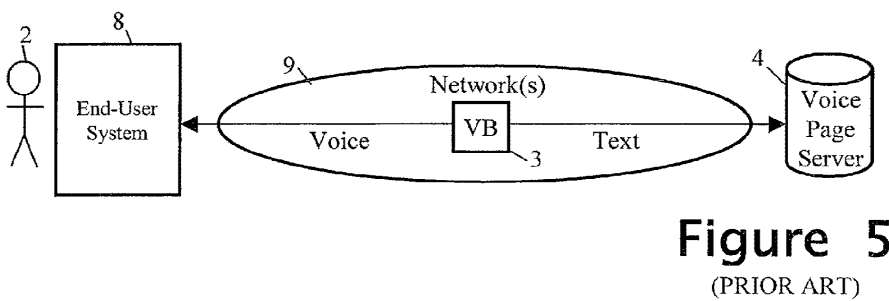
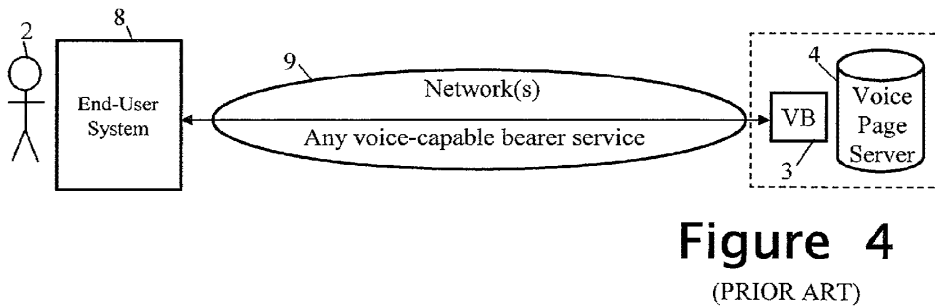
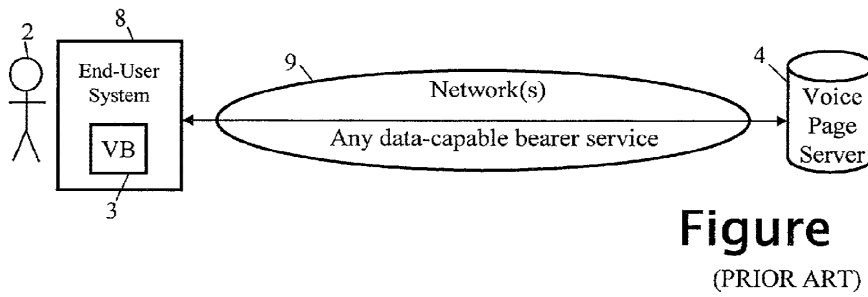
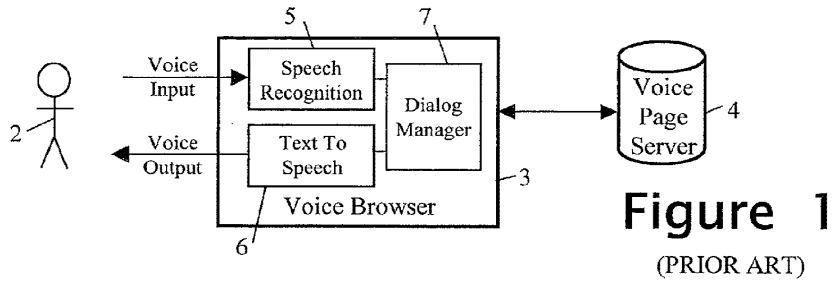
the form of digital image data and identifiers of narrators associated with the picture; the display subsystem being arranged to respond to selection of a particular specified narrator by user voice input by indicating on the displayed image the said particular features for which responses are available concerning that narrator.

- 5 **12.** A system according to claim 8, further comprising a display subsystem for displaying said image provided to it in the form of digital image data, and identifiers of narrators associated with the picture; user selection of a narrator being arranged to be effected by the user using said selection arrangement to select a displayed narrator identifier, and the control arrangement being arranged to respond to the selection of a particular narrator by using only the said responses associated with that narrator in providing a response to a user query.
- 10 **13.** A system according to claim 12, wherein the display subsystem is arranged to respond to selection of a particular specified narrator to indicate on the displayed image the said particular features for which responses are available concerning the currently-selected narrator.
- 15 **14.** A system according to any one of the preceding claims, wherein said selection arrangement is a pointing arrangement usable by the user to point to a feature of interest in a displayed view of the picture.
- 20 **15.** A system according to any one of the preceding claims, further comprising a feedback arrangement arranged to respond to a user query concerning a picture feature that is other than a said particular picture feature, by outputting at least an identifier of the concerned picture feature for informing an author of the picture or its associated responses regarding the unsatisfied query.
- 25 **16.** A system according to any one of the preceding claims, further comprising a feedback arrangement arranged to respond to a user query that although concerning a said particular picture feature is not a said specific query, by outputting an indication of the query and an identifier of the concerned picture feature for informing an author of the picture or its associated responses regarding the unsatisfied query.
- 30 **17.** A system according to claim 15, wherein the feedback arrangement is further arranged to output an indication of the user query together with said picture feature identifier.
- 35 **18.** A system according to any one of claims 15 to 17, wherein the picture feature identifier arranged to be output by the feedback arrangement comprises an indication of the picture concerned and image coordinates of the picture feature.
- 40 **19.** A system according to any one of claims 15 to 17, further comprising means for converting digital picture data into said displayed image of the picture, the picture feature identifier arranged to be output by the feedback arrangement comprising digital data representing a corresponding portion of the image.
- 45 **20.** A system according to any one of claims 15 to 17, further comprising means for converting digital picture data into said displayed image of the picture, the picture feature identifier arranged to be output by the feedback arrangement comprising digital data representing the image with a marking indicating the position of the feature in the image.
- 50 **21.** A system according to any one of claims 15 to 20, wherein the feedback arrangement is operative to output said picture feature identifier to a log file.
- 55 **22.** A system according to any one of claims 15 to 20, wherein the feedback arrangement is operative to output said picture feature identifier in the form of an electronic message addressed to a person associated with the generation of the picture or its associated responses.
- 60 **23.** A multi-modal picture specified by data held on at least one data carrier, this data comprising:
 - picture image data for displaying a picture image;
 - response data indicative of voice responses intended to be given to specific user queries concerning particular picture features of the picture;
 - first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature in the displayed image; and
 - second control data for determining, on the basis of a spoken user query and on which said particular picture

feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.

- 5 24. A multi-modal picture according to claim 23, wherein the first control data comprises image-map data mapping image coordinates to said particular features.
- 10 25. A multi-modal picture according to claim 23, wherein the first control data comprises label data arranged to be positioned in the displayed image in the region of each said particular picture feature to indicate the identity of that feature.
- 15 26. A multi-modal picture according to claim 23, wherein at least some of the said responses are associated with a narrator identified in the response data, the second control data enabling the determination of which said response is to be used to reply to the user query to be restricted to those responses associated with a said narrator that has been selected by the user.
- 20 27. A multi-modal picture according to any one of claims 23 to 26, wherein the picture is of a non-topographic real-world scene.
- 25 28. A multi-modal picture comprising a hard-copy picture image, and data held on at least one data carrier, this data comprising:
 - response data indicative of voice responses intended to be given to specific user queries concerning particular picture features;
 - first control data for enabling a determination to be made as to which said particular feature in the picture image, if any, a user is selecting when using a selection arrangement to indicate a feature of the image; and
 - second control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by the user using the selection arrangement, which said response is to be used to reply to the user query.
- 30 29. A multi-modal picture according to claim 28, wherein the first control data comprises image-map data mapping image coordinates to said particular features.
- 35 30. A multi-modal picture according to claim 28, wherein the first control data comprises label data arranged to be positioned in or on the image in the region of each said particular picture feature to indicate the identity of that feature.
- 40 31. A multi-modal picture according to claim 28, wherein at least some of the said responses are associated with a narrator identified in the response data, the second control data enabling the determination of which said response is to be used to reply to the user query to be restricted to those responses associated with a said narrator that has been selected by the user.
- 45 32. A multi-modal picture according to any one of claims 28 to 31, wherein the picture is of a non-topographic real-world scene.
- 50 33. Apparatus for authoring a multi-modal picture, comprising:
 - a first tool for defining image hotspots associated with particular picture-image features;
 - a second tool with speech recognition capability, for recording user responses input by voice, to user-specified queries each associated with a particular said picture-image feature; and
 - means for automatically generating control data for determining, on the basis of a spoken user query and on which said particular picture feature is selected by a user, which said response is to be used to reply to the user query.

55



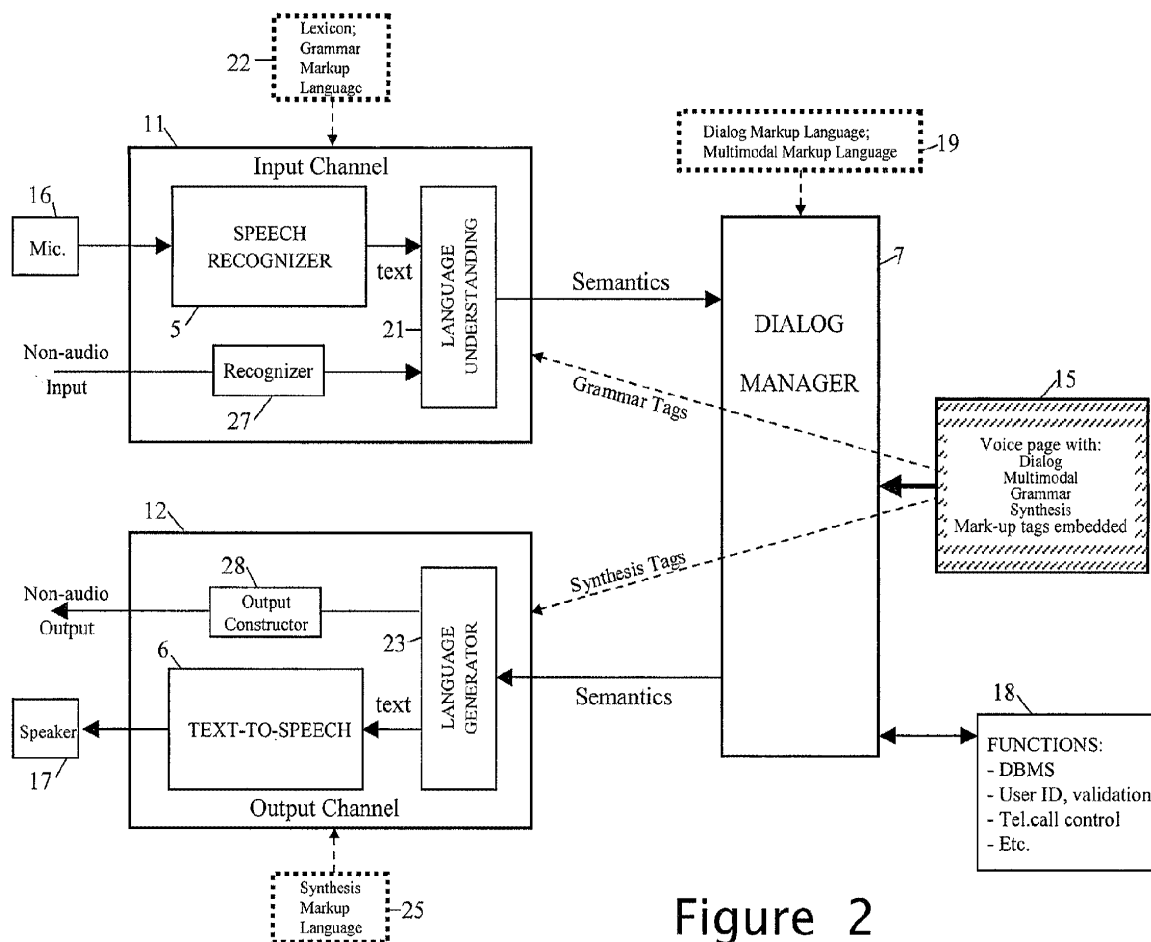


Figure 2
(PRIOR ART)

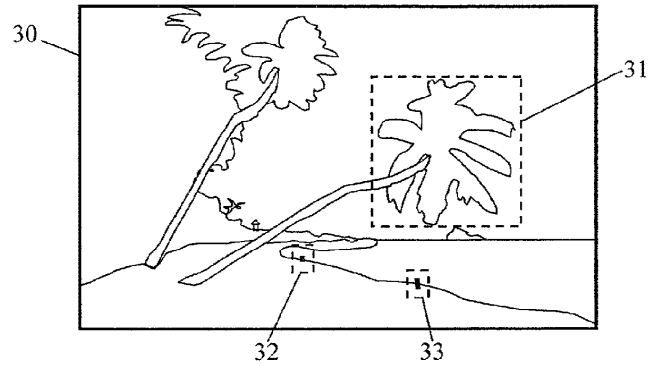


Figure 6

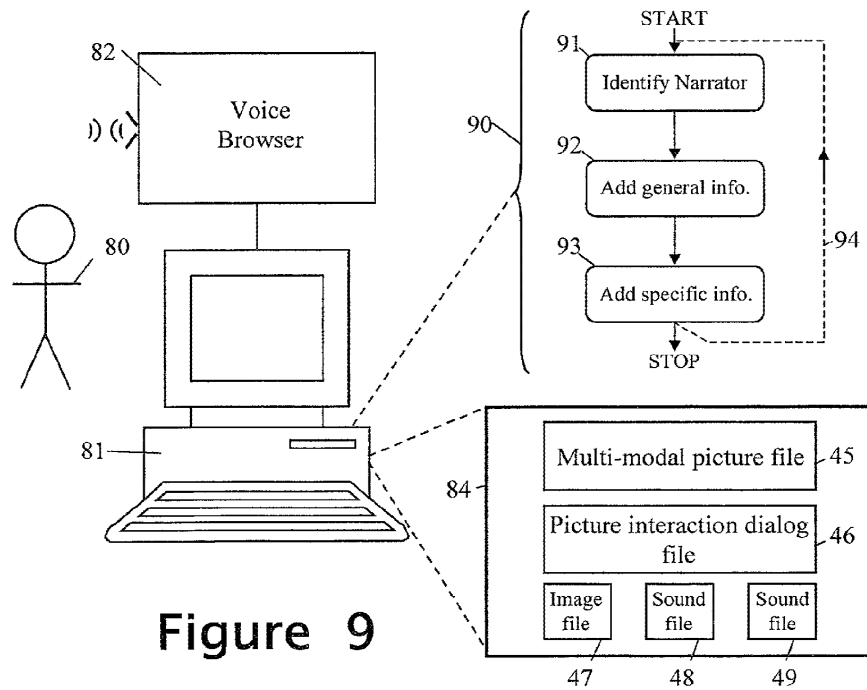


Figure 9

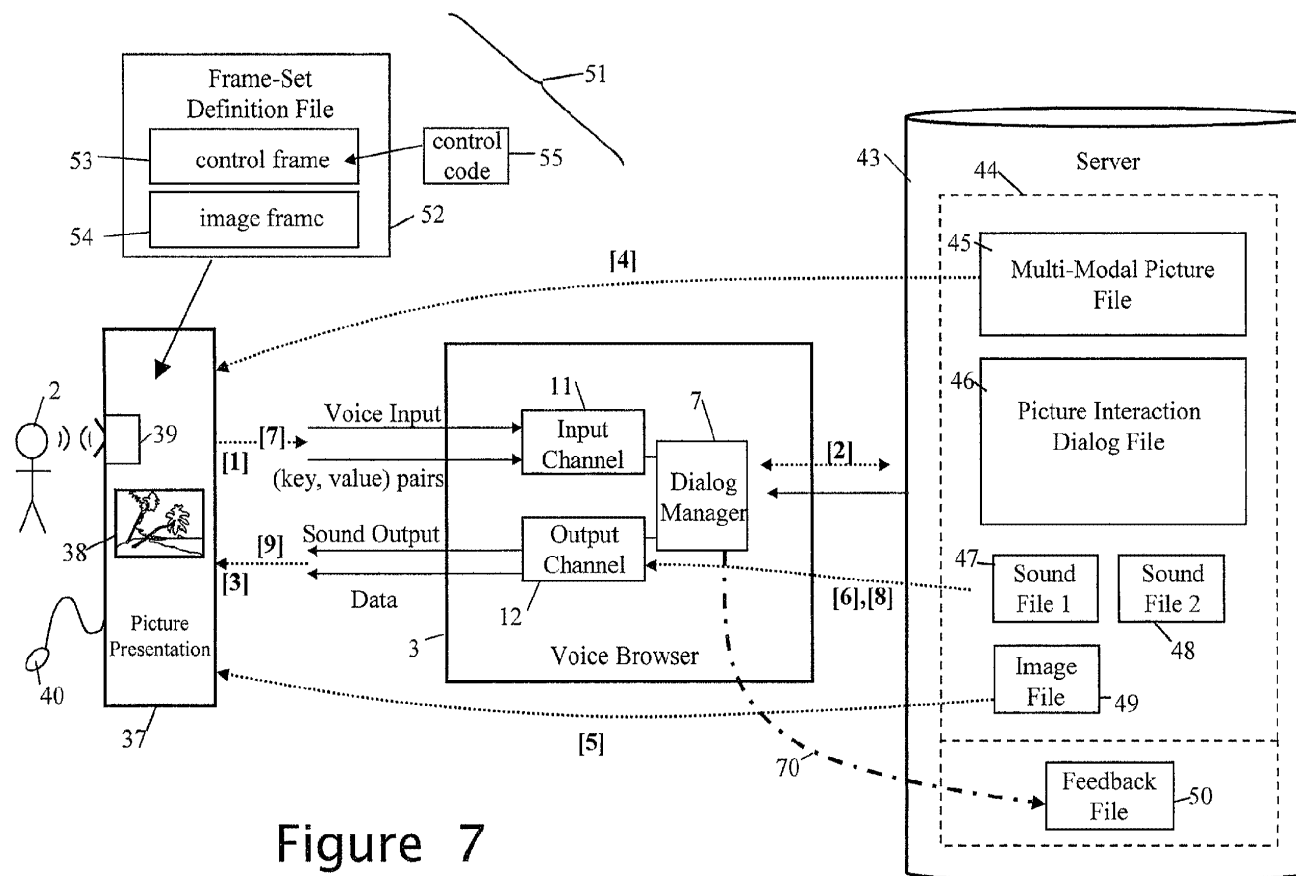
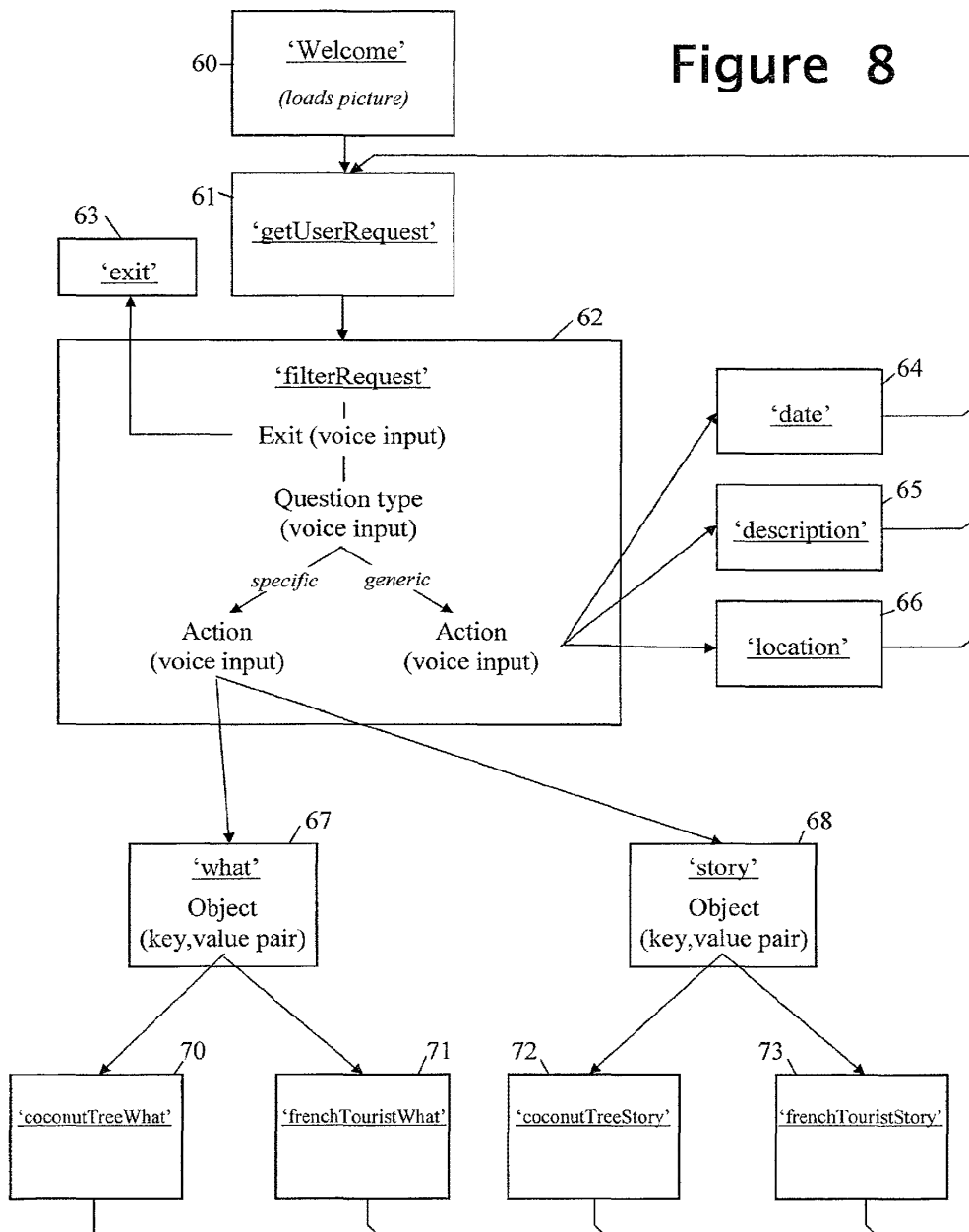


Figure 8



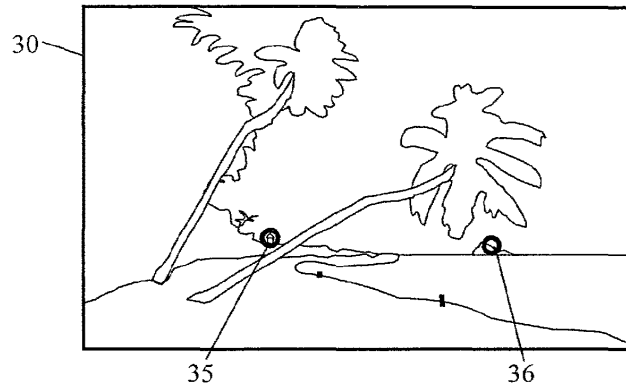


Figure 10

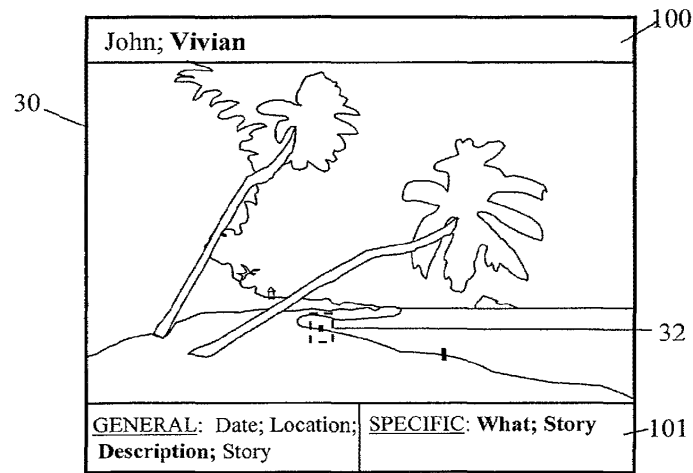


Figure 11

Electronic Patent Application Fee Transmittal				
Application Number:		13084197		
Filing Date:		11-Apr-2011		
Title of Invention:		MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		
First Named Inventor/Applicant Name:		Chris Weider		
Filer:		Syed Jafar Ali/Diane Bogusz		
Attorney Docket Number:		090611-0393260		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	1	30	30
Independent claims in excess of 3	2201	1	125	125
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Request for continued examination	2801	1	465	465
Total in USD (\$)				620

Electronic Acknowledgement Receipt	
EFS ID:	11737970
Application Number:	13084197
International Application Number:	
Confirmation Number:	9666
Title of Invention:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
First Named Inventor/Applicant Name:	Chris Weider
Customer Number:	909
Filer:	Syed Jafar Ali/Diane Bogusz
Filer Authorized By:	Syed Jafar Ali
Attorney Docket Number:	090611-0393260
Receipt Date:	30-DEC-2011
Filing Date:	11-APR-2011
Time Stamp:	15:20:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$620
RAM confirmation Number	2171
Deposit Account	033975
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1		0393260.PDF	1576531	yes	28
	4d9d204e3c21ffc5ed76f3ac298a54db7ddf8b62				
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Request for Continued Examination (RCE)		1	1	
	Amendment Submitted/Entered with Filing of CPA/RCE		2	2	
	Specification		3	5	
	Claims		6	13	
	Applicant Arguments/Remarks Made in an Amendment		14	15	
	Transmittal Letter		16	24	
	Information Disclosure Statement (IDS) Form (SB08)		25	28	
Warnings:					
Information:					
2	Foreign Reference	EP1320043A2.pdf	1416212	no	28
	2ec7d64c9ab7063100d70c545035fd72a13ded77				
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	33958	no	2
	bb81d41298c34c1a04ace1d8eb461060798a9c1				
Warnings:					
Information:					
Total Files Size (in bytes):			3026701		

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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.

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

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 13/084,197		Filing Date 04/11/2011		☐ To be Mailed		
APPLICATION AS FILED – PART I											
(Column 1)			(Column 2)			SMALL ENTITY ☒		OR		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)	
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A		N/A		N/A		N/A		
☐ SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A		N/A		N/A		N/A		
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A		N/A		N/A		N/A		
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$	=	OR	X \$	=	X \$	=	X \$	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=	OR	X \$	=	X \$	=	X \$	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).										
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))											
* If the difference in column 1 is less than zero, enter "0" in column 2.											
TOTAL			TOTAL		TOTAL		TOTAL		TOTAL		
APPLICATION AS AMENDED – PART II											
(Column 1)			(Column 2)			SMALL ENTITY		OR		OTHER THAN SMALL ENTITY	
AMENDMENT	12/30/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	
Total (37 CFR 1.16(i))	*	33	Minus	**	32	=	1	X \$30 =	30	OR	X \$ =
Independent (37 CFR 1.16(h))	*	4	Minus	***	3	=	1	X \$125 =	125	OR	X \$ =
☐ Application Size Fee (37 CFR 1.16(s))											
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
TOTAL ADD'L FEE						155	OR		TOTAL ADD'L FEE		
(Column 1)			(Column 2)			SMALL ENTITY		OR		OTHER THAN SMALL ENTITY	
AMENDMENT	Total (37 CFR 1.16(i))	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	
Total (37 CFR 1.16(i))	*	Minus	**	=	X \$	=	OR	X \$	=	X \$	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$	=	OR	X \$	=	X \$	
☐ Application Size Fee (37 CFR 1.16(s))											
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))											
TOTAL ADD'L FEE							OR		TOTAL ADD'L FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.											

Legal Instrument Examiner:
/LASHAWN MARKS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

909 7590 02/17/2012
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

EXAMINER

YEN, ERIC L

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 02/17/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666
TITLE OF INVENTION: MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS				

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	05/17/2012

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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

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

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

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or **Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

909 7590 02/17/2012
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666

TITLE OF INVENTION: MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	05/17/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
YEN, ERIC L	2626	704-275000

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, 1 _____

(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. 2 _____

3 _____

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

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

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

4a. The following fee(s) are submitted:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666
909	7590	02/17/2012	EXAMINER	
Pillsbury Winthrop Shaw Pittman, LLP (NV)			YEN, ERIC L	
PO Box 10500			ART UNIT	PAPER NUMBER
McLean, VA 22102			2626	

DATE MAILED: 02/17/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

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

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	13/084,197	WEIDER ET AL.	
	Examiner	Art Unit	
	ERIC YEN	2626	

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

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

1. ☒ This communication is responsive to Amendment filed 12/30/11.

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 1-33.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

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

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.

(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____ 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	5. ☐ Notice of Informal Patent Application 6. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____ . 7. ☐ Examiner's Amendment/Comment 8. ☒ Examiner's Statement of Reasons for Allowance 9. ☐ Other _____.
---	---

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-33 are allowed.
2. The following is an examiner's statement of reasons for allowance:

Claims 1-32 are allowed for the reasons described in the Notice of Allowability mailed 11/3/11.

The combination of references cited in the reasons provided in the Notice of Allowability mailed 11/3/11 also do not teach or suggest the combination of limitations of New Claim 33 (i.e. limitations similar to Claim 1 absent the identification of a user, but nevertheless takes into account personalized information and thus still incorporates information about a user to create the transcription)

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 ERIC YEN whose telephone number is (571)272-4249. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone

Art Unit: 2626

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.

EY 2/1/12

/Eric Yen/

Primary Examiner, Art Unit 2626

INFORMATION DISCLOSURE CITATION IN AN APPLICATION Form PTO-1449	Docket Number	Application Number
	090611-0393260	13/084,197
	Applicant(s)	
	Chris WEIDER <i>et al.</i>	
	Filing Date	Group Art Unit
	April 11, 2011	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE - IF APPROPRIATE
	1A	5,027,406	06/25/1991	Roberts <i>et al.</i>	381	43	
	1B	5,740,256	04/14/1998	Castello Da Costa <i>et al.</i>	361	94.7	
	1C	5,839,107	11/17/1998	Gupta <i>et al.</i>	704	270	
	1D	5,897,613	04/27/1999	Chan	704	210	
	1E	5,960,399	09/28/1999	Barclay <i>et al.</i>	704	270	
	1F	5,960,447	09/28/1999	Holt <i>et al.</i>	707	500	
	1G	5,995,928	11/30/1999	Nguyen <i>et al.</i>	704	251	
	1H	6,018,708	01/25/2000	Dahan <i>et al.</i>	704	244	
	1I	6,049,607	04/11/2000	Marash <i>et al.</i>	379	410	
	1J	6,085,186	07/04/2000	Christianson <i>et al.</i>	707	3	
	1K	6,108,631	08/22/2000	Ruhl	704	270	
	1L	6,167,377	12/26/2000	Gillick <i>et al.</i>	704	240	
	1M	6,173,266	01/09/2001	Marx <i>et al.</i>	704	270	
	1N	6,208,964	03/27/2001	Sabourin	704	244	
	1O	6,269,336	07/31/2001	Ladd <i>et al.</i>	704	270	
	1P	6,275,231	08/14/2001	Obradovich	345	349	
	1Q	6,278,968	08/21/2001	Franz <i>et al.</i>	704	3	
	1R	6,362,748	03/26/2002	Huang	340	901	
	1S	6,366,882	04/02/2002	Bijl <i>et al.</i>	704	235	
	1T	6,397,181	05/28/2002	Li <i>et al.</i>	704	256	
	1U	6,405,170	06/11/2002	Phillips <i>et al.</i>	704	270	
	1V	6,429,813	08/06/2002	Feigen	342	357.13	
	1W	6,522,746	02/18/2003	Marchok <i>et al.</i>	379	406.03	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO
	1X	1 320 043 A2	06/18/2003	Europe				

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

EXAMINER	/E. Yen/	DATE CONSIDERED	02/01/2012
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.			

403250466v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.Y./

INFORMATION DISCLOSURE CITATION IN AN APPLICATION Form PTO-1449	Docket Number	Application Number
	090611-0393260	13/084,197
	Applicant(s)	
	Chris WEIDER <i>et al.</i>	
	Filing Date	Group Art Unit
	April 11, 2011	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	2A	6,549,629	04/15/2003	Finn <i>et al.</i>	381	92	
	2B	6,587,858	07/01/2003	Strazza	707	102	
	2C	6,591,239	07/08/2003	McCall <i>et al.</i>	704	275	
	2D	6,594,367	07/15/2003	Marash <i>et al.</i>	381	92	
	2E	6,606,598	08/12/2003	Holthouse <i>et al.</i>	704	275	
	2F	6,633,846	10/14/2003	Bennett <i>et al.</i>	704	257	
	2G	6,754,485	06/22/2004	Obradovich <i>et al.</i>	455	414.1	
	2H	6,910,003	06/21/2005	Arnold <i>et al.</i>	704	4	
	2I	6,912,498	06/28/2005	Stevens <i>et al.</i>	704	235	
	2J	6,934,756	08/23/2005	Maes	709	227	
	2K	6,968,311	11/22/2005	Knockeart <i>et al.</i>	704	270	
	2L	6,975,993	12/13/2005	Keiller	704	275	
	2M	6,983,055	01/03/2006	Luo	381	313	
	2N	7,024,364	04/04/2006	Guerra <i>et al.</i>	704	270	
	2O	7,035,415	04/25/2006	Belt <i>et al.</i>	381	92	
	2P	7,054,817	05/30/2006	Shao	704	270	
	2Q	7,058,890	06/06/2006	George <i>et al.</i>	715	728	
	2R	7,110,951	09/19/2006	Lemelson <i>et al.</i>	704	270	
	2S	7,143,037	11/28/2006	Chestnut	704	251	
	2T	7,197,069	03/27/2007	Agazzi <i>et al.</i>	375	233	
	2U	7,206,418	04/17/2007	Yang <i>et al.</i>	381	92	
	2V	7,236,923	06/26/2007	Gupta	704	9	
	2W	7,305,381	12/04/2007	Poppink <i>et al.</i>	1	1	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO

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

EXAMINER	DATE CONSIDERED
/E. Yen/	02/01/2012
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.	

403250466v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.Y./

INFORMATION DISCLOSURE CITATION IN AN APPLICATION Form PTO-1449	Docket Number	Application Number
	090611-0393260	13/084,197
	Applicant(s)	
	Chris WEIDER <i>et al.</i>	
	Filing Date	Group Art Unit
	April 11, 2011	2626

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	3A	7,337,116	02/26/2008	Charlesworth <i>et al.</i>	704	254	
	3B	7,366,669	04/29/2008	Nishitani <i>et al.</i>	704	256	
	3C	7,406,421	07/29/2008	Odinak <i>et al.</i>	704	275	
	3D	7,447,635	11/04/2008	Konopka <i>et al.</i>	704	275	
	3E	7,472,020	12/30/2008	Brulle-Drews	701	211	
	3F	7,478,036	01/13/2009	Shen <i>et al.</i>	704	9	
	3G	7,493,259	02/17/2009	Jones <i>et al.</i>	704	257	
	3H	7,536,297	05/19/2009	Byrd <i>et al.</i>	704	10	
	3I	7,536,374	05/19/2009	Au	706	55	
	3J	7,558,730	07/07/2009	Davis <i>et al.</i>	704	235	
	3K	7,676,365	03/09/2010	Hwang <i>et al.</i>	704	240	
	3L	7,788,084	08/31/2010	Brun <i>et al.</i>	704	7	
	3M	7,831,433	11/09/2010	Belvin <i>et al.</i>	704	275	
	3N	7,873,523	01/18/2011	Potter <i>et al.</i>	704	275	
	3O	7,902,969	03/08/2011	Obradovich	340	439	
	3P	7,949,529	05/24/2011	Weider <i>et al.</i>	704	270	
	3Q	7,983,917	07/19/2011	Kennewick <i>et al.</i>	704	257	
	3R	8,015,006	09/06/2011	Kennewick <i>et al.</i>	704	236	
	3S	8,069,046	11/29/2011	Kennewick <i>et al.</i>	704	257	
	3T	8,073,681	12/06/2011	Baldwin <i>et al.</i>	704	9	
	3U	2001/0049601	12/06/2001	Kroeker <i>et al.</i>	704	254	
	3V	2002/0015500	02/07/2002	Belt <i>et al.</i>	381	66	
	3W	2002/0022927	02/21/2002	Lemelson <i>et al.</i>	701	301	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations	
							YES	NO

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

EXAMINER	DATE CONSIDERED
/E. Yen/	02/01/2012
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.	

403250466v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.Y./

Search Notes 	Application/Control No. 13084197	Applicant(s)/Patent Under Reexamination WEIDER ET AL.
	Examiner ERIC YEN	Art Unit 2626

SEARCHED			
Class	Subclass	Date	Examiner
704	233, 9, 250, 257, 270, 270.1, 275	10/23/11	EY
704	233, 9, 250, 257, 270, 270.1, 275	2/1/12	EY

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search (attached)	10/23/11	EY

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
704	233, 9, 250, 257, 270, 270.1, 275	10/23/11	EY
704	233, 9, 250, 257, 270, 270.1, 275	2/1/12	EY

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Issue Classification 	Application/Control No. 13084197	Applicant(s)/Patent Under Reexamination WEIDER ET AL.	
	Examiner ERIC YEN	Art Unit 2626	

ORIGINAL						INTERNATIONAL CLASSIFICATION										
CLASS			SUBCLASS			CLAIMED					NON-CLAIMED					
704			275			G	0	6	F	17 / 27 (2006.01.01)						
CROSS REFERENCE(S)						G	1	0	L	15 / 20 (2006.01.01)						
						G	1	0	L	17 / 00 (2006.01.01)						
						G	1	0	L	15 / 18 (2006.01.01)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					G	1	0	L	11 / 00 (2006.01.01)						
704	9	233	250	257	270	G	1	0	L	21 / 00 (2006.01.01)						
704	270.1					G	1	0	L							
							</									

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	17	17	33	33										
2	2	18	18												
3	3	19	19												
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11	11	27	27												
12	12	28	28												
13	13	29	29												
14	14	30	30												
15	15	31	31												
16	16	32	32												

NONE		Total Claims Allowed:	
		33	
(Assistant Examiner)	(Date)		
/ERIC YEN/ Primary Examiner.Art Unit 2626	10/23/11	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	8

INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number	
				090611-0393260		13/084,197	
				Applicant(s)			
				Chris WEIDER <i>et al.</i>			
				Filing Date		Group Art Unit	
Form PTO-1449				April 11, 2011		2626	

U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	5,208,748	05/04/1993	Flores <i>et al.</i>	364	419	
	B	5,608,635	03/04/1997	Tamai	364	449.3	
	C	6,233,561	05/15/2001	Junqua <i>et al.</i>	704	277	
	D	6,757,544	06/29/2004	Rangarajan <i>et al.</i>	455	456.1	
	E	7,184,957	02/27/2007	Brookes <i>et al.</i>	704	246	
	F	7,207,011	04/17/2007	Mulvey <i>et al.</i>	715	812	
	G	7,577,244	08/18/2009	Taschereau	379	218.01	
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	I	8,086,463	12/27/2011	Ativanichayaphong <i>et al.</i>	704	275	
	J	8,112,275	02/07/2012	Kennewick <i>et al.</i>	704	240	
	K	8,140,327	03/20/2012	Kennewick <i>et al.</i>	704	226	
	L	8,140,335	03/20/2012	Kennewick <i>et al.</i>	704	257	
	M	8,145,489	03/27/2012	Freeman <i>et al.</i>	704	257	
	N	8,150,694	04/03/2012	Kennewick <i>et al.</i>	704	257	
	O	8,155,962	04/10/2012	Kennewick <i>et al.</i>	704	257	
	P	2005/0143994	06/30/2005	Mori <i>et al.</i>	704	235	
	Q	2007/0073544	03/29/2007	Millett <i>et al.</i>	704	277	
	R	2008/0065386	03/13/2008	Cross <i>et al.</i>	704	270	
	S	2012/0022857	01/26/2012	Baldwin <i>et al.</i>	704	9	

FOREIGN PATENT DOCUMENTS							
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES NO

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

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

Electronic Patent Application Fee Transmittal				
Application Number:		13084197		
Filing Date:		11-Apr-2011		
Title of Invention:		MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		
First Named Inventor/Applicant Name:		Chris Weider		
Filer:		Bradford C. Blaise/Susan Trader		
Attorney Docket Number:		090611-0393260		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description		Fee Code	Quantity	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt	
EFS ID:	12518669
Application Number:	13084197
International Application Number:	
Confirmation Number:	9666
Title of Invention:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
First Named Inventor/Applicant Name:	Chris Weider
Customer Number:	909
Filer:	Bradford C. Blaise/Susan Trader
Filer Authorized By:	Bradford C. Blaise
Attorney Docket Number:	090611-0393260
Receipt Date:	11-APR-2012
Filing Date:	11-APR-2011
Time Stamp:	15:33:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 180
RAM confirmation Number	2057
Deposit Account	033975
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1		0393260_IDS.pdf	130726 5580ac3dfff9bbb9f65e601b1c23f6f4230317af	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	4	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30476 9ff5f2ea6cc516186e2381c5d18cdf48d990c5d9	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			161202		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Chris WEIDER *et al.* CONFIRMATION No.: 9666
SERIAL NUMBER : 13/084,197 EXAMINER: Eric L. Yen
FILING DATE : April 11, 2011 ART UNIT: 2626
FOR : MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE
INTERACTIONS

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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

Sir:

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

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

This Supplemental Information Disclosure Statement is being filed more than three months after the filing date of a national application other than a continued prosecution application under 37 C.F.R. § 1.53(d), or more than three months after the date of entry of the

national stage as set forth in 37 C.F.R. § 1.491 in an international application, and after the mailing date of any of a Final Action under 37 C.F.R. § 1.113, a Notice of Allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee. 37 C.F.R. § 1.97(d).

Documents I and R were cited by the U.S. Patent Office in co-pending Application Serial No. 12/389,678, filed February 20, 2009, in an Office Action dated January 11, 2012.

Documents A, C, H, P, and Q were cited by the U.S. Patent Office in co-pending Application Serial No. 13/251,712, filed October 3, 2011, in an Office Action dated January 19, 2012.

Documents D and G were cited by the U.S. Patent Office in co-pending Application Serial No. 13/341,572, filed December 30, 2011, in an Office Action dated February 28, 2012. Document F was cited by the U.S. Patent Office in co-pending Application Serial No. 13/019,834, filed February 2, 2011, in an Office Action dated March 7, 2012. Documents B and E were cited by the U.S. Patent Office in co-pending Application Serial No. 13/341,621, filed December 30, 2011, in an Office Action dated March 30, 2012. I hereby certify that no item of information contained in this Supplemental Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to my knowledge after making reasonable inquiry, no item of information contained in this Supplemental Information Disclosure Statement was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this Supplemental Information Disclosure Statement. 37 C.F.R. § 1.97(e)(2).

Please charge the \$180.00 fee [37 C.F.R. § 1.17(p)] to Deposit Account No. 03-3975. In addition, please charge any fee deficiencies, or credit any overpayment, to Deposit Account No. 03-3975 as needed to ensure consideration of the Supplemental Information Disclosure Statement.

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

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

Customer No.
00909

By 
Bradford C. Blaise
Registration No.: 47,429

P. O. Box 10500
McLean, Virginia 22102
Telephone: (703) 770-7900
Telefax: (703) 770-7901

Dated: April 11, 2012

INFORMATION DISCLOSURE CITATION IN AN APPLICATION				Docket Number		Application Number	
				090611-0393260		13/084,197	
				Applicant(s)			
				Chris WEIDER <i>et al.</i>			
				Filing Date		Group Art Unit	
Form PTO-1449				April 11, 2011		2626	
U.S. PATENT DOCUMENTS							
*EXAMINER INITIAL	REF	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A	5,208,748	05/04/1993	Flores <i>et al.</i>	364	419	
	B	5,608,635	03/04/1997	Tamai	364	449.3	
	C	6,233,561	05/15/2001	Junqua <i>et al.</i>	704	277	
	D	6,757,544	06/29/2004	Rangarajan <i>et al.</i>	455	456.1	
	E	7,184,957	02/27/2007	Brookes <i>et al.</i>	704	246	
	F	7,207,011	04/17/2007	Mulvey <i>et al.</i>	715	812	
	G	7,577,244	08/18/2009	Taschereau	379	218.01	
	H	7,676,369	03/09/2010	Fujimoto <i>et al.</i>	704	270	
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	J	8,112,275	02/07/2012	Kennewick <i>et al.</i>	704	240	
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	L	8,140,335	03/20/2012	Kennewick <i>et al.</i>	704	257	
	M	8,145,489	03/27/2012	Freeman <i>et al.</i>	704	257	
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	Q	2007/0073544	03/29/2007	Millett <i>et al.</i>	704	277	
	R	2008/0065386	03/13/2008	Cross <i>et al.</i>	704	270	
	S	2012/0022857	01/26/2012	Baldwin <i>et al.</i>	704	9	
FOREIGN PATENT DOCUMENTS							
	REF	DOCUMENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translations YES NO
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
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.							

403426282v1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /E.Y./



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.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666
909 7590 04/24/2012 Pillsbury Winthrop Shaw Pittman, LLP (NV) PO Box 10500 McLean, VA 22102			EXAMINER YEN, ERIC L	
			ART UNIT 2626	PAPER NUMBER
			NOTIFICATION DATE 04/24/2012	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket_ip@pillsburylaw.com
margaret.drosos@pillsburylaw.com



UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office

Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
13/084,197	11 April, 2011	WEIDER ET AL.	090611-0393260

Pillsbury Winthrop Shaw Pittman, LLP (NV) PO Box 10500 McLean, VA 22102		EXAMINER	
		ERIC YEN	
		ART UNIT	PAPER
		2626	20120418

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

IDS filed 4/11/12 considered.

/Eric Yen/
Primary Examiner, Art Unit 2626

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or **Fax** (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

909 7590 02/17/2012
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666

TITLE OF INVENTION: MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$870	\$300	\$0	\$1170	05/17/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
YEN, ERIC L	2626	704-275000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

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

2. For printing on the patent front page, list

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

1 Pillsbury Winthrop Shaw Pittman LLP
2
3

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

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

(A) NAME OF ASSIGNEE

VoiceBox Technologies, Inc.

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Bellevue, Washington

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

4a. The following fee(s) are submitted:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

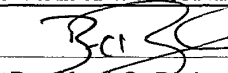
- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 03-3975 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature


Typed or printed name Bradford C. Blaise

Date May 3, 2012

Registration No. 47,429

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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

Electronic Patent Application Fee Transmittal				
Application Number:		13084197		
Filing Date:		11-Apr-2011		
Title of Invention:		MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS		
First Named Inventor/Applicant Name:		Chris Weider		
Filer:		Bradford C. Blaise/Susan Trader		
Attorney Docket Number:		090611-0393260		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	870	870
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1170

Electronic Acknowledgement Receipt	
EFS ID:	12691876
Application Number:	13084197
International Application Number:	
Confirmation Number:	9666
Title of Invention:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
First Named Inventor/Applicant Name:	Chris Weider
Customer Number:	909
Filer:	Bradford C. Blaise/Susan Trader
Filer Authorized By:	Bradford C. Blaise
Attorney Docket Number:	090611-0393260
Receipt Date:	03-MAY-2012
Filing Date:	11-APR-2011
Time Stamp:	09:24:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1170
RAM confirmation Number	10219
Deposit Account	033975
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
-----------------	----------------------	-----------	-------------------------------------	------------------	------------------

1	Issue Fee Payment (PTO-85B)	0393260_IssueFee.pdf	95204 5601cb328f9ad5d91567382819730a0058513992	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31938 c79b3316401dac0b9710a3b11dc350dbfcd2fc86	no	2
Warnings:					
Information:					
Total Files Size (in bytes):				127142	
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.					



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.
13/084,197	06/05/2012	8195468	090611-0393260	9666

909 7590 05/16/2012
Pillsbury Winthrop Shaw Pittman, LLP (NV)
PO Box 10500
McLean, VA 22102

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 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):

Chris Weider, Everett, WA;
Richard Kennewick, Woodinville, WA;
Mike Kennewick, Bellevue, WA;
Philippe Di Cristo, Bellevue, WA;
Robert A. Kennewick, Seattle, WA;
Samuel Menaker, Bellevue, WA;
Lynn Elise Armstrong, Woodinville, WA;

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Current Date: December 3th, 2019

Application No.: 13/084197
Filed: 04/11/2011

Patent No.: 8195468
Issued: 06/05/2012

**CHANGE OF ENTITY STATUS PURSUANT TO 37 C. F. R. § 1.27
(g)(2)**

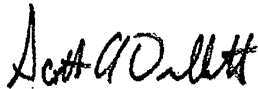
Commissioner for Patents
Mail Stop M Correspondence
P.O. Box 1450
Alexandria, VA 22313-1450

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 A. Ouellette
TITLE: Senior Director – Intellectual Property

ipan

ipan gmbh · münchener str. 14 · 85540 münchen-haar · germany

Fax Message

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f +49 89 943 850 411

info@ipan.eu
www.ipan-services.com

To : USPTO

From : IPAN GmbH

Maintenance Fee Branch

Office of Finance

001-571-273-6500

Pages : 1 + 2

Date : December 05th 2019

Attached: Petition pursuant § 1.27

geschäftsführer: anton bory, anton wallner, christoph mann · münchen hrb 152740 · ust-identr. de 235527546
bank account: kreissparkasse münchen · iban de09702501500010506442 · swift/bic bylaem1kms;
deutsche bank · de85700700100203901400 · swift/bic deutdem33xxx



we mind.

PATENT
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Current Date: December 3th, 2019

Application No.: 13/084197
Filed: 04/11/2011

Patent No.: 8195468
Issued: 06/05/2012

**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 A. Ouellette
TITLE: Senior Director – Intellectual Property

URGENT due date 05.12.19

NUA 4338 US

ipan

ipan gmbh · münchener str. 14 · 85540 münchen-haar · germany

Fax Message

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associates network
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85540 münchen-haar
germany

p +49 89 943 850 40
f +49 89 943 850 411

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www.ipan-services.com

To: USPTO

From: IPAN GmbH

Maintenance Fee Branch

Office of Finance

001-571-273-6500

Pages: 1 + 2

Date: December 05th 2019

Attached: Petition pursuant § 1.27

geschäftsführer: anton bory, anton wallner, christoph mann · münchen hrb 162740 · ust-idnr. de 235527548
bank account: kreissparkasse münchen · iban.de09702501500010508442 · swift/bic byladem1kms;
deutsche bank · de85700700100203901400 · swift/bic deutdem33xxx



we mind.

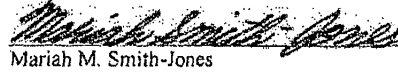
Docket No.: N0484.71162US01
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Chris Weider, et al.
Patent No.: 8,195,468
Issued: June 05, 2012
Serial No.: 13/084,197
For: MOBILE SYSTEMS AND METHODS OF SUPPORTING
NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
Maintenance Fee: 4th Year – December 07, 2015

CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 CFR § 1.8(a)

The undersigned hereby certifies that this document is being sent via facsimile to 571-273-6500.
ATTN: Receipts Accounting Div./Office of Finance, United States Patent & Trademark Office, on the
10 day of March, 2020.


Mariah M. Smith-Jones

VIA FACSIMILE (571-273-6500)
Receipts Accounting Division
Office of Finance
U.S. Patent and Trademark Office

CORRECTION OF ERROR IN SMALL ENTITY STATUS
PURSUANT TO 37 C.F.R. § 1.28(c)

Sir/Madam:

In the above-identified case, through error and without deceptive intent, the Patent Office was not timely notified of a loss to entitlement to Small Entity Status for the present application that occurred prior to payment of the 4th year Maintenance Fee, and through error and without deceptive intent the 4th year Maintenance Fee was incorrectly paid under the Small Entity status. Pursuant to 37 C.F.R. § 1.28(c)(1)(2), Patentee respectfully requests acceptance of the enclosed the deficiency payment.

Patentee submits herewith the deficiency in payment of \$800.00 for the 4th year Maintenance Fee payment. Pursuant to 37 C.F.R. §§ 1.28(c)(1), 1.28(c)(2)(i), and 1.28(c)(2)(ii), the itemization of the deficiency payment is as follows:

Patent No.: 8,195,468

- 2 -

Serial No.: 13/084,197

Type of fee erroneously paid as small entity	Current fee amount for non- small entity	Small entity fee actually paid and date paid	Deficiency Owed Amount
4 th Year Maintenance Fee	\$1,600.00	\$800.00 November 19, 2015	\$800.00
Total Deficiency Owed			\$800.00

In view of compliance with 37 C.F.R. §§ 1.28(c)(1), 1.28(c)(2)(i), and 1.28(c)(2)(ii), Patentee respectfully requests that the error in Small Entity status be excused. Additionally, pursuant to 37 C.F.R. § 1.28(d), it is requested that the submission of the deficiency payment be treated under 37 C.F.R. § 1.27(g)(2) as a notification of a loss of entitlement to Small Entity status.

Please charge the deficiency of \$800.00 to Deposit Account Number 23/2825, under our Docket Number N0484.71162US01, in order that the 4th Year Maintenance Fee payment reflects Large Entity status.

If there is an additional fee that is not covered, please charge any deficiency to Deposit Account No. 23/2825 under Docket No. N0484.71162US01.

Respectfully submitted,

Date: March 10, 2020

By: /Andrew J. Tibbetts/
Andrew J. Tibbetts
Registration Number: 65,139
Wolf, Greenfield & Sacks, P.C.
600 Atlantic Avenue
Boston, Massachusetts 02210-2206
Telephone: (617) 646-8000

7966731.1

FAX COVER SHEET

TO	
COMPANY	
FAX NUMBER	15712736500
FROM	Wolf Greenfield
DATE	2020-03-10 22:09:39 GMT
RE	FW: AccuRoute Scan

COVER MESSAGE

WWW.MYFAX.COM



F A X C O V E R

*****OFFICIAL FAX*****

Date: March 10, 2020

Number of pages (including cover): 3

To: Attn: Maintenance Fee, Receipts Accounting Division, Office of Finance
U.S. Patent and Trademark Office

Fax No.: (571) 273-6500

Patent No.: 8,195,468

Title: MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

From: Mariah M. Smith-Jones

Direct dial: 617.646.8470

Our File #: N0484.71162US01

CERTIFICATE OF FACSIMILE TRANSMISSION 37 C.F.R. §1.8(a)

The undersigned hereby certifies that this document is being transmitted via facsimile to the attention of the Receipts Accounting Division, Office of Finance, FAX number (571) 273-6500, at the United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450, in accordance with 37 C.F.R. §1.6(d), on the _10th_ day of March, 2020.

Mariah M. Smith-Jones
Mariah M. Smith-Jones

ORIGINAL DOCUMENTS WILL NOT BE MAILED.

MESSAGE: Transmitted herewith is a Correction of Error In Small Entity Status Pursuant to 37 C.F.R. § 1.28(c) and fee deficiency payment. Please note the 4th year maintenance fee was paid on November 19, 2015. Thank you.

This transmission contains confidential information intended for use only by the above-named recipient. Reading, discussing, distributing, or copying this message by anyone other than the named recipient, or his or her employees or agents, is strictly prohibited. If you have received this fax in error, please notify us immediately by telephone (collect), and return the original message to us at the address below via the U.S. Postal Service.

IF YOU DID NOT RECEIVE ALL OF THE PAGES OF THIS TRANSMISSION, OR IF ANY OF THE PAGES ARE ILLEGIBLE, PLEASE CALL 617.646.8000 IMMEDIATELY.

Wolf Greenfield Fax Number: 617.646.8646

Wolf, Greenfield & Sacks, P.C. | 600 Atlantic Avenue | Boston, Massachusetts 02210-2206

617.646.8000 | fax 617.646.8646 | www.wolfgreenfield.com

PATENTS TRADEMARKS COPYRIGHTS TECHNOLOGY TRANSFERS LITIGATION



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 NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/084,197	04/11/2011	Chris Weider	090611-0393260	9666
909	7590	07/28/2020		
Pillsbury Winthrop Shaw Pittman, LLP			EXAMINER	
PO Box 10500			YEN, ERIC L	
McLean, VA 22102				
			ART UNIT	PAPER NUMBER
			2626	
			NOTIFICATION DATE	DELIVERY MODE
			07/28/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket_ip@pillsburylaw.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Patent No. 8,195,468 :
Issue Date: June 05, 2012 :
Application No. 13/084,197 : NOTICE
Filed: April 11, 2011 :
Attorney Docket No. 090611-0393260 :

This is a notice regarding the request for acceptance of a fee deficiency submission under 37 CFR 1.28(c) filed March 10, 2020.

The present request is not signed by an attorney/agent of record. However, in accordance with 37 CFR 1.34(a), the signature of Andrew J. Tibbetts appearing on the request shall constitute a representation to the United States Patent and Trademark Office that he or she is authorized to represent the particular party on whose behalf he or she acts

The Office no longer investigates or rejects original or reissue applications under 37 CFR 1.56. 1098 Off. Gaz. Pat. Office 502 (January 3, 1989). Therefore, nothing in this Notice is intended to imply that an investigation was done.

The fee deficiency submission under 37 CFR 1.28(c) is hereby **ACCEPTED**.

This patent file is no longer entitled to small entity status. Accordingly, all future fees paid in this patent file must be paid at the undiscounted rate.

Since the address in the present request differs from the correspondence address of record, a courtesy copy of this Notice is being mailed to the address given in the request. However, applicant should note that a change in the correspondence address will not affect the fee address. Therefore, if applicant desires to receive future correspondence, which **may** be mailed, regarding maintenance fees for the above-identified patent, a "Fee Address Indication" form and/or a "Request for Customer Number" form(s) should be submitted (See USPTO form numbers PTO/SB/47 and/or PTO/SB/125).

Telephone inquiries concerning this decision should be directed to Jonya Smalls, Paralegal Specialist at 571-272-1619.

/JONYA SMALLS/
Jonya Smalls
Paralegal Specialist, OPET

Cc: Andrew J. Tibbetts
Wolf, Greenfield, & Sacks, P.C.
600 Atlantic Avenue
Boston Massachusetts 02210-2206

Transmittal Communication on Petition	Application/Control No. 13/084,197	Applicant(s)/Patent Under Reexamination Weider et al.	
	Deciding Official YEN, ERIC L	Office of Petitions OPET	

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

(ADDITIONAL PARTY'S CORRESPONDENCE ADDRESS)

Andrew J. Tibbetts
Wolf, Greenfield, & Sacks, P.C.
600 Atlantic Avenue
Boston Massachusetts 02210-2206

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above-identified Application/Patent.

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;

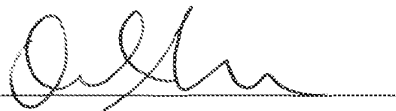
WHEREAS the parties desire to effectuate the assignment and transfer of the Assigned Patent Portfolio to Assignee such that Assignee shall acquire, and thus hereby acquires, all of Assignor's worldwide rights, title, and interests in and to the Assigned Patent Portfolio; and

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 be 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
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26	US	DYNAMIC SPEECH SHARPENING	11/513,269	Aug 31, 2006	7,634,409
27	US	DYNAMIC SPEECH SHARPENING	12/608,544	Oct 29, 2009	7,983,917
28	US	DYNAMIC SPEECH SHARPENING	12/608,572	Oct 29, 2009	8,069,046
29	US	SYSTEM AND METHOD FOR PROVIDING AN ACOUSTIC GRAMMAR TO DYNAMICALLY SHARPEN SPEECH INTERPRETATION	13/150,977	Jun 1, 2011	8,150,694

30	CN	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	2006800362006	Aug 4, 2006	ZL200680036200.6
31	CN	SYSTEMS AND METHODS FOR RESPONDING TO NATURAL LANGUAGE SPEECH UTTERANCE	2015102059396	Aug 4, 2006	ZL201510205939.6
32	CN	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS	200680038560	Aug 29, 2006	200680038560

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PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS	Patent Number	8195468
	Issue Date	06/05/12
	First Named Inventor	Weider, Chris
	Title	Mobile systems and methods of supporting natural language
	Attorney Docket No.	9032-0018

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

174889

OR

☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☒ The address associated with the above-identified Customer Number.

OR

☐ The address associated with the Customer Number identified in the box at right:

OR

☐ Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the:

☐ Applicant.

OR

☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

SIGNATURE of Applicant or Patent Owner

Signature	/Jeff Ronaldi/	Date	02/27/2023
Name	Jeff Ronaldi	Telephone	(571) 334-1112
Title and Company	Manager, Dialect, LLC		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Dialect, LLC

Application No./Patent No.: 8195468

Filed/Issue Date: 06/05/12

Titled: Mobile systems and methods of supporting natural language human-machine interactions
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: Weider, Chris et al. To: VoiceBox Technologies, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 026106, Frame 0426, or for which a copy thereof is attached.

2. From: VoiceBox Technologies, Inc. To: VoiceBox Technologies Corporation

The document was recorded in the United States Patent and Trademark Office at
Reel 032620, Frame 0956, or for which a copy thereof is attached.

[Page 1 of 2]

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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: VoiceBox Technologies Corporation To: Nuance Communications, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 034703, Frame 0429, or for which a copy thereof is attached.

4. From: Nuance Communications, Inc. To: Voice Inventions, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 056185, Frame 0742, or for which a copy thereof is attached.

5. From: Voice Inventions, LLC To: Dialect, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 060820, Frame 0857, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jeff Ronaldi/

02/27/2023

Signature

Date

Jeff Ronaldi

Manager, Dialect, LLC

Printed or Typed Name

Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

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

Electronic Acknowledgement Receipt	
EFS ID:	47602593
Application Number:	13084197
International Application Number:	
Confirmation Number:	9666
Title of Invention:	MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS
First Named Inventor/Applicant Name:	Chris Weider
Customer Number:	909
Filer:	David Alexander Gerasimow
Filer Authorized By:	
Attorney Docket Number:	090611-0393260
Receipt Date:	28-FEB-2023
Filing Date:	11-APR-2011
Time Stamp:	11:53:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	8195468.pdf	206840	no	2
			815f57b93bc257e20ea16c9ccd188358a863a636		

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	8195468-aia0096.pdf	201054	no	3
			d5f8e1a7ad0671a261ad5065b5688b1cfd068f		
Warnings:					
Information:					
Total Files Size (in bytes):				407894	
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.					

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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	8195468
Issue Date	06/05/12
First Named Inventor	Weider, Chris
Title	Mobile systems and methods of supporting natural language
Attorney Docket No.	9032-0018

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

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Practitioner(s) Name	Registration Number

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☐ 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	/I eff Ronaldi/	Date	11/06/2023
Name	I eff 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.

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UNITED STATES
PATENT AND TRADEMARK OFFICE

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
13/084,197

RECEIPT DATE / TIME
11/09/2023 12:49:10 PM Z ET

ATTORNEY DOCKET #
090611-0393260

Title of Invention

MOBILE SYSTEMS AND METHODS OF SUPPORTING NATURAL LANGUAGE HUMAN-MACHINE INTERACTIONS

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # 8195468

CONFIRMATION # 9666

FILED BY David Gerasimow

PATENT CENTER # 63206871

FILING DATE 04/11/2011

CUSTOMER # 909

FIRST NAMED
INVENTOR Chris Weider

CORRESPONDENCE
ADDRESS -

AUTHORIZED BY -

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
8195468.pdf	2	Power of Attorney	208 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
8195468.pdf	5F45C4DC7602B360294EABBE909DBC32C6EFCF16B1CB16C AC31F6D30385DC9A254E8BAB1F5BA390F1832F07E1B1FF784 EEC637497BD0B1D55E3F81600DD61C4

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
13/084,197	04/11/2011	Chris Weider	090611-0393260

CONFIRMATION NO. 9666

POWER OF ATTORNEY NOTICE



OC000000064854379

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

Date Mailed: 11/22/2023

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/09/2023.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/byemane/



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
13/084,197	04/11/2011	Chris Weider	9032-0018

CONFIRMATION NO. 9666

POA ACCEPTANCE LETTER



OC00000064854402

174899

The Law Offices of David A. Gerasimow, P.C.

211 W. Wacker Dr.

Ste. 1717

Chicago, IL 60606

Date Mailed: 11/22/2023

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/09/2023.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

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/byemane/