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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

Practitioners associated with the Customer Number: 49,637

OR

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

Name	Registration Number	Name	Registration Number

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

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

The address associated with Customer Number: 49,637

OR

<input type="checkbox"/> Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

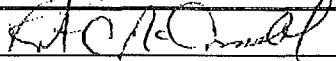
Assignee Name and Address:

Parus Holdings, Inc.
 3000 Lakeside Dr., Suite 300N
 Bannockburn, IL 60015

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

SIGNATURE of Assignee of Record

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

Signature		Date	11/17/2011
Name	Robert C. McConnell	Telephone	888-587-3481
Title	Chief Financial Officer, Senior Vice President and General Counsel - Parus Holdings, Inc.		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1460, 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.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Shawn Diedtrich.
Attorney Docket Number:	PRS-20.CON5

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	95	95
Utility Search Fee	2111	1	310	310
Utility Examination Fee	2311	1	125	125

Pages:

Claims:

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				530

Electronic Acknowledgement Receipt

EFS ID:	12691416
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	49637
Filer:	Shawn Diedtrich.
Filer Authorized By:	
Attorney Docket Number:	PRS-20.CON5
Receipt Date:	03-MAY-2012
Filing Date:	
Time Stamp:	00:45:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$530
RAM confirmation Number	9401
Deposit Account	503102
Authorized User	

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

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

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

IPR2020-00686

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

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

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	PRS-20_CON5_Application_Data_Sheet_5-3-12.pdf	1659878 b646752c89fae514a7208e2ab683a0bad2fd6cf	no	5

Warnings:

Information:

2	Drawings-only black and white line drawings	PRS-20_CON5_Drawings-5-3-12_final.pdf	171669 2d2ea0cd290de652ef56dc67875953007d60c4	no	4
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Warnings:

Information:

3	Oath or Declaration filed	PRS-20_CON5_Signed_Declaration-5-3-12.pdf	236008 9ee5f5b3a564da09d144580de5fe4d81f9888e6	no	4
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Warnings:

Information:

4		PRS-102_CON5_Specification_final.pdf	469281 2ec13d1ca3dbc7217c783c42547abc0203ae4993	yes	39
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Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	37
Claims	38	38
Abstract	39	39

Warnings:

Information:

5	Assignee showing of ownership per 37 CFR 3.73(b).	PRS-20_CON5_statement373_5-3-12.pdf	483679 3eee8ae5322b2be4851bc7e12b192031d62e0ebb	no	2
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Warnings:

Information:

6	Power of Attorney	PRS-20_CON5_Signed_GEN_POA-5-3-12.pdf	237977 1eb4aa476a6f40e79d336fa6a539f19084201bd66	no	1
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Warnings:

Information:					
7	Fee Worksheet (SB06)	fee-info.pdf	33036	no	2
			1b29280f98834c2d292b787be1cce9d423a73dfd		

Warnings:

Information:

Total Files Size (in bytes):	3291528
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

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

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

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

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PRS-102.CON5
		Application Number	
Title of Invention	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

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

Applicant Information:

Applicant 1						<input type="button" value="Remove"/>	
Applicant Authority		<input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117		<input type="radio"/> Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name		Suffix		
	Alexander		Kurganov				
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service							
City	Buffalo Grove	State/Province	IL	Country of Residenceⁱ	US		
Citizenship under 37 CFR 1.41(b)ⁱ		US					
Mailing Address of Applicant:							
Address 1	2099 Sheridan Road						
Address 2							
City	Buffalo Grove	State/Province	IL				
Postal Code	60089	Countryⁱ					
Applicant 2						<input type="button" value="Remove"/>	
Applicant Authority		<input checked="" type="radio"/> Inventor		<input type="radio"/> Legal Representative under 35 U.S.C. 117		<input type="radio"/> Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name		Suffix		
	Valery		Zhukoff				
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service							
City	Deerfield	State/Province	IL	Country of Residenceⁱ	US		
Citizenship under 37 CFR 1.41(b)ⁱ		US					
Mailing Address of Applicant:							
Address 1	821 Rosemary Terrace						
Address 2							
City	Deerfield	State/Province	CA				
Postal Code	60015	Countryⁱ	US				
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						<input type="button" value="Add"/>	

Correspondence Information:

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

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

IP R2020-00686

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PRS-102.CON5	
		Application Number		
Title of Invention	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER			
Customer Number	49637			
Email Address	efiling@berrypc.com		<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>

Application Information:

Title of the Invention	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER			
Attorney Docket Number	PRS-102.CON5	Small Entity Status Claimed	<input checked="" type="checkbox"/>	
Application Type	Nonprovisional			
Subject Matter	Utility			
Suggested Class (if any)		Sub Class (if any)		
Suggested Technology Center (if any)				
Total Number of Drawing Sheets (if any)	4	Suggested Figure for Publication (if any)		

Publication Information:

<input type="checkbox"/>	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
<input type="checkbox"/>	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.			
Please Select One:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
Customer Number	49637		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.			
Prior Application Status	Pending	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	12973475	2010-02-20
Prior Application Status	Patented	<input type="button" value="Remove"/>	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	PRS-102.CON5
		Application Number	
Title of Invention	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER		

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12973475	Continuation of	12030556	2008-02-13	7881941	2011-02-01
Prior Application Status		Patented	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12030556	Continuation of	11409703	2006-04-24	7386455	2008-06-10
Prior Application Status		Patented	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11409703	Continuation of	10821690	2004-04-09	7076431	2006-07-11
Prior Application Status		Patented	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
10821690	Continuation of	09776996	2001-02-05	6721705	2004-04-13
Prior Application Status		Expired	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Issue Date (YYYY-MM-DD)	
09776996	non provisional of	60233068	2000-09-15		
Prior Application Status		Expired	Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Issue Date (YYYY-MM-DD)	
09776996	non provisional of	60180344	2000-02-04		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button. Add					

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).			
Remove			
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			<input checked="" type="radio"/> Yes <input type="radio"/> No
Additional Foreign Priority Data may be generated within this form by selecting the Add button. Add			

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.	
Remove	
Assignee 1	
If the Assignee is an Organization check here. <input checked="" type="checkbox"/>	
Organization Name	Parus Holdings, Inc.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	PRS-102.CON5
	Application Number	
Title of Invention	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER	

Mailing Address Information:			
Address 1	3000 Lakeside Dr. Suite 300N		
Address 2			
City	Bannockburn	State/Province	IL
Country i	US	Postal Code	60015
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Shawn Diedtrich/			Date (YYYY-MM-DD)	2012-05-03
First Name	Shawn	Last Name	Diedtrich	Registration Number	58176

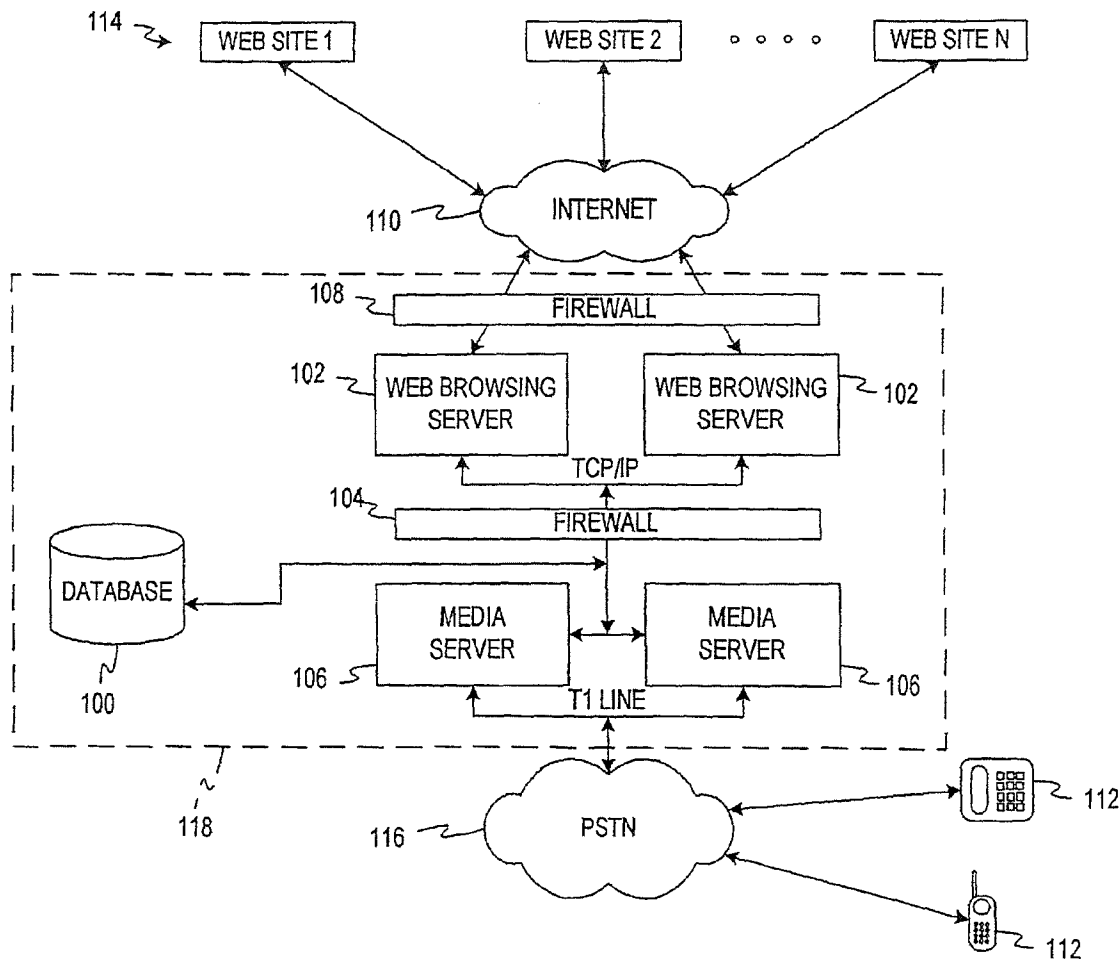
This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 the Freedom of Information Act requires disclosure of these records.
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 inspections 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.



1/4

FIG. 1

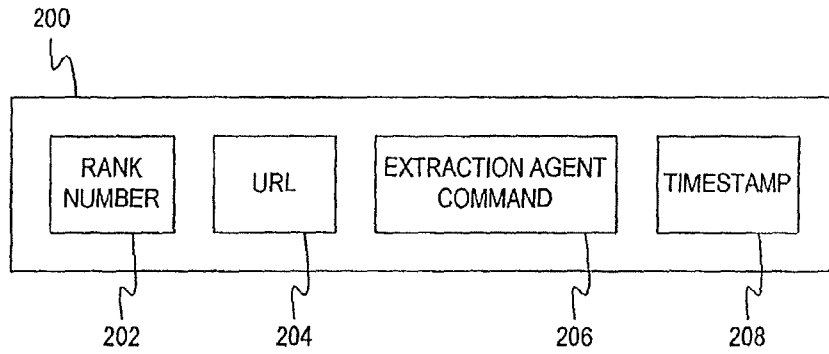


FIG. 2

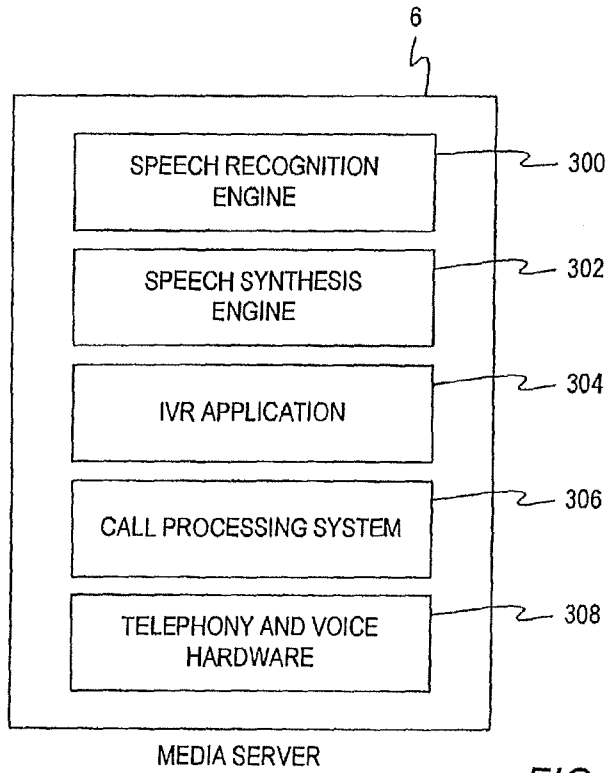


FIG. 3

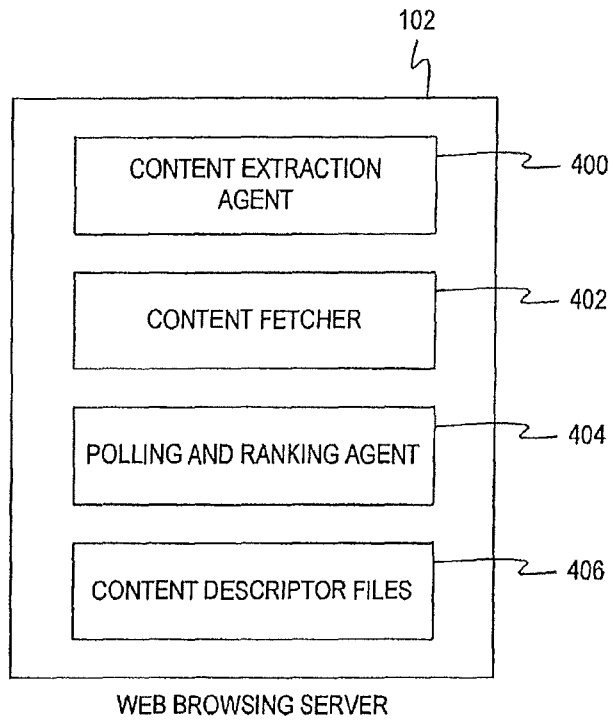


FIG. 4

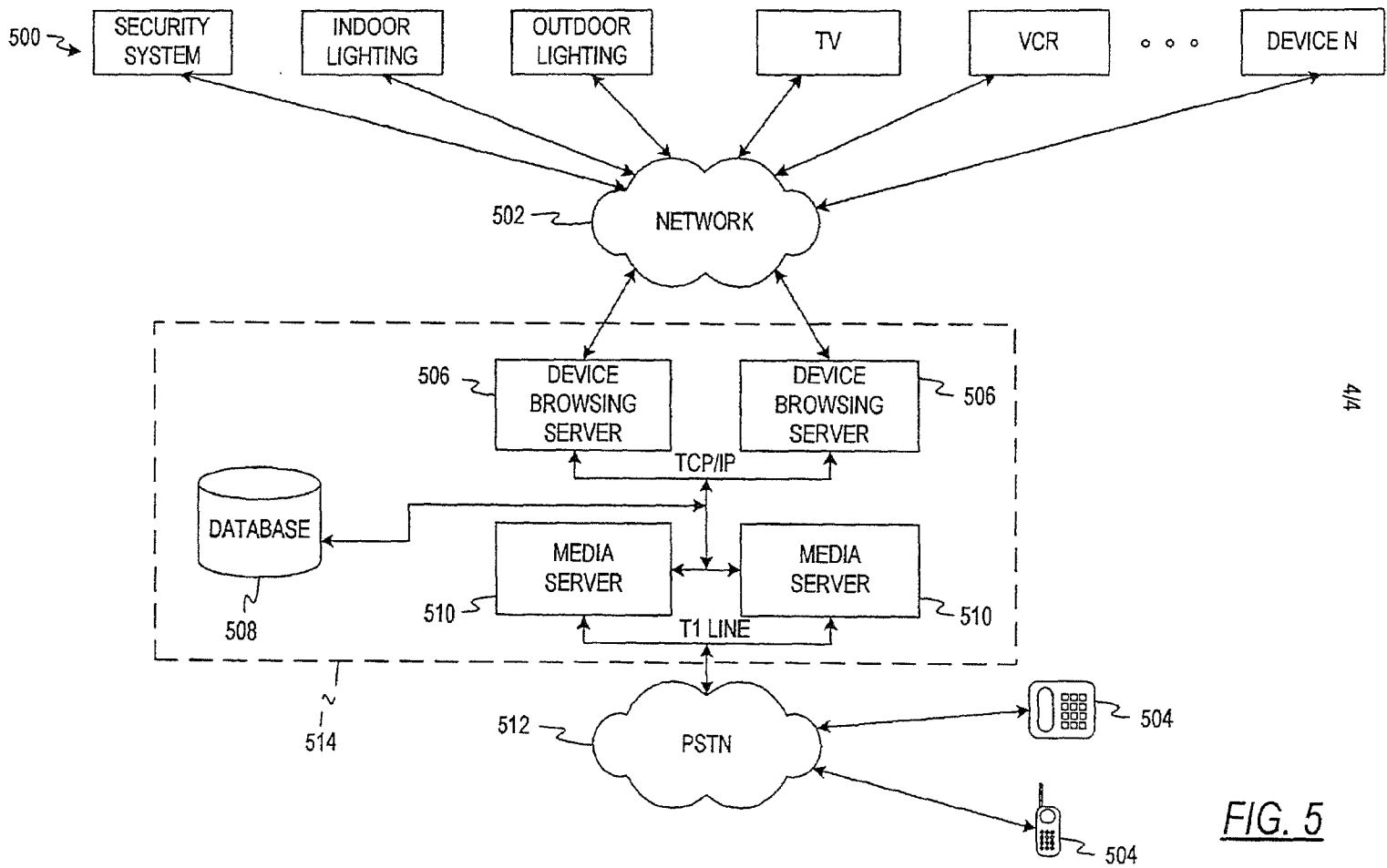


FIG. 5

**RULES 63 AND 67 (37 C.F.R. 1.63 and 1.67)
DECLARATION AND POWER OF ATTORNEY**

FOR UTILITY/DESIGN/CIP/PCT NATIONAL APPLICATIONS

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 that 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: **ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER**, the specification of which: (mark only one)

- (a) is attached hereto.
- (b) was filed on February 5, 2001 as Application Serial No. 09/776,996 and was amended on _____ (if applicable)
- (c) was filed as PCT International Application No. PCT/_____ on _____ and was amended on _____ (if applicable).
- (d) was filed on _____ as Application Serial No. _____ and was issued a Notice of Allowance on _____.
- (e) was filed on _____ and bearing attorney docket number _____

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above or as allowed as indicated above.

I acknowledge the duty to disclose all information known to me to be material to the patentability of this application as defined in 37 CFR § 1.56. If this is a continuation-in-part (CIP) application, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the Office all information known to me to be material to patentability of the application as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

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

CHICAGO 155885v1 47242-00027

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disclosing the subject matter claimed in this application and having a filing date (1) before that of the application on which my priority is claimed or, (2) if no priority is claimed, before the filing date of this application:

PRIOR FOREIGN PATENTS

<u>Number</u>	<u>Country</u>	<u>Month/Day/Year Filed</u>	<u>Date first laid-open or Published</u>	<u>Date patented or Granted</u>	<u>Priority Claimed</u>	
					<u>Yes</u>	<u>No</u>
NONE						

I hereby claim the benefit under 35 U.S.C. § 120/365 of any United States application(s) listed below and PCT international applications listed above or below:

PRIOR U.S. OR PCT APPLICATIONS

<u>Application No. (series code/serial no.)</u>	<u>Month/Day/Year Filed</u>	<u>Status(pending, abandoned, patented)</u>
60/180,344	February 4, 2000	Pending
60/233,068	September 15, 2000	Pending

I hereby appoint:

TIMOTHY G. ACKERMANN, Reg. No. 44,493	GERALD H. GLANZMAN, Reg. No. 25,035	SPENCER C. PATTERSON, Reg. No. 43,849
BENJAMIN J. BAL, Reg. No. 43,481	LEKHA GOPALAKRISHNAN, Reg. No. 46,733	RUSSELL N. RIPPAMONTI, Reg. No. 39,521
MICHAEL J. BLANKSTEIN, Reg. No. 37,097	J. KEVIN GRAY, Reg. No. 37,141	ROSS T. ROBINSON, Reg. No. 47,031
MARY JO BOLDINGH, Reg. No. 34,713	STEVEN R. GREENFIELD, Reg. No. 38,166	STEPHEN G. RUDISILL, Reg. No. 20,087
MARGARET A. BOULWARE, Reg. No. 28,708	JOSHUA A. GRISWOLD, Reg. No. 46,310	HOLLY L. RUDNICK, Reg. No. 43,065
ARTHUR J. BRADY, Reg. No. 42,356	J. PAT HEPTIG, Reg. No. 40,643	J.L. JENNIE SALAZAR, Reg. No. 45,065
MATTHEW O. BRADY, Reg. No. 44,554	SHARON A. ISRAEL, Reg. No. 41,867	KEITH W. SAUNDERS, Reg. No. 41,462
DANIEL J. BURNHAM, Reg. No. 39,618	JOHN R. KIRK JR., Reg. No. 24,477	JERRY R. SELINGER, Reg. No. 26,582
THOMAS L. CANTRELL, Reg. No. 20,849	PAUL R. KITCH, Reg. No. 38,206	JAMES O. SKARSTEN, Reg. No. 28,346
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ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE
CONTROLLER

CROSS REFERENCE TO RELATED APPLICATIONS

5 [0001] This application is a continuation of Application
Serial No. 12/973,475, entitled "Robust Voice Browser System
And Voice Activated Device Controller," filed December 20,
2010, which is a continuation of Application Serial No.
12/030,556, entitled "Robust Voice Browser System And Voice
10 Activated Device Controller," filed February 13, 2008, now
U.S. Patent No. 7,881,941, which is a continuation
application of Application Serial No. 11/409,703, entitled
"Robust Voice Browser System And Voice Activated Device
Controller," filed April 24, 2006, now US Patent No.
15 7,386,455, which is a continuation application of
Application Serial No. 10/821,690, entitled "Robust Voice
Browser System And Voice Activated Device Controller," filed
April 9, 2004, now US Patent No. 7,076,431, which is a
continuation application of Application Serial No.
20 09/776,996, entitled "Robust Voice Browser System And Voice
Activated Device Controller," filed February 5, 2001, now US
Patent No. 6,721,705, which claims priority to U.S.
Provisional Application Serial No. 60/180,344, entitled
"Voice Activated Information Retrieval System," filed
25 February 4, 2000 and U.S. Provisional Application No.
60/233,068, filed September 15, 2000, entitled "Robust Voice
Browser System and Voice Activated Device Controller, all
assigned to the assignee of the present application. The
subject matter in the above-identified co-pending and
30 commonly owned applications is incorporated herein by
reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a robust and
35 highly reliable system that allows users to browse web

sites and retrieve information by using conversational voice commands. Additionally, the present invention allows users to control and monitor other systems and devices that are connected the Internet or any other network by using
5 voice commands.

BACKGROUND OF THE INVENTION

[0003] Currently, three options exist for a user who wishes to gather information from a web site accessible over
10 the Internet. The first option is to use a desktop or a laptop computer connected to a telephone line via a modem or connected to a network with Internet access. The second option is to use a Personal Digital Assistant (PDA) that has the capability of connecting to the Internet either through
15 a modem or a wireless connection. The third option is to use one of the newly designed web-phones or web-pagers that are now being offered on the market. Although each of these options provide a user with access to the Internet to browse web sites, each of them have their own drawbacks.

[0004] Desktop computers are very large and bulky and are difficult to transport. Laptop computers solve this inconvenience, but many are still quite heavy and are inconvenient to carry. Further, laptop computers cannot be carried and used everywhere a user travels. For instance, if
25 a user wishes to obtain information from a remote location where no electricity or communication lines are installed, it would be nearly impossible to use a laptop computer. Oftentimes, information is needed on an immediate basis where a computer is not accessible. Furthermore, the use of
30 laptop or desktop computers to access the Internet requires either a direct or a dial-up connection tan an Internet Service Provider (ISP). Oftentimes, such connections are not available when a user desires to connect to the Internet to acquire information.

[0005] The second option for remotely accessing web sites

is the use of PDAs. These devices also have their own set of drawbacks. First, PDAs with the ability to connect to the Internet and access web sites are not readily available. As a result, these PDAs tend to be very expensive. Furthermore, users are usually required to pay a special service fee to enable the web browsing feature of the PDA. A further disadvantage of these PDAs is that web sites must be specifically designed to allow these devices to access information on the web site. Therefore, a limited number of web sites are available that are accessible by these web-enabled PDAs. Finally, it is very common today for users to carry cell phones, however, users must also carry a separate PDA if they require the ability to gather information from various web sites. Users are therefore subjected to added expenses since they must pay for both cellular telephone service and also for the web-enabling service for the PDA. This results in a very expensive alternative for the consumer.

[0006] The third alternative mentioned above is the use of web-phones or web-pagers. These devices suffer many of the same drawbacks as PDAs. First, these devices are expensive to purchase. Further, the number of web sites accessible to these devices is limited since web sites must be specifically designed to allow access by these devices. Furthermore, users are often required to pay an additional fee in order to gain wireless web access. Again, this service is expensive. Another drawback of these web-phones or web-pagers is that as technology develops, the methods used by the various web sites to allow access by these devices may change. These changes may require users to purchase new web-phones or web-pagers or have the current device serviced in order to upgrade the firmware or operating system stored within the device. At the least, this would be inconvenient to users and may actually be quite expensive.

[0007] Therefore, a need exists for a system that allows users to easily access and browse the Internet from any location. Such a system would only require users to have access to any type of telephone and would not require users
5 to subscribe to multiple services.

[0008] In the rapidly changing area of Internet applications, web sites change frequently. The design of the web site may change, the information required by the web site in order to perform searches may change, and the method
10 of reporting search results may change. Web browsing applications that submit search requests and interpret responses from these web sites based upon expected formats will produce errors and useless responses when such changes occur. Therefore, a need exists for a system that can detect
15 modifications to web sites and adapt to such changes in order to quickly and accurately provide the information requested by a user through a voice enabled device, such as a telephone.

[0009] When users access web sites using devices such as
20 personal computers, delays in receiving responses are tolerated and are even expected, however, such delays are not expected when a user communicates with a telephone. Users expect communications over a telephone to occur immediately with a minimal amount of delay time. A user
25 attempting to find information using a telephone expects immediate responses to his search requests. A system that introduces too much delay between the time a user makes a request and the time of response will not be tolerated by users and will lose its usefulness. Therefore, it is
30 important that a voice browsing system that uses telephonic communications selects web sites that provide rapid responses since speed is an important factor for maintaining the system's desirability and usability. Therefore, a need exists for a system that accesses web sites based upon their
35 speed of operation.

SUMMARY OF THE INVENTION

[0010] It is an object of an embodiment of the present invention to allow users to gather information from web sites by using voice enabled devices, such as wireline or wireless telephones.

[0011] An additional object of an embodiment of the present invention is to provide a system and method that allows the searching and retrieving of publicly available information by controlling a web browsing server using naturally spoken voice commands.

[0012] It is an object of another embodiment of the present invention to provide a robust voice browsing system that can obtain the same information from several web sites based upon a ranking order. The ranking order is automatically adjusted if the system detects that a given web site is not functioning, is too slow, or has been modified in such a way that the requested information cannot be retrieved any longer.

[0013] A still further object of an embodiment of the present invention is to allow users to gather information from web sites from any location where a telephonic connection can be made.

[0014] Another object of an embodiment of the present invention is to allow users to browse web sites on the Internet using conversational voice commands spoken into wireless or wireline telephones or other voice enabled devices.

[0015] An additional object an embodiment of the present invention is to provide a system and method for using voice commands to control and monitor devices connected to a network.

[0016] It is an object of an embodiment of the present invention to provide a system and method which allows devices connected to a network to be controlled by conversational voice commands spoken into any voice enabled
5 device interconnected with the same network.

[0017] The present invention relates to a system for acquiring information from sources on a network, such as the Internet. A voice browsing system maintains a database containing a list of information sources, such as web
10 sites, connected to a network. Each of the information sources is assigned a rank number which is listed in the database along with the record for the information source. In response to a speech command received from a user, a network interface system accesses the information source
15 with the highest rank number in order to retrieve information requested by the user.

[0018] The a preferred embodiment of the present invention allows users to access and browse web sites when they do not have access to computers with Internet access.
20 This is accomplished by providing a voice browsing system and method that allows users to browse web sites using conversational voice commands spoken into any type of voice enabled device (i.e., any type of wireline or wireless telephone, LP phone, wireless PDA, or other wireless
25 device). These spoken commands are then converted into data messages by a speech recognition software engine running on a user interface system. These data messages are then sent to and processed by a network interface system. This network interface system then generates the proper requests
30 that are transmitted to the desired web site over the Internet. Responses sent from the web site are received and

processed by the network interface system and then converted into an audio message via a speech synthesis engine or a pre-recorded audio concatenation application and finally transmitted to the user's voice enabled device.

5 [0019] A preferred embodiment of the voice browser system and method uses a web site polling and ranking methodology that allows the system to detect changes in web sites and adapt to those changes in real-time. This enables the voice browser system of a preferred embodiment to
10 deliver highly reliable information to users over any voice enabled device. This ranking system also enables the present invention to provide rapid responses to user requests. Long delays before receiving responses to requests are not tolerated by users of voice-based systems,
15 such as telephones. When a user speaks into a telephone, an almost immediate response is expected. This expectation does not exist for non-voice communications, such as email transmissions or accessing a web site using a personal computer. In such situations, a reasonable amount of
20 transmission delay is acceptable. The ranking system of implemented by a preferred embodiment of the present invention ensures users will always receive the fastest possible response to their request.

[0020] An alternative embodiment of the present
25 invention allows users to control and monitor the operation of a variety of household devices connected to a network using speech commands spoken into a voice enabled device.

BRIEF DESCRIPTION OF THE DRAWINGS

30 [0021] FIG. 1 is a depiction of the voice browsing system of the first embodiment of the present invention;

[0022] FIG. 2 is a block diagram of a database record

used by the first preferred embodiment of the present invention;

[0023] FIG. 3 is a block diagram of a media server used by the preferred embodiment;

5 **[0024]** FIG. 4 is a block diagram of a web browsing server used by the preferred embodiment; and

[0025] FIG. 5 is a depiction of the device browsing system of the second embodiment of the present invention.

10 DETAILED DESCRIPTION OF THE INVENTION

[0026] A first embodiment of the present invention is a system and method for allowing users to browse information sources, such as web sites, by using naturally spoken, conversational voice commands spoken into a voice enabled device. Users are not required to learn a special language or command set in order to communicate with the voice browsing system of the present invention. Common and ordinary commands and phrases are all that is required for a user to operate the voice browsing system. The voice browsing system recognizes naturally spoken voice commands and is speaker-independent; it does not have to be trained to recognize the voice patterns of each individual user. Such speech recognition systems use phonemes to recognize spoken words and not predefined voice patterns.

25 **[0027]** The first embodiment allows users to select from various categories of information and to search those categories for desired data by using conversational voice commands. The voice browsing system of the first preferred embodiment includes a user interface system referred to as a media server. The media server contains a speech recognition software engine. This speech recognition engine is used to recognize natural, conversational voice commands spoken by

the user and converts them into data messages based on the available recognition grammar. These data messages are then sent to a network interface system. In the first preferred embodiment, the network interface system is referred to as a web browsing server. The web browsing server then accesses the appropriate information source, such as a web site, to gather information requested by the user.

[0028] Responses received from the information sources are then transferred to the media server where speech synthesis engine converts the responses into audio messages that are transmitted to the user. A more detailed description of this embodiment will now be provided.

[0029] Referring to FIG. 1, a database 100 designed by Webley Systems Incorporated is connected to one or more web browsing servers 102 as well as to one or more media servers 106. The database may store information on magnetic media, such as a hard disk drive, or it may store information via other widely acceptable methods for storing data, such as optical disks. The database 100 contains a separate set of records for each web site accessible by the system. An example of a web site record is shown in FIG. 2. Each web site record 200 contains the rank number of the web site 202, the associated Uniform Resource Locator (URL) 204, and a command that enables the appropriate "extraction agent" 206 that is required in order to generate proper requests sent to and to format data received from the web site. The database record 200 also contains the timestamp 208 indicating the last time the web site was accessed. The extraction agent is described in more detail below. The database 100 categorizes each database record 200 according to the type of information provided by each web site. For instance, a first category of

database records 200 may correspond to web sites that provide "weather" information. The database 100 may also contain a second category of records 200 for web sites that provide "stock" information. These categories may be further divided into subcategories. For instance, the "weather" category may contain subcategories depending upon type of weather information available to a user, such as "current weather" or "extended forecast". Within the "extended forecast" subcategory, a list of web site records may be stored that provide weather information for multiple days. The use of subcategories may allow the web browsing feature to provide more accurate, relevant, and up-to-date information to the user by accessing the most relevant web site. The number of records contained in each category or subcategory is not limited. In the preferred embodiment, three web site records are provided for each category.

[0030] Table 1 below depicts two database records 200 that are used with the preferred embodiment. These records also contain a field indicating the "category" of the record, which is "weather" in each of these examples.

25

30

[0031]

TABLE 1

```
category: weather
URL: URL=http://cgi.cnn.com/cgi-
bin/weather/redirect?zip=zip
rank: 1
command: web_dispatch.pl weather_cnn
browsingserver: wportal1
browsingServerBackup: wportal2
dateTime: Dec 21 2000 2:15PM
category: weather
URL: URL=http://weather.lycos.com/wcfiveday.asp?city=zip
rank: 2
command: web_dispatch.pl weather_lycos
browsingServer: wportal1
browsingserverBackup: wportal2
dateTime: Dec 21 2000 1:45PM
```

[0032] The database also contains a listing of pre-

5 recorded audio files used to create concatenated phrases and sentences. Further, database 100 may contain customer profile information, system activity reports, and any other data or software servers necessary for the testing or administration of the voice browsing system.

10 [0033] The operation of the media servers 106 will now be

discussed in relation to FIG. 3. The media servers 106 function as user interface systems. In the preferred embodiment, the media servers 106 contain a speech recognition engine 300, a speech synthesis engine 302, an
15 Interactive Voice Response (IVR) application 304, a call processing system 306, and telephony and voice hardware 308 required to communicate with the Public Switched Telephone Network (PSTN) 116. In the preferred embodiment, each media

server is based upon Intel's Dual Pentium III 730 MHz
microprocessor system.

[0034] The speech recognition function is performed by a
speech recognition engine 300 that converts voice commands
5 received from the user's voice enabled device 112 (i.e., any
type of wireline or wireless telephone, Internet Protocol
(IP) phones, or other special wireless units) into data
messages. In the preferred embodiment, voice commands and
audio messages are transmitted using the PSTN 116 and data is
10 transmitted using the TCP/IP communications protocol.
However, one skilled in the art would recognize that other
transmission protocols may be used for either voice or data.
Other possible transmission protocols would include SIP/VoIP
(Session Initiation Protocol/Voice over IP), Asynchronous
15 Transfer Mode (ATM) and Frame Relay. A preferred speech
recognition engine is developed by Nuance Communications of
1380 Willow Road, Menlo Park, Calif. 94025 (www.nuance.com).
The Nuance engine capacity is measured in recognition units
based on CPU type as defined in the vendor specification. The
20 natural speech recognition grammars (i.e., what a user can
say that will be recognized by the speech recognition engine)
were developed by Webley Systems.

[0035] Table 2 below provides a partial source code
listing of the recognition grammars used by the speech
25 recognition engine of the preferred embodiment for obtaining
weather information.

30

[0036]

TABLE 2

```

?WHAT...IS ?the weather ?[info information report conditions]
  ? ( (?like in )
    ]
  UScities:n
    {<param1 $n.zip> <param2 $n.city> <param3
    $n.state>}
    ( (area code) AREA_CODE:n ) {<param1 $n>}
    ( AREA_CODE:n (area code) ) {<param1 $n>}
    ( (zip ?code) ZIP_CODE:n ) {<param1 $n>}
    ( ZIP_CODE:n (zip ?code) ) {<param1 $n>}
    ]
  )
) {<memm 194>}

```

[0037] The media server 106 uses recognition results
 5 generated by the speech recognition engine 300 to retrieve a
 web site record 200 stored in the database 100 that can
 provide the information requested by the user. The media
 server 106 processes the recognition result data identifying
 keywords that are used to search the web site records 200
 10 contained in the database 100. For instance, if the user's
 request was "What is the weather in Chicago?", the keywords
 "weather" and "Chicago" would be recognized. A web site
 record 200 with the highest rank number from the "weather"
 category within the database 100 would then be selected and
 15 transmitted to the web browsing server 102 along with an
 identifier indicating that Chicago weather is being
 requested.

[0038] The media servers 106 also contain a speech
 synthesis engine 302 that converts the data retrieved by the
 20 web browsing servers 102 into audio messages that are

transmitted to the user's voice enabled device 112. A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third Avenue, Burlington, Mass. 01803 (www.lhsl.com).

5 **[0039]** A further description of the web browsing server 102 will be provided in relation to FIG. 4. The web browsing servers 102 provide access to any computer network such as the Internet 110. These servers are also capable of accessing databases stored on Local Area Networks (LANs) or Wide Area
10 Networks (WANs). The web browsing servers receive responses from web sites and extract the data requested by the user. This task is also known as "content extraction." The web browsing servers 102 also perform the task of periodically polling or "pinging" various web sites and modifying the
15 ranking numbers of these web sites depending upon their response and speed. This polling feature is further discussed below. The web browsing server 102 is comprised of a content extraction agent 400, a content fetcher 402, a polling and ranking agent 404, and the content descriptor files 406. Each
20 of these are software applications and will be discussed below.

[0040] Upon receiving a web site record 200 from the database 100 in response to a user request, the web browsing server 102 invokes the "content extraction agent" command 206
25 contained in the record 200. The content extraction agent 400 allows the web browsing server 102 to properly format requests and read responses provided by the web site 114 identified in the URL field 204 of the web site record 200. Each content extraction agent command 206 invokes the content
30 extraction agent and identifies a content description file associated with the web page identified by the URL 204. This

content description the directs the extraction agent where to
 extract data from the accessed web page and how to format a
 response to the user utilizing that data. For example, the
 content description for a web page providing weather
 5 information would indicate where to insert the "city" name or
 ZIP code in order to retrieve Chicago weather information.
 Additionally, the content description file for each supported
 URL indicates the location on the web page where the response
 information is provided. The extraction agent 400 uses this
 10 information to properly extract from the web page the
 information requested by the user.

[0041] Table 3 below contains source code for a content
 extraction agent 400 used by the preferred embodiment.

[0042]

TABLE 3

```
#!/usr/local/www/bin/sybpperl5
#SHheader:
/usr/local/cvsroot/webley/agents/service/web_dispatch.pl, v
1.6
# Dispatches all web requests
#http://wcorp.itn.net/cgi/flstat?carrier=ua&flightno=155&mo
nabbr=jul&date=
6&stamp=OhLN~PdbuuE*itn/ord, itn/cb/sprint_hd
#http://cgi.cnnfn.com/flightview/rfm?airline=amt&number=300
require "config_tmp.pl";
# check parameters
die "Usage: $0 service [params]\n" if $#ARGV < 1;
#print STDERR @ARGV;
* get parameters
my ( $service, @param ) = @ARGV;
# check service
my %Services = (
    weather_cnn => 'webget.pl weather_cnn',
    weather_lycos => 'webget.pl
```

15

TABLE 3-continued

```

weather_lycos',
    weather...weather => 'webget.pl
weather...weather',
    weather...snap => 'webget.pl
weather...snap',
    weather...infospace => 'webget.pl
weather...infospace',
    stockQuote...yahoo => 'webget.pl stock',
    flightstatus... => 'webget.pl
flight...date',
    yellowPages...yahoo => 'yp...data.pl',
    yellowPages...yahoo => 'yp...data.pl',
    newsHeadline...newsfeed => 'news.pl',
    newsArticle...newsfeed => 'news.pl',

# test param
my $date = 'date';
chop ( $date );
my ( $short...date ) = $date =~ /s+(?=[3])s+(?=[1,2])w+/;
my %test = (
    weather...err => '60053',
    weather_lycos => '80053',
    weather...weather => '60053',
    weather...snap => '60053',
    weather...infospace => '60053',
    stockQuote...yahoo => 'stock',
    flightStatus...in => 'aa 155',

$short...date,
    yellowPages...yahoo => 'line 60015',
    newsHeadline...newsfeed => '1',
    newsArticle...newsfeed => '1 1',

die "$date $0: error: no such service: $service (check this
script) in"
unless $services { $service };
# prepare absolute path to run other scripts
my ( $path, $script ) = $0 =~ m{(.*)} {/P};
# store the service to compare against datatable
my $service...stored = $service;
# run service
while ( $response = $path.$services{$service}{@params} ) {
    # response failed
    # check with test parameters
    $response = $path.$services{$service}{$test{$service}};
};
# print "test: $path.$services{$service}{$test{$service}}";
};
if ( $response ) {
    $service = $switch...service ( $service );
    print "Wrong parameter values were supplied:
$service -
@params";
# die "$date $0: error: wrong parameters: $service
-
@params";
}
else {
    # change priority and notify
    $service = $increase...attempt( $service );
}
}
# output the response
print $response;
sub increase...attempt {
    my ( $service ) = @_;
    my ( $service...name ) = split ( /./, $service );
    print STDERR "$date $0: now: changing priority for
service:
$service";
    # update priority
    $db...query( "update mcServiceRoute
...set priority = ( select max( priority )
from
mcServiceRoute
...where service = '$service...name' ) + 1,
...
... "date = getdate);",

```

TABLE 3-continued

```

      . "attempt = attempt + 1"
      . "where route = '$script $service'");
#   print "---$route====\n";
      # find new route
      my $route = @{$&db__query( "select route from
mcServiceRoute "
      . "where service =
'$service name'
      . "and attempt < 5
"
      . "order by
priority "
      )->[ 0 ]{route };
      &db__query( "update mcServiceRoute "
      . "set attempt = 0 "
      . "where route = '$script $service'"
      if( $route eq "$script $service"
      or $route eq "$script $service__stored" );
      ( $service__name, $service ) = split( /_*/, $route );
      die "$date: $0: error: no route for the service:
$service (add
more) \n"
      unless $service;
      return $service;
}
sub switch__service {
  my ( $service ) = @_;
  my ( $service__name ) = split( /_*/, $service );
  print STDERR "$date: $0: atm: changing priority for
service:
$service\n";
  # update priority
  &db__query( "update mcServiceRoute "
      . "set priority = ( select max ( priority )

```


TABLE 3-continued

```

from
meServiceRoute "
    . "where service = '$service_name' ) + 1,
"
    . "date = getdate( ) "
    . "where route = '$script $service'" );
#   print "--Route====\n";
#   # find new route
my $route = @{@&db_query( "select route from
meServiceRoute "
    . "where service =
'$service_name' "
    . "and attempt < 5
"
    . "order by
priority "
    . "}> 1 0 ){route };
die "%date: %0: error: there is the only service:
$route (add
more) \n"
    if ( $route eq "$script $service"
    or $route eq "$script $service_stored" );
( $service_name, $service ) = split( /&+/, $route );
die "%date: %0: error: no route for the service:
$service (add
more) \n"
    unless $service;
return $service;
}

```

[0043] Table 4 below contains source code of the content
 5 fetcher 402 used with the content extraction agent 400 to
 retrieve information from a web site.

TABLE 4

```

#1 /usr/local/www/bin/syberis
#-T
# -w
# $Header:
/usr/local/cvsroot/webley/agents/service/webget.pl,v 1.4
# Agent to get info from the web.
# Parameters: service...name [service...parameters], i.e. stock
msft or weather
60645
# configuration stored in files service...name.ini
# if this file is absent the configuration is received from
mcServices table
# This script provides autoupdate to datatable if the .ini
file is newer.
$debug = 1;
use URI::URL;
use LWP::User Agent;
use HTTP::Request::Common;
use Visit::VarList;
use Sybase::CTlib;
use HTTP::Cookies;
#print "Sybase::CTlib $DB__USR, $DB__PWD, $DB__SRV";
open( STDERR, ">>$0.log" ) if $debug;
#open( STDERR, ">&STDOUT" );
$log = `date`;
#$response = `curl.pl "http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605";
#$response = `pwd`;
#print STDERR "pwd = $response\n";
#$response = `is`;
#print STDERR "is = $response\n";
chop( $log );
$log .= "pwd=" . `pwd`;
chop( $log );
#$debug2 = 1;
my $service = shift;
$log .= " $service: ". join( ':', @ARGV ). "\n";

```

TABLE 4-continued

```

print STDERR $log if $debug;
$response => ./url.pl
"http://cgi.csi.cmu.edu/cgi-bin/weather/sectsect?zip=61605";
my @ini = &read_ini { $service };
chomp @ini;
my $section = "";
do { $section = &process_section( $section ) } while $section;
$response => ./url.pl
"http://cgi.csi.cmu.edu/cgi-bin/weather/sectsect?zip=61605";
exit;
sub read_ini {
    my ( $service ) = my @ini = ();
    # first, try to read file
    $0 =~ m{ (.*? ) /? };
    $service = $1 . $service;
    if { open INI, "$service.ini" } {
        @ini = ( <INI> );
        return @ini unless ( $DB...SRV);
        # update database
        my $file_time = time - ini ( -M "$service.ini" )
* 24 *
3600 )
#
        print "time $file_time\n";
        my $dbh = new MySQL::DB ($DB...USR, $DB...PWD,
$DB...SRV);
        unless ( $dbh ) {
            print STDERR "wget.pl: Cannot connect to
dataserver $DB...SRV:$DB...USR:$DB...PWD\n";
            return @ini;
        }
        my @row_refs = $dbh->et_sql( "select lastUpdate
from
mcServices where service = '$service'", undef, 1 );
        if ( $dbh->{RC} == CS...FAIL ) {
            print STDERR "wget.pl: DB select from
mcServices
failed\n";
            return @ini;
        }
        unless ( defined @row_refs ) {
            # have to insert
            my ( @ini_escaped ) = map {
                ( my $x = $_ ) =~ s/'/'\''ig;
                $dbh->et_sql( "insert mcServices values(
'$service'
'@ini_escaped', $file_time )" );
            if ( $dbh->{RC} == CS...FAIL ) {
                print STDERR "wget.pl: DB insert to
mcServices failed\n";
            }
            return @ini;
        }
        #
        print "time $file_time: @row_refs [ 0 ]\n
> { 'lastUpdate'
} , ""
        if ( $file_time > $row_refs [ 0 ] => { 'lastUpdate' } )
        {
            # have to update
            my ( @ini_escaped ) = map {
                ( my $x = $_ ) =~ s/'/'\''ig;
                $x;
            } @ini;
            $dbh->et_sql( "update mcServices set config =
'@ini_escaped', lastUpdate = $file_time where service =
'$service'" );
            if ( $dbh->{RC} == CS...FAIL ) {
                print STDERR "wget.pl: DB update to
mcServices failed\n";
            }
            return @ini;
        }
    }
    else {
        print STDERR "$0: WARNING: $service.ini sfa in ".
'pwd'
        . "Try to read DB\n";

```

TABLE 4-continued

```

}
# then try to read datatable
die "webget.pl: Unable to find service $service\n"
unless ( $DB...SRV
);
my $dbh = new Sybase::DBlib $DB...USR, $DB...PWD, $DB...SRV;
die "webget.pl: Cannot connect to datasever
$DB...SRV:$DB...USR:$DB...PWD\n" unless ( $dbh );
my @@row...rels = $dbh->sql "select config from
mcServices where
service = '$service'", undef, 1 );
die "webget.pl: DB select from mcServices failed\n" if
$dbh->{RC }
== CS...FAIL;
die "webget.pl: Unable to find service $service\n"
unless ( defined
@@row...rels );
$row...rels [ 0 ]->{'config'}=-- $'\n $'\n;
@iis = split(/\n/, $row...rels { 0 }->{'config' });
return @iis;
} -
#####
sub process_section {
my ( $prev_section ) = my ( $section, $output, $content );
my %$param;
my %content;
# print "#####\n";
foreach ( @iis ) {
# print;
# chop;
s/'s+$/;
s/'s+//;
# get section name
if (/[C*]/) {
# print "$... Section:$prev_section\n";
last if $section;
next if $1 eq "print";
next if $prev_section ne " and $prev_section
ne $1;
if ( $prev_section eq $1 ) {
$prev_section = "";
next;
}
$section $1;
}
# get parameters
push( @{$$param{$1 }}, $2 ) if $section and
/([*]*)s(.*)/;
# print "#####\n";
return 0 unless $section;
# print "section $section\n";
# substitute parameters with values
map { $param{URL, }->| 0 } s- s$param{input }->{ $...
|&ARCIV{ $...
|&
}0 .. ${$param{input }};
# get page content
( $content{"HTML"}, $content ) = &geturlcontent(
${$param{URL, }
} | 0 );
# filter it
map {
if ( /([*]*)s(.*)/ )
/([*]*)s(.*)/ )
{
my $out = $2; $content = s- s$1/$out/g;
}
} @{$param{"pre-filter" }};
# print STDERR $content;
# do main regular expression
unless ( @values = $content =~
/(${param}{Regular...expression } ) { 0
| } {
&die...hard( ${$param}{Regular...expression } { 0 };
$content

```

TABLE 4-continued

```

}
    return $action;
}
%content = map {($Param{Output }->) $...}, $values[ $...
}
}G..S*{$Param {Output }};
# filter it
map {
    if (/ ( (? " | \+ ) " ( " | \+ ) " ( " | \+ ) " ) \? \?
        or / ( (? " | \+ ) " ( " | \+ ) " ( (? " | \+ ) " ) \? \? ) {
        my $out = $3;
        $context{$1 } =~ s:/$2%/out/g;
    }
}
}G{$Param { "Post-filter" }};
# calculate it
map {
    if ( / ( [ \+ ] \? \? ) {
        my $eval = $2;
        map { $eval =~ s:/$Content{$3 }/g;
            } keys %Content;
        $content{$1 } = eval( $eval );
    }
}
}G{$Param {Calculate }};
# read section {print}
foreach $i ( 0 .. $*int ) {
    next unless $in[ $i ] =~ / { \+ };
    foreach ( $i + 1 .. $*int ) {
        last if $in[ $... ] =~ / { \+ };
        $output .= $in[ $... ] . "\n";
    }
    last;
}
# prepare output
map { $outpost =~ s:$.../$Content{$... }/g;
} keys %Content;
print $output;
return 0;
}
}
#####
sub get...url content {
    my ( $url ) = @...;
    print STDERR $url if $debug;
    $response = "url.pl $url";
    $response = "url.pl $url";
    return $time - time, $response ;
    my $ua = LWP::UserAgent->new;
    $ua->agent = "Mozilla/4.0 [en] (X11; i; FreeBSD 2.2.8-
STABLE i386)";
}
#
    ua->proxy( 'http', 'https' );
'http://proxy.webey:3128/';
#
    $ua->no_proxy( 'webey', 'vail' );
    my $cookie = HTTP::Cookies->new;
    $ua->cookie_jar( $cookie );
    $url = url $url;
    print "url.pl" if $debug2;
    my $time = time;
    my $res = $ua->request( GET $url );
    print "Response: " . ( time - $time ) . "sec" if
$debug2;
    return $time - time, $res->content();
}
#####
sub die...hard {
    my( $re, $content ) =
my ( $re...url, $pattern );
while( $content =~ /$re/ ) {
    if ( $re =~ s: ( ( \ ( ) \+ ) ( \ ( ) \+ ) * $ ) : ) {
        $re end = $1 . $re end;
    }
    else {
        $re...end = $re;
        last;
    }
}
$content =~ /$re/;
}

```


TABLE 5-continued

(S+) C (S+)
(S+) HIGH (S+) F (S+) C LOW (S+) F (S+) C (+) Current
Conditions(+)
!local, (S+) (S+) (+) Temp: (S+) F, (S+) C Ref.
Humidity: (S+) Wind:
(+) Pressure: (+) Sunrise: (+) Sunset: (+) Related Links
Post-filter= __current__weather"p/"partly"
Post-filter= __current__weather"l/"little"
Post-filter= __current__weather"su/"mostly"
Post-filter= __current__weather"t/"thunder"
Post-filter= __wind"N"North"
Post-filter= __wind"E"East"
Post-filter= __wind"S"South"
Post-filter= __wind"W"West"
Post-filter= __wind/inch/miles per hour/
Post-filter= __wind/kph/ /kilometers per hour/
Post-filter= __wind"se!";"
[print]
Current weather in __location is __current__weather.
Temperature is __current__temperature...F Fahrenheit,
__current__temperature...C
Celsius.
Humidity is __humidity.
Wind from the __wind.

[0045] Table 6 below contains the content descriptor file
source code for obtaining weather information from the web
5 site www.lycos.com that is used by the extraction agent 400
of the preferred embodiment.

TABLE 6

[lycos]
Input=zip
Input=...city
URL=http://weather.lycos.com/wcfive/day.asp?city=zip
Pre-filter="a"
Pre-filter="</TD>"td"
Pre-filter="<!.*?>"
Pre-filter="
"br..."
Pre-filter="/alt"/>alt="/
Pre-filter="<[<>]+>"
Pre-filter=" "
Pre-filter="/s+//
Output=...location
Output=...current...weather
Output=...current...temperature...F
Output=...humidity
Output=...winddir
Output=...windspeed
Output=...windmeasure
Output=...pressure

TABLE 6-continued

```

Output=<first__day__name
Output=<second__day__name
Output=<third__day__name
Output=<fourth__day__name
Output=<fifth__day__name
Output=<first__day__weather
Output=<second__day__weather
Output=<third__day__weather
Output=<fourth__day__weather
Output=<fifth__day__weather
Output=<first__day__high__F
Output=<first__day__low__F
Output=<second__day__high__F
Output=<second__day__low__F
Output=<third__day__high__F
Output=<third__day__low__F
Output=<fourth__day__high__F
Output=<fourth__day__low__F
Output=<fifth__day__high__F
Output=<fifth__day__low__F
Output=___windkmh
Regular expression=<Guide My Lycos (<*) Click image to
enlarge
alt=({ "})+*(?:+) Temp: (<+)(?:+)F___br___Humidity:
(S+) (?:+) Wind:
___br___
Output =___current__temperature__C
Post-filter=<__location*__br__"
Post-filter=<__current__weather"p/"partly"
Post-filter=<__current__weather"m/"mostly"
Post-filter=<__current__weather"t-/"thunder"
Post-filter=<__winddir"@ " at"
Post-filter=<__winddirmph/miles per hour/
Post-filter=<__wind/kph/kilometers per hour/
Calculate=___current__temperature__C=int ( (___current__temperature__F
-32) *5/9)
Calculate=<___windkmh=int (___windspeed*1.6)
[print]
The current weather in ___location is ___current__weather.
The current temperature is ___current__temperature__F Faahrenheit
___current__temperature__C Celsius.
Humidity is ___humidity.
Winds ___winddir.

```

[0046] Once the web browsing server 102 accesses the web site specified in the URL 204 and retrieves the requested

information, the information is forwarded to the media server 106. The media server uses the speech synthesis engine 302 to create an audio message that is then transmitted to the user's voice enabled device 112. In the preferred embodiment,
5 each web browsing server 102 is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

[0047] Referring to FIG. 1, the operation of the robust voice browser system will be described. A user establishes a connection between his voice enabled device 112 and a media
10 server 106. This may be done using the Public Switched Telephone Network (PSTN) 116 by calling a telephone number associated with the voice browsing system 118. Once the connection is established, the media server 106 initiates an interactive voice response (WR) application 304. The IVR
15 application plays audio messages to the user presenting a list of options, such as, "stock quotes", "flight status", "yellow pages", "weather", and "news". These options are based upon the available web site categories and may be modified as desired. The user selects the desired option by
20 speaking the name of the option into the voice enabled device 112.

[0048] As an example, if a user wishes to obtain restaurant information, he may speak into his telephone the phrase "yellow pages". The FIR application would then ask the
25 user what he would like to find and the user may respond by stating "restaurants". The user may then be provided with further options related to searching for the desired restaurant. For instance, the user may be provided with the following restaurant options, "Mexican Restaurants", "Italian
30 Restaurants", or "American Restaurants". The user then speaks into the telephone 112 the restaurant type of interest. The

IVR application running on the media server 106 may also request additional information limiting the geographic scope of the restaurants to be reported to the user. For instance, the IVR application may ask the user to identify the zip code of the area where the restaurant should be located. The media server 106 uses the speech recognition engine 300 to interpret the speech commands received from the user. Based upon these commands, the media server 106 retrieves the appropriate web site record 200 from the database 100. This record and any additional data, which may include other necessary parameters needed to perform the user's request, are transmitted to a web browsing server 102. A firewall 104 may be provided that separates the web browsing server 102 from the database 100 and media server 106. The firewall provides protection to the media server and database by preventing unauthorized access in the event the firewall for web browsing server 108 fails or is compromised. Any type of firewall protection technique commonly known to one skilled in the art could be used, including packet filter, proxy server, application gateway, or circuit-level gateway techniques.

[0049] The web browsing server 102 then uses the web site record and any additional data and executes the extraction agent 400 and relevant content descriptor file 406 to retrieve the requested information.

[0050] The information received from the responding web site 114 is then processed by the web browsing server 102 according to the content descriptor file 406 retrieval by the extraction agent. This processed response is then transmitted to the media server 106 for conversion into audio messages using either the speech synthesis software 302 or selecting

among a database of prerecorded voice responses contained within the database 100.

[0051] As mentioned above, each web site record contains a rank number 202 as shown in FIG. 2. For each category
5 searchable by a user, the database 100 may list several web sites, each with a different rank number 202. As an example, three different web sites may be listed as searchable under the category of "restaurants". Each of those web sites will be assigned a rank number such as 1, 2, or 3. The site with
10 the highest rank (i.e., rank=1) will be the first web site accessed by a web browsing server 102. If the information requested by the user cannot be found at this first web site, then the web browsing server 102 will search the second ranked web site and so forth down the line until the
15 requested information is retrieved or no more web sites left to check.

[0052] The web site ranking method and system of the present invention provides robustness to the voice browser system and enables it to adapt to changes that may occur as
20 web sites evolve. For instance, the information required by a web site 114 to perform a search or the format of the reported response data may change. Without the ability to adequately monitor and detect these changes, a search requested by a user may provide an incomplete response, no
25 response, or an error. Such useless responses may result from incomplete data being provided to the web site 114 or the web browsing server 102 being unable to recognize the response data messages received from the searched web site 114.

[0053] The robustness and reliability of the voice
30 browsing system of the present invention is further improved by the addition of a polling mechanism. This polling

mechanism continually polls or "pings" each of the sites listed in the database 100. During this polling function, a web browsing server 102 sends brief data requests or "polling digital data" to each web site listed in database 100. The
5 web browsing server 102 monitors the response received from each web site and determines whether it is a complete response and whether the response is in the expected format specified by the content descriptor file 406 used by the extraction agent 400. The polled web sites that provide
10 complete responses in the format expected by the extraction agent 400 have their ranking established based on their "response time". That is, web sites with faster response times will be will be assigned higher rankings than those with slower response times. If the web browsing server 102
15 receives no response from the polled web site or if the response received is not in the expected format, then the rank of that web site is lowered. Additionally, the web browsing server contains a warning mechanism that generates a warning message or alarm for the system administrator
20 indicating that the specified web site has been modified or is not responsive and requires further review.

[0054] Since the web browsing servers 102 access web sites based upon their ranking number, only those web sites that produce useful and error-free responses will be used by the
25 voice browser system to gather information requested by the user. Further, since the ranking numbers are also based upon the speed of a web site in providing responses, only the most time efficient sites are accessed. This system assures that users will get complete, timely, and relevant responses to
30 their requests. Without this feature, users may be provided with information that is not relevant to their request or may

not get any information at all. The constant polling and re-ranking of the web sites used within each category allows the voice browser of the present invention to operate efficiently. Finally, it allows the voice browser system of the present invention to dynamically adapt to changes in the rapidly evolving web sites that exist on the Internet.

[0055] It should be noted that the web sites accessible by the voice browser of the preferred embodiment may use any type of mark-up language, including Extensible Markup Language (XML), Wireless Markup Language (WML), Handheld Device Markup Language (HDML), Hyper Text Markup Language (HTML), or any variation of these languages.

[0056] A second embodiment of the present invention is depicted in FIG. 5. This embodiment provides a system and method for controlling a variety of devices 500 connected to a network 502 by using conversational speech commands spoken into a voice enabled device 504 (i.e., wireline or wireless telephones, Internet Protocol (IP) phones, or other special wireless units). The networked devices may include various household devices. For instance, voice commands may be used to control household security systems, VCRs, TVs, outdoor or indoor lighting, sprinklers, or heating and air conditioning systems.

[0057] Each of these devices 500 is connected to a network 502. These devices 500 may contain embedded microprocessors or may be connected to other computer equipment that allow the device 500 to communicate with network 502. In the preferred embodiment, the devices 500 appear as "web sites" connected to the network 502. This allows a network interface system, such as a device browsing server 506, a database 508, and a user interface system, such as a media server 510, to

operate similar to the web browsing server 102, database 100 and media server 106 described in the first preferred embodiment above. A network 502 interfaces with one or more network interface systems, which are shown as device browsing servers 506 in FIG. 5. The device browsing servers perform many of the same functions and operate in much the same way as the web browsing servers 102 discuss above in the first preferred embodiment. The device browsing servers 506 are also connected to a database 508.

10 **[0058]** Database 508 lists all devices that are connected to the network 502. For each device 500, the database 508 contains a record similar to that shown in FIG. 2. Each record will contain at least a device identifier, which may be in the form of a URL, and a command to "content extraction agent" contained in the device browsing server 506. Database 15 508 may also include any other data or software necessary to test and administer the device browsing system.

[0059] The content extraction agent operates similarly to that described in the first embodiment. A device descriptor 20 file contains a listing of the options and functions available for each of the devices 500 connected on the network 502. Furthermore, the device descriptor file contains the information necessary to properly communicate with the networked devices 500. Such information would include, for 25 example, communication protocols, message formatting requirements, and required operating parameters.

[0060] The device browsing server 506 receives messages from the various networked devices 500, appropriately formats those messages and transmits them to one or more media 30 servers 510 which are part of the device browsing system. The user's voice enabled devices 504 can access the device

browsing system by calling into a media server 510 via the Public Switched Telephone Network (PSTN) 512. In the preferred embodiment, the device browsing server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

5 **[0061]** The media servers 510 act as user interface systems and perform the functions of natural speech recognition, speech synthesis, data processing, and call handling. The media server 510 operates similarly to the media server 106 depicted in FIG. 3. When data is received from the device
10 browser server 506, the media server 510 will convert the data into audio messages via a speech synthesis engine that are then transmitted to the voice enabled device of the user 504. Speech commands received from the voice enabled device of the user 504 are converted into data messages via a speech
15 recognition engine running on the media server 510. A preferred speech recognition engine is developed by Nuance Communications of 1380 Willow Road, Menlo Park, Calif. 94025 (www.nuance.com). A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third
20 Avenue, Burlington, Mass. 01803 (www.lhsl.com). The media servers 510 of the preferred embodiment are based on Intel's Dual Pentium III 730 MHz microprocessor system. A specific example for using the system and method of this embodiment of the invention will now be given.

25 **[0062]** First, a user may call into a media server 510 by dialing a telephone number associated with an established device browsing system. Once the user is connected, the IVR application of the media server 510 will provide the user with a list of available systems that may be monitored or
30 controlled based upon information contained in database 508.

[0063] For example, the user may be provided with the

option to select "Home Systems" or "Office Systems". The user may then speak the command "access home systems". The media server 510 would then access the database 508 and provide the user with a listing of the home subsystems or devices 500
5 available on the network 502 for the user to monitor and control. For instance, the user may be given a listing of subsystems such as "Outdoor Lighting System", "Indoor Lighting System", "Security System", or "Heating and Air Conditioning System". The user may then select the indoor
10 lighting subsystem by speaking the command "Indoor Lighting System". The IVR application would then provide the user with a set of options related to the indoor lighting system. For instance the media server 510 may then provide a listing such as "Dining Room", "Living Room", "Kitchen", or "Bedroom".
15 After selecting the desired room, the IVR application would provide the user with the options to hear the "status" of the lighting in that room or to "turn on", "turn off", or "dim" the lighting in the desired room. These commands are provided by the user by speaking the desired command into the users
20 voice enabled device 504. The media server 510 receives this command and translates it into a data message. This data message is then forwarded to the device browsing server 506 which routes the message to the appropriate device 500.

[0064] The device browsing system 514 of this embodiment
25 of the present invention also provides the same robustness and reliability features described in the first embodiment. The device browsing system 514 has the ability to detect whether new devices have been added to the system or whether current devices are out-of-service. This robustness is
30 achieved by periodically polling or "pinging" all devices 500 listed in database 508. The device browsing server 506

periodically polls each device 500 and monitors the response. If the device browsing server 506 receives a recognized and expected response from the polled device, then the device is categorized as being recognized and in-service. However, if
5 the device browsing server 506 does not receive a response from the polled device 500 or receives an unexpected response, then the device 500 is marked as being either new or out-of-service. A warning message or a report may then be generated for the user indicating that a new device has been
10 detected or that an existing device is experiencing trouble.

[0065] Therefore, this embodiment allows users to remotely monitor and control any devices that are connected to a network, such as devices within a home or office.

Furthermore, no special telecommunications equipment is
15 required for users to remotely access the device browser system. Users may use any type of voice enabled device (i.e., wireline or wireless telephones, IP phones, or other wireless units) available to them. Furthermore, a user may perform these functions from anywhere without having to subscribe to
20 additional services. Therefore, no additional expenses are incurred by the user.

[0066] The descriptions of the preferred embodiments described above are set forth for illustrative purposes and are not intended to limit the present invention in any
25 manner. Equivalent approaches are intended to be included within the scope of the present invention. While the present invention has been described with reference to the particular embodiments illustrated, those skilled in the art will recognize that many changes and variations may be made
30 thereto without departing from the spirit and scope of the present invention. These embodiments and obvious variations

thereof are contemplated as falling within the scope and spirit of the claimed invention.

CLAIMS

What is claimed is:

1. A method for retrieving information using a voice
5 enabled device, the method comprising the steps of:
 receiving speech at a speech recognition device;
 retrieving information according to the received
 speech.

10

ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE
CONTROLLER

ABSTRACT OF THE INVENTION

The present invention relates to a system for
5 acquiring information from sources on a network, such as
the Internet. A voice browsing system maintains a database
containing a list of information sources, such as web
sites, connected to a network. Each of the information
sources is assigned a rank number which is listed in the
10 database along with the record for the information source.
In response to a speech command received from a user, a
network interface system accesses the information source
with the highest rank number in order to retrieve
information requested by the user.

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

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Alexander Kurganov et al.

Application No./Patent No.: Not yet assigned Filed/Issue Date: Herewith

Titled: **ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER**

Parus Holdings, Inc., a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

- 1. the assignee of the entire right, title, and interest in;
- 2. an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
- 3. the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

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 024640, Frame 0433, or for which a copy therefore is attached.

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Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(b)(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.

/Shawn Diedtrich/
Signature

May 3, 2012
Date

Shawn Diedtrich, Reg. No. 58,176, Berry & Associates P.C.
Printed or Typed Name

Patent Attorney
Title

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IPR2020-00686

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	APPLICANT: Kurganov	
	FILING DATE: 5/3/12	GROUP: 2626

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE	
	3,728,486	04-1973	Kraus				
	4,058,838	11-1977	Crager et al.				
	4,100,377	07-1978	Flanagan				
	4,313,035	01-1982	Jordan et al.				
	4,327,251	04-1982	Fomenko et al.				
	4,340,783	07-1982	Sugiyama et al.				
	4,371,752	02-1983	Matthews et al.				
	4,481,574	11-1984	DeFino et al.				
	4,489,438	12-1984	Hughes				
	4,500,751	02-1985	Darland et al.				
	4,513,390	04-1985	Walter et al.				
	4,523,055	06-1985	Hohl et al.				
	4,549,047	10-1985	Brian et al.				
	4,584,434	04-1986	Hashimoto				
	4,585,906	04-1986	Matthews et al.				
	4,596,900	06-1986	Jackson				
	4,602,129	07-1986	Matthews et al.				
	4,635,253	01-1987	Urui et al.				
	4,652,700	03-1987	Matthews et al.				
	4,696,028	09-1987	Morganstein et al.				
	4,713,837	12-1987	Gordon				
	4,747,127	05-1988	Hansen et al.				

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	4,748,656	05-1988	Gibbs et al.				
	4,755,932	07-1988	Diedrich				
	4,757,525	07-1988	Matthews et al.				
	4,761,807	08-1988	Matthews et al.				
	4,763,317	08-1988	Lehman et al.				
	4,769,719	09-1988	Endo				
	4,771,425	09-1988	Baran et al.				
	4,776,016	10-1988	Hansen				
	4,782,517	11-1988	Bernardis et al.				
	4,792,968	12-1988	Katz				
	4,799,144	01-1989	Parruch				
	4,809,321	02-1989	Morganstein et al.				
	4,811,381	03-1989	Woo et al.				
	4,837,798	06-1989	Cohen et al.				
	4,847,891	07-1989	Kotani				
	4,850,012	07-1989	Mehta et al.				
	4,852,149	07-1989	Zwick et al.				
	4,866,758	09-1989	Heinzelmann				
	4,873,719	10-1989	Reese				
	4,879,743	11-1989	Burke et al.				
	4,893,333	01-1990	Baran et al.				
	4,893,335	01-1990	Fuller et al.				

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	4,903,289	02-1990	Hashimoto				
	4,903,291	02-1990	Tsurufuji et al.				
	4,905,273	02-1990	Gordon et al.				
	4,907,079	03-1990	Turner et al.				
	4,918,722	04-1990	Duehren et al.				
	4,922,518	05-1990	Gordon et al.				
	4,922,520	05-1990	Bernard et al.				
	4,922,526	05-1990	Morganstein et al.				
	4,926,462	05-1990	Ladd et al.				
	4,930,150	05-1990	Katz				
	4,933,966	06-1990	Hird et al.				
	4,935,955	06-1990	Neudorfer				
	4,935,958	06-1990	Morganstein et al.				
	4,941,170	07-1990	Herbst				
	4,942,598	07-1990	Davis				
	4,953,204	08-1990	Cuschleg, Jr., et al.				
	4,955,047	09-1990	Morganstein et al.				
	4,956,835	09-1990	Grover				
	4,959,854	09-1990	Cave et al.				
	4,967,288	10-1990	Mizutori et al.				
	4,969,184	11-1990	Gordon et al.				
	4,972,462	11-1990	Shibata				

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	4,974,254	11-1990	Perine et al.				
	4,975,941	12-1990	Morganstein et al.				
	4,985,913	01-1991	Shalom et al.				
	4,994,926	02-1991	Gordon et al.				
	4,996,704	02-1991	Brunson				
	5,003,575	03-1991	Chamberlin et al.				
	5,003,577	03-1991	Ertz				
	5,008,926	04-1991	Misholi				
	5,020,095	05-1991	Morganstein et al.				
	5,027,384	06-1991	Morganstein				
	5,029,196	07-1991	Morganstein				
	5,036,533	07-1991	Carter et al.				
	5,054,054	10-1991	Pessia et al.				
	5,065,254	11-1991	Hishida				
	5,086,385	02-1992	Launey et al.				
	5,095,445	03-1992	Sekiguchi				
	5,099,509	03-1992	Morganstein et al.				
	5,109,405	04-1992	Morganstein				
	5,128,984	07-1992	Katz				
	5,131,024	07-1992	Pugh et al.				
	5,133,004	07-1992	Heileman, Jr. et al.				
	5,145,452	09-1992	Chevalier				

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	5,166,974	11-1992	Morganstein et al.				
	5,179,585	01-1993	MacMillan, Jr. et al.				
	5,193,110	03-1993	Jones et al.				
	5,195,086	03-1993	Baumgartner et al.				
	5,233,600	08-1993	Pekarske				
	5,243,643	09-1993	Sattar et al.				
	5,243,645	09-1993	Bissell et al.				
	5,249,219	09-1993	Morganstein et al.				
	5,263,084	11-1993	Chaput et al.				
	5,291,302	03-1994	Gordon et al.				
	5,291,479	03-1994	Vaziri et al.				
	5,303,298	04-1994	Morganstein et al.				
	5,307,399	04-1994	Dai et al.				
	5,309,504	05-1994	Morganstein et al.				
	5,325,421	06-1994	Hou et al.				
	5,327,486	07-1994	Wolff et al.				
	5,327,529	07-1994	Fults et al.				
	5,329,578	07-1994	Brennan et al.				
	5,333,266	07-1994	Boaz et al.				
	5,347,574	09-1994	Morganstein				
	5,355,403	10-1994	Richardson, Jr., et al.				
	5,359,598	10-1994	Steagall et al.	704	275		

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	5,365,524	11-1994	Hiller et al.				
	5,375,161	12-1994	Fuller et al.				
	5,384,771	10-1995	Isidoro et al.				
	5,404,231	04-1995	Bloomfield				
	5,408,526	04-1995	McFarland et al.				
	5,414,754	05-1995	Pugh et al.				
	5,416,834	05-1995	Bales et al.				
	5,432,845	07-1995	Burd et al.				
	5,436,963	07-1995	Fitzpatrick et al.				
	5,459,584	10-1995	Gordon et al.				
	5,463,684	10-1995	Morduch et al.				
	5,475,791	12-1995	Schalk et al.				
	5,479,487	12-1995	Hammond				
	5,495,484	02-1996	Self et al.				
	5,497,373	03-1996	Hulen et al.				
	5,499,288	03-1996	Hunt et al.				
	5,515,427	05-1996	Carlsen et al.				
	5,517,558	05-1996	Schalk				
	5,526,353	06-1996	Henley et al.				
	5,533,115	07-1996	Hollenbach et al.				
	5,537,461	07-1996	Bridges et al.				
	5,555,100	09-1996	Bloomfield et al.				

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	5,559,611	09-1996	Bloomfield et al.				
	5,559,859	09-1996	Dai et al.				
	5,566,236	10-1996	MeLampy et al.				
	5,603,031	02-1997	White et al.				
	5,608,786	03-1997	Gordon				
	5,610,910	03-1997	Focsaneanu et al.				
	5,610,970	03-1997	Fuller et al.				
	5,611,031	03-1997	Hertzfeld et al.				
	5,630,079	05-1997	McLaughlin				
	5,652,789	07-1997	Miner et al.				
	5,657,376	08-1997	Espeut et al.				
	5,659,597	08-1997	Bareis et al.				
	5,666,401	09-1997	Morganstein et al.				
	5,675,507	10-1997	Bobo, II				
	5,675,811	10-1997	Broedner et al.				
	5,689,669	11-1997	Lynch et al.				
	5,692,187	11-1997	Goldman et al.				
	5,699,486	12-1997	Tullis et al.				
	5,712,903	01-1998	Bartholomew et al.				
	5,719,921	02-1998	Vysotsky et al.				
	5,721,908	02-1998	Lagarde et al.				
	5,724,408	03-1998	Morganstein				

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	5,742,905	04-1998	Pepe et al.				
	5,752,191	05-1998	Fuller et al.				
	5,764,639	06-1998	Staples et al.				
	5,764,736	06-1998	Shachar et al.				
	5,764,910	06-1998	Shachar				
	5,787,298	07-1998	Broedner et al.				
	5,793,993	08-1998	Broedner et al.				
	5,799,065	08-1998	Junqua et al.				
	5,809,282	09-1998	Cooper et al.				
	5,812,796	09-1998	Broedner et al.				
	5,819,220	10-1998	Sarukkai et al.				
	5,819,306	10-1998	Goldman et al.				
	5,822,727	10-1998	Garberg et al.				
	5,823,879	10-1998	Goldberg et al.				
	5,832,063	11-1998	Vysotsky et al.				
	5,835,570	11-1998	Wattenbarger				
	5,838,682	11-1998	Dekelbaum et al.				
	5,867,494	02-1999	Krishnaswamy et al.				
	5,867,495	02-1999	Elliott et al.				
	5,870,550	02-1999	Wesinger, Jr. et al.				
	5,873,080	02-1999	Coden et al.				
	5,881,134	03-1999	Foster et al.				

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	5,884,032	03-1999	Bateman et al.				
	5,884,262	03-1999	Wise et al.				
	5,884,266	03-1999	Dvorak				
	5,890,123	03-1999	Brown et al.				
	5,915,001	06-1999	Uppaluru				
	5,917,817	06-1999	Dunn et al.				
	5,943,399	08-1999	Bannister et al.				
	5,946,389	08-1999	Dold				
	5,953,392	09-1999	Rhie et al.				
	5,974,413	10-1999	Beauregard et al.				
	5,999,525	12-1999	Krishnaswamy et al.				
	6,012,088	01-2000	Li et al.				
	6,014,437	01-2000	Acker et al.				
	6,018,710	01-2000	Wynblatt et al.				
	6,021,181	02-2000	Miner et al.				
	6,031,904	02-2000	An et al.				
	6,038,305	03-2000	McAllister et al.				
	6,047,053	04-2000	Miner et al.				
	6,067,516	05-2000	Levay et al.				
	6,078,580	06-2000	Mandalia et al.				
	6,081,518	06-2000	Bowman-Amuah				
	6,081,782	07-2000	Rabin				

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	6,091,808	07-2000	Wood et al.				
	6,101,472	08-2000	Giagarra et al.				
	6,104,803	08-2000	Weser et al.				
	6,115,742	09-2000	Franklin et al.				
	6,130,933	10-2000	Miloslavsky				
	6,157,705	12-2000	Perrone				
	6,185,535	02-2001	Hedin et al.				
	6,195,357	02-2001	Polcyn				
	6,208,638	03-2001	Rieley et al.				
	6,230,132	05-2001	Class et al.				
	6,233,318	05-2001	Picard et al.				
	6,243,373	06-2001	Turock				
	6,252,944	06-2001	Hansen, II et al.				
	6,269,336	07-2001	Ladd et al.				
	6,285,745	09-2001	Bartholomew et al.				
	6,327,572	12-2001	Morton et al.				
	6,349,132	02-2002	Wesemann et al.				
	6,353,661	03-2002	Bailey, III				
	6,366,578	04-2002	Johnson				
	6,424,945	07-2002	Sorsa				
	6,434,529	08-2002	Walker et al.				
	6,446,076	09-2002	Burkey et al.				

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	6,456,699	09-2002	Burg et al.				
	6,477,420	11-2002	Struble et al.				
	6,501,966	12-2002	Bareis et al.				
	6,505,163	01-2003	Zhang et al.				
	6,529,948	03-2003	Bowman-Amuah				
	6,532,444	03-2003	Weber				
	6,539,359	03-2003	Ladd et al.				
	6,546,393	04-2003	Khan				
	6,584,439	06-2003	Geilhufe et al.				
	6,594,348	07-2003	Bjurstrom et al.				
	6,618,726	09-2003	Colbath et al.				
	6,636,831	10-2003	Profit, Jr. et al.				
	6,665,640	12-2003	Bennett et al.				
	6,687,341	02-2004	Koch et al.				
	6,718,015	04-2004	Berstis				
	6,721,705	04-2004	Kurganov et al.				
	6,732,142	05-2004	Bates et al.				
	6,771,732	08-2004	Xiao et al.				
	6,775,264	08-2004	Kurganov				
	6,807,257	10-2004	Kurganov				
	6,823,370	11-2004	Kredo et al.				
	6,888,929	05-2005	Saylor et al.				

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U.S. PATENT DOCUMENTS							
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE	
	6,922,733	07-2005	Kuiken et al.				
	6,941,273	09-2005	Loghmani et al.				
	6,964,012	11-2005	Zimgibl et al.				
	6,964,023	11-2005	Maes et al.				
	6,965,864	11-2005	Thrift et al.				
	6,996,609	02-2006	Hickman et al.				
	7,003,463	02-2006	Maes et al.				
	7,050,977	05-2006	Bennett				
	7,076,431	07-2006	Kurganov et al.				
	7,386,455	06-2008	Kurganov et al.				
	7,516,190	04-2009	Kurganov				
	2001/0032234	10-2001	Summers et al.				
	2001/0040885	11-2001	Jonas et al.				
	2001/0048676	12-2001	Jimenez et al.				
	2002/0006126	07-2002	Johnson et al.				

FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATIO		
						YES	NO	
	CA 1,329,852	05-1994	Canada					
	EP 0 572 544	09-1996	Europe					
	GB 2 211 698	07-1989	Great Britain					
	GB 2 240 693	08-1991	Great Britain					
	GB 2,317,782	04-1998	Great Britain					

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

FORM PTO-1449 LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	ATTY. DOCKET NO. PRS-20.CON5	SERIAL NO. 13/462,819
	APPLICANT: Kurganov	
	FILING DATE: 5/3/12	GROUP: 2626

	JP 1-258526	10-1989	Japan					
	WO 91/07838	05-1991	PCT					
	WO 91/18466	11-1991	PCT					
	WO 96/09710	03-1996	PCT					
	WO 97/37481	09-1997	PCT					
	WO 98/23058	05-1998	PCT					

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)	
EXAMINER INITIAL	"A PABX that Listens and Talks", Speech Technology, January /February 1984, pp. 74-79.
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	"Introducing PIC SuperFax, First PC/Fax System to Run Under Windows", Pacific Image Communications, Pasadena, CA, Date Unknown, (received at COMDEX show, Nov. 3, 1987). 3 pgs.

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

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	APPLICANT: Kurganov	
	FILING DATE: 5/3/12	GROUP: 2626

	<p>"Juggler by Pure Speech," p. 1, available at http://members.aol.com/compqanda1/juggler.html (accessed on December 8, 2006).</p>
	<p>KUBALA et al., "BYBLOS Speech Recognition Benchmark Results:, Workshop on Speech & Natural Language, February 19-22, 1991.</p>
	<p>LY, "Chatter: A Conversational Telephone Agent", submitted to Program in Media Arts, & Sciences, MIT, 1993, pp. 1-130.</p>
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	<p>Plaintiff Parus Holdings, Inc.'s Supplemental Response to Defendant Web Telephony LLC's First Set of Interrogatories (Nos. 1-12), Parus Holdings, Inc. v. Web Telephony LLC & Robert Swartz, Case No. 06-cv-01146 (N.D. Ill.), October 31, 2006, 32 pages.</p>
	<p>Plaintiff Parus Holdings, Inc.'s Supplemental Response to Defendant Web Telephony LLC's Second Set of Interrogatories (Nos. 13-17), Parus Holdings, Inc. v. Web Telephony LLC & Robert Swartz, Case No. 06-cv-01146 (N.D. Ill.), October 31, 2006, 31 pages.</p>
	<p>Print outs of Internet web site, "Wildfire Communications, Inv.," November 5, 1997, including print outs of the following web pages: http://www.wildfire.com; http://www.wildfire.com/consumerhome.html; http://www.wildfire.com/106.html; http://www.wildfire.com/carrierhome.html; http://www.wildfire.com/sfandb.html; http://www.wildfire.com/about.html; http://www.wildfire.com/abtmgmt.html; http://www.wildfire.com/scoop.html; http://www.wildfire.com/intel.html; and http://www.wildfire.com/msft.html.</p>
	<p>"Proceedings of the IFIP World Computer Congress", Dublin, Ireland, September 1-5, 1986.</p>
	<p>"PureSpeech Announces Juggler PC System for First Quarter of 1997", HighBeam Research, September 19, 1996, pp. 1-3, available at http://www.highbeam.com/doc/1G1-186909545.html (accessed on December 8, 2006).</p>
	<p>PureSpeech, "Meet the Voice of Juggler!", the date of November 18, 1996 is shown on the top of Page 1.</p>

EXAMINER:	DATE CONSIDERED:
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	APPLICANT: Kurganov	
	FILING DATE: 5/3/12	GROUP: 2626

	ROSS, Randy, "Retrieve E-Mail from a Telephone", October 7, 1996, pp. 1-2, available at http://resna.org/ProfessOrg?Sigs?SIGSites/sig11/archive/juggler.htm (accessed on December 8, 2006). Printout indicates that the article was originally printed in PC World.
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Electronic Acknowledgement Receipt

EFS ID:	12808358
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	49637
Filer:	Shawn Diedtrich.
Filer Authorized By:	
Attorney Docket Number:	PRS-102.CON5
Receipt Date:	17-MAY-2012
Filing Date:	03-MAY-2012
Time Stamp:	18:12:54
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		PRS-20_CON5_IDS_before_OA_final_5-17-12.pdf	164848 7a5720b4d9efc424dea4d8ecd90f0b49c2d51d4a	yes	17

Multipart Description/PDF files in .zip description			
Document Description		Start	End
Transmittal Letter		1	2
Information Disclosure Statement (IDS) Form (SB08)		3	17

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:)	Customer No.: 49,637
)	
Alexander Kurganov et al.)	Confirmation No.: 8402
)	
Serial No.: 13/462,819)	Group Art Unit: 2626
)	
Filed: May 3, 2012)	Examiner: To be assigned
)	
For: ROBUST VOICE BROWSER)	
SYSTEM AND VOICE ACTIVATED)	
DEVICE CONTROLLER)	

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR § 1.97(b)(1) and (3)

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

Sir:

In compliance with the Applicant's duty under 37 CFR § 1.56, the following information is brought to the attention of the Examiner. The items are listed on the attached form PTO-1449. Copies of the listed items are not enclosed, as each of the items was cited by or submitted to the Patent Office in the prior application (Application Serial No. 12/973,475), from which the present application relies upon for priority under §120. *See* 37 C.F.R. 1.98(d).

The items identified in this Information Disclosure Statement may or may not be “material” pursuant to 37 CFR § 1.56 and the submission thereof by Applicant shall not be construed as an admission that any such patent, publication or other information referred to therein is material or considered to be material (37 CFR § 1.97(h)), or even qualifies as “prior art” under 35 USC § 102 with respect to this invention unless specifically designated by Applicant as such.

The filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information, as defined in 37 CFR § 1.56, exists. The attached Information Disclosure Statement is being filed in accordance with 37 CFR §§ 1.97 and 1.98. This IDS is believed to be timely in that it is being submitted under 37 CFR § 1.97(b)(1) and (3), that is contemporaneously with the application and therefore within three months of the filing date and before the mailing of a first Office Action on the merits, and thus no petition or fee is required. However, if the undersigned representative of Applicant is in error in this regard, then the Examiner is requested to consider this a petition and is hereby authorized to charge any fee required by the filing of these papers to Berry & Associates P.C.'s Deposit Account No. **50-3102**.

Respectfully submitted,

BERRY & ASSOCIATES P.C.

Dated: May 17, 2012

By: /Shawn Diedtrich/
Shawn Diedtrich
Reg. No. 58,176

9229 Sunset Blvd., Suite 630
Los Angeles, California 90069
(310) 247-2860



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Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY. DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 13/462,819, 05/03/2012, 2447, 530, PRS-102.CON5, 1, 1

CONFIRMATION NO. 8402

49637
BERRY & ASSOCIATES P.C.
9229 SUNSET BOULEVARD
SUITE 630
LOS ANGELES, CA 90069

FILING RECEIPT



Date Mailed: 05/18/2012

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)

Alexander Kurganov, Buffalo Grove, IL;
Valery Zhukoff, Deerfield, IL;

Assignment For Published Patent Application

PARUS HOLDINGS, INC., Bannockburn, IL

Power of Attorney: The patent practitioners associated with Customer Number 49637

Domestic Priority data as claimed by applicant

This application is a CON of 12/973,475 12/20/2010 PAT 8185402 *
which is a CON of 12/030,556 02/13/2008 PAT 7881941
which is a CON of 11/409,703 04/24/2006 PAT 7386455
which is a CON of 10/821,690 04/09/2004 PAT 7076431
which is a CON of 09/776,996 02/05/2001 PAT 6721705
which claims benefit of 60/233,068 09/15/2000
and claims benefit of 60/180,344 02/04/2000
(*)Data provided by applicant is not consistent with PTO records.

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: 05/15/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 13/462,819

Projected Publication Date: 08/23/2012

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

Preliminary Class

709

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
13/462,819

APPLICATION AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(j))	1 minus 20 = *	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 = *	
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

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

SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	95
N/A	310
N/A	125
x 30 =	0.00
x 125 =	0.00
	0.00
	0.00
TOTAL	530

OR OTHER THAN SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

APPLICATION AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(j))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(j))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
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".

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/462,819	05/03/2012	Alexander Kurganov	PRS-102.CON5

CONFIRMATION NO. 8402

POA ACCEPTANCE LETTER

49637
BERRY & ASSOCIATES P.C.
9229 SUNSET BOULEVARD
SUITE 630
LOS ANGELES, CA 90069



Date Mailed: 05/18/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/03/2012.

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.

/tqlam/

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



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Table with 4 columns: APPLICATION NUMBER (13/462,819), FILING OR 371(C) DATE (05/03/2012), FIRST NAMED APPLICANT (Alexander Kurganov), ATTY. DOCKET NO./TITLE (PRS-20.CON5)

CONFIRMATION NO. 8402

PUBLICATION NOTICE

49637
BERRY & ASSOCIATES P.C.
9229 SUNSET BOULEVARD
SUITE 630
LOS ANGELES, CA 90069



Title: ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

Publication No. US-2012-0215545-A1
Publication Date: 08/23/2012

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

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

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

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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes details for application 13/462,819 filed 05/03/2012 by Alexander Kurganov, attorney PRS-20.CON5, examiner MCFADDEN, SUSAN IRIS, art unit 2658, notification date 02/12/2013, and 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):

efiling@berrypc.com

Office Action Summary	Application No. 13/462,819	Applicant(s) KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 03 May 2012.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
- 4) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) Claim(s) 1 is/are pending in the application.
 - 5a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 6) Claim(s) _____ is/are allowed.
- 7) Claim(s) 1 is/are rejected.
- 8) Claim(s) _____ is/are objected to.
- 9) Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) The specification is objected to by the Examiner.
- 11) The drawing(s) filed on 03 May 2012 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

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

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 3) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 4) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

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

2. Claim(s) 1 is rejected under 35 USC 101 as not falling within one of the four statutory categories of invention. While the claim(s) recite a series of steps or acts to be performed, a statutory "process" under 35 USC 101 must (1) be tied to another statutory category (such as a manufacture or a machine), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claim(s) neither transform underlying subject matter nor positively recite any type of physical structure associated with another statutory category, and therefore do not define a statutory process or system. In regard to claim 1, a device is not claimed.

Claim Rejections - 35 USC § 102

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

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (4,340,800).

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In regard to claim 1, Ueda et al. show a method comprising: receiving speech at a speech recognition device; retrieving information according to the received speech (Fig. 5).

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Takano et al. (4,340,797).

In regard to claim 1, Takano et al. show in Figure 3, a method comprising: receiving speech at a speech recognition device (item 23); retrieving information according to the received speech (item 24).

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Sakoe et al. (4,158,750).

In regard to claim 1, Sakoe et al. show in Figure 1, a method comprising: receiving speech at a speech recognition device (item 20); retrieving information according to the received speech (item 50).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 8185402. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

7. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 8098600. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

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8. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7881941. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

9. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7516190. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

10. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7386455. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

11. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7327723. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

12. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7076431. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

13. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6807257. Although the

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conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

14. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6721705. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN MCFADDEN whose telephone number is (571)272-7621. The examiner can normally be reached on Monday-Friday, 9:30-6:00.

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.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Susan McFadden/
Primary Examiner, Art Unit 2658
February 6, 2013

Notice of References Cited	Application/Control No. 13/462,819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-4,158,750	06-1979	Sakoe et al.	704/251
*	B US-4,340,797	07-1982	Takano et al.	219/707
*	C US-4,340,800	07-1982	Ueda et al.	219/714
*	D US-7,327,723	02-2008	Kurganov, Alex	370/352
*	E US-7,386,455	06-2008	Kurganov et al.	704/270.1
*	F US-7,516,190	04-2009	Kurganov, Alexander	709/217
*	G US-7,881,941	02-2011	Kurganov et al.	704/275
*	H US-8,098,600	01-2012	Kurganov, Alex	370/260
*	I US-8,185,402	05-2012	Kurganov et al.	704/275
	J US-			
	K US-			
	L US-			
	M US-			


FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	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.

<i>Index of Claims</i> 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

✓	Rejected
=	Allowed


-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	02/06/2013							
	1	✓							

Search Notes 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Searched WEST	2-6-13	SM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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BIB DATA SHEET
CONFIRMATION NO. 8402

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
13/462,819	05/03/2012	704	2658	PRS-20.CON5		
APPLICANTS Alexander Kurganov, Buffalo Grove, IL; Valery Zhukoff, Deerfield, IL;						
** CONTINUING DATA ***** This application is a CON of 12/973,475 12/20/2010 PAT 8,185,402 * which is a CON of 12/030,556 02/13/2008 PAT 7,881,941 which is a CON of 11/409,703 04/24/2006 PAT 7,386,455 which is a CON of 10/821,690 04/09/2004 PAT 7,076,431 which is a CON of 09/776,996 02/05/2001 PAT 6,721,705 which claims benefit of 60/233,068 09/15/2000 and claims benefit of 60/180,344 02/04/2000 (*)Data provided by applicant is not consistent with PTO records.						
** FOREIGN APPLICATIONS *****						
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 05/15/2012						
Foreign Priority claimed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		IL	4	1	1
Verified and	/SUSAN IRIS MCFADDEN/ Examiner's Signature		Initials			
ADDRESS BERRY & ASSOCIATES P.C. 1801 AVENUE OF THE STARS SUITE 434 LOS ANGELES, CA 90067 UNITED STATES						
TITLE ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER						
FILING FEE RECEIVED	FEES: Authority has been given in Paper			<input type="checkbox"/> All Fees		
530	No. _____ to charge/credit DEPOSIT ACCOUNT			<input type="checkbox"/> 1.16 Fees (Filing)		
	No. _____ for following:			<input type="checkbox"/> 1.17 Fees (Processing Ext. of time)		
				<input type="checkbox"/> 1.18 Fees (Issue)		
				<input type="checkbox"/> Other _____		
				<input type="checkbox"/> Credit		

LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

APPLICANT:

Kurganov

FILING DATE:

5/3/12

GROUP:

2626

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	3,728,486	04-1973	Kraus			
	4,058,838	11-1977	Crager et al.			
	4,100,377	07-1978	Flanagan			
	4,313,035	01-1982	Jordan et al.			
	4,327,251	04-1982	Fomenko et al.			
	4,340,783	07-1982	Sugiyama et al.			
	4,371,752	02-1983	Matthews et al.			
	4,481,574	11-1984	DeFino et al.			
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	4,500,751	02-1985	Darland et al.			
	4,513,390	04-1985	Walter et al.			
	4,523,055	06-1985	Hohl et al.			
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	4,602,129	07-1986	Matthews et al.			
	4,635,253	01-1987	Urui et al.			
	4,652,700	03-1987	Matthews et al.			
	4,696,028	09-1987	Morganstein et al.			
	4,713,837	12-1987	Gordon			
	4,747,127	05-1988	Hansen et al.			

EXAMINER:

/Susan Mcfadden/

DATE CONSIDERED:

02/06/2013

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

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U.S. PATENT DOCUMENTS

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	4,748,656	05-1988	Gibbs et al.			
	4,755,932	07-1988	Diedtrich			
	4,757,525	07-1988	Matthews et al.			
	4,761,807	08-1988	Matthews et al.			
	4,763,317	08-1988	Lehman et al.			
	4,769,719	09-1988	Endo			
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	4,782,517	11-1988	Bernardis et al.			
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	4,879,743	11-1989	Burke et al.			
	4,893,333	01-1990	Baran et al.			
	4,893,335	01-1990	Fuller et al.			

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/Susan Mofadden/

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EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	4,903,289	02-1990	Hashimoto			
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	4,905,273	02-1990	Gordon et al.			
	4,907,079	03-1990	Turner et al.			
	4,918,722	04-1990	Duehren et al.			
	4,922,518	05-1990	Gordon et al.			
	4,922,520	05-1990	Bernard et al.			
	4,922,526	05-1990	Morganstein et al.			
	4,926,462	05-1990	Ladd et al.			
	4,930,150	05-1990	Katz			
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	4,935,955	06-1990	Neudorfer			
	4,935,958	06-1990	Morganstein et al.			
	4,941,170	07-1990	Herbst			
	4,942,598	07-1990	Davis			
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	4,959,854	09-1990	Cave et al.			
	4,967,288	10-1990	Mizutori et al.			
	4,969,184	11-1990	Gordon et al.			
	4,972,462	11-1990	Shibata			

EXAMINER:

/Susan Mcfadden/

DATE CONSIDERED:

02/06/2013

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	4,974,254	11-1990	Perine et al.			
	4,975,941	12-1990	Morganstein et al.			
	4,985,913	01-1991	Shalom et al.			
	4,994,926	02-1991	Gordon et al.			
	4,996,704	02-1991	Brunson			
	5,003,575	03-1991	Chamberlin et al.			
	5,003,577	03-1991	Ertz			
	5,008,926	04-1991	Misholi			
	5,020,095	05-1991	Morganstein et al.			
	5,027,384	06-1991	Morganstein			
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	5,054,054	10-1991	Pessia et al.			
	5,065,254	11-1991	Hishida			
	5,086,385	02-1992	Launey et al.			
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	5,099,509	03-1992	Morganstein et al.			
	5,109,405	04-1992	Morganstein			
	5,128,984	07-1992	Katz			
	5,131,024	07-1992	Pugh et al.			
	5,133,004	07-1992	Heileman, Jr. et al.			
	5,145,452	09-1992	Chevalier			

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U.S. PATENT DOCUMENTS

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LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

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	GB 2 211 698	07-1989	Great Britain				
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	APPLICANT: Kurganov	
	FILING DATE: 5/3/12	GROUP: 2626

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WEST Search History for Application 13462819

Creation Date: 2013020615:27

Prior Art Searches

Query	DB	Op.	Plur.	Thes.	Date
kurganov.in.	USPT	OR	YES		02-06-2013
kurganov.in. and speech near recognition	USPT	OR	YES		02-06-2013
kurganov.in. and (speech near recognition).clm.	USPT	OR	YES		02-06-2013
speech near recognition and voice	USPT	OR	YES		02-06-2013
(speech near recognition and voice).clm.	USPT	OR	YES		02-06-2013
zhuoff.in.	USPT	OR	YES		02-06-2013
zhukoff.in.	USPT	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition	USPT	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition and voice	USPT	OR	YES		02-06-2013

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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

Practitioners associated with Customer Number: 93219

OR

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

Name	Registration Number

Name	Registration Number

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

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

The address associated with Customer Number: 93219


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	Address			
	City	State	Zip	
	Country			
	Telephone	Email		

Assignee Name and Address: Parus Holdings, Inc.
 3000 Lakeside Drive, Suite 300N
 Bannockburn, IL 60015

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

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

Signature		Date	5/21/2015
Name	Robert C. McConnell	Telephone	888-387-3481
Title	Chief Financial Officer, Senior Vice President and General Counsel of Parus Holdings, Inc.		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS, SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Acknowledgement Receipt

EFS ID:	16547506
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	49637
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	PRS-20.CON5
Receipt Date:	09-AUG-2013
Filing Date:	03-MAY-2012
Time Stamp:	18:27:36
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	Assignee showing of ownership per 37 CFR 3.73.	04042US_PowerOFAttorney.pdf	426372 <small>04aae925a91b7360ba3347c69ffcb3534f491477</small>	no	2

Warnings:

Information:

IPR2020-00686

2	Power of Attorney	01000US_PowerOfAttorney.pdf	54861 b1e81e1552839b780d925223a97421f5162d47dd	no	1
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Warnings:

Information:

Total Files Size (in bytes):	481233
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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Alexander Kurganov, Valery Zhukoff

Application No./Patent No.: 13/462,819 Filed/Issue Date: May 3, 2012

Titled: Robust Voice Browser System and Voice Activated Device Controller

Parus Holdings, Inc., a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

- 1. the assignee of the entire right, title, and interest in;
- 2. an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
- 3. the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

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 therefore is attached.

OR

B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Alexander Kurganov, Valery Zhukoff To: Parus Holdings, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 24640, Frame 0433, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(b)(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.

/Reena Kuyper/
Signature

August 9, 2013
Date

Reena Kuyper, Reg. No. 33,830
Printed or Typed Name

Patent Agent for Applicant
Title

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.**

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

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

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

APPLICANTS: Alexander Kurganov et al.
APPLICATION NO: 13/462,819
FILING DATE: May 3, 2012
TITLE: Robust Voice Browser System and Voice Activated Device
Controller
EXAMINER: Susan Iris McFadden
GROUP ART UNIT: 2658
ATTY. DKT. NO: 10115-04042 US
CONFIRMATION NO: 8402

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Eastern Time Zone of the United States on the local date shown below:

Dated: August 12, 2013 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33,830

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

AMENDMENT A

Madam:

Responsive to the Office Action mailed on February 12, 2013, and further to an in-person interview conducted with the Examiner on August 1, 2013, which sets a shortened statutory period for response that expires on May 12, 2013, please enter the following amendment and consider the following remarks.

IN THE CLAIMS

All pending claims are reproduced below.

1. Canceled.

2. (New) A system for acquiring information from one or more sources maintaining a listing of web sites by receiving speech commands uttered by users into a voice-enabled device and for providing information retrieved from the web sites to the users in an audio form via the voice-enabled device, the system comprising:
 - at least one computing device, the computing device operatively coupled to one or more networks;
 - at least one speaker-independent speech-recognition device, the speaker-independent speech-recognition device operatively connected to the computing device and configured to receive the speech commands;
 - at least one speech-synthesis device, the speech-synthesis device operatively connected to the computing device;
 - memory operatively associated with the computing device with at least one instruction set for identifying the information to be retrieved, the instruction set being associated with the computing device, the instruction set comprising:
 - a plurality of web site addresses for the listing of web sites, each web site address identifying a web site containing the information to be retrieved;
 - at least one recognition grammar associated with the computing device, each recognition grammar corresponding to each instruction set and corresponding to a speech command, the speech command comprising an information request provided

by the user, the speaker-independent speech-recognition device configured to receive the speech command from the users via the voice-enabled device and to select the corresponding recognition grammar upon receiving the speech command;

the computing device configured to retrieve the instruction set corresponding to the recognition grammar provided by the speaker-independent speech-recognition device;

the computing device further configured to access at least one of the plurality of web sites identified by the instruction set to obtain the information to be retrieved, wherein the computing device is further configured to periodically search via the one or more networks to identify new web sites and to add the new web sites to the plurality of web sites, the computing device configured to access a first web site of the plurality of web sites and, if the information to be retrieved is not found at the first web site, the computer configured to access the plurality of web sites remaining in an order defined for accessing the listing of web sites until the information to be retrieved is found in at least one of the plurality of web sites or until the plurality of web sites have been accessed;

the speech synthesis device configured to produce an audio message containing any retrieved information from the plurality of web sites, and

the speech synthesis device further configured to transmit the audio message to the users via the voice-enabled device.

3. (New) The system of claim 2, wherein the one or more networks include the Internet.

4. (New) The system of claim 2, wherein the one or more networks include a local-area network.
5. (New) The system of claim 2, wherein the voice-enabled device is at least one of a standard telephone, an IP telephone, a cellular phone, a PDA, a personal computer, a DVD player, a television or other video display device, a CD player, a MP3 player, and any other device capable of transmitting the audio message.
6. (New) The system of claim 2, wherein the speaker-independent speech recognition device is configured to analyze phonemes to recognize the speech commands.
7. (New) The system of claim 2, wherein the speaker-independent speech-recognition device is configured to recognize naturally spoken speech commands.
8. (New) The system of claim 2, wherein the instruction set further comprises: a content descriptor associated with each web site address, the content descriptor pre-defining a portion of the web site containing the information to be retrieved.
9. (New) The system of claim 2, wherein the computing device is further configured to periodically poll each of the web sites without being instructed by the user to determine at least one or more of 1) the availability of each web site, 2) the duration of time for each web site to respond to a request from the computing device, and changes to the location of the information to be retrieved from each web site, the computing device further configured to

create the order of access to the plurality of web sites based on the periodic polling.

10. (New) The system of claim 2, wherein the computing device is configured to search each of the new web sites without being instructed by the user to determine the availability of each new web site, the duration of time for each new web site to respond to a request from the computer, and changes to the location of the information to be retrieved from each new web site, the computing device further configured to create an order for access to the plurality of new web sites based on the periodic searches.

11. (New) The system of claim 2, wherein the instruction set further comprises a pre-defined order of access associated with each web site address, the pre-defined order of access indicating the order in which the plurality of web sites are accessed.

12. (New) The system of claim 11, wherein the computing device is configured to modify the pre-defined order for access to a particular web site, based upon at least one of a plurality of criteria, the plurality of criteria comprising: 1) the availability of each web site; 2) the duration of time for each web site to respond to a request from the computing device; and 3) changes to the location of the information to be retrieved from each web site.

13. (New) The system of claim 12, wherein the computing device is configured to weigh the criteria with respect to one another when modifications to the pre-defined order for access are based on more than one of the plurality of criteria.

14. (New) The system of claim 13, wherein the computing device is configured to access the plurality of web sites in the order pre-defined to retrieve the information requested by the user, the computing device further configured to access first the web site that is highest in the order pre-defined.

15. (New) The system of claim 2, further comprising:

a database operatively connected to the computing device, the database configured to store the information gathered from the web sites in response to the information requests.

16. (New) The system of claim 15, wherein each recognition grammar and each instruction set are stored in the database.

REMARKS

Claim 1 was presented for examination. Claim 1 stands rejected in the Office Action dated February 12, 2013 (herein, "OA"). At the outset, the Applicants and the undersigned thank the Examiner for the courtesy extending in granting the in-person interview and during the interview. As indicated during the interview, Applicants respectfully cancel Claim 1, without prejudice, and submit new claims 2-16 for the Examiner's consideration. Reconsideration of this application is respectfully requested. Claims 2-16 are pending upon entry of this amendment.

Summary of Office Action & Rejections & Response to Rejections

1. Claim 1 is rejected under 35 USC 101 -.Applicants respectfully submit that the rejection of Claim 1 under 35 USC 101 is moot as it is canceled here, without prejudice.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (4,340,800), Takano et al., (4,340,797), and Sakoe et al. (4,158,750) – Applicants respectfully submit that the rejections of Claim 1 under 35 U.S.C. 102(b) are moot as Claim 1 is canceled here, without prejudice. Claims 2-16 define features that are not disclosed in any of the references applied with respect to Claim 1.

3. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claim 1 of U.S. Patent No. 8,185,402, over Claim 1 of U.S. Patent No. 8,098,600, over Claim 1 of U.S. Patent No. 7,881,941, over Claim 1 of U.S. Patent No. 7,516,190, over Claim 1 of U.S. Patent No. 7,386,455, over Claim

1 of U.S. Patent No. 7,327,723, over Claim 1 of U.S. Patent No. 7,076,431, over Claim 1 of U.S. Patent No. 6,807,257, and over Claim 1 of U.S. Patent No. 6,721,705. Although the conflicting claims are not identical, they are not patentably distinct from Claim 1 here because they "claim a speech recognition device and retrieval of info." – Applicants respectfully submit that the rejections on the grounds of nonstatutory obviousness-type double patenting are moot as Claim 1 is canceled, without prejudice.

Discussion of New Claims 2- 16

As discussed during the in-person interview, Applicants submit new Claims 2-16, which are similar to the claims issued in U.S. Patent No. 7,076,431, with some variations in claim language. In particular, Claims 2-16 are similar to Claim 1 of U.S. Patent No. 7,076,431, with an additional limitation, and certain of its dependents. Applicants respectfully submit that no new matter is submitted by these claims and they are fully supported by the original application as filed. Support for the claims may be found at least in Figures 1-5, and cols.3, 4 (for example, lines 30-43), col. 5 (for example, lines 60-65), col. 6 (for example, lines 4-18, 25-52, 65-67), and col. 7 (for example, lines 1-10), col. 16 (for example, lines 30-35, 50-60).

Favorable consideration of the new claims is respectfully requested.

CONCLUSION

Favorable consideration and allowance of all the claims presented here is respectfully requested. The Examiner is kindly requested to contact the undersigned to resolve any outstanding issues as Applicants earnestly solicit expedited consideration and conclusion of this application.

Respectfully submitted,

Dated: August 12, 2013 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33,830
Of
PATENT LAW WORKS LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111
Tel.: (385) 232-7854
Fax: (801) 355-0160
Email: rkuyper@patentlawworks.net

Electronic Patent Application Fee Transmittal

Application Number:	13462819
Filing Date:	03-May-2012
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Reena Kuyper/Esther Kim
Attorney Docket Number:	PRS-20.CON5

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:				
Extension-of-Time:				
Extension - 3 months with \$0 paid	2253	1	700	700
			IPR2020-00686	

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				700

Electronic Acknowledgement Receipt

EFS ID:	16569920
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	49637
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	PRS-20.CON5
Receipt Date:	12-AUG-2013
Filing Date:	03-MAY-2012
Time Stamp:	22:35:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$700
RAM confirmation Number	8006
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digits	Multi Part (if appl.)	Pages (if appl.)

1		04042US_AmendmentA.pdf	99104 58fb84a93440853eff4b373c3edf396747de c91c	yes	9
Multipart Description/PDF files in .zip description					
		Document Description	Start	End	
		Amendment/Req. Reconsideration-After Non-Final Reject	1	1	
		Claims	2	6	
		Applicant Arguments/Remarks Made in an Amendment	7	9	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30662 e305ce6ce9292300d3b0a27028fd9b76968 f0120	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			129766		
<p>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.</p> <p><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.</p> <p><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.</p> <p><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.</p>					

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/462,819	Filing Date 05/03/2012	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> 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	

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	08/12/2013	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total (37 CFR 1.16(i))	* 15	Minus	** 20	= 0	X \$40 = 0
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X \$210 = 0
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					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.

LIE
/STELLA LITTLE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/462,819	05/03/2012	Alexander Kurganov	PRS-20.CON5

CONFIRMATION NO. 8402

POA ACCEPTANCE LETTER

93219
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111



Date Mailed: 08/19/2013

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/09/2013.

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.

/zabraha/

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



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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/462,819	05/03/2012	Alexander Kurganov	PRS-20.CON5

CONFIRMATION NO. 8402

POWER OF ATTORNEY NOTICE

49637
BERRY & ASSOCIATES P.C.
1801 AVENUE OF THE STARS
SUITE 434
LOS ANGELES, CA 90067



Date Mailed: 08/19/2013

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/09/2013.

- 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).

/zabraha/

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
Row 1: 13/462,819, 05/03/2012, Alexander Kurganov, 10115-04042 US, 8402
Row 2: 93219, 7590, 09/26/2013, Patent Law Works, LLP, 201 South Main Street, Suite 250, Salt Lake City, UT 84111
Row 3: EXAMINER, MCFADDEN, SUSAN IRIS
Row 4: ART UNIT, PAPER NUMBER, 2658
Row 5: NOTIFICATION DATE, DELIVERY MODE, 09/26/2013, ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

- docteting@patentlawworks.net
patents@patentlawworks.net
mfurubayashi@patentlawworks.net

DETAILED ACTION

Response to Amendment

1. The present application is being examined under the pre-AIA first to invent provisions.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

Art Unit: 2658

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 2-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 8185402. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

3. Claims 2-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7881941. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

4. Claims 2-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7386455. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

5. Claims 2-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7076431. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

6. Claims 2-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6721705. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN MCFADDEN whose telephone number is (571)272-7621. The examiner can normally be reached on Monday-Friday, 9:30-6:00.

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.

Art Unit: 2658

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Susan McFadden/
Primary Examiner, Art Unit 2658
September 23, 2013


WEST Search History for Application 13462819

Creation Date: 2013092315:35

Prior Art Searches

Query	DB	Op.	Plur.	Thes.	Date
kurganov.in.	USPT	OR	YES		02-06-2013
kurganov.in. and speech near recognition	USPT	OR	YES		02-06-2013
kurganov.in. and (speech near recognition).clm.	USPT	OR	YES		02-06-2013
speech near recognition and voice	USPT	OR	YES		02-06-2013
(speech near recognition and voice).clm.	USPT	OR	YES		02-06-2013
zhuoff.in.	USPT	OR	YES		02-06-2013
zhukoff.in.	USPT	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition	USPT	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition and voice	USPT	OR	YES		02-06-2013
kurganov.in.	USPT	OR	YES		09-23-2013
kurganov.in. and speech near recognition	USPT	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent	USPT	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent and address	USPT	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent and address and grammar	USPT	OR	YES		09-23-2013
kurganov.in. and (speech near recognition and speaker-independent and address and grammar).clm.	USPT	OR	YES		09-23-2013
kurganov.in. and (speech near recognition and speaker-independent and address and grammar and synthesis).clm.	USPT	OR	YES		09-23-2013
kurganov.in. and (speech near recognition and speaker-independent and address and grammar and synthesis and network).clm.	USPT	OR	YES		09-23-2013
(speech near recognition and speaker-independent and address and grammar and synthesis and network).clm.	USPT	OR	YES		09-23-2013
(speech near recognition and speaker-independent and	PGPB	OR	YES		09-23-2013

address and grammar and synthesis and network).clm.					
8185402.pn.	USPT	OR	YES		09-23-2013
8098600.pn.	USPT	OR	YES		09-23-2013
7516190.pn.	USPT	OR	YES		09-23-2013
7516190.pn. and speaker-independent	USPT	OR	YES		09-23-2013
7327723.pn.	USPT	OR	YES		09-23-2013
7327723.pn. and web near site	USPT	OR	YES		09-23-2013
7327723.pn. and web near site near address	USPT	OR	YES		09-23-2013
6807257.pn. and web near site near address	USPT	OR	YES		09-23-2013
6807257.pn.	USPT	OR	YES		09-23-2013
6721705.pn.	USPT	OR	YES		09-23-2013

Search Notes 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

CPC- SEARCHED		
Symbol	Date	Examiner


CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
Searched WEST	2-6-13	SM
Updated Search	9-23-13	SM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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<i>Index of Claims</i> 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	02/06/2013	09/23/2013						
	1	✓	-						
	2		✓						
	3		✓						
	4		✓						
	5		✓						
	6		✓						
	7		✓						
	8		✓						
	9		✓						
	10		✓						
	11		✓						
	12		✓						
	13		✓						
	14		✓						
	15		✓						
	16		✓						

**REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)**

Application Number	13462819	Filing Date	2012-05-03	Docket Number (if applicable)	10115-04042 US	Art Unit	2658
First Named Inventor	Alexander Kurganov			Examiner Name	Susan Iris McFadden		

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. The Instruction Sheet for this form is located at WWW.USPTO.GOV

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).

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.

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

Other _____

Enclosed

Amendment/Reply

Information Disclosure Statement (IDS)

Affidavit(s)/ Declaration(s)

Other
Terminal Disclaimers

MISCELLANEOUS

Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
(Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

Other _____

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 any underpayment of fees, or credit any overpayments, to Deposit Account No _____

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Patent Practitioner Signature

Applicant Signature

Signature of Registered U.S. Patent Practitioner			
Signature	/Reena Kuyper/	Date (YYYY-MM-DD)	2014-03-26
Name	Reena Kuyper	Registration Number	33830

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.

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Privacy Act Statement

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

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

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
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 inspections 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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13462819
	Filing Date		2012-05-03
	First Named Inventor	Alexander Kurganov	
	Art Unit		2658
	Examiner Name	Susan Iris McFadden	
	Attorney Docket Number		10115-04042 US

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4371752		1983-02-01	Matthews et al.*	
	2	4776016		1988-10-04	Hansen*	
	3	4930150		1990-05-29	Katz*	
	4	5146452		1992-09-08	Pekarske*	
	5	5255305		1993-10-19	Sattar	
	6	5276729		1994-01-04	Higuchi et al.	
	7	5287199		1994-02-15	Zoccolillo	
	8	5365574		1994-11-15	Hunt et al.	

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	9	5426421		1995-06-20	Gray	
	10	5630079		1997-05-13	McLaughlin*	
	11	5758322		1998-05-26	Rongley	
	12	5774860		1998-06-30	Bayya et al.	
	13	5737395		1998-04-07	Irribarren	
	14	5742596		1998-04-21	Baratz et al.	
	15	5761294		1998-06-02	Shaffer et al.	
	16	5764910		1998-06-09	Shachar*	
	17	5794205		1998-08-11	Walters et al.	
	18	5796791		1998-08-18	Polcyn	
	19	5799063		1998-08-25	Krane	

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	20	5832440		1998-11-03	Woodbridge et al.	
	21	5809481		1998-09-15	Baron et al.	
	22	5823879		1998-10-20	Goldberg et al.	
	23	5881135		1999-03-09	Watts et al.	
	24	5914951		1999-06-22	Bentley et al.	
	25	5940598		1999-08-17	Strauss et al.	
	26	5974124		1999-10-26	Schlueter et al.	
	27	5991292		1999-11-23	Focsaneanu et al.	
	28	5995615		1999-11-30	Miloslavsky	
	29	5999965		1999-12-07	Kelly	
	30	5999611		1999-12-07	Tatchell et al.*	

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31	6215858		2001-04-10	Bartholomew et al.	
32	6366575		2002-04-02	Barkan et al.	
33	6445694		2002-09-03	Swartz	
34	6490627		2002-12-03	Kaira et al.	
35	6560604		2003-05-06	Fascenda	
36	6593944		2003-07-15	Nicolas et al.	
37	6618763		2003-09-09	Steinberg	
38	6654814		2003-11-25	Britton et al.	
39	6704024		2004-03-09	Robotham et al.	
40	6763388		2004-07-13	Tsimelzon	
41	6812939		2004-11-02	Flores et al.	

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	42	6999804		2006-02-14	Engstrom et al.	
	43	6477240		2002-11-05	Lim et al.*	
	44	6594692		2003-07-15	Reisman	
	45	6014626		2000-01-11	Cohen	
	46	6021190		2000-02-01	Fuller et al.	
	47	6178399		2001-01-23	Takebayashi et al.	
	48	6201814		2001-03-13	Greenspan	
	49	6330538		2001-12-11	Breen	
	50	6459910		2002-10-01	Houston	
	51	6201863		2001-03-13	Miloslavsky	
	52	6044107		2000-03-28	Gatherer et al.	

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	53	6052372		2000-04-18	Gittins et al.	
	54	6115737		2000-09-05	Ely et al.	
	55	6131095		2000-10-10	Low et al.	
	56	6161128		2000-12-12	Smyk	
	57	6188683		2001-02-13	Lang et al.	
	58	6199076		2001-03-06	Logan et al.	
	59	6430282		2002-08-06	Bannister et al.	
	60	6445694		2002-09-03	Swartz	
	61	6456699		2002-09-24	Burg et al.*	
	62	6618039		2003-09-09	Grant et al.	
	63	6785266		2004-08-31	Swartz	

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	64	7024464		2006-04-04	Lusher et al.	
	65	7075555		2006-07-11	Flores et al.	
	66	7089307		2006-08-08	Zintel et al.	
	67	7145898		2006-12-05	Elliott	
	68	6137863		2000-10-24	Brown et al.	

If you wish to add additional U.S. Patent citation information please click the Add button.

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U.S.PATENT APPLICATION PUBLICATIONS

[Remove](#)

Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020090114		2002-07-11	Rhoads et al.	
	2	20020059402		2002-05-16	Belanger	
	3	20020064149		2002-05-30	Elliott et al.	
	4	20040160913		2004-08-19	Kubler et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819
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	Attorney Docket Number	10115-04042 US

5	20050025133		2005-02-03	Swartz	
6	20050030179		2005-02-10	Script et al.	
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	1	HEMPHILL et al., "Surfing the Web by Voice," ACM Multimedia 95 - Electronic Proceedings, November 5-9, 1995. San Francisco, CA.	<input type="checkbox"/>
	2	LY, "Chatter A: A Conversational Telephone Agent," submitted to Program in Media Arts and Sciences, Massachusetts Institute of Technology, (1993), pp. 1-130.	<input type="checkbox"/>
	3	SCHMANDT, "Phoneshell: the Telephone as Computer Terminal," Proceedings of ACM Multimedia '93 Conference (1993), pp. 373-382.	<input type="checkbox"/>

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	First Named Inventor	Alexander Kurganov
	Art Unit	2658
	Examiner Name	Susan Iris McFadden
	Attorney Docket Number	10115-04042 US

4	SCHMANDT et al., "Phone Slave: A Graphical Telecommunications Interface," Proceedings of the SID (1985), vol. 26/1, pp. 79--82.	<input type="checkbox"/>
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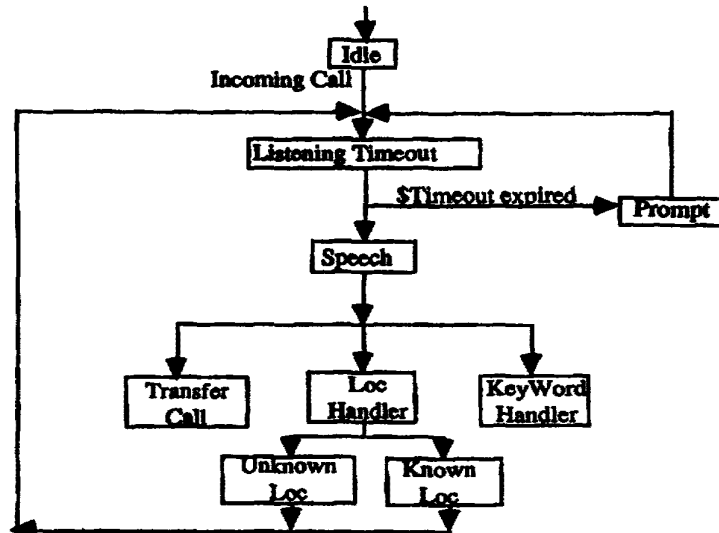
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<p>(51) International Patent Classification ⁶ : H04M 1/27, G10L 5/06</p>	<p>A1</p>	<p>(11) International Publication Number: WO 97/37481 (43) International Publication Date: 9 October 1997 (09.10.97)</p>
<p>(21) International Application Number: PCT/CA97/00008 (22) International Filing Date: 9 January 1997 (09.01.97) (30) Priority Data: 08/623,635 28 March 1996 (28.03.96) US (71) Applicant: NORTHERN TELECOM LIMITED [CA/CA]; World Trade Center of Montreal, 8th floor, 380 St. Antoine Street West, Montreal, Quebec H2Y 3Y4 (CA). (72) Inventor: WONG, Chi; Apartment #3390, 2850 Middlefield Road, Palo Alto, CA 94306 (US). (74) Agent: MacGREGOR, George; Northern Telecom Limited, Patent Dept., P.O. Box 3511, Station "C", Ottawa, Ontario K1Y 4H7 (CA).</p>		<p>(81) Designated States: CA, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i></p>

(54) Title: APPARATUS AND METHOD FOR REDUCING SPEECH RECOGNITION VOCABULARY PERPLEXITY AND DYNAMICALLY SELECTING ACOUSTIC MODELS



(57) Abstract

A method of reducing the perplexity of a speech recognition vocabulary and dynamically selecting speech recognition acoustic model sets used in a simulated telephone operator apparatus. The directory of users of the telephone network is subdivided into subsets wherein each subset contains the names of users within a certain location or exchange. A speech recognition vocabulary database is compiled for each subset and the appropriate database is loaded into the speech recognition apparatus in response to a requested call to the location covered by the subset. Furthermore, a site-specific acoustic model set is dynamically loaded according to the location of a calling party. An apparatus for carrying out the method is also discussed.

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APPARATUS AND METHOD FOR REDUCING SPEECH RECOGNITION
VOCABULARY PERPLEXITY AND DYNAMICALLY SELECTING
ACOUSTIC MODELS

5

Field of the Invention

This invention relates to automatic speech recognition in telecommunication systems and to the use of such systems to provide large scale voice activated dialing and information retrieval services.

10

Background to the Invention

In the early development of telephone systems it was commonplace for a telephone subscriber to converse directly with a telephone operator at a telephone central office. The telephone subscriber would verbally request the telephone operator to complete a connection to a called party. As telephone exchanges were small the telephone operator was aware of virtually all of the subscribers by name and manually completed the requested connection. With the advent of dial telephone services, calls within an exchange could be completed automatically, and only certain toll calls required operator assistance. Today, operator assisted calls have become the exception and are usually comparatively expensive. Machine-simulated operator functions, including limited speech recognition services, have recently been available for expediting some typical operator-assisted functions. This includes "collect" long distance calls wherein completion of the connection is contingent upon the called party agreeing to pay for the service. However, these functions are limited to the simple recognition of "yes" or "no" so there is little room for non-functionality due to uncertainty as to which word was spoken. There have also been advancements in voice recognition services relating to directory assistance but these too are directed to a very limited vocabulary.

35

Prior Art

The prior art contains several recent developments pertaining to voice recognition in general, and to voice recognition applicable to telecommunication systems in particular.

U.S. Patent No. 5,091,947, which issued February 25, 1992 to Ariyoshi et al, entitled "Speech Recognition Method and Apparatus", discloses a voice recognition system for comparing both speaker dependent and speaker independent utterances against stored voice patterns within a coefficient memory. The voice identification comparator selects the one voice pattern having the highest degree of similarity with the utterance in question.

15

In U.S. Patent No. 5,165,095, which issued on November 17, 1992, Borcharding discloses a voice recognition system to initiate dialog to determine the correct telephone number. According to the '095 patent, the calling party is first identified so that a database containing speaker templates can be accessed. These templates are then used to compare the dial command so that the dialing instructions can be recognized and executed. An example of a dialing directive in the patent is "call home", with "call" being the dial command and "home" being the destination identifier.

20

Gupta et al, in U.S. Patent No. 5,390,278 issued February 14, 1995, disclose a flexible vocabulary speech recognition for recognizing speech transmitted via the public switched telephone network. This voice recognition technique is a phoneme based system wherein the phonemes are modeled as hidden Markov models.

30

In spite of these ongoing developments, the functionality of automatic recognition of human speech by machine has not advanced to a degree wherein a calling party

35

can simply speak the called party's name and thereafter be connected as reliably as a human operator in situations where the database for a potential called party is very large (greater than 100 names).

5

Summary of the Invention

The present invention is in the field of human speech recognition performed by machines and more particularly relates to a reduction of the perplexity of the speech recognition task in the context of names spoken by a telephone user in a telephone system.

Individual users of telephone networks are divided into subsets to facilitate identification of the vast number of subscribers to the service. In the public network these subsets are local exchanges. Private switching networks such as the Nortel Electronic Switching Network (ESN) assigns individual ESN numbers to each location within the private network. The present invention relies on these subsets or location identifiers to reduce the perplexity of a speech recognition application.

Therefore in accordance with a first aspect of the present invention, there is provided a telephone network including a plurality of telephone exchanges, each for serving a plurality of telephone terminals and each being interconnected with at least one other of the telephone exchanges for providing telephone communications between users of the telephone terminals. The network function includes a simulated telephone operator apparatus for receiving a speech request from a user for connection to another telephone user and to translate this request into a directory number for use by the appropriate one of the telephone exchanges. The translation is in accordance with a speech recognition algorithm and an active speech recognition vocabulary selected in accordance with the origin of the request.

In an ESN application the active speech recognition vocabulary is limited to the names of the individuals serviced by the ESN number. In a preferred embodiment the ESN number, which is also a location code, is contained in the first two or three digits of the directory number.

In accordance with a second aspect of the invention there is provided a simulated telephone operator server for a telephone network. The server has means for storing voice utterances of a calling party telephone user and means responsive to location information in association with the telephone user for selecting an active speech recognition vocabulary. Speech detection means are provided for processing the stored voice utterance in accordance with a speech recognition algorithm and the active speech recognition vocabulary. Directory lookup means identify a directory listing of a called party corresponding to a result of the processing by the speech detection means. The server also includes means for transmitting the directory listing to a telephone exchange serving the called party.

In accordance with a further aspect of the invention there is provided a telephone exchange comprising: a plurality of ports for serving a plurality of telephone users' telephone instruments via telephone lines; a trunk facility for connection to another telephone exchange; a switching network for connecting and disconnecting the telephone instruments; a controller means for causing a newly OFF HOOK telephone instrument to be coupled via the switching network with a solicitation signal, and subsequently for being responsive to a telephone number received in association with the newly OFF HOOK telephone instrument for completing a telephone call via the switching network. The exchange also includes an originating register means for storing voice band signals received from the newly OFF HOOK telephone instrument via the switching network.

Means are provided for detecting digits represented by frequency signals, within the stored voice band signals, in accordance with a standard for key pad dialed telephone numbers and for transmitting detected digits to the call controller. A simulated telephone operator apparatus receives and translates voice band signals in accordance with a speech recognition algorithm and an active speech recognition vocabulary selected in accordance with the origin of the voice band signals into a directory number for use by the controller means. An interface facility is provided for transmitting the stored voice band signals via the switching network to the simulated telephone operator server apparatus in an event wherein the voice band signals did not include a key pad dialed digit.

15

In accordance with yet a further aspect of the present invention there is provided a method of detecting a voiced speech request of a calling party for connection to another user of an automatic telephone exchange. The method comprises storing a plurality of speech recognition vocabularies in association with geographic location of users; receiving the voiced request and information as to the geographic location of the user having voiced the request from the automatic telephone exchange; selecting an active speech recognition vocabulary in accordance with the information as to the geographic location of the user and, in accordance with a speech recognition algorithm and the selected active speech recognition vocabulary, translating the received request into a directory number for use by the automatic telephone exchange in setting up a telephone connection between the calling telephone user and the other telephone user.

20

25

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Brief Description of the Drawings

35

The invention will now be described in greater detail with reference to the attached drawings wherein:

FIGURE 1 is a block diagram illustrating trunk connections between private switch locations;

FIGURE 2 is a block diagram of the system hardware architecture;

5 FIGURE 3 is an overall system state diagram; and
 FIGURE 4 is a state diagram of the key word handler.

Detailed Description of the Invention

10 The following description relates to an enterprise-wide speech directory calling service within a company or corporation having a number of locations. Each location is assigned a unique electronic switching network (ESN) location code or ESN number. As shown in the block
15 diagram of FIGURE 1, the on-site PBX 20 at each location is connected to each other location via trunk connectors 22. In this discussion the ESN comprises a three-digit code to identify the location. It is to be understood, however, that it is not essential to use all three digits to identify
20 the location as it may be sufficient to use the first two for example.

 FIGURE 2 illustrates the hardware architecture in accordance with a preferred embodiment of the invention. As
25 shown, PBX 20 is connected to trunk 22 and to a plurality of on site telephone sets as known in the art. The speech recognition system 30 of the invention is connected to the PBX 20 via T1 line 32 via T1 card 34 and via signal link 36 and signal link card 38. Speech recognition system 30
30 includes a speech recognition processor operating on a speech recognition algorithm, central processor and control units as well as memory cards for storing active speech recognition vocabulary data bases.

35 Although FIGURE 1 refers to a private switching network using ESNs, it is to be understood that the

invention is not limited to such networks but can also be adapted to use in public switching systems.

One objective metric used to measure the accuracy of a speech recognition system is the Word Error Rate (WER). The WER is defined as the total number of incorrectly recognized words made by a speech recognition system divided by the total number of words spoken by a user of the system.

$$WER = \frac{\text{Number of Errors Made by Recognizer}}{\text{Number of Words Spoken by User}}$$

The present invention makes use of information as to the calling party's location for automatically assisting in improving the WER of a speech recognition system on a spoken called party's name for the purpose of connecting a telephone call.

It has been empirically shown that the WER of a speech recognition system will vary with the square root of the perplexity of the vocabulary of words being recognized. [Kimbal, O., et al., "Recognition Performance and Grammatical Constraints", Proceedings of a Workshop on Speech Recognition, Report Number SAIC-86/1546, Defense Advanced Research Projects Agency, Palo Alto, February 19-20, 1986.]

$$WER \propto \sqrt{\text{Perplexity}}$$

The perplexity of a vocabulary is defined as the measure of the constraint imposed by a grammar, or the level of uncertainty given the grammar of a population of users. Perplexity is mathematically modeled and quantified in the following way:

$$H = -\frac{1}{|V|} \sum_{w \in V} P(w) \cdot \log P(w)$$

$$B = 2^H$$

where: H is entropy
 $P(w)$ is the probability of w being spoken
 5 B is the perplexity of the application

The vocabulary of words in this implementation consists entirely of proper names; location names, and a small number of key words for command and control. For
 10 large corporations with a large number of employees, the proper names become the determining factor in measuring the perplexity since the number of employees will overwhelm the number of location names and key words. Thus location names and key words can be ignored in this calculation. If we
 15 make a simplifying assumption that every name is spoken with equal probability, then the equation above can be simplified to the following:

$$\text{Perplexity} = \sqrt[L]{|S|}$$

20

where: L is the average number of words in a sentence
 S is the number of sentences in the vocabulary V

If we further make the simplification that proper
 25 names contain two words -- first and last name -- and the number of sentences in the vocabulary is equivalent to the number of employee names, then we can further reduce the equation to the following:

$$\text{Perplexity} = \sqrt{|S|}$$

30

If we make the assumption that the amount of
 confusability between names within a large database will be
 similar between large databases, the accuracy of a speech
 35 recognition system has the following relationship with the number of names in the vocabulary:

$$WER \propto \sqrt[4]{\text{Number of Active Directory Names}}$$

We can observe from the above equations that the WER increases with the perplexity and thus increases with the number of proper names in the vocabulary.

In the past, speech recognition scientists have used various methods to reduce the perplexity in an effort to improve the WER of a speech recognition system. To achieve this result, most of these efforts have been focused at the linguistic level. For example, scientists have used statistical language models and linguistics rules of phonology to reduce perplexity or uncertainty in recognizing a spoken word or phrase.

In this implementation the list of employee names for each location is stored in a separate speech recognition vocabulary. The employee name will normally be associated with the four digits of the telephone number following the three-digit ESN or location code. According to the system of the present invention a calling party wishing to speak to another employee at the same location will simply announce the first and last name of the employee to whom a connection is desired. The speech recognition system will assume that calling party and called party are at the same location and load the active speech recognition vocabulary database containing the names of all employees at that location. Using a conventional speech recognition algorithm the name spoken by the calling party is compared by the system against the names of all employees in the database and the closest match is selected. The name selected is announced to the calling party and the call is automatically connected to the line associated with the telephone number assigned to the called party unless the calling party interrupts the process by saying, "No." Thereafter the voice recognition system releases from the call.

If the called party is at a different location than the calling party, the calling party will first announce the location of the called party followed by the called party's name. The voice recognition system responds
5 by announcing the location and subsequently loading the active voice recognition vocabulary database including the names of all the employees at the announced location of the called party. The voice recognition system then selects the name in the loaded database that most closely matches the
10 name of the called party. The selected name is announced to the calling party and the call is automatically connected to the line associated with the telephone number assigned to the called party unless the calling party interrupts the process by saying, "No." Thereafter the voice recognition
15 system releases from the call.

Because the active voice recognition vocabulary set associated with each ESN or location contains only a portion of the total number of employees of the corporation
20 or company, the WER is much lower than it would be if the complete employee directory was loaded in the database.

The actual decrease in the corporate wide WER (C_WER) is contingent upon how evenly the employees are
25 spread over the different sites. In the best case where the employees are evenly distributed in each site, C_WER will decrease according to the following relation.

$$C_WER = \frac{WER}{\sqrt[4]{n}}$$

30 where: n is the number of sites.

In the worst case, where there is only one employee in each site, except for one site which holds all of the remaining employees, there will be a negligible
35 decrease in the C_WER.

$$C_WER \propto \sqrt[4]{(m-n)}$$

where: m is the number of employees in the company.

$$C_WER \approx WER$$

5

for: $m \gg n$

In a similar way that ESN information is used by the speech recognition system to dynamically load the active vocabulary set, the ESN information can also be used by the speech recognition system to select the appropriate acoustic model set. Speech recognition systems use previously collected speech samples to serve as reference templates against which new spoken speech samples are matched for classification. Statistical pattern recognition techniques are used to match new speech samples against reference templates to determine the closest match. These reference templates are referred to as acoustic models in the speech recognition system. Acoustic models may vary according to the regional accent and subsequently according to ESN locations. The speech recognition system can use site-specific acoustic models that are dynamically loaded based on the ESN information presented at the time of the call. Having site-specific acoustic models will also decrease the WER of the system.

The following specification illustrates an example of the NORTEL Speech Directory Calling Service. The state diagram shown in FIGURES 3 and 4 describes the user interface that users of the service experience and is not meant as an implementation specification. Some parts of the system, such as error recovery and instructions have been omitted.

In the description that follows, the use of *italics* denotes system state and the use of a dollar sign symbol denotes a parameter.

Description of the States in Alphabetical Order:Cancel:

5 Play Who
go to *Listening Timeout*

Idle:

10 /* Go to *Idle* anytime a user hangs up */
On an incoming call
Get ESN information
Set \$Location based on ESN information
go to *Listening Timeout*

15

Keyword Handler:

Case

Service Locations: go to *Service Location*
Receptionist: go to *Transfer Receptionist*
20 Cancel: go to *Cancel*
End Case

Known Loc:

Set \$Location to \$RecognizedWord
25 Play \$Location
Play EmployeeName
go to *Listening Timeout*

30 Listening Timeout:

Listen for \$Timeout
If the user speaks
go to *Speech*
Else

35 go to *Prompt*

13

Loc Handler:

```
If $Location is known location
    go to Known Loc
Else
5     go to Unknown Loc
```

Prompt:

```
Case (state before Listening Timeout )
10     Idle:
        Play Who
        go to Listening Timeout

        The rest of the states:
15     When $Timeout expires on the first two times
        Play TimeoutHelp.$Location
        $Timeout = 4 sec
        go to Listening Timeout
        When $Timeout expires on the third time
20     Play Difficulties
        go to Transfer Receptionist

End Case
```

Service Location:

```
25 Play ServiceAvailable
   Play $Location list
   Play Who
   go to Listening Timeout
```

30 Speech:

```
Load the active vocabulary set from $Location
Get $RecognizedWord from Speech Recognizer
```

35

14

Case (\$RecognizedWord)

Rejection: go to *Rejection Handler*
\$Name: go to *Transfer Call*
\$Location: go to *Loc Handler*
5 Key Word: go to *KeyWord Handler*
End Case

Transfer Call:

Database Lookup for Employee Phone Number
10 Transfer the call
go to *Idle*

Transfer Receptionist :

Play TransferReceptionist
15 Transfer the call to the receptionist
go to *Idle*

Unknown Loc:

Play NotServiced.\$Location
20 go to *Listening Timeout*

Index of the Prerecorded Prompts in Alphabetical Order :

Calling:

25 Calling \$Name?

Difficulties:

The system is having difficulties with your request.
Transferring to a receptionist.
30

EmployeeName:

Employee name?

NotServiced:

35 This service is not available in \$Location. Choose
another location or for a list of serviced ESN locations,
say "Service Locations".

ServiceAvailable:

This service is available for the following Nortel/BNR locations: \$Location list.

5

TransferReceptionist:

Transferring to a receptionist.

Who:

10 Who would you like to call?

A specific embodiment of the invention has been disclosed and illustrated. It will be apparent to one skilled in the art that various changes in methodology and/or approach can be made without departing from the spirit and scope of this invention as defined in the appended claims.

15

20

I CLAIM:

1. A telephone network including:
 - a plurality of telephone exchanges each for
5 serving a plurality of telephone instruments and each being
interconnected with at least one other of the telephone
exchanges, for providing telephone communications between
telephone users associated with the telephone instruments;
and
 - 10 a simulated telephone operator apparatus for
receiving a voiced speech request from a user for connection
to another of the telephone users and translating said
request into a directory number for use by one of the
telephone exchanges in accordance with a speech recognition
15 algorithm and an active speech recognition vocabulary
selected in accordance with the origin of the request.

2. A simulated telephone operator server for a
telephone network comprising:
 - 20 means for storing voice utterances of a calling
party telephone user;
means responsive to location information in
association with the telephone user for selecting an active
speech recognition vocabulary;
 - 25 speech detection means for processing the stored
voice utterances in accordance with a speech recognition
algorithm and said active speech recognition vocabulary;
 - directory lookup means for identifying a directory
listing of a called party corresponding to a result of said
30 processing by the speech detection means; and
means for transmitting the directory listing to a
telephone exchange serving said called party.

3. A simulated telephone operator server as defined
35 in claim 2, wherein the directory lookup means defaults to
identification by a telephone attendant directory listing in
the event of there being no called party directory listing

corresponding to the result of said processing by the speech detection means.

4. A telephone exchange comprising:
- 5 a plurality of ports for serving a plurality of telephone users' telephone instruments via telephone lines; a trunk facility for connection to another telephone exchange;
- 10 a switching network for connecting and disconnecting the telephone instruments;
- a controller means for causing a newly OFF HOOK telephone instrument to be coupled via the switching network with a solicitation signal, and subsequently for being responsive to a telephone number received in association
- 15 with the newly OFF HOOK telephone instrument for completing a telephone call via the switching network;
- an originating register means for storing voice band signals received from the newly OFF HOOK telephone instrument via the switching network;
- 20 means for detecting digits represented by frequency signals, within the stored voice band signals, in accordance with a standard for key pad dialed telephone numbers, and for transmitting detecting digits to the call controller;
- 25 a simulated telephone operator apparatus for receiving and translating voice band signals in accordance with a speech recognition algorithm and an active speech recognition vocabulary selected in accordance with the origin of the voice band signals into a directory number for
- 30 use by the controller means; and
- an interface facility for transmitting the stored voice band signals via the switching network to the simulated telephone operator server apparatus in an event wherein the voice band signals did not include a key pad
- 35 dialed digit.

5. A telephone exchange as defined in claim 4,
wherein the call controller means is operative to cause the
interface means to transmit said stored voice band signals
via the switching network to the simulated telephone
5 operator server apparatus in an event wherein the voice band
signals included a key pad dialed digit designating the
simulated telephone operator apparatus.

6. A simulated telephone operator apparatus for
10 receiving a user voiced speech request for connection to
another user of a telephone network and translating said
request into a directory number for use by an automatic
telephone exchange, in accordance with a speech recognition
algorithm and an active speech recognition vocabulary
15 selected in accordance with the origin of the request.

7. A method for detecting a calling telephone user
voiced speech request for connection to another telephone
user via an automatic telephone exchange comprising:
20 storing a plurality of speech recognition
vocabularies in association with geographic locations of
users;
receiving the voiced speech request and
information as to the geographic location of the user having
25 voiced the speech request from the automatic telephone
exchange;
selecting an active speech recognition vocabulary
in accordance with the information as to the geographic
location of the user; and
30 in accordance with a speech recognition algorithm
and the selected active speech recognition vocabulary,
translating the received request into a directory number for
use by the automatic telephone exchange in setting up a
telephone connection between the calling telephone user and
35 said another telephone user.

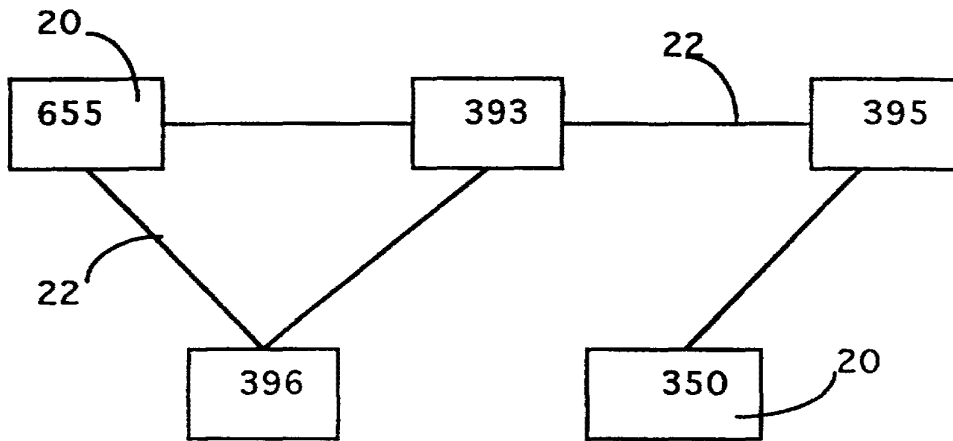


FIGURE 1

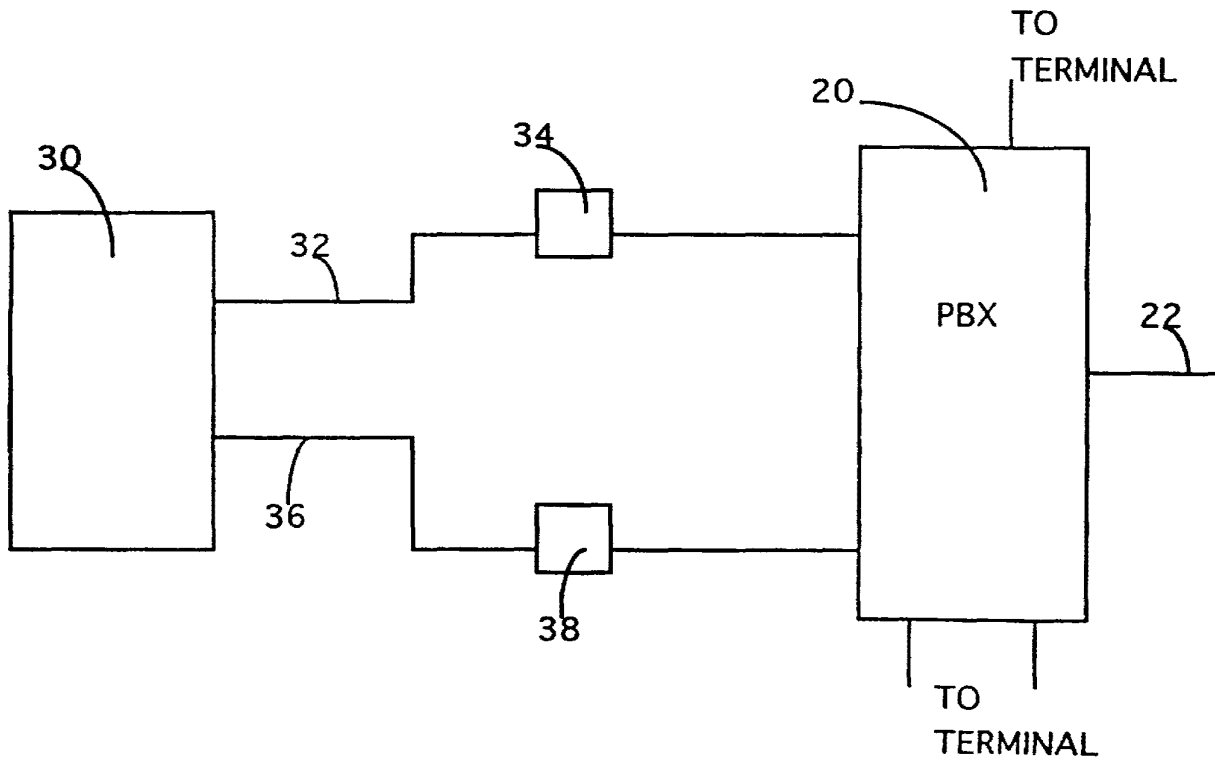


FIGURE 2

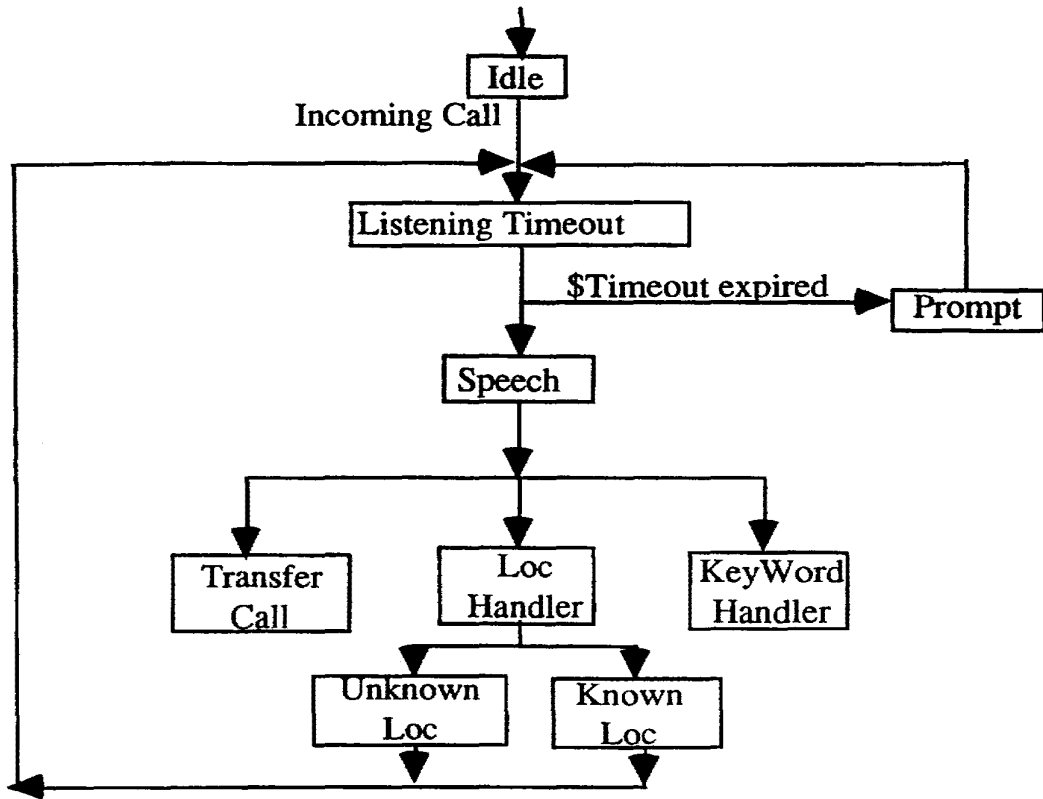


FIGURE 3

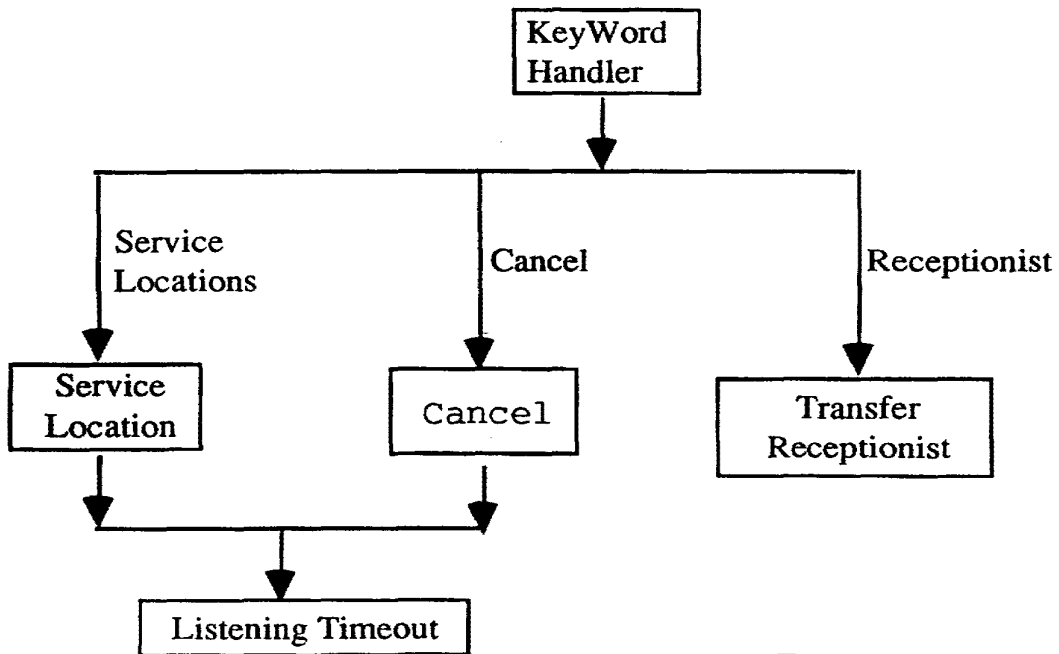


FIGURE 4

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/CA 97/00008

A. CLASSIFICATION OF SUBJECT MATTER H 04 M 1/27, G 10 L 5/06				
According to International Patent Classification (IPC) or to both national classification and IPC ⁶				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) H 04 M, G 10 L, H 04 Q				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	EP, A, 0 105 441 (SIEMENS) 18 April 1984 (18.04.84), page 1, line 1 - page 3, line 32; claim 1. --	1, 2, 4, 6, 7		
A	US, A, 5 165 095 (BORCHERDING) 17 November 1992 (11.11.92), abstract; column 1, line 6 - column 2, line 37; column 3, line 22 - column 6, line 27; fig. 1, 2 (cited in the application). --	1, 2, 4, 6, 7		
A	EP, A, 0 568 979 (SONY CORPORATION) 10 November 1993 (10.11.93), abstract; column 1, lines	1, 2, 4, 6, 7		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input type="checkbox"/> Patent family members are listed in annex.				
* Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none; vertical-align: top;"> *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family </td> </tr> </table>			*A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family			
Date of the actual completion of the international search 21 March 1997		Date of mailing of the international search report 18. 04. 97		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+ 31-70) 340-3016		Authorized officer HAJOS e.h.		

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 97/00008

-2-

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	43-50.	
A	<p>US, A, 5 390 278 (GUPTA et al.) 14 February 1995 (14.02.95), abstract (cited in the application).</p>	1, 2, 4, 6, 7
A	<p>EP, A, 0 045 941 (SIEMENS) 17 February 1982 (17.02.82), page 1, line 7 - page 4, line 9; fig..</p>	1, 2, 4, 6, 7
A	<p>US, A, 5 091 947 (ARIYOSHI et al.) 25 February 1992 (25.02.92), abstract; column 1, line 10 - column 3, line 17 (cited in the application).</p>	1, 2, 4, 6, 7

ANHANG

zum internationalen Recherchenbericht über die internationale Patentanmeldung Nr.

ANNEX

to the International Search Report to the International Patent Application No.

ANNEXE

au rapport de recherche international relatif à la demande de brevet international n°

PCT/CA 97/00008 SAE 148639

In diesem Anhang sind die Mitglieder der Patentfamilien der im obengenannten internationalen Recherchenbericht angeführten Patendokumente angegeben. Diese Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The Office is in no way liable for these particulars which are given merely for the purpose of information.

La présente annexe indique les membres de la famille de brevets relatifs aux documents de brevets cités dans le rapport de recherche international visée ci-dessus. Les renseignements fournis sont donnés à titre indicatif et n'engagent pas la responsabilité de l'Office.

Im Recherchenbericht angeführtes Patendokument Patent document cited in search report Document de brevet cité dans le rapport de recherche		Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
EP A1	105441	18-04-84	AT E 55359 DE A1 3230271 EP A1 3230271 EP B1 3277192 EP B1 105441	15-07-89 08-04-84 08-07-89 22-05-89
US A	5165095	17-11-92	EP A1 427686 EP A1 3772685 EP A1 5085897	01-04-93 16-07-92 23-07-92
EP A1	568977	10-11-93	EP A1 5016189	26-11-93
US A	5390278	14-02-95	CA A1 2069675	09-04-95
EP A1	45941	17-02-82	DE A1 3028823 DE B1 3028823 EP B1 45941	04-03-82 15-06-90 02-01-85
US A	5091947	25-02-92	JP A1 1309099 DE A1 3819178 DE C2 3819178	13-12-89 22-10-89 20-09-91

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

APPLICANTS: Alexander Kurganov et al.
APPLICATION NO: 13/462,819
FILING DATE: May 3, 2012
TITLE: Robust Voice Browser System and Voice Activated Device
Controller
EXAMINER: Susan Iris McFadden
GROUP ART UNIT: 2658
ATTY. DKT. NO: 10115-04042 US
CONFIRMATION NO: 8402

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Eastern Time Zone of the United States on the local date shown below:

Dated: March 26, 2014 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33,830

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

RESPONSE B

Madam:

Responsive to the Final Office Action mailed on September 26, 2013, which sets a shortened statutory period for response that expires on December 26, 2013, please enter the following response and consider the following remarks. With this response Applicants are submitting a Request for Continued Reconsideration ("RCE") and an Information Disclosure Statement for the Examiner's consideration. Additionally, an extension of time to extend the period for response to March 26, 2014 is requested, the fee for which is submitted herewith.

IN THE CLAIMS

All pending claims are reproduced below.

1. Canceled.

2. (Previously Presented) A system for acquiring information from one or more sources maintaining a listing of web sites by receiving speech commands uttered by users into a voice-enabled device and for providing information retrieved from the web sites to the users in an audio form via the voice-enabled device, the system comprising:
 - at least one computing device, the computing device operatively coupled to one or more networks;
 - at least one speaker-independent speech-recognition device, the speaker-independent speech-recognition device operatively connected to the computing device and configured to receive the speech commands;
 - at least one speech-synthesis device, the speech-synthesis device operatively connected to the computing device;
 - memory operatively associated with the computing device with at least one instruction set for identifying the information to be retrieved, the instruction set being associated with the computing device, the instruction set comprising:
 - a plurality of web site addresses for the listing of web sites, each web site address identifying a web site containing the information to be retrieved;
 - at least one recognition grammar associated with the computing device, each recognition grammar corresponding to each instruction set and corresponding to a speech command, the speech command comprising an information request provided

by the user, the speaker-independent speech-recognition device configured to receive the speech command from the users via the voice-enabled device and to select the corresponding recognition grammar upon receiving the speech command;

the computing device configured to retrieve the instruction set corresponding to the recognition grammar provided by the speaker-independent speech-recognition device;

the computing device further configured to access at least one of the plurality of web sites identified by the instruction set to obtain the information to be retrieved, wherein the computing device is further configured to periodically search via the one or more networks to identify new web sites and to add the new web sites to the plurality of web sites, the computing device configured to access a first web site of the plurality of web sites and, if the information to be retrieved is not found at the first web site, the computer configured to access the plurality of web sites remaining in an order defined for accessing the listing of web sites until the information to be retrieved is found in at least one of the plurality of web sites or until the plurality of web sites have been accessed;

the speech synthesis device configured to produce an audio message containing any retrieved information from the plurality of web sites, and

the speech synthesis device further configured to transmit the audio message to the users via the voice-enabled device.

3. (Previously Presented) The system of claim 2, wherein the one or more networks include the Internet.

4. (Previously Presented) The system of claim 2, wherein the one or more networks include a local-area network.

5. (Previously Presented) The system of claim 2, wherein the voice-enabled device is at least one of a standard telephone, an IP telephone, a cellular phone, a PDA, a personal computer, a DVD player, a television or other video display device, a CD player, a MP3 player, and any other device capable of transmitting the audio message.

6. (Previously Presented) The system of claim 2, wherein the speaker-independent speech recognition device is configured to analyze phonemes to recognize the speech commands.

7. (Previously Presented) The system of claim 2, wherein the speaker-independent speech-recognition device is configured to recognize naturally spoken speech commands.

8. (Previously Presented) The system of claim 2, wherein the instruction set further comprises: a content descriptor associated with each web site address, the content descriptor pre-defining a portion of the web site containing the information to be retrieved.

9. (Previously Presented) The system of claim 2, wherein the computing device is further configured to periodically poll each of the web sites without being instructed by the user to determine at least one or more of 1) the availability of each web site, 2) the duration

of time for each web site to respond to a request from the computing device, and changes to the location of the information to be retrieved from each web site, the computing device further configured to create the order of access to the plurality of web sites based on the periodic polling.

10. (Previously Presented) The system of claim 2, wherein the computing device is configured to search each of the new web sites without being instructed by the user to determine the availability of each new web site, the duration of time for each new web site to respond to a request from the computer, and changes to the location of the information to be retrieved from each new web site, the computing device further configured to create an order for access to the plurality of new web sites based on the periodic searches.

11. (Previously Presented) The system of claim 2, wherein the instruction set further comprises a pre-defined order of access associated with each web site address, the pre-defined order of access indicating the order in which the plurality of web sites are accessed.

12. (Previously Presented) The system of claim 11, wherein the computing device is configured to modify the pre-defined order for access to a particular web site, based upon at least one of a plurality of criteria, the plurality of criteria comprising: 1) the availability of each web site; 2) the duration of time for each web site to respond to a request from the computing device; and 3) changes to the location of the information to be retrieved from each web site.

13. (Previously Presented) The system of claim 12, wherein the computing device is configured to weigh the criteria with respect to one another when modifications to the pre-defined order for access are based on more than one of the plurality of criteria.

14. (Previously Presented) The system of claim 13, wherein the computing device is configured to access the plurality of web sites in the order pre-defined to retrieve the information requested by the user, the computing device further configured to access first the web site that is highest in the order pre-defined.

15. (Previously Presented) The system of claim 2, further comprising:

a database operatively connected to the computing device, the database configured to store the information gathered from the web sites in response to the information requests.

16. (Previously Presented) The system of claim 15, wherein each recognition grammar and each instruction set are stored in the database.

REMARKS

Claims 2-16 were presented for examination. Claims 2-16 stand rejected in the Office Action dated September 26, 2013 (herein, "OA"). By this response, submitted with a Request for Continued Reconsideration ("RCE"), Applicants have addressed the Examiner's rejections. Claims 2-16 are pending upon entry of this amendment. In addition, Applicants submit that the Information Disclosure Statement submitted with this Amendment cites references of record in Applicants' other issued and pending applications to create a complete record with respect to this application. For the Examiner's convenience, the particular references of record in the parent cases are marked with an asterisk. The Examiner is respectfully requested to consider the Information Disclosure Statement.

Summary of Office Action

1. Claims 2-16 are rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 8185402. The Examiner indicates that "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info."

2. Claims 2-16 are rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7881941. The Examiner indicates that [a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info."

3. Claims 2-16 are rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7386455. The Examiner

indicates that "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info."

4. Claims 2-16 are rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7076431. The Examiner indicates that "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info."

5. Claims 2-16 are rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6721705. The Examiner indicates that "[a]lthough the conflicting claims are not identical, they are not patentably distinct from each other because they both claim a speech recognition device and retrieval of info."

Response to Double Patenting Rejection

Claims 2-16 are rejected on the ground of non-statutory double patenting as being unpatentable over claims 1 of U.S. Patent Nos. 8185402; 7881941; 7386455, 7076431, 6721705. As acknowledged by the Examiner, although the claims here are not identical to those indicated by the Examiner, in the interest of advancing prosecution, Applicants submit a terminal disclaimer with this amendment. Accordingly, the Examiner is requested to withdraw the double patenting rejection and to allow the claims.

CONCLUSION

Allowance of all the pending claims is respectfully requested. If there are any remaining issues, the Examiner is respectfully requested to contact the undersigned to resolve them before issuing an office action.

Respectfully submitted,
ALEXANDER KURGANOV ET AL.

Dated: March 26, 2014

By: /Reena Kuyper/

Reena Kuyper, Reg. No. 33,830

Of

PATENT LAW WORKS LLP

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Fax: (801) 355-0160

Email: rkuyper@patentlawworks.net

Electronic Patent Application Fee Transmittal

Application Number:	13462819
Filing Date:	03-May-2012
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Reena Kuyper
Attorney Docket Number:	10115-04042 US

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:				
Extension-of-Time:				
Extension - 3 months with \$0 paid	2253	1	700	700
			IPR2020-00686	

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for Continued Examination	2801	1	600	600
Total in USD (\$)				1300

Electronic Acknowledgement Receipt

EFS ID:	18591851
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	93219
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	10115-04042 US
Receipt Date:	26-MAR-2014
Filing Date:	03-MAY-2012
Time Stamp:	17:47:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1300
RAM confirmation Number	4595
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digits	Multi Part (if appl.)	Pages (if appl.)
			PR2012-00686		

1	Request for Continued Examination (RCE)	04042US_RCE.pdf	697879 8ddc8b41113ed397137b7c3624367c352e38537e	no	3
Warnings:					
Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	04042US_IDS.pdf	614896 929240e9f9c1a128c09bc71d3e1a4f18f417aa1b	no	11
Warnings:					
Information:					
3	Foreign Reference	04042US_WO_1997037481.pdf	2763709 bac27757fc53862d6d5a8a59ca76f9ae37ae3af7	no	25
Warnings:					
Information:					
4	Non Patent Literature	04042US_Hemphill_Surfing.pdf	503053 ca355aad95484804ee51ed6aa500ecd897b5a650	no	8
Warnings:					
Information:					
5	Non Patent Literature	01_Schmandt_PhoneSlave.pdf	883631 6340ed76e0f886136145584bd6de158ff6d2374b	no	4
Warnings:					
Information:					
6	Non Patent Literature	02_Schmandt_Phoneshell.pdf	208344 cc27a319aeae8ae13776286695d8d91993c900d	no	10
Warnings:					
Information:					
7	Non Patent Literature	03_Chatter.pdf	24464169 2b963fc2ca2fe55a4ae02e6e8f03540ff4a24e12	no	130
Warnings:					
Information:					
8	Response After Final Action	04042US_ResponseB.pdf	91648 a522eaa53f683ade2d97c18ebf5cc5e10b526fd7	no	9
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	32229 b2396ddf6c75861aa3eaeed5144e35040a4f919a	no	2
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.

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
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Electronic Petition Request	TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT
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Application Number	13462819
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Filing Date	03-May-2012
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First Named Inventor	Alexander Kurganov
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Attorney Docket Number	10115-04042 US
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Title of Invention	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
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<input checked="" type="checkbox"/> Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action <input checked="" type="checkbox"/> This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.
--

Owner	Percent Interest
Parus Holdings, Inc.	100%

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

8185402
7881941
7386455
7076431
6721705

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicant claims the following fee status:

- Small Entity
- Micro Entity
- Regular Undiscounted

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.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 33830

A sole inventor

A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

A joint inventor; all of whom are signing this request

Signature	/Reena Kuyper/
Name	Reena Kuyper

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	13462819
Filing Date:	03-May-2012
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Reena Kuyper
Attorney Docket Number:	10115-04042 US

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Statutory or Terminal Disclaimer	1814	1	160	160

Pages:

Claims:

Miscellaneous-Filing:

Petition:

Patent-Appeals-and-Interference:

Post-Allowance-and-Post-Issuance:

Extension-of-Time:

IPR2020-00686

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				160

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 13462819

Filing Date: 03-May-2012

Applicant/Patent under Reexamination: Kurganov et al.

Electronic Terminal Disclaimer filed on March 26, 2014

APPROVED

This patent is subject to a terminal disclaimer

DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	18591251
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	93219
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	10115-04042 US
Receipt Date:	26-MAR-2014
Filing Date:	03-MAY-2012
Time Stamp:	17:53:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$160
RAM confirmation Number	4655
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digits	Multi Part (if appl.)	Pages (if appl.)
			PR2012-00686		

1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	35355	no	3
			1377da453fc59e499826331572e59f8563cc92a7		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30344	no	2
			3c0df2f00c5ff7c8b2fcfa0991f91a34c61b471e		

Warnings:

Information:

Total Files Size (in bytes):	65699
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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 13/462,819	Filing Date 05/03/2012	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	
AMENDMENT	03/26/2014	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR				
	Total <small>(37 CFR 1.16(i))</small>	* 15	Minus	** 20	= 0	X \$40 = 0	
	Independent <small>(37 CFR 1.16(h))</small>	* 1	Minus	***3	= 0	X \$210 = 0	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	0	

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR				
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	X \$ =	
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =	
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					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.

LIE
/KIMBERLY PANNELL/

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.

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

APPLICANTS: Alexander Kurganov et al.
APPLICATION NO: 13/462,819
FILING DATE: May 3, 2012
TITLE: Robust Voice Browser System and Voice Activated Device
Controller
EXAMINER: Susan Iris McFadden
GROUP ART UNIT: 2658
ATTY. DKT. NO: 10115-04042 US
CONFIRMATION NO: 8402

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Eastern Time Zone of the United States on the local date shown below:

Dated: June 22, 2015 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33,830

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

STATUS INQUIRY

Madam:

Further to the next action prediction letters received from the U.S. Patent Office, dated June 9th, 2014, and August 11th, 2014, Applicants request the status of when the next action is

likely to issue, as the six month prediction period indicated in the last letter dated August 11th, 2014, passed in February of 2015.

Respectfully submitted,
ALEXANDER KURGANOV ET AL.

Dated: June 22, 2015 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33,830
Of
PATENT LAW WORKS LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111
Tel.: (385) 232-7854
Fax: (801) 355-0160
Email: rkuyper@patentlawworks.net

Electronic Acknowledgement Receipt

EFS ID:	22705535
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	93219
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	10115-04042 US
Receipt Date:	22-JUN-2015
Filing Date:	03-MAY-2012
Time Stamp:	20:10:56
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	Request for status of Application	04042US_2015-06-22-StatusInquiryLetter.pdf	17491 <small>3112686346ae5d1ed3d919c674ff872044c28b60</small>	no	2

Warnings:

Information:

IPR2020-00686

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

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

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New International Application Filed with the USPTO as a Receiving Office

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NOTICE OF ALLOWANCE AND FEE(S) DUE

93219 7590 03/23/2016
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111

EXAMINER

McFADDEN, SUSAN IRIS

ART UNIT PAPER NUMBER

2658

DATE MAILED: 03/23/2016

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

13/462,819 05/03/2012 Alexander Kurganov 10115-04042 US 8402

TITLE OF INVENTION: ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional SMALL \$480 \$0 \$0 \$480 06/23/2016

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

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

HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

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

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)

93219 7590 03/23/2016
Patent Law Works, LLP
 201 South Main Street, Suite 250
 Salt Lake City, UT 84111

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.
13/462,819	05/03/2012	Alexander Kurganov	10115-04042 US	8402

TITLE OF INVENTION: ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	06/23/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
MCFADDEN, SUSAN IRIS	2658	704-275000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "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.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(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</p> <p>_____ 3</p>
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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

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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5. **Change in Entity Status** (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



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

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
13/462,819 05/03/2012 Alexander Kurganov 10115-04042 US 8402

93219 7590 03/23/2016
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111

Table with 1 column: EXAMINER
MCFADDEN, SUSAN IRIS

Table with 2 columns: ART UNIT, PAPER NUMBER
2658

DATE MAILED: 03/23/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(Applications filed on or after May 29, 2000)

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

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

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

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

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

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

Privacy Act Statement

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

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

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

IPR2020-00686

Notice of Allowability	Application No. 13/462,819	Applicant(s) KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	AIA (First Inventor to File) Status No

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

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

1. This communication is responsive to RCE filed 3-26-14.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 2-16. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

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

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

/SUSAN MCFADDEN/
Primary Examiner, Art Unit 2658

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		13462819
	Filing Date		2012-05-03
	First Named Inventor	Alexander Kurganov	
	Art Unit		2658
	Examiner Name	Susan Iris McFadden	
	Attorney Docket Number		10115-04042 US

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4371752		1983-02-01	Matthews et al.*	
	2	4776016		1988-10-04	Hansen*	
	3	4930150		1990-05-29	Katz*	
	4	5146452		1992-09-08	Pekarske*	
	5	5255305		1993-10-19	Sattar	
	6	5276729		1994-01-04	Higuchi et al.	
	7	5287199		1994-02-15	Zoccolillo	
	8	5365574		1994-11-15	Hunt et al.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13462819	13462819 - GAU: 2658
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First Named Inventor	Alexander Kurganov	
Art Unit	2658	
Examiner Name	Susan Iris McFadden	
Attorney Docket Number	10115-04042 US	

9	5426421		1995-06-20	Gray	
10	5630079		1997-05-13	McLaughlin*	
11	5758322		1998-05-26	Rongley	
12	5774860		1998-06-30	Bayya et al.	
13	5737395		1998-04-07	Irribarren	
14	5742596		1998-04-21	Baratz et al.	
15	5761294		1998-06-02	Shaffer et al.	
16	5764910		1998-06-09	Shachar*	
17	5794205		1998-08-11	Walters et al.	
18	5796791		1998-08-18	Polcyn	
19	5799063		1998-08-25	Krane	

**INFORMATION DISCLOSURE
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Art Unit	2658	
Examiner Name	Susan Iris McFadden	
Attorney Docket Number	10115-04042 US	

20	5832440		1998-11-03	Woodbridge et al.	
21	5809481		1998-09-15	Baron et al.	
22	5823879		1998-10-20	Goldberg et al.	
23	5881135		1999-03-09	Watts et al.	
24	5914951		1999-06-22	Bentley et al.	
25	5940598		1999-08-17	Strauss et al.	
26	5974124		1999-10-26	Schlueter et al.	
27	5991292		1999-11-23	Focsaneanu et al.	
28	5995615		1999-11-30	Miloslavsky	
29	5999965		1999-12-07	Kelly	
30	5999611		1999-12-07	Tatchell et al.*	

**INFORMATION DISCLOSURE
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Application Number	13462819	13462819 - GAU: 2658
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First Named Inventor	Alexander Kurganov	
Art Unit	2658	
Examiner Name	Susan Iris McFadden	
Attorney Docket Number	10115-04042 US	

31	6215858		2001-04-10	Bartholomew et al.	
32	6366575		2002-04-02	Barkan et al.	
33	6445694		2002-09-03	Swartz	
34	6490627		2002-12-03	Kaira et al.	
35	6560604		2003-05-06	Fascenda	
36	6593944		2003-07-15	Nicolas et al.	
37	6618763		2003-09-09	Steinberg	
38	6654814		2003-11-25	Britton et al.	
39	6704024		2004-03-09	Robotham et al.	
40	6763388		2004-07-13	Tsimelzon	
41	6812939		2004-11-02	Flores et al.	

**INFORMATION DISCLOSURE
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First Named Inventor	Alexander Kurganov	
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Attorney Docket Number	10115-04042 US	

42	6999804		2006-02-14	Engstrom et al.	
43	6477240		2002-11-05	Lim et al.*	
44	6594692		2003-07-15	Reisman	
45	6014626		2000-01-11	Cohen	
46	6021190		2000-02-01	Fuller et al.	
47	6178399		2001-01-23	Takebayashi et al.	
48	6201814		2001-03-13	Greenspan	
49	6330538		2001-12-11	Breen	
50	6459910		2002-10-01	Houston	
51	6201863		2001-03-13	Miloslavsky	
52	6044107		2000-03-28	Gatherer et al.	

**INFORMATION DISCLOSURE
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Examiner Name	Susan Iris McFadden	
Attorney Docket Number	10115-04042 US	

53	6052372		2000-04-18	Gittins et al.	
54	6115737		2000-09-05	Ely et al.	
55	6131095		2000-10-10	Low et al.	
56	6161128		2000-12-12	Smyk	
57	6188683		2001-02-13	Lang et al.	
58	6199076		2001-03-06	Logan et al.	
59	6430282		2002-08-06	Bannister et al.	
60	6445694		2002-09-03	Swartz	
61	6456699		2002-09-24	Burg et al.*	
62	6618039		2003-09-09	Grant et al.	
63	6785266		2004-08-31	Swartz	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819	13462819 - GAU: 2658
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	First Named Inventor	Alexander Kurganov	
	Art Unit	2658	
	Examiner Name	Susan Iris McFadden	
	Attorney Docket Number	10115-04042 US	

	64	7024464		2006-04-04	Lusher et al.	
	65	7075555		2006-07-11	Flores et al.	
	66	7089307		2006-08-08	Zintel et al.	
	67	7145898		2006-12-05	Elliott	
	68	6137863		2000-10-24	Brown et al.	

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	1	20020090114		2002-07-11	Rhoads et al.	
	2	20020059402		2002-05-16	Belanger	
	3	20020064149		2002-05-30	Elliott et al.	
	4	20040160913		2004-08-19	Kubler et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819	13462819 - GAU: 2658
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	First Named Inventor	Alexander Kurganov	
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	Examiner Name	Susan Iris McFadden	
	Attorney Docket Number	10115-04042 US	

5	20050025133		2005-02-03	Swartz	
6	20050030179		2005-02-10	Script et al.	
7	20050074104		2005-04-07	Swartz	

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	1	1997/037481	WO		1997-10-09	Northern Telecom Ltd.*		<input type="checkbox"/>

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	1	HEMPHILL et al., "Surfing the Web by Voice," ACM Multimedia 95 - Electronic Proceedings, November 5-9, 1995. San Francisco, CA.	<input type="checkbox"/>
	2	LY, "Chatter A: A Conversational Telephone Agent," submitted to Program in Media Arts and Sciences, Massachusetts Institute of Technology, (1993), pp. 1-130.	<input type="checkbox"/>
	3	SCHMANDT, "Phoneshell: the Telephone as Computer Terminal," Proceedings of ACM Multimedia '93 Conference (1993), pp. 373-382.	<input type="checkbox"/>

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819	13462819 - GAU: 2658
	Filing Date	2012-05-03	
	First Named Inventor	Alexander Kurganov	
	Art Unit	2658	
	Examiner Name	Susan Iris McFadden	
	Attorney Docket Number	10115-04042 US	

4	SCHMANDT et al., "Phone Slave: A Graphical Telecommunications Interface," Proceedings of the SID (1985), vol. 26/1, pp. 79--82.	<input type="checkbox"/>
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Examiner Signature	/Susan Mcfadden/	Date Considered	03/10/2016
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¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

WEST Search History for Application 13462819

Creation Date: 2016031412:08

Interference Searches


Query	DB	Hits	Op.	Plur.	Thes.	Date
((speech or voice) near4 command and speech near4 synthesis and recognition near4 grammar and address and web near site).clm.	PGPB	6	OR	YES		03-14-2016

Prior Art Searches

Query	DB	Hits	Op.	Plur.	Thes.	Date
kurganov.in.	USPT	n/a	OR	YES		02-06-2013
kurganov.in. and speech near recognition	USPT	n/a	OR	YES		02-06-2013
kurganov.in. and (speech near recognition).clm.	USPT	n/a	OR	YES		02-06-2013
speech near recognition and voice	USPT	n/a	OR	YES		02-06-2013
(speech near recognition and voice).clm.	USPT	n/a	OR	YES		02-06-2013
zhuoff.in.	USPT	n/a	OR	YES		02-06-2013
zhukoff.in.	USPT	n/a	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition	USPT	n/a	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition and voice	USPT	n/a	OR	YES		02-06-2013
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kurganov.in. and speech near recognition	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent and address	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent and address and grammar	USPT	n/a	OR	YES		09-23-2013
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(speech near recognition and speaker-independent and address and grammar and synthesis and network).clm.	PGPB	n/a	OR	YES		09-23-2013
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8098600.pn.	USPT	n/a	OR	YES		09-23-2013
7516190.pn.	USPT	n/a	OR	YES		09-23-2013
7516190.pn. and speaker-independent	USPT	n/a	OR	YES		09-23-2013
7327723.pn.	USPT	n/a	OR	YES		09-23-2013
7327723.pn. and web near site	USPT	n/a	OR	YES		09-23-2013
7327723.pn. and web near site near address	USPT	n/a	OR	YES		09-23-2013
6807257.pn. and web near site near address	USPT	n/a	OR	YES		09-23-2013
6807257.pn.	USPT	n/a	OR	YES		09-23-2013
6721705.pn.	USPT	n/a	OR	YES		09-23-2013
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kurganov.in. and voice	USPT	13	OR	YES		03-09-2016
kurganov.in. and voice and speech	USPT	13	OR	YES		03-09-2016
kurganov.in. and voice and speech near synthesis	USPT	6	OR	YES		03-09-2016
kurganov.in. and voice and speech near synthesis and command	USPT	6	OR	YES		03-09-2016
kurganov.in. and voice and speech near synthesis and command and address	USPT	6	OR	YES		03-09-2016
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(voice and speech near synthesis and command and address and grammar and speaker-independent).clm.	USPT	3	OR	YES		03-09-2016
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((speech or voice) near4 command and speech near4 synthesis and grammar and address and web near site).clm.	USPT	3	OR	YES		03-14-2016

Issue Classification 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	

CPC						
Symbol					Type	Version
H04M		3		4938	F	2013-01-01
G06F		3		16	A	2013-01-01
H04M		2201		39	A	2013-01-01
H04M		2201		40	A	2013-01-01
Y10S		707		99943	A	2013-01-01
Y10S		707		99942	A	2013-01-01
G10L		15		26	I	2013-01-01


CPC Combination Sets					
Symbol		Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
		15	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/SUSAN MCFADDEN/ Primary Examiner. Art Unit 2658	3-10-16	1	5
(Primary Examiner)	(Date)		

Issue Classification 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input checked="" type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47									
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	2														
2	3														
3	4														
4	5														
5	6														
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9	10														
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13	14														
14	15														
15	16														

NONE		Total Claims Allowed:	
		15	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/SUSAN MCFADDEN/ Primary Examiner. Art Unit 2658	3-10-16	1	5
(Primary Examiner)	(Date)		

Index of Claims 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

✓	Rejected
=	Allowed


-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	02/06/2013	09/23/2013	03/10/2016					
	1	✓	-	-					
1	2		✓	=					
2	3		✓	=					
3	4		✓	=					
4	5		✓	=					
5	6		✓	=					
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12	13		✓	=					
13	14		✓	=					
14	15		✓	=					
15	16		✓	=					

Search Notes 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

CPC- SEARCHED		
Symbol	Date	Examiner
G06F 3/167	3-14-16	SM

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
704	275	3-10-16	SM

SEARCH NOTES		
Search Notes	Date	Examiner
Searched WEST	2-6-13	SM
Updated Search	9-23-13	SM
Updated Search	3-10-16	SM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
G06F	3/167	3-14-16	SM
704	275	3-14-16	SM

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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
13/462,819 05/03/2012 Alexander Kurganov 10115-04042 US 8402

93219 7590 03/30/2016
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111

EXAMINER

MCFADDEN, SUSAN IRIS

ART UNIT PAPER NUMBER

2658

NOTIFICATION DATE DELIVERY MODE

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Application No. : 13462819
Applicant : Kurganov
Filing Date : 05/03/2012
Date Mailed : 03/30/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

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Office of Data Management
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**IDENTIFICATION OF APPLICATION DEFICIENCIES
IN APPLICATION FILED BEFORE SEPTEMBER 16, 2012**

- Applicant must provide legible text for the following item(s).
- Specification filed 05/03/2012, page(s) 15-23.
 - Claims filed , claim(s) .
 - Other:
- Applicant must provide missing information on the following page(s) of the specification by amending the specification to add the missing text. No new matter may be added.
Page/line no(s).
- The specification refers to one or more applications by attorney docket number and does not show the U.S. application number(s). Applicant must supply the U.S. application number in place of each attorney docket number.
Page/line no(s).
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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL (Submitted Only via EFS-Web)

Application Number	13462819	Filing Date	2012-05-03	Docket Number (if applicable)	10115-04042 US	Art Unit	2658
First Named Inventor	Alexander Kurganov			Examiner Name	Susan Iris McFadden		

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. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

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- Information Disclosure Statement (IDS)
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MISCELLANEOUS

- Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____
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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 any underpayment of fees, or credit any overpayments, to Deposit Account No _____

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Signature	Reena Kuyper/	Date (YYYY-MM-DD)	2016-06-22
Name	Reena Kuyper	Registration Number	33830

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(54) **Voice mail on the internet**

(57) A first Internet telephone system 620 attempts to call with a second Internet telephone system 630 via the Internet 600. However, the second Internet telephone system 630 is not logged onto the Internet at the time of the call. In response to the failed attempt to call, the first Internet telephone system prompts the user to send voice mail to the user of the second Internet tele-

phone system. This results in a phone call over the Internet between a voice mail system 610 and the first Internet telephone system, allowing a greeting to be heard, and a message to be stored. This message may be subsequently retrieved, either using an Internet telephone system over the Internet, or using a standard phone over the conventional telephone network.

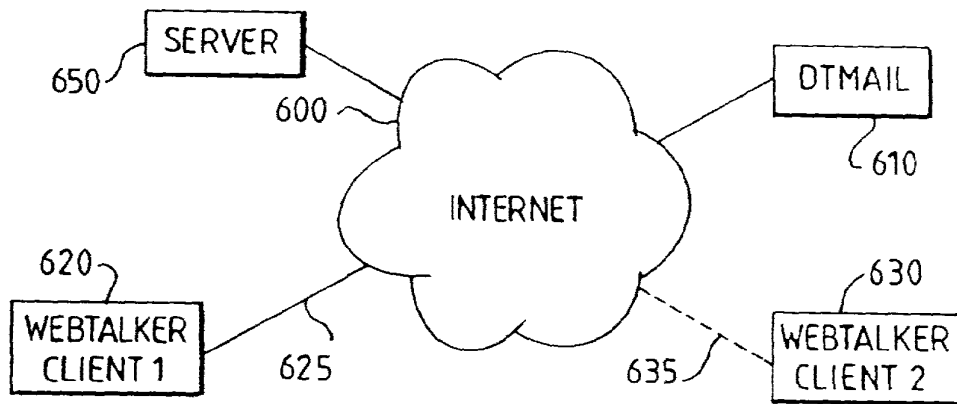


FIG. 6

Description

Background of the invention

The present invention relates to voice mail systems for use over the Internet.

Conventional voice mail systems (also termed voice messaging systems) attach to the telephone network, often via a PBX, and are used to store messages from incoming calls when the intended recipient is absent or otherwise engaged. The intended recipient can then listen to their stored messages at some future time. A voice mail system is generally implemented either on special purpose computer hardware, or else on a standard computer workstation equipped with a suitable telephony interface. Such voice mail systems are well-known; one example is the DirectTalkMail system, available from IBM Corporation, which operates in conjunction with the DirectTalk/6000 voice processing system (also available from IBM). Other examples of voice mail systems are described in US 5,136,648 and EPA 0588576.

Also known are electronic mail systems (email), which allow the transmission of text messages over a computer network. The most prominent such network over the last couple of years is the Internet, which provides a readily accessible, worldwide network for packet-based communications. Background information about the Internet and the World Wide Web can be found in "Spinning the Web" by Andrew Ford (International Thomson Publishing, London 1995) and "The World Wide Web Unleashed" by John December and Neil Randall (SAMS Publishing, Indianapolis 1994).

Although originally intended primarily for the transmission of computer data, more recently the Internet has been exploited to provide real-time telephony communications. The primary attraction of the Internet for telephony communications is the charging structure. Thus many Internet users have a dial-up connection to an access provider. This is normally over a local telephone line, so such users pay only local telephone charges when logged on. Some access providers charge a monthly description, whilst others charge on the basis of connection time (some may do both). However, there is generally no charge associated with actual data transfer over the network. As a result, the effective cost of an international call over the Internet may be no more than that of a local call of the same duration to the access provider. In addition, the fully digital nature of the Internet may potentially offer a richer functionality (eg in terms of conference calling) than conventional telephone networks. Internet telephones are surveyed in the article "Dial 1-800-Internet" in Byte Magazine, February 1996, p83-88, and in the article "Nattering On", in New Scientist, 2 March 1996, p38-40.

The transmission of voice signals over a packet network is described for example in "Using Local Area Networks for Carrying Online Voice" by D Cohen, pages

13-21, in "Voice Transmission over an Ethernet Backbone" by P Ravasio, R Marcogliese, and R Novarese, pages 39-65, both in "Local Computer Networks" (edited by P Ravasio, G Hopkins, and N Naffah; North Holland, 1982) and also in GB 2283152. The basic principles of such a scheme are that a first terminal or workstation digitally samples a voice input signal at a regular rate (eg 8 kHz). A number of samples are then assembled into a data packet for transmission over the network to a second terminal, which then feeds the samples to a loudspeaker or equivalent device for playout, again at a constant 8 kHz rate. Voice transmission over the Internet is substantially similar to transmission over a LAN (which may indeed provide part of the Internet transmission path), but there tends to be less spare bandwidth available on the Internet. As a result, Internet telephones normally compress the voice signal at the transmitting end, and then decompress it at the receiving end.

There are several well-known problems with packet-based voice communications. Firstly, there is a transmission delay over the network, which is variable, depending particularly on the utilisation of the network by other nodes at any given time. Thus the arrival of packets at a destination node is both delayed and irregular. If the packets were played out in irregular fashion, this would have an extremely adverse effect on intelligibility of the voice signal. Therefore, packet voice transmissions utilise some degree of buffering at the reception end, to absorb such irregularities. Such buffering however increases the delay between the original voice signal and the audio output at the destination end. This delay may cause problems with echos, and more importantly, can render natural interactive two-way conversation difficult (in the same way that an excessive delay on a transatlantic conventional phone call can be highly intrusive). Yet further delays are introduced by the necessity to compress/decompress the voice signal.

Some Internet telephones which are currently commercially available provide a voice mail facility, whereby the calling party can leave a message if the called party does not answer. This is somewhat analogous to the conventional answerphone. Note that such systems are limited in that generally the called party is required to be logged onto the Internet to receive a voice message. However, many users with dial-up Internet access via a modem have to pay on a time basis for a telephone call into their Internet access provider, and moreover some Internet access providers charge for connections on a time basis. Therefore most users log off from the Internet when they are not using it to avoid incurring excessive charges. In such circumstances, this implies that they are no longer able to receive a voice message.

It would of course be possible for a user to transmit a voice message in the form of a normal email (data) message to another user who is not currently logged on. The message is then queued at the Internet access provider's site for delivery at next logon by the relevant user. However, generally this approach offers few benefits

over simply sending an email message, rather than the voice message.

It is an object of the invention to provide improved voice mail facilities for the users of Internet telephones.

Accordingly, the invention provides a method of providing voice mail on the Internet comprising the steps of:

selecting to make a call from a first user at a first Internet telephone system to a second user at a second Internet telephone system;
determining that said second Internet telephone system is not currently logged onto the Internet to receive said call; and
transmitting a voice message for said second user over the Internet to a voice mail system distinct from said second Internet telephone system for subsequent retrieval by said second user.

The voice mail service is therefore available when the first user cannot directly contact the second user. This may be determined as a result of actually trying to place a call to the second user, or perhaps simply by viewing the list of currently accessible parties. The voice mail system is distinct from the second Internet telephone system, and is intended to be continuously attached to the Internet. The voice mail system is therefore available when the second Internet telephone system is not logged onto the Internet, thereby avoiding the subscriber of this second system having to pay overly high Internet connection or usage charges.

In a preferred embodiment, responsive to a determination that the second Internet telephone system is not currently logged onto the Internet, the first user at the first Internet telephone system is offered a choice of whether or not to leave a voice message for the second user. Typically this choice is generated locally at the calling Internet telephone, although it may be generated at some intermediate server in the network, which is used for routing and placing calls. Assuming that the option to leave voice mail is accepted, a communications link is established over the Internet between the first Internet telephone system and the voice mail system in order to transmit the voice message for said second user. Said communications link permits two-way communications, and the voice mail system transmits to the first user one or more prompts or greetings prior to transmission of the message for the second user to the voice mail system. Typically, said one or more prompts or greetings include information concerning the current location and availability of the second user.

In the preferred embodiment, said voice message can be retrieved by the second user either using an Internet telephone over the Internet, or by using a conventional telephone over the conventional phone network. It is generally most convenient if substantially the same prompts and/or greetings are heard irrespective of whether the voice mail system is accessed by the conventional telephone network or over the Internet, since

a subscriber is then only required to keep a single set of prompts/greetings up-to-date. Note that one of the advantages of the invention is that any voice mail stored in the voice mail system can be immediately available for retrieval by the mailbox owner, either by calling the voice mail system by telephone, or by Internet access (not necessarily via the mailbox owner's normal access provider).

Preferably the method further comprises the step of the voice mail system providing said second user of said second Internet telephone with an indication that he or she has a voice mail message waiting next time said second user logs on to the Internet using an Internet telephone. This indication may be provided in response to a request from the Internet telephone, which is transmitted from the Internet telephone to the voice mail system at start-up time.

It is also preferred that this indication is provided irrespective of whether said voice mail message was received over the Internet or over the conventional telephone network. This emphasises one of the important aspects of the invention, namely that a subscriber should only need one voice mail service, and the distinction between the Internet and the conventional telephone network should be essentially transparent to the subscriber.

The invention also provides a telephone system for making a telephone call over the Internet, including:

means for allowing a first user at said system to select a second user at a second Internet telephone system to call;
means for determining that said second Internet telephone system is not currently logged onto the Internet to receive said call; and
means for transmitting a voice message for said second user over the Internet to a voice mail system distinct from said second Internet telephone system for subsequent retrieval by said second user.

The telephone system will typically include means for displaying one or more prompts or greetings to said first user in textual or graphical form, although usage of this facility may be somewhat restricted in order to maintain conformity between the access mechanisms over the Internet and over the conventional telephone network.

The invention further provides a voice mail system including:

means for receiving a voice message over the Internet;
means for storing said voice message;
means for allowing said message to be retrieved over the Internet; and means for allowing said message to be retrieved over the conventional telephone network.

In a preferred embodiment, the voice mail system further comprises means for transmitting one or more prompts or greetings prior to receipt or retrieval of a voice message over the Internet. Generally said one or more prompts or greetings transmitted prior to receipt of a voice message over the Internet may include information concerning the current location and availability of the intended message recipient.

It is preferred that the voice mail system includes means for receiving a voice message over the conventional telephone network, which can then be accessed and processed in the same manner as messages received over the Internet. Thus a message received over either the Internet or the conventional telephone network can be retrieved over either the Internet or the conventional telephone network without restriction. Further in this vein, preferably there are means for providing an indication to a subscriber that he or she has one or more voice mail messages waiting, and this indication includes both voice messages received over the Internet, and voice messages received over the conventional telephone network.

In the preferred embodiment, said means for receiving a voice message over the Internet includes means for receiving a voice signal in compressed form split into a plurality of packets, and means for assembling the voice signal and decompressing it into said voice message; and said means for allowing a voice message to be retrieved over the Internet includes means for compressing the message and packetising it prior to transmission over the Internet.

Preferred embodiments of the invention will now be described by way of example only, with reference to the following drawings:

Figure 1 is a schematic diagram of a voice mail system;

Figure 2 is a schematic diagram of the prior art arrangement of software running on the voice mail system;

Figure 3 is a schematic diagram of an Internet telephone system;

Figure 4 is a schematic diagram of the audio processing components on the audio adapter card of the Internet telephone system of Figure 3;

Figure 5 illustrates the user interface presented by the Internet telephone system of Figure 3;

Figure 6 is a schematic diagram of two Internet telephone systems and a voice mail system connected by the Internet;

Figure 7 is a schematic diagram of the enhancements made to the voice mail system software, compared with that shown in Figure 2, in order to receive voice messages over the Internet in accordance with the present invention.

Detailed Description

Figure 1 is a simplified diagram of a voice mail system based on a conventional computer workstation comprising system unit 20, display screen 12, and keyboard 14. The system unit includes a microprocessor 22, ROM/RAM 24, and disk storage 26, connected together via bus 28. In order to operate as a voice mail unit, the computer workstation is connected to telephone line 66 via a digital trunk processor 64 and a digital trunk adapter card 62. The voice mail system also includes a network adapter card 30 to connect the voice mail system to a computer network (eg a LAN). The voice mail system may also include other known components, such as an audio capture/playback card, a CD-ROM and mouse (not shown).

The voice mail system illustrated in Figure 1 is based on the DirectTalk/6000 voice processing system, available from IBM Corporation. The hardware components of this system are an RISC System/6000 computer workstation, plus the digital trunk processor and digital trunk adapter. The DirectTalk/6000 system connects to the telephone network through a T1 or E1 digital trunk line 66 (and via a PBX in most installations). The digital trunk processor is used to demultiplex incoming signals and multiplex outgoing signals on the trunk line, and perform log-linear conversion as appropriate. The digital trunk processor is also used to perform compression/decompression. The digital trunk adapter effectively acts as an interface between the workstation itself and the digital trunk processor. Further details about the DirectTalk/6000 voice processing system can be found in the manual "IBM AIX DirectTalk/6000, General Information and Planning" (publication number GC33-1720-00) and the other manuals referenced therein.

Figure 2 is a simple block diagram of the main software components running on the voice mail system of Figure 1. Running on the RISC System/6000 workstation is first of all the operating system for the workstation, which in the present case is AIX 110, and then the DirectTalk/6000 software 120 itself. The latter includes a device driver for the telephony hardware (the digital trunk adapter). Also on the RISC System/6000 workstation, effectively running as an application on top of the DirectTalk/6000 system, is DirectTalkMail 130, which provides standard voice messaging capabilities.

It will be appreciated that voice mail systems such as that illustrated in Figures 1 and 2 are well-known, and that many variations on the system illustrated are also well-known. For example, there are many systems in which telephone line 66 is analog, in which case the digital trunk processor is often omitted, and its functions performed, where appropriate by a suitable telephony adapter card. The precise hardware configuration employed in the voice mail system is not relevant to an understanding of the present invention, and so will not be discussed further.

The DirectTalkMail voice messaging system itself

can be considered as a form of voice database system, based on mailboxes. Thus each user or subscriber has a mailbox, which has associated with it all the information for that user, eg their extension number, their password, the number of new messages that they have, their current greeting, and so on. The mailbox also logically contains the digitised stored messages for that user (although physically the audio recording may be stored in a different location from the other information). Each mailbox has a unique identifier, such as a number or name, for example, each mailbox can be allocated the extension number of the user associated with that mailbox. The DirectTalkMail voice messaging system also contains routines to allow callers to telephone messages into the database and subscribers to extract messages from the database for listening over the telephone, as well as other functions such as forwarding messages. The operation of a voice mail system in such a manner is well-known and so will not be described further.

Figure 3 is a simplified schematic diagram of a client computer system which may be used for telephone transmission over the Internet. The computer workstation of Figure 3, which is similar to that of Figure 1, but generally less powerful, has a system unit 310 including microprocessor 322, semi-conductor memory (ROM/RAM) 324, hard disk 326, and a bus over which data is transferred 328. Other typical components of the computer are a display 312, keyboard 314, and mouse (not shown). The computer of Figure 3 may be any conventional workstation, such as an Aptiva computer, available from IBM Corporation. Alternatively, any other form of suitable Internet access device, including the new generation of low-cost systems (effectively sub-PCs) which are currently being developed may be employed instead as the client telephone terminal.

The computer of Figure 3 is equipped with two adapter cards. The first of these is a network adapter card 330. This card, together with accompanying software such as the TCP/IP communications stack, allows messages to be transmitted onto and received from a computer network such as a Local Area Network (LAN). In this case, it is presumed that the Internet is accessed via the LAN. Alternatively (or additionally), the computer of Figure 3 may have a modem (not shown), installed either internally as another adapter card, or externally, for example via the RS-232 serial port. The modem in turn can be connected to a telephone socket, allowing dial-up access to an Internet provider. The operation of a network adapter card or modem to provide Internet access is well-known, and so again will not be described in detail.

The second card shown in Figure 3 is an audio card 362 which is connected to a headset including microphone 366 and earphones 364 for audio input and output respectively (alternatively the computer in Figure 3 may have a loudspeaker, and built-in microphone, but the use of a headset is preferred to optimise the quality of the audio signal produced and actually heard).

The audio card is shown in more detail in Figure 4. The card illustrated and used in the preferred embodiment is an M-Wave card available from IBM Corporation, although other cards are commercially available that perform an analogous function. The card 362 contains an A/D converter 442 to digitise incoming audio signals from the attached microphone 366. The A/D converter is attached to a codec 444, which samples the incoming audio signal into samples (eg 8 bit or 16 bit). Digitised samples are then passed to a digital signal processor (DSP) 446 on the card via a buffer 448 where they are compressed. The DSP is controlled by one or more programs stored in semiconductor memory 452 on the card. Data can be transferred by the DSP to and from the main PC bus.

Audio signals to be played out are received by the DSP 446 from the PC bus 328, and processed in a converse fashion to incoming audio. That is, the output audio signals are passed through the DSP 446 for decompression, and then through buffer 450 to the codec 444, from there to a D/A converter 454, and finally to a loudspeaker 364 or other appropriate output device.

There are various compression/decompression techniques that are available for audio communication over the Internet. The preferred embodiment uses a modified version of GSM, which is the standard compression technique used in Europe for cellular phones, to provide voice compression. Another possible technique to use is the DigiTalk system developed by Rockwell Communications. Such technologies as these reduce the bandwidth requirements for voice communications to less than 10 kbits per second. Note that although the embodiment shown in Figure 4 performs the compression/decompression on a DSP, in other embodiments this processing may be performed purely in software on the host computer.

In order to operate as an Internet telephone, the computer system of Figure 3 must contain appropriate application software. In the preferred embodiment, this application software is called WebTalker, and provides a user interface as shown in Figure 5. This interface includes message panel 505, which can be used to pass status messages to the user (eg "dialling", "engaged", etc), and a set of control buttons 510. The Call button 511 allows a call to be made to a named individual, whilst the User List button 512 provides access to a server directory (see below), as well as to a listing of people who have been called previously (or from whom calls have been received). Clicking on the name of a desired individual from one of these lists results in a call being made to the corresponding email address for that individual. The remaining control buttons, Set-Up 513, Help 515, Mute 514 and Exit 516 are substantially self-explanatory, and will not be described further since they are not directly relevant to an understanding of the present invention.

The window also contains slider bars, which can be used to control Volume 530, Voice Quality 531, and Mi-

crophone Sensitivity 532. It will be appreciated that it is possible to improve voice quality for example by reducing the degree of compression, or by increasing the amount of buffering at the receiving end, although these will tend to lead to increased delays. Finally, the window contains Mail Waiting light 520 and Voice Mail light 525, which will be explained in more detail below.

The operation of the Webtalker telephone is as follows (see Figure 6). When the user starts up the Webtalker software telephone client 620 on the Internet 600, the telephone logs onto a server 650 on the Internet. There may be multiple possible servers, but a default one is chosen in accordance with the set-up parameters of the Internet telephone. It will be appreciated that this requires the Web telephone to use standard Internet communications facilities, as well-known in the art.

The server maintains a list of people currently logged on to the Internet and using Webtalker. This list is accessible to the user (via the User List control button), allowing the user to select another party to call. The called party then receives notification of their incoming call in their control window 505, plus a pop-up box asking them whether or not they wish to accept the call. Assuming the call is accepted, then this establishes a direct link between the two clients (ie the two Internet telephones) independent of the server. This link provides a TCP/IP control channel and a UDP data channel. The two clients can start audio communications, using their audio subsystems as described above. Thus the audio data from each client is processed into a compressed form, and then transmitted over the UDP data channel to the other client. The audio communications can either be full duplex, or, to save bandwidth, half duplex.

In practice although the audio quality across the network is acceptable, the end to end delay Internet may be a couple of seconds or more, which means that completely natural conversation is not possible. Thus it can become confusing if one party tries to interrupt another, or does not clearly indicate when he or she finishes speaking. However, once a user is accustomed to these limitations, then an Internet telephone conversation becomes a very valuable method of communication.

As so far described, the WebTalker application has substantially the same function as known Internet telephones, and so its operation will be well understood by the skilled person. However, in accordance with the present invention, the WebTalker telephone includes the additional facility of allowing a voice message to be left when the called party is not logged onto the Internet. This is to be contrasted with the situation with known Internet telephones, which at the called end provide a voice mail message when the called party is logged onto the network, but chooses not to answer an incoming call. As explained previously, most users, particularly those at home, do log-off from the Internet when not specifically using it to avoid paying unnecessary connection charges.

There can be several reasons why a call might be made to a party who is not currently logged on. One possibility is for the server list to be in error, perhaps because of a recent failure in the network, which has not yet been reflected in the list. Another possibility is that a caller exited abnormally from the Webtalker application (eg they crashed out), and so did not trigger the normal log off procedure at shut-down (normally the server would eventually time out with respect to these terminals, and eventually log them off anyway). Another possibility is that the call is made using the Call button 511, with the address of the called party directly entered, therefore by-passing the server list of users currently logged on (not all Internet telephones enable this).

Figure 6 illustrates the situation where client 1 has a first WebTalker telephone 620, connected to the Internet 600 typically via a modem and telephone line 625. Likewise client 2 has a WebTalker telephone 630, and a similar dial-up connection 635 to the Internet. However, client 2 is not currently logged onto the Internet, so this connection is shown in a dashed line.

At this point, when client 1 tries unsuccessfully to make a call to client 2, the WebTalker telephone of client 1 provides a status message indicating that the call could not be made because client 2 is not currently logged onto the network. Further, the WebTalker telephone invites client 1 to leave a voice mail message for client 2. Assuming that client 1 does opt to leave a voice mail message, then the WebTalker telephone dials up the voice mail system 610 in exactly the same manner as dialling any other WebTalker telephone on the Internet.

In the preferred embodiment, the option of sending voice mail is therefore controlled by the calling Internet telephone without reference to the server. However, as an alternative, the server may be involved. For example, in addition to presenting a list of users currently logged on, the server may present an additional list of callers for whom voice messages can be left. Selecting a caller from this list results in a call being made to the voice mail system, in the same manner that selecting a currently logged on user results in a call to that user. In such circumstances, it may in fact be desirable for the voice mail system itself to log onto the server.

In general, the voice mail system 610 will have the capability to handle many lines of incoming traffic, and have a permanent connection into the Internet. The voice mail system 610 will typically be managed by a service provider. Client 2 may pay a subscription for this service, or it might perhaps be included free with an Internet access package, or telephone line rental, in order to encourage usage. Similarly, an organisation marketing Internet telephones might offer the voice mail service to attract users to their particular offering. Alternatively, a company might provide the voice mail system 610 for all its employees.

It is assumed that client 1 was informed of the Internet address of the voice mail system 610 for client 2

at the same time that it learned of the Internet address of client 2, and that these have been stored together in a directory on client 1. It may also be possible for client 1 to interrogate the server 650 to find out the address of the voice mail system for client 2; or as suggested above, the connection may in fact be initiated through the server. Alternatively it may be that all subscribers to the WebTalker Internet telephone may use the same voice mail service. However, in the event that the WebTalker telephone is unable to determine the address of the voice mail system for client 2, then an appropriate error message is supplied to client 1.

Figure 7 illustrates the enhancements necessary to the voice mail system 610 in order to allow it to receive calls from the WebTalker telephone. As shown previously in Figure 2, the DirectTalkMail system 730 is essentially an application running on top of the DirectTalk/6000 voice processing system 720, which itself is an application running on top of the AIX operating system 710 to provide recording and playout of voice segments etc. Included within the DirectTalk voice processing system is a custom server interface 725, which allows C programs to interact directly with the DirectTalk/6000 voice database. Use of the custom server interface is required in the present instance since the voice messages are not being played out over the standard telephone interface (via the digital trunk adapter), but rather transmitted in software format over the Internet. The custom server interface is described in more detail in the manual IBM AIX DirectTalk/6000 Voice Application Development (reference SC33-1722-00).

In order for the DirectTalkMail to receive WebTalker telephone calls, appropriate software has to be provided. This software can effectively be split into two components, with an interface between them. The first component provides the WebTalker interface 750, and includes communications software 760 to allow communications over the Internet (nb some of the software necessary for this is already provided in the operating system 710, as known in the art). The WebTalker interface software 750 ensures that to a client WebTalker telephone, such as WebTalker telephone 620 (see Figure 6), the voice mail system can appear substantially similar to another WebTalker telephone. Therefore, when the voice mail system needs to play out a prompt over the Internet, the WebTalker IF component 750 is responsible for compressing the audio, packaging it correctly, and transmitting it out over the Internet to the client system. Conversely, for incoming audio from the client system, the WebTalker IF component is responsible for decompressing, buffering, and assembling the received packets into a proper audio signal. Note that this processing may be done all in software (ie there is no need for special hardware at the voice processing system such as that shown in Figure 4).

The DirectTalkMail interface component 740 is therefore passed incoming audio signals in PCM format from the WebTalker interface (A law, mu law, or any oth-

er suitable digital audio format could be used), and uses the DirectTalk/6000 custom server interface to store these as voice messages in the DirectTalk/6000 voice database. Similarly, the DirectTalkMail interface component uses the custom server interface to retrieve stored prompts and voice messages, converts to the appropriate format (eg PCM) and passes these over to the WebTalker interface component for compression, and transmission to the client. Each mailbox in the voice database may have an assigned Internet address, so that calls intended for a client at a particular Internet address (as specified by the information received from the WebTalker interface component) can be stored in the correct mailbox (alternatively incoming calls could be required to specify a mailbox number). It will be appreciated that in common with most voice mail systems, DirectTalkMail actually performs its own compression on voice messages prior to storage, to reduce storage requirements. The compression technique used by the voice mail system differs from that used by the WebTalker telephone system, hence the need to decompress and the recompress incoming calls (and similarly for outgoing calls), although it is certainly feasible for a voice mail system and Internet telephone to use the same compression scheme throughout.

The most basic embodiment of the present invention simply allows for the two-way transmission of audio, enabling the caller to hear a greeting or prompt, and then to leave a message. However, it will be appreciated that the DirectTalkMail system, in common with most voice mail systems, is normally controlled by a user pressing DTMF keys on their telephone to select between multiple commands or options. In order to provide this control to a client over an Internet, a facility is added to the WebTalker telephone, such that when it dials a voice mail system, a telephone keypad is presented to the user of the WebTalker telephone. By clicking on the desired button (ie digits 0-9, * or #), the user of the WebTalker telephone can transmit a control command to the voice mail system. The selected command is not transmitted as a DTMF signal, but rather as a simple message containing an identifier of the pressed key, since this requires far less bandwidth. This identifier is distinguished from normal audio data, so that it is properly recognised by the WebTalker interface component 650. The identifier is then passed to the DirectTalkMail interface, which interacts with the DirectMail and DirectTalk/6000 systems to ensure that the requested function is performed.

The two-way audio exchange between the voice mail system and the client Webtalker telephone, together with the facility for the client to send and the voice mail system to accept identifiers corresponding to DTMF tones, provide a full function voice mail service, thereby allowing (for example) client 1 to leave a voice mail message for client 2, when client 2 is not logged onto the Internet to personally receive a telephone call. It will be appreciated that voice mail system 610 can typ-

ically accept many incoming calls simultaneously. Indeed, unlike conventional operation of a voice mail system, which is limited by a predetermined number of telephone ports, there is not necessarily any hard limit on the number of software Internet calls which can be handled at the same time (rather, as the number of calls increase, performance will eventually start to degrade, due to the finite processing power available at the voice mail system, or the limited bandwidth of the voice mail Internet connection, or both).

Once a voice mail message has been stored within the voice mail system 610, then there are several possible mechanisms for retrieving it. Firstly, the message can be retrieved in conventional fashion over the normal telephone network. Thus the user simply dials the telephone number associated with the voice mail system, and can then access any messages they have by responding to appropriate prompts, and (generally) entering a password.

Another possibility is that the message can be retrieved over the Internet using a Web browser with audio capability. This can be implemented by having the voice mail system act as a WWW site, with universal resource locators pointing to a user mailbox, and the mail messages within. This approach is described in more detail in PCT application PCT/GB95/02009, and is also provided by the currently available release of the DirectTalk/6000 and DirectTalkMail products (see the manual IBM AIX DirectTalkMail Administration, reference SC33-1733-00). As a slight variation on the approach described therein, once a message has been selected, the Web browser may also provide the option of having this message delivered to the user's Internet telephone system (which will generally be running on the same machine as the browser). It may be advantageous to have the Internet telephone system play the message (rather than the browser itself), for example because the former allows the message to be subsequently forwarded, or will allow the caller's address to be stored in the user's directory.

The preferred embodiment provides another possibility, that of accessing the stored voice mail message from a WebTalker telephone. Thus as part of its start-up procedure, the WebTalker telephone interrogates the voice mail system associated with that client (this can be specified as part of the set-up procedure). The Webtalker telephone client therefore sends a query to the voice mail system, which is received by the WebTalker interface component and passed into the DirectTalkMail system. The DirectTalkMail system then identifies the mailbox corresponding to the specified Internet address for that client, and returns an indication of whether or not there are any new messages for that user. This indication is returned by the WebTalker interface component to the requesting WebTalker telephone, and if positive, the message waiting indicator on the WebTalker telephone client screen is activated (eg by highlighting or making a different colour).

In order to access the voice messages, the client Internet telephone then places a call over the Internet to the voice mail system. This is done by simply pressing the voice mail button, which automatically dials the default voice mail system for that client. This establishes a two-way audio call between the client Internet telephone and the voice mail system. The call can now proceed in analogous fashion to that described above for entering a voice message into the system. Again, the voice mail system plays various prompts to the user, who is provided with a simulated DTMF keypad on his or her screen. The user selects the desired button, and can navigate through the voice mail system, including typically some password protection, to obtain access to their voice mail, which can then be played out to them over the Internet. Thus the user can have immediate access to their voice mail, either via the conventional telephone network, or from any location on the Internet.

It will be appreciated that many variations on the above approach are possible. For example, instead of using a simulated DTMF keypad for inputting control commands, it may be possible to include a voice recognition facility with the voice mail system to allow a client to simply speak his or her desired choice. Another possibility is for all prompts from the voice mail system to be available for transmission in text form to a client, and displayed there textually or graphically, eg perhaps using a menu structure, thereby significantly reducing bandwidth requirements and overall delay. It is also possible for DirectTalkMail to exploit the enhanced user interface of the client (compared to a conventional telephone) to provide information in a more convenient format to the client. For example, rather than asking a user to "Press 1 to hear messages" (say), the system might simply display the command "Listen to messages", with associated button. Selecting this button would then result in the voice mail system taking the same action as if a "1" had been pressed on a conventional telephone. The enhanced capabilities of the screen interface may be further exploited to provide the user with features that are not directly available when calling from a conventional telephone. For example, the voice mail system could send a text list of stored messages, together with information such as the sender of the message, to allow a user to immediately assess all his or her outstanding messages (nb this is the approach taken with the voice mail Web browser access described above).

It will be appreciated that although the systems described so far transmit telephone calls entirely over the Internet, for some Internet telephone systems it is in fact possible to make hybrid telephone calls. In these cases the originating or destination telephone may in fact be a conventional telephone, with one or more servers acting as interface units between the Internet and the conventional telephone network (indeed, the voice mail system itself may possibly be so connected). As used herein, the term "Internet telephone" is generally meant to cover such systems, and references to transmission

over the Internet may include transmission over the conventional telephone network along some of the route.

It is possible for the voice mail service described above to be invoked not only when the called party is not logged onto the Internet, but even when they are logged on, but unable or unwilling to accept the call at the time that it is received. This would avoid the need for an Internet telephone to provide a local voice mail service. In this case, the Internet telephone, in refusing to accept a call, could transmit back to the calling party the Internet address of its preferred voice mail system.

There are also many possibilities for the action to be taken by the voice mail system on receipt of an incoming voice message. For example, it might try to page the intended recipient, or possibly place a telephone call through to them at a previously indicated location. Another possibility is to send an email notification to them, to be read next time they log on to the Internet.

It will be recognised that one of the drawbacks with current Internet telephones is that systems from different vendors are generally incompatible with one another. Although efforts are being made to provide standardisation, it will be noted that the voice mail system of the present invention may easily be adapted to support multiple formats. The simplest way of achieving this is to have software which is the equivalent of the WebTalker interface 750 and communications layer 760 for each different telephone format, with incoming/outgoing calls being identified and passed to the correct interface software.

An important aspect of the invention is that allows a subscriber to maintain a single voice mailbox, accessible either over the Internet, or the conventional telephone network. Thus a user has only a single greeting response to maintain (eg to inform callers if the user is eg in a meeting, away on vacation, or whatever). Furthermore, voice mail messages may be treated in exactly the same manner, whether received over the Internet or conventional telephone network, and whether accessed and retrieved via the Internet or the conventional telephone network. For example, when a user may notified of the number or existence of new or stored messages, without any distinction as to the origin receipt mechanism of the messages. The voice mail system of the invention therefore offers the user greater power and flexibility, without any corresponding increase in complexity.

Claims

1. A method of providing voice mail on the Internet comprising the steps of:

selecting to make a call from a first user at a first Internet telephone system to a second user at a second Internet telephone system;
determining that said second Internet tele-

phone system is not currently logged onto the Internet to receive said call; and
transmitting a voice message for said second user over the Internet to a voice mail system distinct from said second Internet telephone system for subsequent retrieval by said second user.

2. The method of claim 1, wherein responsive to a determination that the second Internet telephone system is not currently logged onto the Internet, the first user at the first Internet telephone system is offered a choice of whether or not to leave a voice message for the second user.
3. The method of claim 1 or 2, further comprising the step of establishing a communications link over the Internet between the first Internet telephone system and the voice mail system in order to transmit the voice message for said second user.
4. The method of claim 3, wherein said communications link permits two-way communications, and the voice mail system transmits to the first user one or more prompts or greetings prior to transmission of the message for the second user to the voice mail system.
5. The method of claim 4, wherein said one or more prompts or greetings include information concerning the current location and availability of the second user.
6. The method of claim 4, wherein said information concerning the current location and availability of the second user is also heard if the voice mail system is accessed by the conventional telephone network.
7. The method of any preceding claim, wherein said voice message can be retrieved by the second user either using an Internet telephone over the Internet, or by using a conventional telephone over the conventional phone network.
8. The method of any preceding claim, wherein said second user needs to supply a password to the voice mail system prior to retrieval of said voice message.
9. The method of any preceding claim, further comprising the step of the voice mail system providing said second user of said second Internet telephone with an indication that he or she has a voice mail message waiting next time said second user logs on to the Internet using an Internet telephone.
10. The method of claim 9, wherein said indication is

provided in response to a request from the Internet telephone, which is transmitted from the Internet telephone to the voice mail system at start-up time.

11. The method of claim 9 or 10, wherein said indication is provided irrespective of whether said voice mail message was received over the Internet or over the conventional telephone network.

12. A telephone system for making a telephone call over the Internet, including:

means for allowing a first user at said system to select a second user at a second Internet telephone system to call;

means for determining that said second Internet telephone system is not currently logged onto the Internet to receive said call; and

means for transmitting a voice message for said second user over the Internet to a voice mail system distinct from said second Internet telephone system for subsequent retrieval by said second user.

13. The telephone system of claim 12, further including means responsive to a determination that the second Internet telephone system is not currently logged onto the Internet, for offering the first user the option of leaving a voice message for the second user.

14. The telephone system of claim 12 or 13, further including means for establishing a communications link over the Internet to a voice mail system associated with said second user in order to transmit a voice message for said second user.

15. The telephone system of claim 14, wherein said communications link permits two-way communications to allow said first user to receive one or more prompts or greetings prior to transmission of the message for the second user.

16. The telephone system of claim 15, further including means for displaying one or more prompts or greetings to said first user in textual or graphical form.

17. The telephone system of any of claims 12 to 15, further including means for receiving from the voice mail system information that said first user has one or more new messages in the voice mail system, and means for providing a visual indication accordingly to said first user.

18. The telephone system of claim 17, further including means responsive to the start-up of said telephone system for sending a request to the voice mail system in order to receive said information whether the

first user has one or more new messages.

19. A voice mail system including:

means for receiving a voice message for over the Internet;

means for storing said voice message;

means for allowing said message to be retrieved over the Internet; and means for allowing said message to be retrieved over the conventional telephone network.

20. The voice mail system of claim 19, further comprising means for transmitting one or more prompts or greetings prior to receipt or retrieval of a voice message over the Internet.

21. The voice mail system of claim 20, wherein said one or more prompts or greetings transmitted prior to receipt of a voice message over the Internet include information concerning the current location and availability of the second user.

22. The voice mail system of any of claims 19 to 21, further including means for receiving a voice message over the conventional telephone network.

23. The voice mail system of any of claims 19 to 22, wherein said means for receiving a voice message over the Internet includes means for receiving a voice signal in compressed form split into a plurality of packets, and means for assembling the voice signal and decompressing it into said voice message.

24. The voice mail system of any of claims 19 to 23, wherein said means for allowing a voice message to be retrieved over the Internet includes means for compressing the message and packetising it prior to transmission over the Internet.

25. The voice mail system of any of claims 19 to 24, further including means for providing an indication to a subscriber that he or she has one or more voice mail messages waiting.

26. The voice mail system of claim 25, wherein said indication includes both voice messages received over the Internet, and voice messages received over the conventional telephone network.

27. The voice mail system of claim 25 or 26, wherein said indication is provided to a subscriber using an Internet telephone system in response to a query received over the Internet from said system.

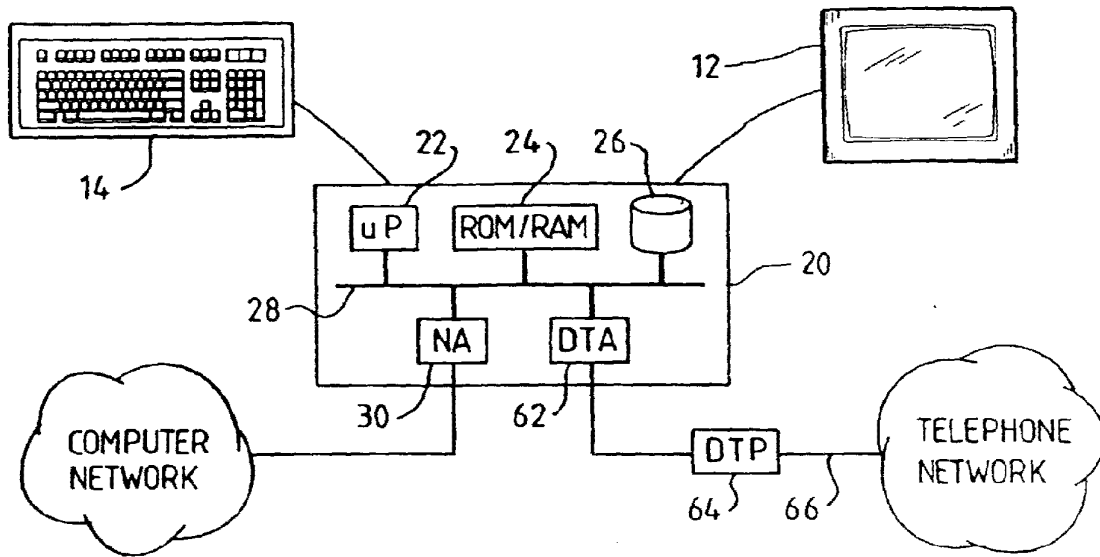


FIG. 1

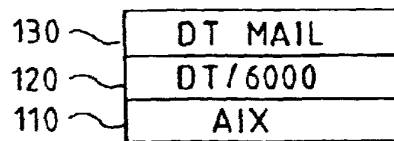


FIG. 2

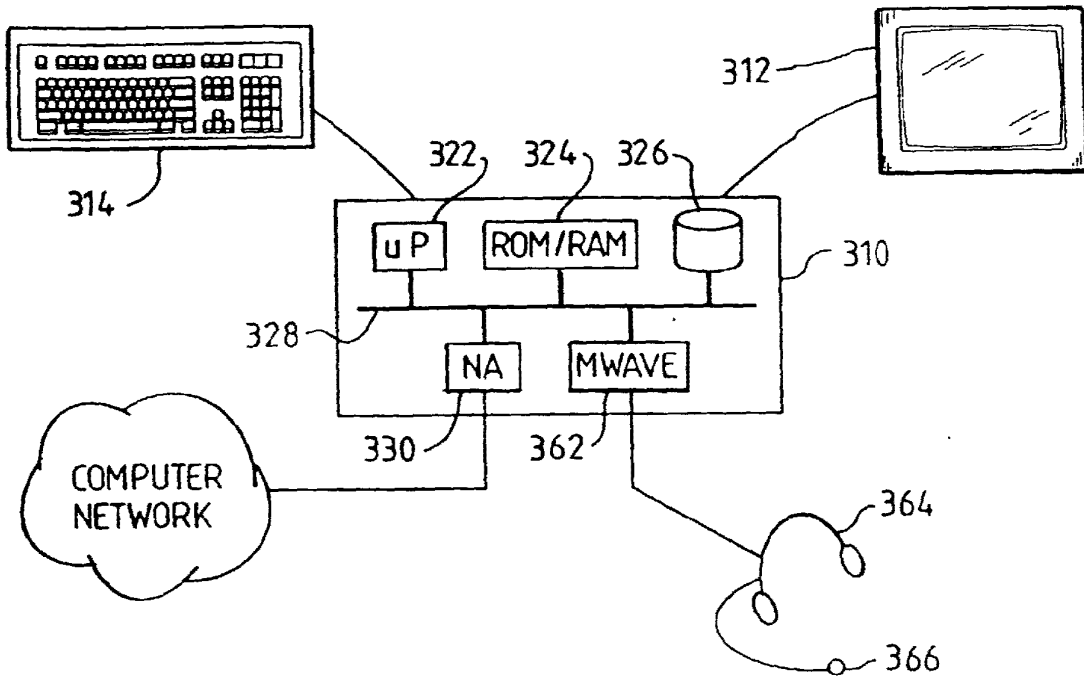


FIG. 3

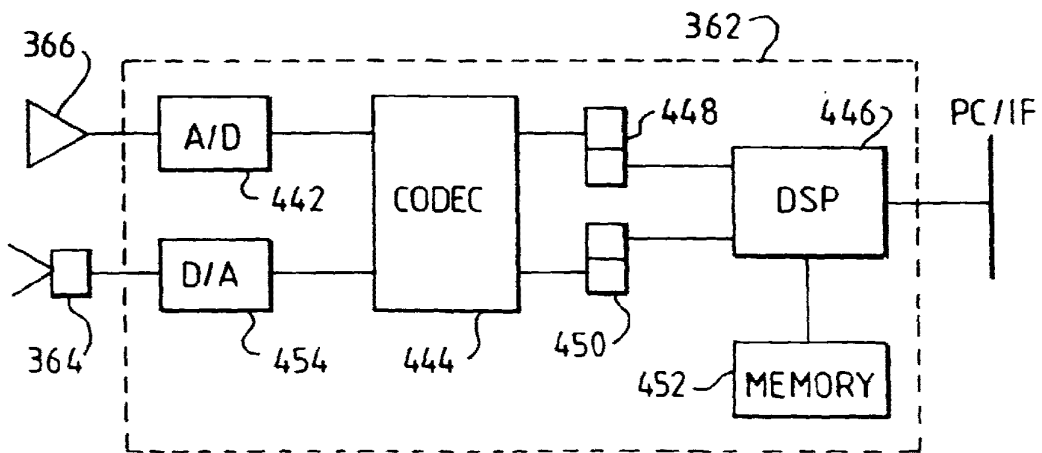


FIG. 4

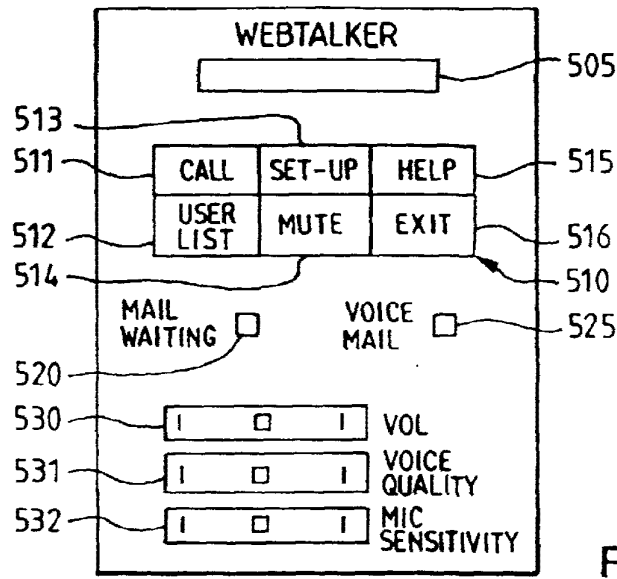


FIG. 5

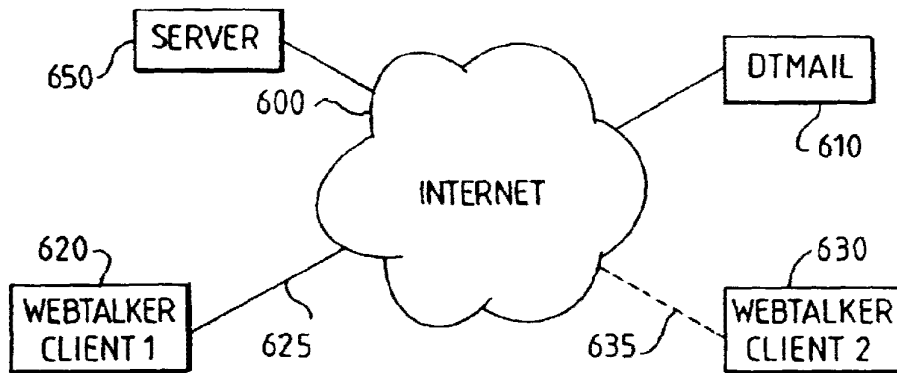


FIG. 6

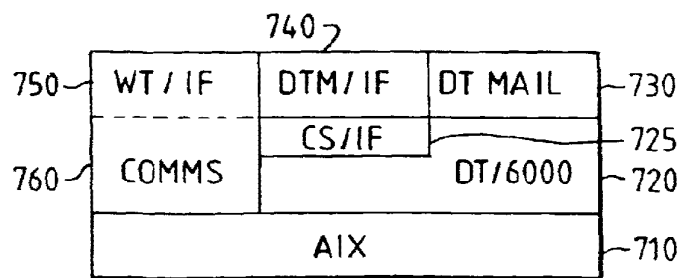


FIG. 7



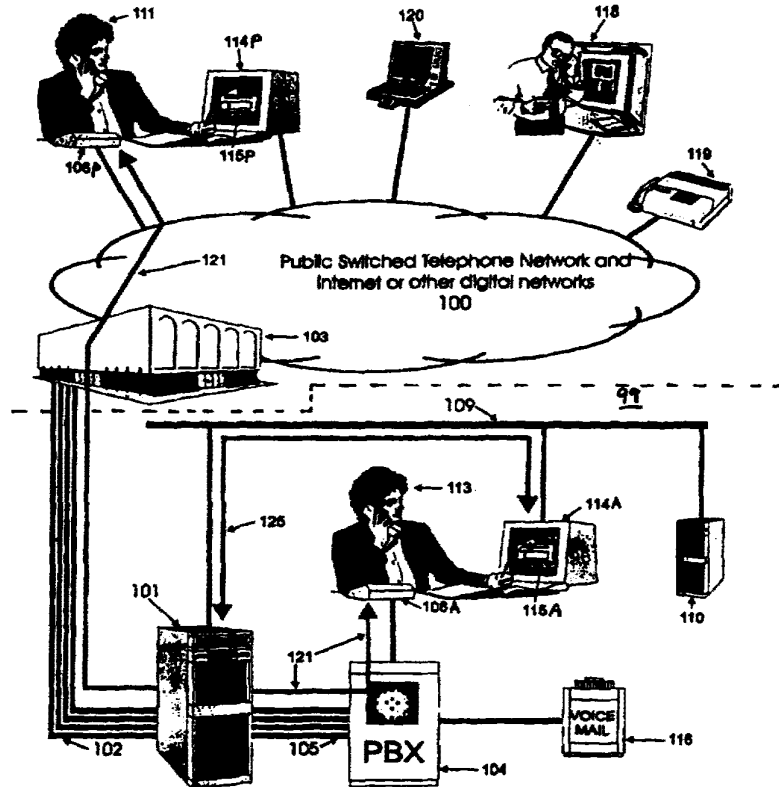
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(54) Title: CALL MANAGEMENT SYSTEM WITH CALL CONTROL FROM USER WORKSTATION COMPUTERS

(57) Abstract

A Call Management System (99) provides for management of calls directly by system users (106A or 106P) at their workstation computers (114A or 114P) via a digital data network (125) such as a digital network not controlled via the user's telephone instruments (106A or 106P) as in prior systems. A call management computer (101) intercepts incoming calls and controls the handling of such calls according to instructions received from the users' workstations, which are accessed via the digital data network (125).



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CALL MANAGEMENT SYSTEM WITH CALL CONTROL
FROM USER WORKSTATION COMPUTERS

BACKGROUND OF THE INVENTION

This invention pertains to telephone switching systems
5 in general.

Business communication has taken two separate paths.
One involves telephone conversations and the other involving
computer communication.

Until now, business telephone communications have been
10 based upon the approach that each individual controls his
own call traffic through multiple buttons on proprietary
telephone instruments and/or simple commands entered through
"hookflash" or the telephone keypad. Further, the
architecture and philosophy applied to business PBXs or
15 other telephone switches is limited to the "switching" of
calls, such as incoming calls, to internal stations or
internal stations to internal stations. This approach
strictly avoids operation based upon "call content" such as
the type of call, from whom it originates, etc. The limited
20 capabilities of the multi-button telephone instruments and
the lack of awareness of call content severely restrict the
capabilities and features available and thus reduce the
overall effectiveness of the business telephone systems of
the past.

25 The focus of computer technology has become the desktop
workstation computer attached to one or more business
enterprise-wide, high-speed digital networks which
interconnect the workstation computers of business

enterprise's employees with a variety of information servers, communications and computing devices. The business enterprise's digital network may be a combination of Local Area Networks LANs and Wide Area Networks WANs attached
5 together via a variety of transmission media augmented by the Internet. These corporate communications worlds, i.e., business enterprise's digital networks and the public switched telephone network PSTN remain separate and distinct until now.

10 SUMMARY OF THE INVENTION

In accordance with the invention, a Call Management System is provided for handling business communications. The system alters the architecture and philosophy of the past, providing the users an array of new features and
15 functions and expanded existing features.

A Call Management System provides for the real-time management of incoming voice calls by called parties. Real-time call management enables the called party to know who is calling before the call is accepted and, thus, to establish
20 the likely priority of the call and decide how best to handle the call before his telephone rings. This method of call handling is intended to improve significantly the efficiency of the called party's interactions with customers, vendors, coworkers, and others. Each called
25 party is notified via his/her computer terminal of each incoming call and the caller's identity, even when the called party's extension is already busy, allowing the called party to choose the appropriate handling of each

incoming call before ringing the extension (hold, transfer, put through, send to voice mail, etc.

In accordance with the invention, calls to an organization are directly controlled through networked user workstation computers, not telephone instruments, a call management computer intercepts telephone and data trunks which link the business to the telephone provider's central office. The call management computer interacts with and controls telephone and data trunks connecting with the telephone service provider.

The call management computer receives and answers all calls from the telephone provider's central office, determines the type of call voice, fax, data, determines for whom the call is intended the called party, and proactively determines who is the calling party. This information determines how the call will be handled. Proactive caller identification is used to identify the caller by interacting directly with the caller to obtain an identifiable telephone number or the caller's spoken voice which are then identified through specialized primary or secondary Caller ID databases or a voice name database.

Call alert information is transferred via operator or digital network interconnecting workstation computer to the called party's workstation, even when the called party's telephone extension is busy. The called party instructs the call management computer via the digital network what to do with the calls in progress .

The call management computer also provides for call handling rules to be defined by the business organization or by the system users. These rules, called "VIP rules", are an adjunct to the called party's direct control and provide
5 for special handling of important individuals, groups or even for all callers.

The call management computer either receives control commands from the called party or operates in accordance with an appropriate VIP rule and responds to the calling
10 party accordingly by, for example, playing out recorded voice messages, receiving additional information from the caller, transferring the call to the called party, to voice mail or elsewhere either within or outside the organization.

One significant advantage of the Call Management System
15 is that it provides system users with the many unique features and functions while requiring nothing more than simple "POTS" (plain old telephone service) telephones or headsets instead of expensive multi-button proprietary business telephone instruments.

20 The Call Management System also functions as an outbound call processor, working in conjunction with software in each user's workstation to provide outbound call processing services. The personal call logs can be reviewed by a user and used to return missed phone calls through a
25 point-and-click interface. A database containing caller identification information may also be used on-line for outdialing calls to selected people, all without the need for manual dialing.

The Call Management System creates reusable "voice pathways" from the call management computer to the called party when it is appropriate to put a call through to a destination because of user selection or VIP rule processing. Voice pathways, once created, are reused repeatedly so long as the destination has calls in process. This enables rapid switching between calls with only the click of a workstation mouse and avoids the typical operation of establishing and tearing down entire calls in order to switch between them.

Real-time protocol conversion is provided between central office trunks and PBX trunks of the Call Management System. This allows the system to receive new or different types of services from the telephone provider while still connecting to and utilizing existing telephone systems which cannot otherwise accept the new capabilities directly. It also permits the Call Management System to utilize directly the user's telephone instruments or headsets, removing the need for a separate PBX or other switch. "Conversion" between different trunk circuits allows the system's many new features and functions to be implemented without upgrade of the organization's legacy PBX or other switch or alternatively as a replacement for an existing PBX.

The system monitors and controls the individual trunk circuits obtaining call content information and directly interacts with the caller to handle voice, Fax and data calls automatically in any combination.

A Call Management System in accordance with the invention treats all calls external and internal in the same way, allowing the transferring and conferencing of calls from inside to outside, outside to outside, or in any other combination. This removes the historical limitations on the handling of calls depending upon their source.

The Call Management System provides for the use of a single unique telephone number for each user. This "one number" is used to receive, identify and automatically handle all the user's voice, fax and data calls, one or several at a time using multiple trunk circuits. The use of only one number per user significantly reduces the costs, complexity, inefficiency and confusion of having multiple different telephone numbers for different functions.

Proactive caller identification is provided by using direct system interactions with the calling party. Predetermined messages and acquired responses are used to identify the caller for the called party. This provides the system user and call management system with knowledge of who each caller is so that appropriate priority and special handling can be applied to each call.

Specialized databases containing caller information are used to identify callers as part of Proactive Caller Identification.

The call management computer automatically answers each call, identifies the called party, determines the call type and identifies the calling party. The call management computer alerts the called party system users through the

organization's local area or wide area networks or via the Internet, providing the called party direct call control via their workstation.

Users may utilize the call management system from
5 remote locations having the same features and functions as though they were onsite.

A system user can handle multiple calls at the same time, knowing who each caller is and applying appropriate priority to each call, eliminating "voice-mail-jail" since
10 only humans, not machines, send callers to voice mail and reducing the incidence of "telephone tag". This capability improves the user's ability to service multiple customers at the same time, as well as saves the time and costs of the otherwise inevitable "telephone tag".

15 In accordance with the invention, certain callers may be identified as "VIP" callers. When an incoming call is identified as originating from a VIP caller, special handling of the call is initiated. The special handling may include personalized voice messages in the user's own voice,
20 user-generated voice "menus" for the caller, receipt of and routing based on caller-entered information, special call rerouting inside or outside, including "follow me" and "find-me" rerouting of the call to the user, even when the user is out of the office, and/or a distinctive ringing
25 sound to alert the user. "Page me" or "Beep me" features are also included, even for calls which are routed to voice mail or elsewhere.

The system routes or conferences calls from any station directly connected to the system, connected to the system via a PBX or other switch, or connected to the system via the public service telephone network or via Internet. The
5 Call Management System views all sources and destinations as equivalent, only differing in their technological access requirements.

"Call tags" which may be digital, text or voice messages, may be attached to voice calls by any system user
10 to provide additional information to other system users to whom the call may be transferred or conferenced.

The Call Management System identifies and automatically receives Fax and data calls directed to each individual system user. Once received and stored in the call
15 management database, the user is alerted to the presence of the file and allowed to transfer it to his/her workstation for further examination or use. Likewise, Faxes or data files can be sent to selected or specified receivers through the Call Management System with individualized Fax banner
20 information for each user.

Summaries are maintained of all incoming and outgoing calls in an interactive, real-time, user-accessible "call log" portion of the Call Management Databases, allowing the called party to know who called, when they called, which
25 calls were missed even if no voice mail or other form of message was left, and to return calls automatically through simple mouse clicks.

A single telephone call can retrieve voice messages, e-mail, Fax and data messages even though in different forms and stored in different places. Users are provided a variety of retrieval mechanisms including: sending to a remote Fax machine anywhere in the world, or sending to a remote computer. This improves the ability for traveling and at-home users to stay in touch with all their information and thus their customers and prospects.

Voice mail-jail is prevented because only humans, not machines, send callers to voice mail. The Call Management System transfers callers to voice mail when system users request or because of their VIP rules, it alerts users when voice mail exists for them to hear and it utilizes voice mail access to provide "One-Call Message Retrieval" of user's e-mail, voice mail, Fax, and data.

The Call Management System monitors the current status of all system users and makes status information available to all other system users on demand.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood from a reading of the following detailed description in which like reference numerals designate like elements and to which:

Fig. 1 is a diagram of a Call Management System;

Fig. 2 is a block diagram of a call management computer;

Fig. 3 is a block diagram of a digital signal processor;

Fig. 4 is a detailed block diagram of a portion of the digital signal processor of Fig. 3;

Fig. 5 is a diagram showing how callers are identified;

Figs. 6a through 6e show components of the call management window as they appear at a workstation display;

Fig. 7 shows components of call management windows for VIP rule creation and management;

Fig. 8 shows a Fax handling display;

Figs. 9a and 9b show components of call management windows;

Figs. 10a and 10b show "copper bypass" configurations for Call Management System fault tolerance.

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1. Overview

1.1 General.

Fig. 1 is an overall block diagram of one embodiment of the improved Call Management System, in which call control is provided by the user through a networked workstation computer, not a conventional telephone instrument. Fig. 1 shows the organization's environment with its Local Area Network and/or Wide Area Network (LAN/WAN), an on-site system user with a LAN/WAN based workstation, a PBX or similar switch, voice mail and a call management computer. In Fig. 1, an organization utilizing the Call Management System is clustered at the bottom of the figure and the outside world of callers and system users is clustered at the top. The organization's calls are handled using a call management computer which is placed so as to intercept telephone and data trunks between the telephone provider's central office and the organization's PBX or other switch (or as its replacement). Also shown are a work-at-home system user with workstation connected via the Internet, a voice caller at a pay phone as well as Fax and data callers all connecting through the public switched telephone network.

All central office calls ring directly into the Call Management System, the system has direct access to all information being provided by the central office. Since the system gets the "first look" at all incoming calls, it can direct and process calls according to user requirements.

In the Call Management System of Fig. 1, call control is provided through a user workstation 114 to provide new and improved capabilities for the user and substantially eliminating the shortcomings and disadvantages of past systems.

Fig. 1 shows pictorially the public switched telephone network (PSTN) with voice 118, Fax 119, a call management system 99 coupled to the public switched telephone network 100 through a telephone central office (CO) 103. The call management system 99 includes a PBX or similar switch 104 and connections to user telephone instruments 106. A digital data network 109 attaches to user workstation computers 114a - 114n. The digital data network of the illustrative embodiment is a conventional Local Area Network (LAN) or Wide Area Network (WAN). In Fig. 1, two different types of system users are shown, the first is an in-house user 113 associated with workstation 114a and telephone instrument 106a while a second user is a work-at-home or traveling employee with a workstation or laptop computer 114p attached remotely via the Internet or WAN extension of the LAN 109, through ISDN or otherwise. The PSTN allows access to/from the call management system 101 via voice communication device 118, fax device 119, data 120.

A call management computer 101 is placed so as to attach to five 5 separate interfaces described below.

1.2 CO Trunks.

Call Management System 99 is coupled to central office 103 via Central Office trunks 102 for both voice and data connections.

CO trunks 102 includes a variety of trunks, including analog, DID, ISDN, T-1, DID over T-1, 800/900 T-1 services, data, and Internet. The central office 103 is interconnected within the public switched telephone network 100 via Local Exchange Carriers, Inter-exchange long-distance Carriers, Cable companies, RF or satellite carriers, digital Internet providers or any other types of voice or data carriers. CO trunks 102 may include multiple individual "circuits" ISDN, T-1, etc. which carry voice and/or data for individual calls.

Voice calls over Internet and similar means are processed utilizing conventional digital techniques but are then fed into the system as though they were voice trunks. For the purposes of this description, CO trunks include Internet connections.

Call management computer 101 is configured and programmed to appear to telephone service providers 103 as though it is a business PBX or other business telephone switch and/or an Internet or other data server or node.

1.3 PBX Trunks.

Within the call management system 99, PBX trunks 105 are the means by which the Call Management System 101 provides voice or data connections to system users or workstations or other devices within the business 99. For traveling or work-at-home users 111, access to the outside

using CO trunks is considered just a part of PBX trunk access, e.g., voice calls to an at-home system user's 111 telephone 106p or Internet voice or data connections.

"PBX" includes a variety of different telephone switches including classical private branch exchanges PBXs, 5 automatic call directors ACDs, key telephone sets, or integrated switches within the call management computer 101. Telephone instrument 106a - 106n, as shown as physical telephones but may also include headsets, earpieces, 10 computer sound systems, isochronous network technology such as isoEthernet and ATM, and other means of providing a voice or data connection to a user.

The call management computer 101 may attach to the organization's PBX or other telephone switch 104 through PBX 15 trunks 105. The call management computer can sit in front of virtually any type of switch. No switch-specific hardware or software is required for integration. PBX trunks 105 may be analog, DID, DISA, ISDN, T-1, DID over T-1, 800/900 T-1 services or other available types. in all 20 available variations and combinations. In addition, the call management computer 101 may be connected directly to the organization's telephone instruments 106a - 106n or directly to the user's workstation 114a - 114n for voice or data connections in place of a switch 104.

25 PBX trunks may or may not be of the same kind and/or number as the CO trunks 102. The Call Management System may provide a one-to-one direct relationship between CO trunks 102 and PBX trunks 105 or it may provide protocol

"conversion" between differing CO and PBX trunk types and/or numbers. PBX trunks also include direct connections to the user's telephone instruments 106.

The call management computer 101 is so configured and
5 programmed that it appears to the business PBX or other switch as though it is a central office and/or it appears to the direct telephone instruments 106a - 106n as though it is a business PBX switch such as 104.

1.4 DSP Processing & Switching.

10 Trunk interfaces 203, 206, circuit switches 204 and DSP digital signal processors 208 interact with and control the CO and PBX trunks under the overall control of the call management computer 101.

All CO trunks 102 and PBX trunks 105 are attached to
15 the call management system through appropriate trunk interfaces 203 and PBX trunk interfaces 206. The interfaced trunk signals are further attached through circuit switches 204 and high-speed telephony buses 210 to each other and to special DSP's 208.

20 The configuration of the call management computer 101 with individual interface boards 203, circuit switches 204, DSP processors 208 and the high-speed buses 210 provide means for real-time sensing, switching and management of calls and the means for the call management computer 101 to
25 appear to the central office 103, through the CO trunks 102, 202, as a business PBX 104 or other switch and/or a server computer for data functions. This configuration further permits computer 101 to appear to the business PBX or other

switch 104 or to the user's telephone instrument through the PBX trunks 105, 205 as a central office switch such as 103 and/or a data server.

1.5 Digital Data Networks.

5 Notification of events and control over multiple calls is accomplished independently of the organization's PBX or other switch system even if the user's telephone instrument 106a - 106n is currently busy because the digital networks 109 are separate from and independent of the user's
10 telephone instrument 106 or telephone system 104.

The call management computer 101 attaches to the organization's digital data network including a LAN as well as Internet and/or other external WAN networks such as Internet via interfaces 209, 213 and 214, through which it
15 has immediate access to the user workstations, whether in-the-office 113 or at the site of a remote user 111. These networks operate independent of whether the user's telephone instrument 106 is busy or not. The digital networks 109 are used by the call management computer 101 to alert called
20 users such as users 111 and 113 to incoming voice calls and newly received Fax, voice or data messages and for receiving back user controls of all types from the user's workstation 114. In addition the digital networks 109 provides access to the organization's LAN server computers 110 for e-mail,
25 voice mail, database, Internet access and other services.

1.6 Call Management Databases.

The call management system 101 utilizes a variety of interactive call management databases 215 for functions

including: system and user configurations, primary and secondary caller identifications and voice caller identification, VIP rules, phone directories, Fax and data file storage, voice message storage, user-accessible call logs and many other functions. These on-line, real-time databases 215 may reside on the call management computer 101 itself or elsewhere on the digital network, e.g., on a LAN-based database server 110.

The Call Management System structure of the embodiment includes call management computer 101, the CO Trunks 102, the PBX Trunks 105, the trunk interfaces 203, circuit switching 204 and DSP processing 208, the organization's digital network(s) 109, 209 and the call management databases 215. However, implementation may be in various combined or extended ways, such as when the call management computer 101 is built into the central office 103 or into a PBX or similar switch 104. The call management computer 101 may replace the PBX and control the organization's telephone instruments 106 directly.

1.7 Call Management Computer.

The call management computer 101 is configured as shown in Fig. 2. It is based on an industry-standard computer with processors, memory, power supply and cabinetry. The computer 101 is coupled to a data bus 211. The data bus has connections to LAN interface 209 and disk memory which stores Call Management Databases 215. The databases may alternatively reside on the digital network system 109. The data bus 211 is connected to interfaces for Digital Internet

connections 213 and bulk calling line identification BCLID data link 214 to the central office.

The telephony subsystem ties together the CO trunk 102 and PBX trunks 105 through their specific trunk interfaces 203, 206 and circuit switches 204 to the telephony signal buses 210. Each of the trunk interfaces 203, 206 is also coupled to the computer data bus 211, through which the computer processors 201 receive information and provide control and data to both the CO trunk interface 203 and its circuit switches 204. The DSP digital signal processors 208 include multiple DSPs. The multiple DSPs as needed are attached to the telephony signal buses 210 through switches 204 and to the computer data bus 211 through which they provide information to the computer processor 201 and receive back control and data e.g. voice messages to play out to the caller. For voice-over-Internet or similar digital connections, voice interface board 207 is connected to the computer data bus 211 and through its own circuit switches 204 to the telephony signal bus 210, through which the voice connections can be made to/from any telephone instrument 106.

1.8 Call Reception.

Typical call paths 121, 221 are shown on Figs. 1 and 2. The in-band call information from central office 103 is sent through a CO trunk 102 to the call management computer 101 where it attaches through an appropriate CO trunk interface 203 and circuit switch 204 to the telephony signal buses 210. For each trunk/circuit, the call management system

assigns one or more DSP processors 208 connected to the telephony signal bus 210, to provide a monitoring and control link 219 for that call.

An incoming call such as from the payphone caller 118 or the Fax caller 119 or data callers 120 is routed through the PSTN 100 to the central office 103 and then to the call management system 99 through a CO trunk 102. The assigned DSP 208 and/or CO interfaces 203 monitor for an incoming call analog or digital signals in any available form, appropriate to the type of trunk and/or circuit.

When the call is presented by the CO 103, the call setup commands are recognized through the trunk interface 203 or through the associated DSP 208 and the call management computer processors 201 receives this information via the trunk interface 203 or DSP 208 connections to the computer signal buses 211. Control signals from the call management computer 101 then cause the call to be answered via the same route according to the trunk and circuit type.

At this point in the process, a first call path segment 221a to a DSP monitoring and control link 219 for the trunk and circuit terminates at the assigned DSP 208.

Connections to a system user 113 are created by the call management computer 101 selecting an available, appropriate CO trunk inbound 105 and establishing a call to the PBX 104 or to remote system users over additional trunk 102 to the central office 103. The PBX 104 or CO 103 responds to the call setup commands depending upon the type of trunk and circuit (including voice-over-Internet and

other digital services). These are sensed by the trunk interface 203 or 206 or the assigned DSP 208 and passed to the call management computer 101. Call management computer 101 then controls the appropriate circuit switches 204 to
5 connect the voice pathway from the calling party 118 to the voice pathway to the called party's 113 telephone instrument 106 or via a second call path segment which includes segment 218 and call path segment 221b, leaving the assigned DSP 208 attached to continue providing the DSP monitoring and
10 control link 219.

The call is then put through in a conventional manner by the PBX 104 or CO 103 to the called party's 113 or 111 telephone instrument 106a or 106p where it rings and is answered by the called party 113 or 111 completing the
15 connection between the caller 118 and the called party 113, 111. The typical call path 221 with the associated DSP monitoring and control link 219 is then completed as shown. The voice pathway so created may be reused as described below.

20 The CO trunk interfaces 203 and PBX trunk interfaces 200 and assigned DSP 208 remain active throughout a call or series of calls to a destination, watching for either end to terminate the call, by hanging up the telephone instrument, or otherwise changing the call state while the call
25 management computer 101 watches for the system users 111, 113 to select a command changing the call's state.

1.9 Call Origination.

Calls are originated by system users through their workstation 114. Such originated calls may be destined to any system user 113, 111, a non-system user, or anywhere else in the PSTN 100. Depending upon the destination, the call management computer 101 selects an available, appropriate CO trunk 102 or PBX trunk 105 and establishes the call to the CO 103 or to the PBX 104 or the telephone instrument 106 using appropriate signaling techniques for that trunk or circuit. The call management computer 101 then instructs the circuit switches 204 to connect the call circuits together, "bridging" the originator to the destination and creating the typical call path 118 in Fig. 1 and DSP monitoring and control link 119 as shown in Fig. 2.

The CO trunk interface 203, the PBX trunk interface 206 and assigned DSP 208 remain active throughout each call, monitoring for either end to terminate the call, by hanging up the telephone instrument, or otherwise to change the call state while the call management computer 101 monitors for the system user 111, 113 to select a command changing the call's state.

The call management computer 101 manages the available, appropriate CO and PBX trunks 102, 202, 105, 205 so as to share between non-system user calls established from the PBX or telephone instruments and system user 113, 111 calls established by itself.

The call management computer software runs under Microsoft's Windows NT operating system, a multi-threading,

multi-tasking operating system required by the real-time call management aspects of the system. The Call Management System may be configured as a "client" to the organization's existing digital networks or as a "server" when

5 incorporating Internet or other server functions for the digital network(s).

1.10 "One Number" Processing.

For system users 111, 113, the Call Management System uses only a single DID (direct in dial) or extension number
10 to receive all calls, voice, fax or data in any mixture and number within the limit of the number of available trunks and circuits at any time or all at the same time. The call management computer 101 is programmed to sort them out and handle each appropriately.

15 1.11 Called Party Identification.

After a call is received, the call management computer 101 determines a destination party for the call, either automatically through reception of DID, DNIS (dialed number identification service), ISDN or other signals or messages
20 from the central office 103 as detected by the trunk interface 203 or the assigned DSP 208 or, alternatively, a call attendant feature of the Call Management System.

In Call Attendant mode, the call management computer 101 instructs the DSP 208 to play out one or more voice
25 messages from the call management database 215 asking the caller 118 to identify the destination party by name, spelling, extension number or otherwise. The DSP 208 receives the information from the calling party 118 and

passes it to the call management computer 101 where the called party 111 or 113 is identified through the digits entered, through voice recognition or otherwise. The called party's extension number is found or verified using the call management database 215.

For voice over Internet or similar techniques, the caller is provided and fills in a "form" which includes: the name of the caller, the name of the called party and other appropriate information.

1.12 Call Type.

The incoming call type voice, Fax or data is also determined using the DSP 208, which searches for appropriate signaling from the call source 118 e.g. none for voice, or CNG for Fax, specified DTMF, carrier or other signals for data whether files, video data, video conferencing, etc. in analog or digital form.

For non-voice calls to system users, the attached DSP 208 is instructed to switch to the appropriate Fax or data mode and to receive the transmission automatically for storage in the call management database 215 and later use by the called party 111, 113 or to transfer the call automatically to an appropriate extension, e.g., for video conferencing.

1.13 Proactive Caller Identification.

The identity of the voice caller 118 is determined either automatically through reception of Caller ID, ISDN, ANI, BCLID or other information from the central office 103 as received by the trunk interface 203, the assigned DSP

208, the BCLID data link 214 or otherwise. Depending upon what information was received, if any, Proactive Caller Identification may then use direct interaction with the caller 118 and the Caller ID databases 215 for additional
5 information. Proactive Caller Identification is described in Section 6 and the Caller ID databases are described in Section 7.

1.14 VIP Rules.

Specific rules, called "VIP rules", are created to
10 specify special handling for important callers, sets of callers or even for all callers. These VIP rules precede and augment direct user controls and are described in Section 10.

1.15 Notification and Control via the Called Party's 15 Workstation Computer.

Voice calls destined for system users either working in the office 113 or outside the office 111 are handled by alerting the called party at his workstation 114 through sending a message from the call management computer 101
20 across the digital network 109 to the user's workstation 114 and thus to the user's call management window 115 which "pops up" onto the user's workstation screen. The user then controls the call through selections made using his call management window 115 and its subscreens. This procedure,
25 the windows and the user's functions are described in Section 8.

1.16 Call Management.

Once the call type, called party and caller are identified, the call management computer 101, 201 handles these calls based first on any applicable VIP rules and then on commands from the user, via their workstation call management window 115. A call is "held" and manipulated by the call management computer 101 throughout answering of a call, identification of the call type, identification of the called party, proactive identification of a calling party, playing out messages to the caller, receiving information received from the caller, VIP rule handling and/or notification of the called party 113. The typical call pathway 221, 219 is terminated at the assigned DSP 208 and is not passed beyond.

Some of the call functions which may be exercised by a system user are described in the following paragraphs insofar as what happens with the call management computer 101. Detailed descriptions of the call management window 115 and the user's functions, controls and management using their workstation 114 are provided in Section 8.

1.17 "Answer" a Call.

A system user such as user 111 or 113, may select the "Answer" function for a call announcement. If the user has no calls currently active, the call management computer 101 selects an available CO trunk (inbound trunk 105 for user 113 or outbound trunk 102, for user 111) and establishes a call to the PBX 104 or the central office 103. The PBX 104 or central office 103 responds to call setup commands depending upon the type of trunk and circuit. Call set up

signaling is sensed by the trunk interface 203 or 206 or an assigned DSP 208 and passed to the call management computer 101 which then controls the appropriate circuit switches 204 to connect the voice pathway from the calling party 118 to
5 the voice pathway 121 to the called party's 113 or 111 telephone instrument 106a or 106p, leaving the assigned DSP 208 attached as well to continue providing the DSP monitoring and control link 219.

The call is then processed conventionally by the PBX or
10 CO to connect to the called party's 113 or 111 telephone instrument 106a or 106b where it rings and is answered by the called party 113 or 111 to complete the connection between the caller 118 and the called party 113 or 111. The typical call path 221 with the associated DSP monitoring and
15 control link 219 is then completed as shown. The voice pathways so created may be reused as described in Section 2.

For cases where the Call Management System is connected in the central office 103 and replaces the PBX and controls the telephone instruments directly, the process is basically
20 the same.

If a system user such as user 113 or user 111 currently has an active call, the voice pathway 121 already exists and the user's current call will be moved to "hold" or "hang Up" mode as defined by the user and the voice pathway switched
25 immediately to the new caller (see "Transfer" below).

The CO trunk interfaces 203 and PBX trunk interfaces 206 and assigned DSP 208 remain active throughout a call or series of calls to a destination, monitoring for termination

of the call by either end through hanging up the telephone instrument or otherwise changing the call state. Call management computer 101 monitors for the system users 111 or 113 to identify selection of a command from the user's call management window 115 to change the call's state.

1.18 "Transfer".

The "Transfer" function is used to cause a received call to be transferred to another destination either inside the business 99 or to any destination coupled to the PSTN 100. Transferring a call requires the user to select a "Speed-Transfer" button or a "Transfer" screen from which he may select a destination from a directory or the user may type in the phone number to use for the destination.

To transfer a call to another destination, the call management computer 101 receives a transfer message from a user's call management window 115 via the digital networks 109, the call management computer 101 instructs switches 204 to disconnect the voice path 121, instructs the appropriate trunk interface 206 to "hang up" the call to the user if appropriate and instructs the DSP 208 to return to call monitoring.

If the new destination is a system user, call management computer 101 checks for any appropriate VIP rules for this calling party and the called party and processes the call as specified by the VP rules. Otherwise, call management computer 101 alerts the called party and awaits user control.

If the destination is not to another system user, the call management computer 101 establishes a new voice pathway to the destination wherever it may be, instructs the appropriate switches 204 to connect the voice pathways together 221 and controls the trunk interface 103, 106 and the DSP 108 to monitor the progress of the call, searching for hang up or change of state at either end.

1.19 "Send to Voice Mail".

One special function provided by the call management window 115 is to send a call to voice mail whether the call is active or not. This is a special variant of the "Transfer" function with a pre-specified destination.

1.20 "Conference".

The Call Management System can conference calls independent of whether the parties are directly coupled to the PBX or are accessed via the central office 103. When a system user 113 selects the "Conference" function for an existing active call or with no active call, he then selects one or more destination parties from the call management window 115 directory and/or types in one or more telephone numbers. The call management window 115 sends a "Conference" message down the organization's digital network(s) 109 to the call management computer 101, 201, whereupon the call management computer 101 alerts the new system users.

As each called system user "Answers" the Conference call, the call management computer 101, 201 creates a new voice path 121, as appropriate, instructs the appropriate

circuit switches 204 to connect the voice paths together to the assigned DSP 208, and instructs the DSPs to combine the signals appropriately to create a conference call.

For "Conference" destinations which are not system users, the call management computer 101, 201 immediately establishes a call to the destination and "bridges" the circuits, as with "Outdial" calls described below.

1.21 "Hold".

A system user can select the "Hold" function for any call currently active. The "Hold" messages are sent by the call management window 115 via the organization's LAN or WAN 109 to the call management computer 101, call management computer 101 instructs the appropriate circuit switches 204 to break both the inbound and outbound portions of the voice path 121 effectively placing a caller on "hold" but providing the user rapid access to the call through simple mouse clicks. During unused time when the calling party would otherwise be waiting, the Call Management System provides "Music on Hold" and/or corporate messages (sales, information, etc.). The caller can terminate any messages at any time by entering a "#".

1.22 "Mute".

A system user can select the "Mute" function for any call currently active. "Mute" messages are relayed via the call management window 115 and sent down the organization's LAN or WAN 109 to the call management computer 101 which instructs the appropriate circuit switches 204 to break just the outbound portion of the voice path from the system user

to the caller leaving the inbound portion active, thus muting the call.

1.23 "Record" and "Playback".

A system user can select the "Record" function for any
5 call currently active. The "Record" messages are relayed
via the call management window 115 and sent via the
organization's digital network(s) 109 to the call management
computer 101 which instructs the assigned DSP 208 to record
the call content, sending it to the call management computer
10 101 which saves it to the Call Management Databases 215 for
future replay.

1.24 "Hang Up".

When either calling or called party terminates a call
by hanging up or by selecting the "Hang Up" function from
15 his call management window 215, the call path 121 is
dismantled by the call management computer 101 instructing
the switches 204 to disconnect the voice path, instructing
the appropriate trunk interface 203 or 206 and/or DSP 208 to
"hang up" the call as appropriate and instructing the DSP to
20 return to searching for a new call. However, either end
currently with new calls waiting is kept active as a re-
usable voice pathway.

1.25 "Outdial".

The users of the system 99 may originate calls to other
25 users located at business 99 or to any numbers outside the
business 99. The user utilizes his/her call control window
115 to identify or type in a destination for the call

internal or external and then instructs the Call Management System to dial to that destination.

Workstation 114 sends the dialing control messages via the digital network(s) 109 to the call management computer 5 101, 201 which, in turn, causes the call to be placed using an available CO or PBX trunk/circuit 102, 105 of the appropriate type through the circuit switches 204. When a call is in process or completed to the destination, a voice path 121 is established to the calling party's telephone 10 instrument 106.

Once established, the system user 11, 113 has available all of the system features for originated calls, as for inbound calls.

1.26 Calls Received for Non-System Users.

15 Calls received for business 99 employees who do not have appropriate workstations or who do not choose to be system users, or for the organization's voice operator and for dedicated Fax machines and other hardware devices are immediately switched by the call management computer 101 to 20 the PBX 104 or telephone number dialed, and are handled conventionally. For such calls, the call management computer 101, 201 selects an available and appropriate PBX trunk 105, establishes a call to the desired extension controls and the circuit switches 204 to connect the voice 25 paths together. DSP 208 monitors progress of the call and monitors for either end to hang up. This process includes protocol conversion features for CO trunk/circuit 102, which are of different type than the PBX trunk/circuit 105.

1.27 Predefined Call Routing.

Fax or data calls received for specified numbers, such as the business's base number, are accepted as though directed to a specified user, e.g., the organization's operator, who is then expected to sort out and the Faxes send them to the appropriate users or print them.

1.28 Calls Originated by Non-System Users.

Calls originated by non-system users, via their PBX or through their telephone instruments controlled directly by the Call Management System, are handled conventionally except that, the call management computer 101 receives the call establishment from the PBX 104 through the PBX trunk/circuit 105 and passes it on to the central office 99 via an available CO trunk circuit 102, connecting the circuits together via appropriate circuit switches 204. The user is unaware of this process and sees no difference from conventional telephone usage.

1.29 Telephone Requirements.

One significant advantage of the Call Management System is that it provides system users the many unique features and functions described here while requiring nothing more than plain old telephone services (POTS) telephones or headsets instead of expensive multi-button proprietary business telephone instruments. None of these features require the telephone instrument to be anything more than just a voice path to the user's ear and mouth.

1.30 International CallBack.

The Call Management System provides a "CallBack" subsystem with which a calling party places a call from a foreign telephone, the system receives the call and telephone number, then terminates the call and immediately
5 dials the caller back at the number received. This process saves significant telephone expenses compared with the costs of calls from many foreign countries.

2. VOICE PATHWAYS

When a call is put through to a system user, the call
10 management computer 101 creates a reusable "voice pathway" 121 to the called party either an in-house user 113 or an external user 111. Voice pathway switching, rather than establishing and tearing down multiple separate calls,
15 provides the ability to switch rapidly between multiple calls, on demand, based on the user's changing priorities through simple point-and-click mouse, keyboard or menu operations.

Fig. 1 shows two re-usable voice pathways 121, one to the "in-house" system user 113 via PBX trunks 105 and the
20 organization's PBX 104 to the user's telephone instrument 106 and another to the "at-home or traveling" system user 111 via a CO trunk/circuit 102 to the central office 103, and then via the PSTN 100 ultimately to the user's telephone instrument 106. Both of these are valid cases, even though
25 they utilize different CO and PBX trunks of any appropriate type. Note that the Call Management System does not care whether the called party is at an in-house extension or is not directly connected to the call management system but is

anywhere reachable via the PSTN or through voice over Internet or some other network.

A voice pathway 121 is created by the call management computer 101 in any of a variety of ways:

- 5 1. Placing a call through the PBX trunks 105 and the organization's PBX 104 or other switch to a called party's extension 106;
2. Activating directly a called party's telephone in the case where the call management computer 101 directly
10 controls the telephone instruments 106;
3. Dialing out through the PSTN to a remote called party 111;
4. Connecting to a called party using an external network such as the Internet;
- 15 5. Connecting through remote links to another of the organization's PBX or other switches;
6. Passing voice over the organization's communications infrastructure within the site or external to
it;
- 20 7. Playback of recorded voice messages may be done via a "Voice Pathway" created to the user's telephone instrument 106 or via the "Data Path" transferring the voice message to the user's workstation to be played out via the workstation's sound capability.
- 25 8. Any other such means which can establish a voice connection to a user's telephone instrument as defined.

Once established, the voice pathway 121 is used for the entire duration of that call and all other calls dialed or

transferred to that same destination, until all such calls have been processed and the voice pathway is no longer needed.

Once a voice pathway is established to a system user
5 such as user 113 or user 111, the calls being held in the call management computer 101 for that user may be rapidly "switched" 204 to a destination voice pathway 121 on demand as controlled by the user 113 or via the user workstation 114 through the call management window 115.

10 The central office trunk interfaces 203, PBX trunk interfaces 206 and assigned DSP 208 remain active throughout a call or series of calls to a destination, monitoring for either calling or called party to terminate the call or otherwise change the call state. Likewise the call
15 management computer 101 monitors for the system user 113 to request change of the call state, e.g., "hangup", "Hold", etc.. When appropriate, the call path is dismantled by instructions to the circuit switches 204 and DSP 208 from the call management computer 101.

20 If either calling or called party has other calls waiting, the call management computer 101 does not "hang up" that end of the call path 121. Instead it is kept so that it may be re-used as a voice pathway for the waiting calls. Otherwise, the call management computer 101 instructs the
25 trunk interface 203, 206 and/or DSP 208 to "hang up" the call and return to waiting for another call to be presented.

Voice pathway switching, rather than requiring the establishment and tearing down of multiple separate calls as

conventionally done, provides the ability to switch rapidly between multiple calls, on demand, based on the user's changing priorities.

3. REAL-TIME PROTOCOL AND SIGNAL CONVERSION

5 The Call Management System provides for real-time protocol conversion between central office trunk type 102 and number and PBX trunk/circuit 105 types and number. The number and type of central office trunk/circuits need bear no direct relationship with the number and type of PBX
10 trunk/circuits. This conversion allows the Call Management System's new and expanded features and functions to be implemented using existing telephone systems which cannot otherwise accept new telephone capabilities directly or in a cost-effective manner.

15 As shown in Figs. 1 and 2, the call management computer 101 attaches to central office trunk/circuits 102 from one or more central offices 103 on the one side and through PBX trunk circuits 105 to the PBX 104 and/or directly to telephone instruments 106. Each type of CO trunk and/or
20 PBX trunk analog, analog DID, T-1, DID over T-1, ISDN, Internet or others is attached through its own appropriate type of interface board 203, 206 which converts the trunk signals to standardized bus signals for the circuit switches 204 and telephony signal buses 210 and it also monitors
25 various aspects of the call.

To identify both the calling party 118, 119, 120 and called party 111, 113 as automatically as possible, it would be logical for the organization to elect to subscribe to

modern telephone provider services even though the organization's existing PBX cannot reasonably or cost effectively be upgraded to support such new services. One example of such new services would be ISDN PRI, where the digital "D" channel identifies the telephone number of both the calling party and the called party for each of up to 23 or 24 circuits. ISDN PRI provides a good start toward automating proactive caller identification.

While most central offices 103 can provide ISDN PRI or other new CO trunk/circuit 102, 202 services, existing PBXs 104 are customarily outfitted with old-style analog DID or even simple analog 1FB or other trunks having entirely different signaling and control requirements from the new ISDN PRI. Rather than requiring an expensive or even impossible upgrade of the existing PBX 104, the call management computer 101 provides "Conversion" of the new types of CO trunk/circuits 102 with their new signaling requirements to older PBX trunk/circuits 105 with their older signaling requirements.

New ISDN PRI services are provided by the central office 103 through the CO trunks 102 to the call management computer 101, 201 where the circuits are "converted" to older analog DID services for the PBX trunks 105 to the organization's existing PBX adding all of the Call Management System features and functions without changing the organization's existing PBX investment.

"Conversion" is made possible by the structure of the call management computer 101 with the logical and physical

separation between trunks, where each different CO trunk 102 and PBX trunk 105 has its own unique trunk interface 203 and 206 which converts the unique trunk signals to standardized circuit signals for the circuit switches 204 and telephony
5 signal bus 210. The only thing that is common is that their voice paths can be connected together, when appropriate, using the circuit switches 204 and telephony signal buses 210. The handling of trunks/circuits from one side is independent of and separate from the handling of
10 trunks/circuits from the other, yet their voice paths can be connected together to complete the circuit whenever appropriate, coming in via one type of trunk interface, converting to standard signals and going out via an entirely different trunk interface being "Converted" en route.

15 Because of this "Conversion" ability, no direct one-to-one relationship need exist between the CO trunk/circuits 102 and the PBX trunk/circuits 105. A special case occurs where the call management computer 101 directly connects to and controls the organization's telephone instruments 206
20 with no PBX switch 204 at all.

Real-time protocol and signal conversion thus provides a crucial enabling mechanism for all of the new features and functions of the Call Management System using information available through new types of telephone provider services,
25 while still using an existing PBX which cannot otherwise support such services. In effect, the Call Management System only requires the legacy PBX to provide voice paths

to user telephone instruments, to voice mail and other devices ignoring its other existing features.

4. INTELLIGENT CALL MANAGEMENT THROUGH REAL-TIME DSP VOICE AND DATA PROCESSING AND CIRCUIT SWITCHING

5 The Call Management System's unique "Intelligent" call management capabilities are based upon the real-time sensing, control, voice and data processing provided by the call management computer's 101 configuration of DSP processors 208, central office trunk interfaces 203, PBX
10 trunk interfaces 206 and circuit switches 204 through which circuits calls are assigned to one or more DSP processors 208 at all times. The DSPs provide real-time DSP voice and data processing which is the essential means by which the content of each call is monitored and known. The Call
15 Management System monitors call content and uses that information to provide "intelligent" call management, unlike conventional PBXs or other telephone switches, which strictly avoid knowledge of the call content and are conceptually limited to "call switching".

20 The amount of DSP processing power applied up to at least 800 MIPS per system coupled with the hardware sensors of the trunk interfaces 203 allowing the Call Management System to apply a broad range of voice and data processing tasks to each and every call, processing capabilities and
25 power not available in conventional business PBXs or similar switches.

4.1 DSP Subsystem.

Each DSP subsystem consists of a DSP motherboard which attaches to the call management computer 101, 201 via the computer signal buses 211 and to the telephony signal buses 210 through circuit switches 204. In addition, the
5 motherboard supports one to four DSP daughterboards of three DSP processors each 3, 6, 9 or 12 DSPs per subsystem with 100, 200, 300 or 400 MIPS of processing power.

Each call management computer 101, 201 utilizes one or more such DSP subsystems.

10 The commercially available Analog Devices DSP ADSP-2181 is used for the DSPs, operating at 16.67 Mhz 33 MIPS with 32K bytes of program RAM and 32K bytes of data RAM. DSP daughterboards are populated on the DSP motherboard as required to provide system support for broad categories of
15 services:

"Call Monitoring" DSPs are those assigned to support the actual number of existing CO and PBX trunks, monitoring and controlling individual calls e.g. call progress monitoring, voice playback, etc. Each call monitoring DSP
20 in this implementation typically can handle four through circuits/calls both CO and PBX sides for a total of 12 to 48 pairs per DSP subsystem.

"Special function" DSPs provide special functions as required for each specific system e.g. voice recognition,
25 text-to-speech, etc.

Because of the anything-to-anything circuit switching capabilities of the Call Management System, DSPs can be

assigned to any circuit/call as needed to support any particular function or set of functions.

4.2 Computer Signal Bus Interface.

The DSP motherboard connects to the call management computer 101 through its interfaces with the computer signal buses 211 through which the call management computer's software drivers control, monitor and pass information between the call management computer processors and memory 201, the call management databases 215, the DSP motherboards and the DSP processors 208 on daughterboards.

The DSP motherboard uses an industry standard PCI bus interface with industry-standard "plug-and-play" support:

1. Assignable interrupt level
2. Assignable shared memory addressing
3. Assignable control addressing
4. Other fixed and/or dynamically changeable parameters.

4.3 Dual-Port RAM.

Each DSP has its own 32K bytes of dual-port shared RAM memory which it shares with the call management computer processors 201. Thus, each daughterboard uses 96K bytes of shared memory and a fully-populated DSP subsystem uses 384K bytes of shared memory. The shared memory provides communications between the DSP and the call management computer's 101, 201 software drivers and minimizes the overhead of system interruptions external memory delay states. Shared memory is used for:

1. Passing voice buffers for voice playback and record

2. Passing Fax and data buffers

3. Providing "mailboxes" for control and status information.

4.4 DSP Signal Processing Task.

Each DSP operates with its own Multi-tasking software environment, sharing the available time and MIPS among a series of tasks. The number and choice of which tasks are active at any moment depends upon the state of each of several calls the DSP is handling. Each call is itself considered a "state" machine. These tasks include:

1. DTMF decoding Dual Tone Multi Frequency, with talk-off play-off prevention

2. DTMF generation

3. MF decoding and generation

4. Call Progress decoding Dial Tone, Ring back, Busy, Fast Busy based on cadence, etc.

5. Precision Call Progress Decoding based on frequency

6. Call Progress tone generation Dial tone, Ring back, Busy

7. Analog signaling control FXO LS/GS, FXS LS/GS, E&M, E&M Wink, DPO, DPT

8. Caller ID decoding FSK modem signaling

9. Caller ID generation FSK modem signaling

10. Voice Playback messages played out to the caller

11. Voice Recording voice name for caller identification, recording of voice messages and recording of calls
12. Voice compression and decompression PCM, ADPCM,
5 etc.
13. Conferencing of calls chimes and voice
14. CNG Fax tone detection
15. Fax Group 3 reception and transmission including CNG tone generation and special Fax identification for
10 reception and special Fax banner for transmission for each system user
16. X.36, X.34 and other modem protocols
17. BCLID data reception
18. Text-to-speech conversion
- 15 19. Text-to-Fax conversion
20. Voice recognition
21. Name recognition voiceprint
22. Many other tasks.

Most of these DSP signal processing tasks are not
20 typically available in conventional business PBXs or similar switches but may available in interactive voice response and similar equipment. In the future, many more voice and data processing tasks will be added to the Call Management System's DSP processors 208, significantly expanding the
25 functions and features of the Call Management System.

4.5 External Connectivity.

Each DSP motherboard also supports the following external connections:

1. External audio connection for "music-on-hold"
2. External audio microphone input which can be used for voice recording if desired
3. External headphone connection so that calls in progress can be monitored for debug purposes
4. Status LEDs red and green for self-test, board diagnostics and operational external notification
5. "Stay-alive" signal for the "copper bypass" unit.

4.6 DSP Motherboard.

Fig. 3 shows the DSP motherboard block diagram. The DSP motherboard functions primarily as an interface between the computer signal buses 211, the telephony signal buses 210, the DSP daughter boards and their DSPs 308 and internal decoders, sequencers and logic. This architecture utilizes common internal address and controls 315 and data 316 signals from the PCI interface 301 connecting the call management computer's 201 PCI bus 211 to essentially everything on the motherboard 208 and through it to the DSP daughterboards. Each motherboard 208 includes:

1. The FMIC telephony bus circuit switches 204 which provide signal paths to/from the telephony signal buses 210 and the DSP processors 208
2. The address counters 317, chip select circuits 319 and address and memory sequencer 318 which manages the board controls
3. DSP and FMIC controls are handled via DSP selects 320, interrupt control register 321 and the mailbox and error register controls 322

4. External audio input for music on hold and headset for debugging are provided 225 by a separate audio circuit.

Each daughterboard interface consists of:

1. Address bus 315
- 5 2. Data bus 316
3. Telephony voice circuits 313
4. Status and error signals to the DSP motherboard buffers and logic 314.

4.7 DSP Daughterboard Block Diagram.

10 Fig. 4 shows the DSP daughterboard. Each daughterboard 2081, 2082, 2083, and 2084 attaches to the DSP motherboard 208 through the daughterboard interfaces address lines 315, data lines 316, telephony circuit buses 313 and status/error lines 314. Each DSP 208, 308, 408 has its own dual-port RAM
15 data memory 410 accessible either from the DSP or from the call management computer 101, 201 via the PCI motherboard interface 301.

4.8 Trunk Interfaces.

The call management computer's 101, central office
20 trunk interfaces 203 support one or more trunks per board, depending upon the type of trunks, with varying number of circuits per trunk typically 1 or 2 T-1 or ISDN PRI to 24 analog, DID or stations. The trunk interfaces 203, 206 provide a variety of different connections, interfaces and
25 features, as is appropriate for each different type, including the following central office and PBX connections:

A. Central Office Connections

1. Loopstart - Ringing detection

2. Loopstart - Loop current detection
3. Loopstart - Loop current direction
4. Loopstart - On/Off hook control
5. Loopstart - Hookflash generation
- 5 6. Groundstart - Ringing detection
7. Groundstart - Loop current detection
8. Groundstart - Loop current direction
9. Groundstart - On/Off hook Control
10. Groundstart - Hookflash generation
- 10 11. Groundstart - Ring ground seizing trunk for
outdialing
12. Groundstart - Tip ground detection of seized trunk
13. AnalogDID - Battery power to trunks
14. AnalogDID - Loop current detection
- 15 15. AnalogDID - Battery reversal wink generation
16. AnalogDID - Reverse battery answer supervision
identifying when the call is answered and when the
station side disconnects
17. AnalogDID - DID decoding of DTMF signals
- 20 18. T-1 Trunks - Signaling type E&M Wink and
Immediate, loopstart, groundstart
19. T-1 Trunks - Wink generation
20. T-1 Trunks - "robbed-bit" signal decoding
21. ISDN PRI - "D" channel digital support
- 25 4.9 PBX Connections
1. Loopstart - Battery power to trunk
2. Loopstart - Ringing generation

3. Loopstart - Loop current detection
4. Groundstart - Battery power to trunk
5. Groundstart - Ringing generation
6. Groundstart - Loop current detection
- 5 7. Groundstart - Loop "open" for idle state
8. Groundstart - Tip Ground seizing trunk for
outdialing
9. Groundstart - Ring Ground Detection of PBX
initiating call
- 10 10. AnalogDID - Loop current detection
11. AnalogDID - Loop current direction detection for
wink and answer supervision
12. AnalogDID - On/Off hook control
13. AnalogDID - DID transmission via DTMF
- 15 14. T-1 Trunks - Signaling type E&M Wink and
Immediate, loopstart, groundstart
15. T-1 Trunks - Wink generation
16. T-1 Trunks - "robbed-bit" signal decoding
17. ISDN PRI - "D" channel digital message support
- 20 4.10 Telephony Signal Buses.

In this implementation, the Telephony signal buses are based on the industry standard Multi-Vendor Integration Protocol (MVIP) which provide for 256 bi-directional voice/data channels, divided into 16 uni-directional or 8
25 bi-directional "streams" of 32 time slots each, operating at 2.048 Mhz. However, the buses could just as well have been based on SCSA, PEB or other types of available standards or conventions — so long as "clear", full-bandwidth circuit

paths are provided among the trunk interfaces 203, 206, 207, the DSPs 208, and their circuit switches 204.

4.11 Circuit Switches.

Trunk interfaces 203, 206, the Internet voice interface
5 207, DSP 208 and others boards connect to the telephony signal buses 211 through their own circuit switches 214. The circuit switches are the FMIC Flexible MVIP Interface Circuit. The FMIC connects the specified time slots of the telephony signal buses 210 to/from the "on-board" internal
10 circuitry.

At any time, the call management computer's software drivers can change the circuit switch 204 settings using commands through the computer signal buses 211. This is the means through which calls/circuits/voice paths are
15 dynamically "switched" from one point to another, placed on "hold", or otherwise as described elsewhere.

5. "ONE NUMBER" RECEPTION OF VOICE, FAX, DATA CALLS

Without changing existing information and telephone systems, the Call Management System provides a single,
20 unique "One Number" for each system user which is his "personal point-of-contact" and "never busy" telephone extension (his Telco DID or equivalent number or his call attendant or DISA extension number) for all voice, FAX and data communications. This
25 "one number" is used to receive, identify and automatically handle all the user's voice, fax and data calls, one or several at a time using multiple trunk circuits, even when the user is on his/her telephone. Thus, user telephone

extensions are converted into a "never busy" extension for voice, e-mail, FAX and data with direct control from the desktop computer where users exercise direct, real-time control of all calls including call queuing with multiple calls on hold, call transfers, call forwarding and other forms of real-time call processing not currently available. The use of only one number per user significantly reduces the costs, complexity, inefficiency and confusion of having multiple different telephone numbers for different functions.

The Call Management System uses only a single DID or extension number for each user such as user 111 or user 113 to receive all their direct calls, voice, fax or data in any mixture and number within the limit of the number of available trunks and circuits. Various calls to a system user may occur at any time or several may occur at the same time.

The Call Management System uses only a single DID or extension number for each user 111 or 113 to receive all direct calls, voice, fax or data in any mixture and number within the limit of the number of available trunks and circuits. Various calls to a system user may occur at any time or several may occur at the same time. The call management computer 101 is programmed to sort them out handle each appropriately, all at the same time. This "One Number" feature is a significant improvement over the conventional use of multiple numbers for different functions.

Fig. 1 shows four different types of callers: an outside voice caller 118, an inside voice caller 113, an outside Fax caller 119 and an outside data caller 120. These callers all use the same "One Number" to call the same system user 111 and they may do so all at the same time.

So long as a sufficient number of trunks or trunk circuits are available, all of the outside calls will be routed through the PSTN 100 to the CO 103 where they will be sent to the organization via the CO trunks 102, 202 and presented to the call management computer 101. When the calls arrive even if all arrive at the same time, their trunk interfaces 203, 206 and the assigned DSPs 108 receive and answer ALL the calls, determine the called party DID, ISDN or otherwise and determine the call type, voice, Fax or data.

For Fax or data calls, the call management computer instructs the attached DSP 208 to establish a FAX or data call session and to receive the transmission. When complete and stored on the Call Management Databases 215, the call management computer 101, 201 alerts the called party to the new Fax or data files.

For each voice call received from outside, the call management computer 101 with assigned DSP 208 proceeds with proactive caller identification, checks for applicable VIP rules and alerts the called party to the call even if other calls are currently active or waiting.

Thus, for each system user only "One Number" is needed to receive all voice, Fax and data calls from outside or

inside with the Call Management System able to identify and handle each type appropriately, even if multiple calls for the same party arrive concurrently.

This "One Number" ability of the Call Management System removes the typical requirement for each user to have expensive, separate telephone lines and equipment for each different type of call and it also prevents the conventional "busy" signal being received by callers, improving efficiency and obviating starting telephone tag.

6. PROACTIVE CALLER IDENTIFICATION

Proactive Caller Identification is the means whereby the Call Management System augments and improves central office-delivered calling party identification. Even with no central office-delivered calling party identification, Proactive Caller Identification can identify the called party. Call Management System configurations are provided for organizations which can include one or more forms of called party identification from their telephone providers and those which cannot. However, even for those which can, the correct caller identification using central office-delivered information occurs for only a modest fraction of all calls, not from blocked lines, pay phones, cellular phones, etc. thus, proactive caller identification is required in any case.

If no or unusable calling party identification is provided by the telephone service provider, A Proactive Caller Identification of the Call Management System requests the calling party to provide identification of the caller to

the called party. Call management computer 101 utilizes a DSP 108 to access a call management database 215 message to be provided to the calling party 118. A typical message is:

5 "So that I may inform Mr. Johnson of your call, please enter your home or office telephone number or state your name."

The calling party identifies himself through one of several means:

10 telephone keypad entry of an identifiable telephone number;

telephone keypad entry of an identifiable business number with attached extension number;

telephone keypad entry of a unique assigned PIN number; or

15 speaking his/her name with subsequent voice recognition by the call management computer.

Proactive Caller Identification is described using Figs. 1 and 2.

20 A typical voice call to a system user might well originate from an outside caller at a payphone 118. The PSTN 100 routes that call to the central office 103 which, in turn, presents the call to the Call Management System via the CO trunks 102 and through the trunk interface 203, circuit switches 204, and telephony signal buses 210 to the
25 DSP 208.

For businesses, the forms which CO-provided calling party identification take are limited, although growing. These include:

1. Caller ID containing the telephone number and/or name of the billed party in FSK;
2. ISDN providing both the calling and the called party's numbers as part of the "D" channel communications;
- 5 3. ANI DTMF or FSK provided by inter-exchange carriers with some 800/900 services;
4. BCLID Bulk Calling Line Identification, in which a BCLID data line from the central office is used by the central office to provide the calling number;
- 10 5. Transmitting the calling number along with the DID number in either DTMF or FSK form.

When a call is received 501, two different and parallel functions are started, identification of the called party 502 and identification of the call type 503. The calling party will be identified. Identification occurs through receipt of the calling party's extension DID after "wink" or T-1 in-band signaling or telephone number ISDN "D" channel signal or via other signaling means.

When the auto attendant mode is used, the DSP 108 accesses the call management databases 215 to play a message to the caller 118. Entry is made of the called party's extension number or name encoded from the telephone keypad or the name of the called party may be spoken and then recognized utilizing conventional auto attendant steps.

25 If the called party is not a system user 504, the PBX 104 is used to process the call in the form required by the PBX trunks 105 and the call is switched over switches 204

via the telephony signal bus 210 to the specified number for conventional treatment.

If the called party is a system user 505, the calling party's telephone number is determined 506 automatically
5 through the receipt of a name or number from the list above.

If a caller identification is received 507 the identification number is compared with the Primary Caller Identification Database.

If no automatic detection of caller identification
10 occurs 508, the system provides a pre-recorded message to the caller 509 such as the one above. The requested information is received by the attached DSP 208 and used in subsequent identification.

If no response 511 is received the caller is considered
15 "unknown" 521.

If the name was spoken 512, the call management computer 101 compares the name with entries in a voice identification database 214. If the name corresponds to one in the voice identification database 214, the calling party
20 is identified 521. If the corresponding name is identified, the caller is "unknown", the recorded name is retained during the call, in case the user wishes to have the name added to the voice identification database 521 for future calls.

25 If a telephone keypad entry was made 513, the entry is used as an index into the Primary Caller ID Database 515.

If a match is found in the Primary Caller ID Database 516, the caller is identified as the party in the matching database record.

If a match is not found in the Primary Caller ID Database 517, the entry of a telephone number is used as an index into the Secondary Caller ID Database 518.

If a match is not found in the Secondary Caller ID Database 519, logic goes to step 521 with the caller considered "unknown". If a match is found in the Secondary Caller ID Database 520 the caller is identified as the party or business matching the Secondary Caller ID Database entry.

Step 521 represents the end of proactive caller identification. At that point, the call is handled according to any appropriate VIP rules 521 and/or the called party is alerted to the presence of the call 522.

This basic procedure can be accomplished with many variations which provide the same results but may add, move or remove various steps to accomplish it, e.g., obtaining information from the caller can be done through a series of different requests and responses, not just the efficient single one described above, or auto attendant identification of the called party can be done following caller identification, instead of before.

Additional Proactive Caller Identification capability is provided to a called party once a call is received whether identified or unknown, by "double-clicking" a toolbar button requesting "More Identification", e.g., a caller identified only as from "General Motors" may give too

little information to the called party. Selecting the button to request "More Identification" causes Proactive Caller Identification to request a different number from the caller so that he may be more closely identified as "Mr. Jones" calling from "General Motors".

Voice calls arriving through Internet or other similar digital networks are identified using a "form" presented to the calling party, which he fills out providing the needed calling party information.

7. CONTINUOUSLY-IMPROVING CALLER IDENTIFICATION DATABASES
7.1 Calling Number Databases.

Identification of a calling party, e.g., party 118, from the calling party's telephone or PIN number or other entries is accomplished with two Caller ID Databases which are part of the overall Call Management Databases 215. A Primary Caller ID Database is dynamic and continuously updating. It includes names, telephone numbers and/or affiliations of callers to the organization, including employees, and is automatically searched by the call management computer 101 first as soon as a number is known or through Proactive Caller Identification. If a match is found, the name from that entry is used by the Call Management System in subsequent VIP processing or to alert the called party.

The Primary Caller ID database contains specific entries relevant to individual system users, e.g. for system user John Adams, the automatically identified business number from one site of General Motors is assigned

to Mr. Jones, but for a different system user, Sam Archer, that same General Motors site number is assigned to Sarah Smith. Since both entries will match the automatically identified number, the one matching the called party will be
5 chosen. A further extension of this process includes numbers not assigned to an individual system user, but to their group or even to the entire organization. All of these are matched to the calling party and the one most appropriate for the called party is chosen. One reason for
10 this process is that all calls from an entire business site are customarily identified by the billing number for the site's PBX, not by individual. Thus, this procedure increases the probability of correct identification of callers based upon who they are calling.

15 A second variation includes alerting the called party using all of the matching names and allowing the called party to select which one actually is calling, removing the others.

If no match is found in the Primary Caller ID Database,
20 the Secondary Caller ID Database is searched. It contains a commercially available list of individual and business names and telephone numbers or an extraction from such a list. If a match is found to the Secondary Caller ID Database, the name and/or affiliation and number is transferred to the
25 Primary Caller ID database to be used for subsequent calls. If no match is found, the caller is finally considered "unknown".

With or without a call present, the called party, such as user 111 or user 113, may use his workstation's call control window 115 to update or correct the Primary Caller ID Database for a caller or add a new caller to the database
5 using any of the following indexes:

1. Home telephone number;
2. Business telephone number;
3. Business telephone number plus the person's
extension;
- 10 4. Special PIN numbers assigned to or selected by
callers;
5. Voice mailboxes for users;
6. Special coded entries including the * and # keys;
and
- 15 7. Other indexes.

With or without a call present, the called party 111 or 113 may use the workstation call control window 115 to update or correct the Primary Caller ID Database for a caller, or add a new caller to the database.

20 7.2 Voice Name Identification.

Voice name identification is accomplished through a comparison of pre-recorded spoken names in a Voice Name Database which cross-references the person's name, affiliation and phone number similar to the Primary Caller
25 ID Database.

The user can have a current caller speak their name, which is then recorded by the DSP 108 and stored by the call management computer 101, 201 in the Voice Name Database for

future use. Alternatively, if the caller had spoken their name at the beginning of the call when requested, that saved recording may be used for the Voice Name Database.

Thus, the Primary Caller ID Database and the Voice Name
5 Database are continuously updated both automatically and through user action, becoming ever more effective in identifying callers.

8. CALL NOTIFICATION & CONTROL VIA THE DIGITAL NETWORK WORKSTATION COMPUTER

10 The Call Management System provides intelligent call management through which calls are handled by called parties using their workstation computer, not the telephone instrument as with conventional business PBX or other telephone systems. A called party, such as user 111 or user
15 113, controls one or many concurrent calls directly through a call control window 115 displayed on a workstation 114. Section 1 describes the actions taken by the call management computer 101 and the relationships of calling parties and called parties for many of the specific user control
20 examples. This section describes the user interactions at their workstations 114 using the many aspects of their graphical user interface call management window 115 and its subsidiary screens. Figs. 6a-6e show the call management window and selected subsidiary screens. It is understood
25 that different combinations and organizations of screens, layouts, buttons, etc. can be configured to provide the user his many Call Management System features and functions.

Thus, the implementation shown and described is but one of many potential graphical user interface layouts which could be used to implement the user aspects of the Call Management System.

5 8.1 Call Notification of the Called Party.

When a call arrives for a system user, the call management computer 101, in concert with its DSP processors 208, identifies the called party, the call type and the calling party as described in Sections 1, 6 and 7. For
10 voice calls, the call management computer 101 reviews any applicable VIP rules from the Call Management Databases 215 and, if none apply, to divert or affect the call, and the called party is in an appropriate "available" status, it notifies the called party 111, 113. Notification messages
15 are sent through the digital network(s) 109 to the user's workstation 114. Notification of the user is accomplished through a call control window 115 on the user's workstation 114 which "pops up" when a call arrives; a flashing icon which, when double-clicked, launches the popup call control
20 window; a special sound from the workstation alerting the user to activate the call control window; any combination of these or other alerting mechanisms.

This notification is not the conventional telephone "ring" typically used by existing telephone systems.
25 Instead, it uses the separate, independent and high-speed information path of the digital network(s) 109 from the call management computer 101 to a called party. In addition, notification conveys significantly greater information to

the user and enables an entire array of new features and capabilities not previously available.

Fig. 6a shows a basic call management window 115 user screen, as seen when it pops to the front on the user's computer display due to any of the alert reasons listed above, or because the user activated it directly. Fig. 6b is a fully expanded user screen as might be configured by a "power" user providing more readily available functions, but in a more "busy" environment. The call management window Figs. 6a and 6b supports a number of subsidiary windows through 6c-6e designed for specific purposes and described elsewhere.

The computer program behind the call management window is kept active at all times when the user is in any of the "available" states. It is designed to be consistent and compatible with Microsoft Windows and other appropriate conventions for its overall look and feel, menu conventions, buttons, borders, help, etc. A user can activate different features in a variety of ways including the following, all of which are referred to as "selecting":

1. clicking the primary mouse button on the selected button or item;
2. clicking on the associated menu, such as "Calls" and then clicking on the selected item;
3. double-clicking call notifications to transfer to that call;

4. clicking the secondary mouse button on a call notification to bring up a short menu of available options and then clicking on the selected one ; or

5. typing in the associated keystrokes such as "Alt-A" for the "answer" button.

The main call management window 115 screen 6a is logically broken into the following areas:

8.2 Customer Logo.

On the top left of the screen is the customer's or vendor's logo 601 as shown. The logo can be changed at any time by providing a new graphic file to replace the existing one.

8.3 User Status.

The elongated button just below the logo is the user's status button 602 which the user may select to change his status to the system. User status includes:

1. "available to receive all calls";
2. "available only for VIP calls";
3. "unavailable - transfer calls to another location;
4. "unavailable - until 4:00".
5. "unavailable for all calls" .

For the fourth listed status, when the time occurs, the status would automatically change back to "available".

The last listed status provides a list of options such as "Out to Lunch"; "In a meeting"; "On vacation"; "On a sales call"; "With a customer"; and others. Alternatively the user may type in or modify one of the standard options to provide more useful information for other users (see

Section 17). Examples include "Out to lunch til 2:00";
"Giving a demo til 4:00";
"Out of the country til July 21, send everything to Judy";
and others.

5 8.4 The Message Board.

Voice mail 606, along with Fax and data messages 603,
e-mail 605 and "Flash" Notes 604 are "historical" messages,
and are treated differently than "real-time" calls. For
these historical messages, the user's call management window
10 contains a "message board" area just below the user status
button with an appropriate control button for each type of
message 603-606. Whenever a message is available to be
reviewed, e.g., a new Fax message, the Call Management
System highlights the appropriate button name in flashing
15 red and places a number adjacent to the button indicating
the number of such new messages available to be reviewed.
This procedure separates the various types of historical
messages and substantially simplifies reviewing messages by
users.

20 8.5 "FAX" Notification.

When a user has received a new Fax transmission, the
"FAX" button is highlighted and the count of new Faxes is
provided. Selecting the "FAX" button launches the FAX
selection subscreen. That screen shows the user's list of
25 Faxes and summarizes the total number of Faxes, and
identifies the number which are new messages (see Section
13).

The user may select one or more of the Faxes to be viewed or handled in other ways. Also, the user may select a checkbox to limit the display to only new Faxes. If the user selects a Fax to be viewed, the computer operating
5 system's FAX viewer is launched with the name of the selected Fax file, popping the selected Fax up in front of the other windows.

8.6 "Flash" Mail Notification.

Flash Notes sometimes called "Flash" mail, are quick,
10 simple messages which may be passed among system users. They are the equivalent of an "electronic shout across the office" intended as an improved, electronic version of the classical "pink slip" notes on which messages used to be written then carried to the intended party and presented to
15 him. The user is notified of his unread flash notes by a highlighted "Flash" Notes button and an associated count of such unread notes. Selecting the "Flash" button allows the user to review his Flash Notes as shown in Fig. 6c. The Flash Notes screen indicates the originator 660 and the note
20 itself 661, and allows the user to close it 662, reply to it with another Flash Note 663, or to return the call 664 by making a voice call to the originator. Flash notes can be sent to one or to many system users at a time, selecting multiple users for the note.

25 8.7 "e-mail" Notification.

When a user receives a new e-mail message, the Call Management System is notified by e-mail services assuming the organization's digital network e-mail services provides

this capability. The user is notified immediately of his unread e-mail by a highlighted "e-mail" button with associated count of unread e-mail messages. When the user selects his e-mail button, it launches the organization's e-mail client program, allowing the user to review and read his new e-mail messages. One special feature the Call Management System provides is the ability to record a voice message and attach that message to an e-mail message for later retrieval by the recipient. This feature is based on the capability of the organization's e-mail system.

8.8 "Voice-mail" Notification.

When a user receives a new voice-mail message, the Call Management System is notified by voice-mail services, assuming the organization's voice-mail services provides this capability. The user is notified immediately of his new voice mail messages by a highlighted "voice mail" button with associated count of new voice mail messages. If the Call Management System includes an integrated voice mail subsystem, the voice mail messages may be retrieved in any order from the list provided. See Section 16 for a further description. Otherwise, the user accesses his voice mail messages serially via his telephone instrument, as is conventionally done.

8.9 User's Call Status.

Near the top of the call management window 115, adjacent to the customer's logo, is provided the call status of the user 607, to whom he is currently connected, and the length of time the call has been connected 608 to the user.

The length of time the call has been connected to the user is different than the length of time the call has existed as shown in the "time" field of the call alert box below. When the user has selected an "unavailable" status, the message
5 on the screen is that selected or created status message.

8.10 Call Alert Box.

The call alert box is immediately below the user's call status, and it displays all real-time call alert messages for the user to control his real-time calls. The components
10 shown on the screen for each call include: "CALL STATUS ICON" 611 sometimes flashing or moving which indicates the status of each individual call; and a "CALL STATUS STATEMENT" 612 showing the individual status of each call. The call status statement may state that the status is
15 "ringing", "connected", "holding" or "recalling". "Ringing" indicates the call has been received by the call management computer and processed, but has not yet been answered by the user. "Connected" indicates the call has been accepted by the user, put through by the call management computer 101,
20 and is currently the "active" call. "Holding" indicates a call has been previously connected to the user and then placed on hold. "Recalling" indicates a call has been holding for longer than a predefined length of time, typically 60-120 seconds, but the call is still "holding"
25

Also displayed are the following: TIME 613 which is the time since the call was answered by the call management computer 101; CALLER 614 to identify the name and/or affiliation of the caller or "Unknown"; and NUMBER 615 to

identify telephone number from which the call was made, when known, including: telephone numbers, "Internet" and other applicable identifiers.

"Source" identifies the source of the call as
5 "outside", "inside", "Internet", or "other".

FOR "group" handling or employees who have temporarily moved to a "meeting" environment, described below, an additional field is displayed showing the initials of the called party.

10 This call information display occurs even while other calls for the same called party are in process, allowing the called party to know who is calling and to apply appropriate priority to each call.

When a call noted as "Unknown" is received, the called
15 party may speak to the caller and determine who they are. The called party may choose to enter that person in the Primary Caller ID Database so that they are identified properly the next time they call; or have them speak their name for recording in the Voice Name Database for future
20 calls; or simply type the caller's name and/or affiliation as part of the call information for use as the call is transferred to others in the organization.

In any case, the call information is corrected in view
25 of the known identity of the caller.

8.11 Workstation Real-Time Call Controls and Management.

A called party can control one call, or many concurrent calls, directly through a call control window 115 on a

workstation 114. Section 1 describes the actions taken by the call management computer 101 and the relationships of the caller and called parties for many of the specific cases. This section describes the user's interactions, features and functions for call alert, control and management. A user can exercise call controls by any one or a combination of the following or other actions:

1. clicking the special call-control buttons shown just below the call alert window 616-620 ;
2. typing the letter underlined for each button or menu item, e.g., Alt-A for "answer";
3. opening and selecting from the "Calls" menu using the mouse or typed control letters Alt-C;
4. double-clicking the call to be answered see below;
5. secondary clicking the call to be handled to bring up a list of call commands, then choosing the desired command;
6. dragging and dropping a call alert onto a call function button; and
7. using the cursor keys to move among call alerts.

User controls may be exercised via the specialized call control buttons placed just below the call alert box, or call controls may be selectively activated from screen menus, or from the special "Button Bar" shown on Figure 6b.

These controls and management functions include:

1. ANSWER 616 answers the selected call. If another call was active at the time, it will be placed on "Hold" or "Hang Up" according to the user's selected options.

2. HOLD 617 places the call on hold, disabling both inbound and outbound voice paths, and starting the "recall" timer.

3. TRANSFER 618 transfers the caller to anywhere in the directory described below, inside or outside the organization, or to a typed in number anywhere in the organization or accessible via the PSTN (see Section 11). For calls transferred from secretaries or telephone receptionists providing "group" support, the default for transfer is the person to whom the call was originally intended. Also, when a call is active, the individual "Speed Dial" buttons or page of Speed Dial buttons (see "call origination" below) become different "Speed Transfer" buttons for single-click, rapid transfers.

Transfers can be directed to any entry in the directory (person, location, inside, outside, etc.). Transferred calls are identified to the transferred party with the initials of the transferring party as further information for call management. When transferring a call, the call can be "Tagged" with a digital message or it can be transferred with an appended voice message selected by the user from his drop-down list and played out at the time the call gets "Answered" by the transferee.

4. HANG UP 619 hangs up the call, releasing the caller and dismantling the caller's part of the call path.

5. VOICE MAIL 620 sends the caller to the user's voice mail box (see Section 16).

6. DIRECTORY 630 opens the directory for update or use (see below).

7. CALL LOG 631 opens the call log screen and displays the call log of the user's calls (see Section 14).

5 8. VIP RULES 632 opens the VIP rules screen for update (see Section 10).

9. GROUP HOLD 633 sends the selected call, not necessarily the active call, with any attached "Tag", to all members of the selected "specialty list" for servicing by the first available member, potentially including the user (see "specialty list" description below).

10 10. "FLASH" NOTE 634 creates a "Flash" note for sending to another user, as described above and in Fig. 6d. Flash notes can be sent to one or many system users at a time (selecting multiple users for the note).

11. TAG CALL 635 adds an electronic message to the selected call, not necessarily the active call, which will display on the user's call alert box and on any other system user's call alert box to whom the call is transferred or conferenced (see Section 12). An example of a "Tag" is shown in Figure 6b attached to the second call 645 in the call alert box.

12. "BOMB" SELECTED CALLER 636 creates a VIP rule, or applies to the caller an existing VIP rule, which handles the current and all future calls from the selected caller, e.g., the "cold-calling broker", in a predetermined manner.

13. "VIP" SELECTED CALLER 637 creates a VIP rule, or applies to the caller an existing VIP rule, which elevates the selected caller to a specific VIP status, by providing distinctive ringing, follow-me routing, etc. (see Section 5 10).

14. "PIM" ACTIVATION 638 links to a selected Personal Information Manager or database with the information about the selected call, not necessarily the active call, in order to provide "Screen Pop" of the information associated with 10 the caller. Note that if multiple PIMs or databases are used, a pull-down selection list is provided for the user to select the appropriate one to use for this specific call. This feature can be done either by clicking the "PIM" button or when the call is answered for automatic "Screen Pop" (a 15 user preference).

15. MUTE 639 disables the outbound voice path, retaining the inbound voice path of the active call.

16. CONFERENCE CALLS conferences the selected call, not necessarily the active call, with the selected party or 20 group of parties from the directory or as typed in by the user. This includes anyone internally, working at home, or external to the organization anywhere in the PSTN.

17. RECORD CALL records the active call for later playback and analysis.

25 18. PLAYBACK RECORDED CALL plays back a recorded call selected from the list of such calls in its own subscreen. Playback is done via a "Voice Pathway" created to the user's telephone system 106 or the "Data Path" transferring the

voice message to the user's workstation to be played out via the workstation's voice capability.

19. MORE ID causes the call management computer 101 to play out a voice message from the Call Management Databases
5 215 asking the caller for additional information with which to identify him, including: entering a different telephone number or stating his name. Once done, the call is returned to the called party.

20. STATE CALLER'S NAME plays out the caller's name
10 for the selected call, not necessarily the active call, as spoken by the caller during proactive caller identification or More ID interaction phases. The call management computer 101, 201 uses or creates a voice path to the called party and states the caller's name as spoken and recorded or uses
15 the "Data Path" to transfer the voice message to the user's workstation to be played out via the workstation's voice capability.

21. PLAY MESSAGE selects a pre-recorded message from the pull-down list of messages and possible actions to be
20 played out to the caller, e.g., "I am tied up at the moment and am transferring your to Sam", and an action to be taken after the message is played out, e.g., "Transfer call to Sam or return call to me, etc.". In effect, this is the creation of a temporary VIP rule for use with the
25 highlighted call.

22. VIP RULES selects a VIP rule from a drop-down list to be applied to the highlighted call.

21. TRANSFER USER transfers the user from the current "available" state on this computer to the computer associated with the selected other user, and changes the current computer to the "Unavailable" status allowing the user to type in a reason for other users (see "meeting" environments described below).

22. USER PREFERENCES. The user may modify his screen and operational preferences at any time by selecting items from the "User" menu including a "Preferences" subscreen, allowing the user to change any of a series of his own operating characteristics including displaying the "Button Bar" 630-639 of Fig. 6b; displaying the user's "Speed Dial" buttons 640; displaying the call management window's "Status Bar" 641 showing the user's name, the current date and time; and when double-clicking a call alert, place the original active call, if any, on "Hold" or "Hangup".

User control messages resulting from user interactions with the call management window 115 and its subsidiary screens are returned, via the digital network(s) 109, to the call management computer 101 where they result in the requested actions being performed, and/or appropriate interactions with the Call Management Databases 215.

8.12 "Directory" Support.

One important aspect of the Call Management System is support for the "Directory", both corporate and personal. The directory user access shown in Figure 6d contains:

1. ENTRY 681. The name/affiliation of a person or organization including employees, voice mail, places, e.g., "conference room", outsider.

2. NUMBER/STATUS 682. The received telephone number
5 or status of the entrant, including local numbers without area codes; long distance numbers with area codes; international numbers with country codes, city codes, etc.; Internet access; status for system users; and other.

3. RETURN TELEPHONE NUMBER The telephone number to
10 call that person, if different from above.

4. VIP STATUS defines this person as having VIP status.

The user maintains the directory through subscreens to add "New" 683 entries, to "Delete" 684 an existing entry or
15 to "Edit" 685 a selected entry. The user may define an entry as "Corporate", available to all users, "Group", available to users specified as part of a specified "group", and "Private", available only to the user himself.

When the directory is opened, the user may select how
20 it is sorted, limited, and displayed, including internal entries only, external entries only, private entries only, sorted by name, sorted by affiliation, sorted by number, limited to area codes, or ranges of names, and others.

Access to entries is conveniently available by
25 scrolling the sidebar 686 using the mouse, scrolling down or up the entries using the cursor keys, clicking letter buttons 687 to jump to the start of names beginning with that combination of letters - after a limited time, three

seconds or so, the list is cleared and the user may start again. As the user types the name, each letter entered causes the list to jump forward to the first of the names beginning with the list of characters entered. Once a match
5 has been made, the user can key "Enter" or click "Call" to originate a call to that number, or the user configuration can be set so that the number is automatically dialed as soon as a match is made. After a limited time, three seconds or so, the list is cleared and the user may start
10 again; and others.

The directory is used throughout the call management window 115 functions for routing calls VIP rules, originating calls 688, reviewing user status, transferring and conferencing calls, sending "Flash" notes, and many
15 other things.

While the directory is a part of the Call Management Databases 215, it is used in a wide variety of ways and with entry sorting and display as appropriate to each.

8.13 Call Origination.

20 The Call Management System provides flexibility and user convenience for "originating" calls, in addition to its features and functions for handling "incoming" calls. The user may originate a call at any time, even while other calls are active or waiting, by opening the "Directory"
25 described above, selecting an entry and clicking "Call" or pressing "Enter" as described above; opening the directory described above, typing a name, and having the system automatically begin dialing when a unique match has been

found or waiting until the user clicks the "Call" button as selected for each user; clicking "SpeedDial" buttons 640 defined uniquely for each individual from the "directory". Multiple pages of SpeedDial buttons are provided for users requiring rapid access to a large number of dialable numbers.; or activating the "Dialpad" button 642 to bring up the dialpad subscreen; utilize the Secondary Caller ID database to find a number and/or name, then outdial it.

The "Dialpad" subscreen, shown in Fig. 6e, includes a representation of the telephone dialpad with the numbers 0-9, # and * 690. Calls may be originated by any of the following:

1. Clicking on the dialpad buttons to enter a dialable number then clicking on the "Dial" button. Note that the "flip" button allows the user to "flip" the dialpad so that it matches an adding machine keypad rather than a telephone keypad. Once entered, numbers may be removed one by one by the "Back" button 691, or cleared altogether 692. "Pause" 693 codes may be entered for use with modems, dialers, etc.
2. Typing in a number from the keyboard and then the "Enter" keyboard key.
3. Clicking the "Redial" button 694 then selecting any one of the last five called numbers shown.
4. Activating the "Directory" 695 and choosing an entry to be called.
5. Typing in a name from the directory and having the system dial that person when a match is made.

When outdialing a number, the Call Management System provides the ability to "Redial" repeatedly until the call gets through an otherwise busy line.

When no call alerts are present and no user calls
5 pending, the call management window 115 shows a "Recall"
button and a "Directory" button in place of the specialized
call control buttons below the call alert box. Clicking
them brings up the "recall list" or the "Directory list" as
described above, simplifying call origination.

10 8.14 "Outside" Employee Support.

The Call Management System supports "Outside" employees
who are rarely or never in the office and who have no
workstation. Such "Outside" employees are given "pseudo"
numbers for which no actual workstation or telephone
15 extension exists, which may be used by callers. The
"Pseudo" user establishes his own VIP rules which
automatically handle all his calls, including his own voice
messages, for selected callers and re-routing of his calls
to other users.

20 Thus, the "Outside" person is supported, just like
other system users, with callers being unaware that person
is not in the same location.

8.15 "Group Secretary" Support for Calls to Specified Groups of Employees.

25 The destination party for calls does not have to be the
actual called party. The Call Management System provides
for a specific user to handle calls for a select "group" of
others, system users or not. This "group" handling mode is

intended for a secretary or telephone receptionist handling a group of executives or others, and for an organization's telephone operator. In either case, the specified user is expected to receive calls, prioritize them appropriately, respond to each accordingly, attach "call tags" and transfer calls as needed, thus effectively screening calls for the specified group.

The basic difference between direct notification of a system user and notification of the "group secretary" receiving calls for the individual, is that the call information displayed on the call management window is expanded to include the initials or other identification of the actual called party, allowing the secretary to know to whom the call was destined, and handle each call as appropriate. This capability requires appropriate information in the call management databases, identifying the group of people, the secretary to answer the calls, the initials or other identification for the called parties and other control information. On a dynamic basis, system users can be added to or removed from "Group Secretary" mode by those assigned "Secretary" status, allowing for the cases where a user runs by the secretary on his way out saying "I have to go, please handle my calls".

8.16 "Meeting" Support for Users Away from their Workstation System.

Users typically use their own workstation computer for most of their activities, but occasionally users need to leave their workstation and move to another location for a

meeting or otherwise. Users can move to another location and, using the call management window on the computer where they are currently active and logged in, they may log off and choose an appropriate "unavailable" state, or select the

5 "TRANSFER USER" function and move to the new site. Once there, they may log on to the call control window of the computer at that site, along with others who may be sharing the meeting site, or the person whose computer is at that site. When this happens, a temporary "group" definition is

10 created and the users who are at that site sharing the site's computer, are treated as described above, with their call notifications sent to the site's computer as though a secretary or operator were screening the calls even though the individuals may be managing their calls themselves.

15 This procedure allows users to hold meetings in offices or conference rooms while continuing to receive and handle their calls as appropriate.

Users who attend meetings outside the office may create the same capabilities by using their portable or other

20 computer at the outside meeting site, calling into the Call Management System via Internet or otherwise, and providing the telephone number for the meeting site. With this, one or more users can continue to receive and handle callers as though they were in the office.

25 8.17 "Specialty-List" Support for Special User Groups.

The Call Management System provides the ability to define multiple "Specialty lists" of users who work together or have certain affinities, e.g., sales, accounting,

customer service, manufacturing, etc. These groups represent arrays of users who can receive and handle certain kinds of calls, such as sales calls, customer service calls, etc. Each such special group is assigned a pseudo extension number through which it may be reached. The purpose of these "specialty lists" is to provide a new means for rapidly getting calls to the first available member of the group able to take the call.

When a call is made directly to the pseudo number or, a call is transferred to the number, the call management computer concurrently alerts all of the users in the group by sending alert messages down the digital network(s) to their workstations and thence to their call management windows. The first person in the group to "answer" the call causes the call management computer to connect the call to the answering party and to remove the call notification from the call management windows of the other members of the group.

Specialty List Handling is a means to provide rapid access to the desired function within an organization, without having to go through an operator as is otherwise customary.

8.18 Feature Activation.

These many features can be turned on individually for each user, maximizing the effectiveness of the organization's training and call management.

8.19 TAPI Client.

The workstation software also provides a TAPI client for other applications which need to outdial or receive calls, e.g., this feature means a PIM can place a TAPI call to have a number automatically dialed.

5 8.20 Automatic Updating.

The Call Management System automatically updates the user's workstation software from the call management computer whenever changes are needed. This is invisible to the user and is handled automatically at user logon time.

10 9. MULTIPLE CALL HANDLING USING A SINGLE EXTENSION

The Call Management System allows each user to be aware of and to manage multiple calls at the same time, using a single extension number, and using a simple POTS telephone instead of the customary expensive, multi-button, proprietary telephone instruments 106. By using the digital network(s) 109, workstation computer 114 and call control window 115 for communications with the called party 111, 113, the Call Management System is freed from the conventional limits on when, how and how much information can be communicated to the called party and likewise, when how and how much control can be exercised by the called party.

The Call Management System presents multiple calls, as they arrive and are identified, (Sections 6 and 7) to the called party 111, 113 using the call management window 115. Multiple calls are identified to the user through call alert information which is displayed in the call alert box of the call management window (see Section 8). The called party,

applying his own preference, may then deal with each call as most appropriate. Calls can be: answered, placed on hold, sent to voice mail, transferred to an individual or "group list", recorded, hung up or any of many other appropriate actions. All of these capabilities are under the control of the called party, and all can be exercised for any of the calls, thereby giving the user complete freedom to manage their calls as best fits their ever-changing priorities, e.g. switching from a cold-calling broker to an important customer.

The called party can effectively interact with multiple callers concurrently by rapidly "switching back-and-forth" as needed among calls. The called party simply double-clicks a call, other than the one that is currently active, and the call control window 115 causes a message to be sent down the high-speed digital network(s) 109 to the call management computer 101 which instructs the circuit switches 204 to transfer the voice path of the new call to the reusable voice pathway 121, 221 to the called party and leave the previous connected call on hold or hang it up as defined by the called party for their own specific configuration. In this way, the called party can "bounce back-and-forth" rapidly among many calls, servicing them as priority dictates. This capability is in sharp contrast to the time-consuming creation and tearing down of entire connections each time, as required by conventional PBX and other switch systems 104.

Thus, handling multiple calls at the same is simply, logically and rapidly controlled by the called party, using the computer's mouse or keyboard while repeatedly reusing the existing voice path.

5 10. USER-DEFINED VIP CALL HANDLING

VIP call handling is an automated adjunct to or an alternative for the call control window 115 notification of the called party 111, 113 and corresponding workstation control commands. With VIP call handling, specific callers, 10 groups of callers or all callers are given unique treatment based on "VIP rules" defined by the organization and/or individually by the user. Call management window 115 "VIP Rule" subscreens allow the user to manage their own VIP rules. The VIP rule subscreens of the current 15 implementation are shown in Figures 7a-7c. As with the other aspects of the user interface, this is but one potential configuration of buttons, selections and controls which can be configured to allow the user to create and manage his VIP rules. VIP call handling rules for each user 20 are maintained by the call management computer 101, 201 as part of the call management databases 215 and are dynamically changeable by and for each user, except for corporate-wide rules. Changes to the rules can be made through the user's VIP Rule subscreens of the call 25 management window 115 on their workstation 114, through the user's laptop or other remote computer attaching through a digital network or through the user calling and changing characteristics through direct telephone entry.

VIP handling for special callers, customers, etc., is a major improvement in the efficiency and effectiveness of call handling for organizations. VIP rules allow each user to tailor how callers are handled and routed, and are especially effective for "follow-me" routing in which an important caller, or group of callers, can be assigned to a rule which specifies that: when you are out of the office to call automatically to your cellular, car or other phone. Later, the user can call and change the rule to route calls to a different phone number. Additional features include, "find-me" capability where the user can have several numbers automatically dialed, such as car, cellular, home, etc. to find the called party for direct connection to the caller.

The basic VIP Rule subscreens consist of a list of existing VIP rules which may be selected 701; the ability to activate an additional subscreen to "Add" 702 another rule; the ability to "Delete" 703 the selected rule; the ability to "Copy" 704 a rule for later change; and the ability to make each rule currently "Active" or "Not Active" 705.

Each VIP Rule contains three parts to define who the rule applies to, what action is to be taken, and when the rule applies. Fig. 7 illustrates the three displays for the who, what, when parts of the VIP rules.

Screen 7700 is used to define "WHO" does the rule apply to. The rule will apply to the caller that is highlighted on the display. The rule applies to specific individual callers 710 whether included in the "Directory" or just typed in; selected callers 711 from the directory and/or

typed in to whom the rule will be applied; or everyone who calls 712, typically for use when the caller is "unavailable".

Individual callers or groups of callers can be included in multiple VIP Rules, allowing the user to specify different handling under differing conditions.

The Call Management System provides for multiple greetings messages to be played out to defined groups of callers based upon their calling numbers, e.g., all callers from New York area codes get one message and then get transferred to Sam. This provides special treatment for callers from different locations.

Screen 7701 is used to define "WHAT" actions are to be taken. VIP rules can result in one or a series of actions to be taken:

1. Play out selected pre-recorded messages 715 to the caller, personalized for the caller and recorded in the called party's own voice, e.g., "John, I'm out of the office today. If you need to speak with sales, press one, or to speak to Sam, press two. Otherwise, I will call you back tomorrow." Or "John, I'm on the phone right now, but don't hang up, I'll be right with you.". These messages can also be used for "Callback" responses to important persons, e.g., "Mark, I got your FAX and have found the shipping date is December 12. Let me know if I can help you further."

Creating new messages is done by selecting "New" from the list of prerecorded messages, whereupon, the call management computer 101, 201 will establish a voice pathway

121, 221 to the user's telephone instrument 106 and the user will record the message. When completed, the user will name the message, edit it as needed and then have it available for the VIP rule being created or modified.

5 Special "Menu" messages can be created, e.g. "To speak with Tom press 1, to speak with Sam, press 2, to speak to my secretary press 3 or to speak to the operator press 0".

 2. Receive information entered by the caller via the telephone keypad, spoken or by other means.

10 3. Process the entered information, re-routing the call to one of a series of other numbers based upon the entered information, e.g., "2" to reach Sam.

 4. Use the entered information as a "Tag" to the call (see Section 12).

15 5. Activate another VIP rule based on information input by the caller.

 6. "Forward" 716 the call to another destination anywhere inside or outside the organization as typed in or selected from the directory.

20 7. Transfer the caller to voice mail 717 whenever he calls.

 8. "Return to me" when the transferred call is complete.

25 9. "Follow-me" routing for certain callers allows the user to specify one or a series of numbers to be used to reach the user when the specified caller calls. The user switches from one number to the next by calling his own extension and entering telephone keypad numbers to change

from one number to another, e.g. car phone, home phone, cellular.

10 10. "Find-me", "Chase me" routing for certain callers allows the user to instruct the Call Management System to call a series of different numbers simultaneously, attempting to locate the user. When found through voice entry or information entered via the telephone keypad or otherwise, the caller is switched automatically to that number, e.g., home, car phone, cellular, etc.

10 11. "Page me" or "Beep me" instructs the system to place a call to the specified beeper service and page the user. It also includes transmitting the caller's name and telephone number for display on the user's beeper, where that service is available. This is useful for both real-time calls which are not completed because the user is "unavailable" and for when calls are sent to voice mail. One variation of the "Page me" approach allows the caller to stay on the line while the page is made and then, when the caller calls his own "One Number" and identifies himself, to connect the two calls together.

12. Provide "Priority Ringing" 718, a special sound when this caller calls to alert the user to a VIP caller.

13. "Hang Up" 719 when this caller calls.

14. Place the caller on "Hold" 720 whenever he calls.

25 Screen 7702 is used to select "WHEN" the rule applies.

The following selections may be made for "When":

1. For certain status of the called party:

always 730

unavailable for calls or not answering 731

available but on the phone 732

available for VIP calls only, etc.

2. Within defined days of the week 733.

5 3. Within specified times of the day.

Certain VIP rules are pre-defined and merely have callers added to them. These include:

1. "Bomb" the caller and send all his calls to user's voice mail.

10 2. "VIP" the caller, giving him special ringing and notices.

3. "Follow Me" having the system follow the user.

4. "Find Me" having the system find the user.

5. "Page Me" having the system page the user.

15 6. Others.

10.1 Temporary VIP Rule Usage.

The user may highlight a call in his call alert box and then select a rule from a drop-down list for immediate application to that call, even though the caller does not normally have that rule applied to him. The user may also create a temporary rule (play out a message and specify a following action) for handling a highlighted call.

The Call Management System further enhances the user's ability to handle his important callers by providing the ability for the user, when out of the office, to call to the system and record new voice messages and/or change selections for his VIP rules via entries from his telephone keypad voice recognition or otherwise.

10.2 Advanced Message Notification.

The user may establish a set of rules that specify how the user is to be notified of various types of messages.

For example, the user could set up a rule like, "If I

5 receive an e-mail message from Victor between 5 AM and 7 AM, call me at my car phone; if I don't answer, page me."

Another example might be, "If I receive a Fax from anyone at Motorola, forward a copy to my home Fax machine." One of

the Call Management System's primary capabilities is to
10 function as a central repository for message notifications, where the user has complete control over the notification mechanisms.

11. ROUTING CALLS INSIDE OR OUTSIDE TO THE ORGANIZATION

Unlike existing PBX or other telephone switching

15 systems, the Call Management System routes calls internally within the organization or externally anywhere in the PSTN. Thus, calls can be transferred by a called party, or via VIP rules, anywhere the telephone network reaches. This is a major departure from the conventional telephone switch
20 capability, which is customarily limited to intra-organization routing only.

When a call is received by the call management computer 101, the calling party, called party, and call type are used to determine the needed action. For voice calls, the called
25 party may be alerted, receive the call and transfer it to a specified number or VIP rules may specify transfer to another number. It matters not that the number specified is within the organization or external to it. In either case,

the call management computer transfers the call as specified.

For internal calls, the call management computer establishes a voice pathway 121 to a destination extension, e.g., user 111, and alerts the called party if that destination applies to a system user. For destinations outside the organization, an available outgoing CO trunk circuit 102 is seized or a two-way circuit is negotiated through which a voice pathway is established and the call path transferred.

Calls utilizing Internet voice capabilities are placed through the Voice-over-Internet interface.

The ability to route calls anywhere, not just within the organization, is a major improvement in efficiency for the organization.

12. "CALL TAGS"

The Call Management System provides a mechanism whereby system users can "tag" calls with digital messages, which then remain with the call, but can be modified so long as the call exists, no matter to which system user it may be transferred. Call tags are a unique ability, available only because of call management via the user's workstation computer for which digital information is conventional, unlike telephone instruments with their lack of or minimal display capabilities. These digital call tags provide an advanced and convenient means for one user to provide useful information to other users, within the organization, about the needs or interests of the caller, or anything else that

may be appropriate, e.g., "Sam needs to know about system installation" or "John has a question re: pricing".

A system user may "tag" any call showing in the call alert box of his call management window 115 with or without his answering the call, thus creating a digital message which, along with the initials of the tagging party, immediately appears attached to the call alert line. As that call is transferred to or conferenced with one or more other system users, the notification and attached call tag moves with it, always displaying along with the call alert line. Any receiving system user can modify, expand or even erase the call tag message, as appropriate.

"Special Tags" can also be added to a call which provide for return of the call when completed by the transferee; return of the call if not taken by the transferee; transfer of the call to another destination when done; or others.

Call tagging is an electronic tool similar to the old-fashioned "pink slip" notes of paper which were used to pass messages within an organization. However, call tagging is a significant improvement, since it is digital, automatic and, specifically, ties the call tag message to the call itself. Call tagging is a powerful new means to improve efficiency and information flow within an organization.

13. FACSIMILE FAX AND DATA CALLS

The Call Management System converts every system user's telephone extension into a never busy FAX gateway, with automatic detection and reception of incoming Fax messages,

and confidential delivery to the recipient's desktop computer. No Fax hardware need be added at the desktop, and no special Fax telephone lines or numbers are required to receive Faxes, Faxes or data transmissions are simply sent
5 to the user's "One Number" unique personal point-of-contact extension. The system detects and automatically receives each Fax or data transmission and electronically delivered it to the user's desktop machine, without his extension ever ringing or interfering with normal voice traffic (private,
10 paperless, immediate delivery of electronic transmissions.

Notification of received Faxes or data files is via the desktop computer, similar to e-mail, and is also given by the system (in voice) when the user calls in to retrieve his voice mail. Outbound Faxes may be composed in the desktop
15 machine and passed to the system for private, paperless, immediate transmission to the recipient(s).

These features improve the efficiency, confidentiality, security and punctuality of Fax and data delivery and transmission within the organization.

20 13.1 Receiving Fax and Data Transmissions.

During all calls, assigned DSPs continue to search for Fax or data signals which, if encountered, immediately switch control to the appropriate Fax or data mode protocols. Thus, even during a voice call, the caller may
25 switch to Fax "Send" mode, causing a CNG or other appropriate signal to be sent. The assigned DSP 208 receives the signal, alerts the call management computer 101

and the assigned DSP is then switched to a Fax protocol mode to complete the transmission.

The call management computer 101 identifies an incoming call as a Fax or data call type because the system received
5 a CNG or other signal for Fax or an appropriate DTMF or other signal for data or a "reverse" modem courier signal. If the fax or data call was dialed directly to a system user's extension number or the caller used the call attendant feature to identify the called party, the call
10 management computer 101 instructs the attached DSP processor 108 to receive the fax transmissions automatically using a standard Fax protocol with adjunct file transmission capabilities. For data transmissions, the DSP is instructed to use an appropriate data protocol Fax plus data, X.34,
15 ISDN, TCP/IP or other. Even during a voice call, the caller may switch to Fax mode, causing a CNG or other appropriate signal to be sent, identified by the assigned DSP 208 and the DSPs to be switched by the call management computer 101, 201 to Fax protocol mode to receive the transmission.

20 Because the Call Management System knows who is receiving each Fax, it applies a unique Fax identification for each user uniquely identifying the receiver to the Fax sender.

When a transmission is received, Fax, file, video,
25 etc., it is stored on the call management computer's database 215 or on the organization's digital network(s) message storage facility. The destination party 111, 113 is then notified of the new Fax or data through messages sent

by the call management computer 101 down the digital network(s) 109 to the user's workstation 114 and finally to the user's call management window 115 (as described in Section 8).

5 When notified, the destination party 111, 113 may review the list of unread Fax or data messages and then may request that the Fax or data message be transported to their workstation 114 via the digital network(s) 109, from whence it can be viewed, printed, archived and treated as any other
10 such file (see below).

The result is that each system user is provided with private, paperless, and immediate Fax and data send and receive capabilities without having to add any hardware to their desktop computer 114.

15 This use of a "One Number" direct user access with automated reception of Fax and data messages is a significant improvement over other approaches, which typically require: a dedicated Fax/data line and hardware for each person's desktop computer 114 doubling the number
20 of CO circuits in use, or having all Fax and data messages routed to a designated person for later sorting out and distribution, thereby delaying delivery and losing privacy, or assigning a separate block of telephone numbers attached to a special fax/data transmission server.

25 13.2 "FAX" Notification.

When the user has received a new Fax transmission, the call management window's 115 "FAX" button is highlighted and the count of new Faxes is provided. Selecting the "FAX"

button launches the FAX selection subscreen Fig. 8 of the current implementation. That screen shows the user's list of Faxes and summarizes the total number of Faxes and the number which are new 800. The list includes:

- 5 1. "Check" 801 if the Fax has been previously seen;
2. The date and time received 802;
3. From whom the Fax originated 803;
4. Subject of the Fax 804 for future reference;
5. "Print" the Fax document;
- 10 6. "Send" copy or original Fax documents to someone else from the directory or typed in with attached "Annotation" voice or digital message and name of the original recipient;
7. "Broadcast" Fax document to selected .
- 15 people/locations form the directory or typed in with attached "Annotation" voice or digital message and name of original recipient. Broadcast of Fax documents includes selection of dates, times, retries, etc.;
8. "Routing" one or more Fax documents to the system
- 20 users assigned to the routing list with attached "Annotation" voice or digital message and name of recipient.

The user may select one or more of the Faxes to be viewed 806, deleted 805 or forwarded 807. Also, the user may select a checkbox to limit the display to only new Faxes

25 809. If the user selects a Fax to be viewed, the computer operating system's FAX viewer is launched with the name of

the Fax file, popping up the selected Fax in front of the other windows. Voice or digital "Annotation" by the system user is provided in the same way that voice messages are recorded for VIP rules.

5 13.3 Unique Call Routing for Faxes or Data.

Fax or data transmissions, received for specified numbers such as the organization's base number, may be accepted for a specified user, e.g., the organization's operator who sorts them out and sends them to the
10 appropriate users, prints them and deals with them conventionally, or sends them directly to a Fax machine or computer for data prefacing.

13.4 Special Data Calls.

For special kinds of data calls, e.g., video
15 conferencing, the Call Management System transfers the call automatically to an appropriate extension for handling by a specialized device.

13.5 Laptop Data Calls.

The Call Management System provides for users to call
20 into their "One Number" with their laptop computer and, after being identified to have access to their desktop computers for file transfers and maintenance as well as to have access to their e-mail and other electronic messages. The user also has access to their Call Management System
25 functions (VIP rules, status, etc.) in order to change and update them as appropriate.

13.6 Outgoing Fax and Data Transmissions.

Fax and data transmission of documents/files created at the desktop computer 114 is also provided through conventional "printing" to the fax/data feature of the call management computer, from whence the document can be
5 transmitted automatically immediately, or at specified times, to one or more recipients in the Call Management System directory or to numbers typed in by the user and with specified retry attempts.

Because the Call Management System knows who is sending
10 each Fax, it applies a unique Fax banner for each user specifically identifying the sender to the Fax receiver.
13.7 Retrieving Fax or Data files via "One-Call" Message Retrieval.

The Call Management System also addresses the special
15 needs of the traveling or at-home user. Using any touch-tone telephone, the user retrieves his voice mail messages from the enterprise's existing voice mail system and, in the same call, is notified by system of the existence of his unread Fax, data and e-mail messages. He can then instruct
20 the system to Fax these messages to a convenient Fax machine near him, e.g., a hotel, airport or home Fax, or to transmit them to his home or laptop computer (see Section 15).

14. USER-ACCESSIBLE CALL LOGS

All calls received by or sent from the Call Management
25 System are summarized in a user-accessible call log as part of the overall call management database. This allows users dynamic access on demand to the call logs, and enables the ability to return missed calls with only the click of a

mouse. The use of a user-accessible call log improves the ability for system users to be aware of who called, to get back to callers missed and to monitor their telephone usage. Management of the organization may also use the call log
5 database to monitor responsiveness to returning calls and misuse of business telephones.

All calls received or placed by the Call Management System are summarized in the Call Log portion of the call management database. Each user has direct access to his own
10 call log containing all his calls, even if the caller chooses not to leave a voice mail message. Using this call log, the user may simply double-click to return missed calls, with the system automatically outdialing them.

Each user is provided a complete log of his own voice
15 calls, available on demand, through subscreens of his call management window 115, as shown in Figure 9a and with log sorting options in 9b. As with all other aspects of the user's graphical interface, different screens, buttons, wordings, etc. can be used as the means to accomplish the
20 same ends. The current implementation as shown is but one of many possible arrangements.

Each log entry includes the following fields:

1. CALL INDICATOR 905
 - "Blank" for incoming calls
 - 25 - "Red Dot" for missed calls sent to voice mail without answering, transferred without answering, etc.
 - "Out" for outdialed calls
 - "VM" for calls sent to voice mail

- Others.
- 2. DATE 906 Date the call occurred
- 3. TIME 907 Time the call began
- 4. LENGTH 908 Duration of the call HH:MM
- 5 5. NUMBER 909 Telephone number from which the call originated
- 6. CALLER 910 Name and/or affiliation of the caller or called party.
- 7. "TAG" Associated "Tag" message and initials of
10 the "Tagger".
- 8. TRANSFERRED TO Number or name of transferred party for transferred calls.
- 9. CALLBACKS Count of times a callback was attempted and the date/time when the callback was successful.
- 15 This directory is retained as a user-accessible part of the Call Management Databases 215 and can be accessed at any time through the user's call management window 115. When opened, the user can click the "Options" button 911 to bring up the "Options" subscreen 912 shown in Fig. 9b. The user
20 can define how his log is to be sorted by picking and choosing among the various options as shown, including only unanswered missed calls; incoming calls, outgoing calls, only new calls since the user last was available, calls only within the last number of days, weeks, months, etc., and
25 others.

If a call is active at the time the call log is accessed, the calls are sorted and limited to those to/from

the caller of the active call, allowing the user to know when calls occurred between himself and the caller.

Whenever the call log is accessed, any call shown can be "double-clicked" by the user to tell the system to
5 outdial the caller immediately. This allows users to keep track of their missed calls and to return calls quickly, e.g. after returning from lunch, even if the caller failed to leave a voice mail message.

Even though each user is limited to viewing only his
10 own log entries, the system manager may have the logs of all employees sorted, combined, processed and printed in any way management requires using the industry-standard database tools as an added means for managing the business. For example, it may desirable to know how long on the average it
15 takes for a customer to get a call back, or whether certain employees are misusing corporate telephone resources for personal purposes.

Additionally, these call logs provide the means for corporate management to do accounting comparisons with
20 central office bills, verifying accuracy and completeness and often saving telephone costs. The logs can also be sorted and compiled to show traffic flow for workplace maximization.

15. "ONE-CALL" MESSAGE RETRIEVAL

25 The Call Management System permits for traveling or out-of-the-office employees to make a single telephone call to receive all of their electronic messages, whether voice mail, Fax messages, data files or e-mail. This feature is a

significant improvement over the usual requirement to make several calls, using different technologies to retrieve messages in different forms. Retrieving all of the user's electronic messages during a single telephone call is a major improvement, especially from remote locations where telephone call connections are difficult, unreliable or can take a long time to establish, and re-establish.

One-Call Message retrieval is accomplished by the traveling system user placing a call to the organization's voice mail 116, as is done conventionally by calling the voice mail retrieval number. The call management computer 101 recognizes the destination number as that of voice mail retrieval and puts the call directly through but remains online with the attached DSP 208 assigned to identify the caller's mailbox number, as entered through the telephone keypad or by voice. With the voice mailbox number, the call management computer 101 identifies the caller 118 through correlating voice mailbox numbers in the call management database 215.

The Call Management System then identifies the caller as a system user and checks to determine if any new Fax or data messages are stored in the call management database, and determines if any new e-mail messages for the caller exist, assuming the e-mail system can report such information. If any of these electronic messages exist, the Call Management System plays an unobtrusive chime for the caller to hear saying, in effect, "you have electronic messages in other forms waiting for you, don't just hang

up." The user then knows to logoff from the voice mail system 116 when he is finished.

When the assigned DSP 208 detects the user's entry of a voice mail's logoff sequence, it informs the call management
5 computer 101 which then instructs the DSP to play out a message from the Call Management Database 215, e.g. "You have two new Faxes and three new e-mail messages, press one for immediate delivery." If the caller responds as requested, the caller may then be asked for and respond with
10 an additional security code or his spoken voice which is verified.

The caller is then given a menu of delivery options for the electronic messages, including:

1. Dial out and send them to my home computer
- 15 2. Dial out and send them to my home Fax machine
3. Dial out and send them to a convenient Fax machine at this number
4. I will attach my laptop computer and then send them to me electronically now
- 20 5. Read part or all of the messages to me (via text-to-speech) before I decide which to send

Depending upon the option selected by the user, the call management computer 101 will respond accordingly including providing translations as needed, e.g., e-mail
25 sent to a Fax machine is converted to Fax format, etc.

The system user may also call his own "One Number", override the greeting message and identify himself using his voice mailbox number and appropriate password. Once

identified, the user is provided the same retrieval capabilities as though he had called voice mail, without having to go through the voice mail process described above.

The Call Management System thus provides the means for a system user to retrieve all his electronic messages during a single telephone call to the organization.

16. VOICE MAIL HANDLING

The Call Management System utilizes voice mail in four broadly different ways: transferring callers to voice mail, alerting system users to the presence of voice mail messages, as a part of "One-call" message retrieval (see Section 15) and as an integrated subsystem of the overall Call Management System, thereby becoming the organization's voice mail, providing expanded voice mail capabilities to system users.

16.1 Transferring Callers to Voice Mail.

The Call Management System eliminates "voice-mail-jail", to which callers are so commonly subjected, because only system users send calls to voice mail, not automated machines as in the past. Callers to system users are transferred to voice mail only because the user makes that choice directly or because of predetermined VIP rules.

When a call is transferred to voice mail (see Sections 1 and 8), the call is transferred to the organization's internal voice mail extension, kept in the call management database 215, and the extension number of the called party, also from the call management database, is entered by the attached DSP 208 to tell the voice mail system, whether

integrated with the PBX or not, which voice mailbox to use. The call management computer 101 records the length of time the caller uses the voice mail as part of the voice mail log, from which the called party can obtain some additional
5 knowledge about the caller's message, or lack thereof. Even if no message is left, the call log reflects to the user that the call was received, allowing the called party to return the call using only the click of his mouse.

The Call Management System also provides a "fake" voice
10 mail capability to which an annoying caller can be sent, appearing like normal voice mail but without recording any message.

16.2 Alerting System Users to New Voice mail Messages.

The Call Management System alerts each system user to
15 the presence of new voice mail messages. The alerts are subscreens of the "Voice Mail" part of the "Message Board" of the call management window 115, as described in Section 8. Included are:

1. The name of the caller
- 20 2. The date and time of the call
3. The length of voice mail message left
4. The telephone number of the caller.

The user may go to the voice mail system to hear his messages and/or he may return the call directly from the
25 voice mail subscreen by a click of his mouse, or he may delete the notification about the voice mail message.

For Call Management System integrated voice mail subsystems (see below) and other voice mail systems which

can integrate with digital network(s) and computer-based systems, the Call Management System provides additional features of:

1. Alerting system users to the presence of all new voice mail messages, not just those received through the Call Management System, including those calls for which no message was left.

2. Retrieving the voice mail messages directly following mouse-click selection from the voice mail alert screen.

3. Message selection can be made by the user in any order.

4. Having the Call Management System establish a voice pathway to the user and then instructing the voice mail system to play out the messages selected through that voice pathway.

5. Returning calls by the click of the mouse.

16.3 Integrated Voice Mail Subsystem.

When the Call Management System provides the integrated voice mail for the organization, the voice mail is tightly integrated with the rest of the system, unlike other voice mail systems. Calls transferred to the integrated voice mail are provided the usual array of voice mail caller features, controlled by entry using the telephone keypad. Voice messages are stored either as part of the call management database 215 or as part of the organization's e-mail or other message storage capabilities 110.

System users are alerted to and may review and activate their voice mail messages from their voice mail alert screen in any order, knowing who each caller is and the length of their voice mail message. When a voice mail message is
5 selected to be heard by the double-click of a mouse or otherwise, the call management computer 101 creates a voice pathway to the user's telephone instrument 106, if one is not already present, which it then uses to play back the selected voice mail messages from the call management
10 database or other storage. During playback, many new capabilities are provided the user including:

1. Knowing the identity of the caller and the length of each voice mail message
2. Selecting voice mail messages to be heard in any
15 order
3. Playback controls over speedup and slowdown, backup, fast forward, fast reverse, and many others which have limited availability with conventional voice mail systems
- 20 4. Returning the calls with the click of the mouse
5. Many others.

With integrated voice mail, the user can send a call to voice mail and, once free from other tasks, retrieve that call.

25 Integrated voice mail removes the limitations and barriers of existing voice mail systems, affording system users much more information and entirely new capabilities for its use.

17. USER STATUS

The current dynamic status of all system users is made available to other system users through their call management window. Knowing the current status of users improves the ability of members of an organization to communicate both within the organization and externally with their customers and prospects.

The user status of all system users 111, 113 is continuously maintained by the system through the user's call management window 115 on their workstation 114 and the call management database 215, as described in Section 8. The system user may change his status at any time, selecting among a variety of status conditions:

1. "Available to receive all calls",
2. "Available only for VIP calls",
3. "Unavailable - transferred to another workstation",
4. "Unavailable for all calls",
5. and others.

When the user selects the item 4 "unavailable" option, he is given a list of potential reasons from which he may choose, e.g., "Out of the Office", "Out to lunch", "On vacation", etc.. He may choose one of these, choose one and modify it or type in anything else he wishes, e.g., "Away from my desk til 2:00", "Out of the office back Friday", "Giving a demo til 10:00" etc.

When the user is in one of the "available" states, the system automatically applies appropriate status, e.g., "On the phone", "Not responding to calls", etc.

Whenever a system user needs to transfer a call, conference a call, contact another user or any number of other reasons, the call management window's "Directory" as accessed in a variety of ways, (see Section 8) provides the means to determine the current status of other system users. Obviously, if another user is not available, there is no use trying to transfer or conference that person with the existing call.

18. FAULT TOLERANCE AND "COPPER BYPASS"

Call Management System fault tolerance is accomplished in two ways, "copper bypass" and "dual system" configurations.

18.1 "Copper Bypass" Fault Tolerance.

For Call Management Systems having the same kind and number of trunks on both the CO and PBX sides 102, 202, 105, 205 "copper bypass" fault tolerance is provided. "Copper bypass" is implemented through an external set of physical switches 1001, Fig. 10a, which are arranged so that, when deactivated, the CO trunks "bypass" the Call Management System altogether, connecting directly to the PBX trunks, removing the call management computer 101, 201 from the configuration, connecting the CO directly to the PBX.

The switches in the copper bypass box are normally energized by a signal from the DSP motherboard 1008, connecting the CO and PBX trunks to the call management

computer 101, 201. The normal energized state continues so long as:

1. The power to the call management computer 101, 201 remains
- 5 2. The call management computer 101, 201 continues to operate in an appropriate manner and to refresh the switch control circuit on a regular basis, at least every few seconds
3. The DSP processors continue to operate as
- 10 programmed.

If any of these conditions fail, the switches are deactivated and the system is instantly removed from connection to the CO and PBX trunks and the trunks are bridged together, attaching the CO 103 to the organization's

15 PBX 104 as before, allowing telephone service to be restored, but without the new Call Management System features.

18.2 "Dual-System" Fault Tolerance.

Dual-system fault tolerance is used for configurations

20 in which CO trunk to PBX trunk conversions are implemented, or for configurations requiring a very high degree of up-time reliability where essentially no down-time is acceptable.

Dual-system fault tolerance is provided through

25 implementing dual call management computers 101 with their trunk interface boards 203, 206, 207, telephony buses 210, circuit switches 204, DSP processors 208, digital network connections 209 and databases 215. During normal

operations, one of the computers is connected to the CO and PBX trunks 202, 205 and is providing the Call Management System features. The other backup system is also alive, attached to the data pathway 109 but not to the CO and PBX trunks. Both systems remain alive during normal operations in order to maintain equality of the two copies of the databases via the digital network. An alternative to this process is to keep the Call Management Databases 215 on the LAN server 110 or elsewhere instead of on the call management computer 101.

When the primary system fails, the backup system is switched in-line in its place allowing business operations to continue while the other system is repaired and placed back in service. This process requires the Call Management Databases 215 to be "equalized" prior to the repaired system being placed on "backup" status, assuming they are kept on the call management computer 101, 201. Switching the CO and PBX trunks from the "primary" system to the "Backup" system is done automatically using variations of the copper bypass boxes, as shown in Figure 10b.

WHAT IS CLAIMED IS:

1. A call management system comprising:
 - a. at least one user position, comprising a computer workstation and associated telephone apparatus;
 - 5 b. a call management computer;
 - c. a digital data network connecting the workstation of said at least one user position with said call management computer;
 - d. said call management computer including means for
10 intercepting an incoming call to said at least one user position;
 - e. means for determining that an intercepted call is for said at least one user position;
 - f. means for interacting with the workstation of said
15 at least one user position to determine how the intercepted call is to be processed; and
 - g. means for processing the call according to instructions received from the workstation of the called user.
- 20 2. A call management system in accordance with claim 1 wherein said call management computer includes means for identifying the calling party.
3. A call management system in accordance with claim 1 wherein said call management computer includes means for
25 identifying the type of call.
4. A call management system in accordance with claim 3 wherein said call types include voice calls and fax calls.

5. A call management system in accordance with claim 4 wherein said call types include data calls.
6. A call management system in accordance with claim 3 wherein said call types include voice calls and data calls.
- 5 7. A call management system in accordance with claim 6 wherein said call types include fax calls.
8. A call management system in accordance with claim 1 wherein said means for identifying which user was called uses direct inward dialing signals.
- 10 9. A call management system in accordance with claim 1 wherein said means for identifying which user was called uses DNIS signals.
10. A call management system in accordance with claim 1 wherein said means for identifying which user was called
15 uses ISDN signals.
11. A call management system in accordance with claim 1 wherein said means for identifying which user was called uses voice recognition apparatus to identify the called party's name when spoken by the caller.
- 20 12. A call management system in accordance with claim 1 wherein said means for identifying which user was called uses Internet screen forms filled in by the caller.
13. A call management system in accordance with claim 1 wherein said means for identifying which user was called
25 includes requesting that the caller enter information and using that information to identify the called user.

14. A call management system in accordance with claim 13 wherein said information includes the called party's extension number.
15. A call management system in accordance with claim 13
5 wherein said information includes spelling or partial spelling of the called party's name on the telephone keypad by the caller.
16. A call management system in accordance with claim 13
10 wherein said information includes the called party's name or a portion thereof as spoken by the caller.
17. A call management system in accordance with claim 4 wherein said call management computer includes means for receiving fax documents.
18. A call management system in accordance with claim 17
15 wherein said call management computer includes storage for received fax documents.
19. A call management system in accordance with claim 18 wherein said computer workstation selectively retrieves stored fax documents determined to be for its user position.
20. A call management system in accordance with claim 4
20 wherein said call management computer includes means for receiving data files.
21. A call management system in accordance with claim 20
25 wherein said call management computer includes storage for received data files.
22. A call management system in accordance with claim 21 wherein said computer workstation selectively retrieves stored data files determined to be for its user position.

23. A call management system in accordance with claim 4 further including means for identifying said fax calls by detecting CNG signals.

24. A call management system in accordance with claim 4 further including means for identifying said fax calls by detecting ISDN messages.

25. A call management system in accordance with claim 5 further including means for identifying said data calls by detecting DTMF signals.

26. A call management system in accordance with claim 5 further including means for identifying said data calls by detecting data carrier signals.

27. A call management system in accordance with claim 6 further including means for identifying said data calls by detecting DTMF signals.

28. A call management system in accordance with claim 6 further including means for identifying said data calls by detecting data carrier signals.

29. A call management system in accordance with claim 7 further including means for identifying said fax calls by detecting CNG signals.

30. A call management system in accordance with claim 7 further including means for identifying said fax calls by detecting ISDN messages.

31. A call management system in accordance with claim 1 wherein said digital network includes at least one local area network.

32. A call management system in accordance with claim 1 wherein said digital network includes at least one wide area network.

33. A call management system in accordance with claim 1
5 wherein said digital network includes the Internet.

34. A call management system in accordance with claim 1 wherein said digital network includes at least one ISDN network.

35. A call management system in accordance with claim 4
10 wherein an identifying message is returned to the calling fax machine which confirms the identify of the called party.

36. A call management system in accordance with claim 7 wherein an identifying message is returned to the calling fax machine which confirms the identify of the called party.

15 37. A call management system in accordance with claim 2 wherein said means for identifying the calling party uses ANI signals.

38. A call management system in accordance with claim 2 wherein said means for identifying the calling party uses
20 BCLID signals.

39. A call management system in accordance with claim 2 wherein said means for identifying the calling party uses ISDN signals.

40. A call management system in accordance with claim 2
25 wherein said means for identifying the calling party uses Caller ID signals.

41. A call management system in accordance with claim 2 wherein said means for identifying the calling party uses DTMF signals.

42. A call management system in accordance with claim 2
5 wherein said means for identifying the calling party uses FSK signals.

43. A call management system in accordance with claim 2 wherein said means for identifying the calling party includes requesting that the caller enter information and
10 using that information to identify the caller.

44. A call management system in accordance with claim 43 wherein said information includes entry of a telephone number.

45. A call management system in accordance with claim 44
15 wherein said telephone number is the caller's home telephone number.

46. A call management system in accordance with claim 44 wherein said telephone number is the caller's business telephone number.

20 47. A call management system in accordance with claim 44 wherein said telephone number is the caller's business telephone number plus the extension number.

48. A call management system in accordance with claim 44 wherein said information includes entry of a personal
25 identification number.

49. A call management system in accordance with claim 43 wherein said information includes speaking an identifying word or phrase.

50. A call management system in accordance with claim 49 wherein said identifying word or phrase is the caller's name or a portion thereof.

51. A call management system in accordance with claim 2
5 wherein said means for identifying the calling party includes storage containing at least one caller ID database.

52. A call management system in accordance with claim 51 wherein said at least one caller ID database is updated with information whenever a call is received from a caller not in
10 said caller ID database.

53. A call management system in accordance with claim 52 wherein said at least one caller ID database contains the telephone numbers and listed names of potential callers.

54. A call management system in accordance with claim 52
15 wherein said at least one caller ID database contains representations of the voices of callers.

55. A call management system in accordance with claim 52 wherein said at least one caller ID database contains Internet addresses of callers.

20 56. A call management system in accordance with claim 52 wherein said at least one caller ID database contains e-mail addresses of callers.

57. A call management system in accordance with claim 51 further including means for updating said at least one
25 caller ID database with information entered from the computer workstation at said at least one user position.

58. A call management system in accordance with claim 1 wherein said means for processing calls includes apparatus for playing a pre-recorded message to the caller.

59. A call management system in accordance with claim 2
5 wherein said means for processing calls includes apparatus for playing a pre-recorded message to the caller.

60. A call management system in accordance with claim 59 wherein the identity of the caller determines at least in part which pre-recorded message is played.

10 61. A call management system in accordance with claim 59 wherein the identity of the called user determines at least in part which pre-recorded message is played.

62. A call management system in accordance with claim 59 wherein the identity of the caller and the identity of the
15 called user determines at least in part which pre-recorded message is played.

63. A call management system in accordance with claim 1 wherein said means for processing the call includes apparatus for switching the call to a destination selected
20 by the called user.

64. A call management system in accordance with claim 63 wherein said apparatus for switching the call includes at least one external telephone switch.

65. A call management system in accordance with claim 64
25 wherein said at least one external telephone switch includes a private branch exchange or PBX switch.

66. A call management system in accordance with claim 64 wherein said at least one external telephone switch includes a telephone key system.
67. A call management system in accordance with claim 64
5 wherein said at least one external telephone switch includes an automatic call distributor or ACD switch.
68. A call management system in accordance with claim 64 wherein said at least one external telephone switch includes a telephone central office.
- 10 69. A call management system in accordance with claim 63 wherein said apparatus for switching the call includes switching apparatus contained within said call management computer.
70. A call management system in accordance with claim 1
15 wherein said system includes one or more processing rules applicable to at least one user which determine at least in part how calls to that at least one user are processed.
71. A call management system in accordance with claim 70 wherein said call management system includes storage for
20 said processing rules.
72. A call management system in accordance with claim 70 wherein which of said processing rules is applicable is determined at least in part by the identity of the called user.
- 25 73. A call management system in accordance with claim 70 wherein which of said processing rules is applicable is determined at least in part by the current status of the called user.

74. A call management system in accordance with claim 73 wherein the current status of the called user includes whether or not he or she is on the phone.

75. A call management system in accordance with claim 73
5 wherein the current status of the called user includes whether or not he or she is available to receive calls.

76. A call management system in accordance with claim 73 wherein the current status of the called user includes whether or not he or she is accepting only priority calls.

10 77. A call management system in accordance with claim 73 wherein the current status of the called user includes his or her current location.

78. A call management system in accordance with claim 70 wherein which of said processing rules is applicable is
15 determined at least in part by the current date, day of the week and/or time of day.

79. A call management system in accordance with claim 70 wherein said processing rules include instructions for routing calls from at least one caller to a destination
20 other than the user position.

80. A call management system in accordance with claim 79 wherein said other destination is a destination on the public switched telephone network.

81. A call management system in accordance with claim 79
25 wherein said other destination is another user position.

82. A call management system in accordance with claim 79 wherein said other destination is a destination on the Internet.

83. A call management system in accordance with claim 79 wherein said other destination is a voice mailbox.

84. A call management system in accordance with claim 70 wherein said processing rules include playing a pre-recorded
5 message to the caller.

85. A call management system in accordance with claim 84 wherein the identity of the called user determines at least in part which pre-recorded message is played.

86. A call management system in accordance with claim 84
10 wherein said pre-recorded message requests the caller to enter information.

87. A call management system in accordance with claim 86 wherein said entered information is in the form of DTMF signals.

15 88. A call management system in accordance with claim 86 wherein said entered information is in the form of spoken words.

89. A call management system in accordance with claim 86 wherein said entered information determines at least in part
20 the subsequent processing of the call.

90. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part that the call be transferred to the called user at a location other than the normal user position.

25 91. A call management system in accordance with claim 90 further including means for the user to change the location

to which the call is to be transferred by calling the call management system and entering appropriate instructions.

92. A call management system in accordance with claim 90 wherein said call processing rule specifies a series of
5 alternate destinations which are to be called.

93. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part that the call be transferred to a paging service.

94. A call management system in accordance with claim 70
10 wherein said call processing rule specifies at least in part that the call be transferred to a voice mailbox.

95. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part that the call be transferred to an alternate location and
15 subsequently transferred back to the called user.

96. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part that another call processing rule should be applied to the call.

20 97. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part that a special ringing sound should be used for the call.

98. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part
25 that the call should be disconnected.

99. A call management system in accordance with claim 70 wherein said call processing rule specifies at least in part that the call should be placed on hold.

100. A call management system in accordance with claim 84 wherein the user may call the system and re-record the pre-recorded message(s), changing content as desired.

101. A call management system in accordance with claim 2
5 wherein said system includes one or more processing rules applicable to at least one caller which determine at least in part how calls from that at least one caller are processed.

102. A call management system in accordance with claim 101
10 wherein said call management system includes storage for said processing rules.

103. A call management system in accordance with claim 101 wherein which of said processing rules is applicable is determined at least in part by the identity of the called
15 user.

104. A call management system in accordance with claim 101 wherein which of said processing rules is applicable is determined at least in part by the current status of the called user.

20 105. A call management system in accordance with claim 104 wherein the current status of the called user includes whether or not he or she is on the phone.

106. A call management system in accordance with claim 104 wherein the current status of the called user includes
25 whether or not he or she is available to receive calls.

107. A call management system in accordance with claim 104 wherein the current status of the called user includes whether or not he or she is accepting only priority calls.

108. A call management system in accordance with claim 104
5 wherein the current status of the called user includes his or her current location.

109. A call management system in accordance with claim 104 wherein which of said processing rules is applicable is determined at least in part by the current date, day of the
10 week and/or time of day.

110. A call management system in accordance with claim 101 wherein said processing rules include instructions for routing calls from at least one caller to a destination other than the user position.

15 111. A call management system in accordance with claim 110 wherein said other destination is a destination on the public switched telephone network.

112. A call management system in accordance with claim 110 wherein said other destination is another user position.

20 113. A call management system in accordance with claim 110 wherein said other destination is a destination on the Internet.

114. A call management system in accordance with claim 110 wherein said other destination is a voice mailbox.

25 115. A call management system in accordance with claim 101 wherein said processing rules include playing a pre-recorded message to the caller.

116. A call management system in accordance with claim 115 wherein the identity of the called user determines at least in part which pre-recorded message is played.

117. A call management system in accordance with claim 115
5 wherein said pre-recorded message requests the caller to enter information.

118. A call management system in accordance with claim 117 wherein said entered information is in the form of DTMF signals.

10 119. A call management system in accordance with claim 117 wherein said entered information is in the form of spoken words.

120. A call management system in accordance with claim 117
15 wherein said entered information determines at least in part the subsequent processing of the call.

121. A call management system in accordance with claim 101 wherein said call processing rule specifies at least in part that the call be transferred to the called user at a location other than the normal user position.

20 122. A call management system in accordance with claim 121 further including means for the user to change the location to which the call is to be transferred by calling the call management system and entering appropriate instructions.

123. A call management system in accordance with claim 121
25 wherein said call processing rule specifies a series of alternate destinations which are to be called.

124. A call management system in accordance with claim 101 wherein said call processing rule specifies at least in part that the call be transferred to a paging service.
125. A call management system in accordance with claim 101
5 wherein said call processing rule specifies at least in part that the call be transferred to a voice mailbox.
126. A call management system in accordance with claim 101 wherein said call processing rule specifies at least in part that the call be transferred to an alternate location and
10 subsequently transferred back to the called user.
127. A call management system in accordance with claim 101 wherein said call processing rule specifies at least in part that another call processing rule should be applied to the call.
128. A call management system in accordance with claim 101
15 wherein said call processing rule specifies at least in part that a special ringing sound should be used for the call.
129. A call management system in accordance with claim 101 wherein said call processing rule specifies at least in part
20 that the call should be disconnected.
130. A call management system in accordance with claim 101 wherein said call processing rule specifies at least in part that the call should be placed on hold.
131. A call management system in accordance with claim 115
25 wherein the user may call the system and re-record the pre-recorded message(s), changing content as desired.
132. A call management system in accordance with claim 101 wherein which of said processing rules is applicable is

determined at least in part by the identity of the calling party.

133. A call management system in accordance with claim 115 wherein the identity of the calling party determines at least in part which pre-recorded message is played.

134. A call management system in accordance with claim 115 wherein the telephone number of the calling party or a portion thereof determines at least in part which pre-recorded message is played.

135. A call management system in accordance with claim 79 wherein said other destination is a plurality of user positions.

136. A call management system in accordance with claim 79 wherein said other destination is an extension number.

137. A call management system in accordance with claim 110 wherein said other destination is a plurality of user positions.

138. A call management system in accordance with claim 110 wherein said other destination is an extension number.

139. A call management system in accordance with claim 3 wherein said system includes one or more processing rules wherein the type of call determines at least in part how calls of each type are processed.

140. A call management system in accordance with claim 139 wherein said call management system includes storage for said processing rules.

141. A call management system in accordance with claim 139 wherein which of said processing rules is applicable is determined at least in part by the identity of the called user.

5 142. A call management system in accordance with claim 139 wherein which of said processing rules is applicable is determined at least in part by the current status of the called user.

143. A call management system in accordance with claim 142
10 wherein the current status of the called user includes whether or not he or she is on the phone.

144. A call management system in accordance with claim 142 wherein the current status of the called user includes whether or not he or she is available to receive calls.

15 145. A call management system in accordance with claim 142 wherein the current status of the called user includes whether or not he or she is accepting only priority calls.

146. A call management system in accordance with claim 142 wherein the current status of the called user includes his
20 or her current location.

147. A call management system in accordance with claim 142 wherein which of said processing rules is applicable is determined at least in part by the current date, day of the week and/or time of day.

25 148. A call management system in accordance with claim 139 wherein said processing rules include instructions for routing calls from at least one caller to a destination other than the user position.

149. A call management system in accordance with claim 148 wherein said other destination is a destination on the public switched telephone network.

150. A call management system in accordance with claim 148
5 wherein said other destination is another user position.

151. A call management system in accordance with claim 148 wherein said other destination is a destination on the Internet.

152. A call management system in accordance with claim 139
10 wherein said call processing rule specifies at least in part that the call be transferred to the called user at a location other than the normal user position.

153. A call management system in accordance with claim 152 further including means for the user to change the location
15 to which the call is to be transferred by calling the call management system and entering appropriate instructions.

154. A call management system in accordance with claim 152 wherein said call processing rule specifies a series of alternate destinations which are to be called.

20 155. A call management system in accordance with claim 139 wherein said call processing rule specifies at least in part that the user be paged upon receipt of certain calls.

156. A call management system in accordance with claim 139 wherein said call processing rule specifies at least in part
25 that another call processing rule should be applied to the call.

157. A call management system in accordance with claim 139 wherein said call processing rule specifies at least in part that a special ringing sound should be used for the call.

158. A call management system in accordance with claim 139
5 wherein which of said processing rules is applicable is determined at least in part by the identity of the calling party.

159. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at
10 least one user position includes a command to put the call through to said at least one user position.

160. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at
15 least one user position includes a command to disconnect the call.

161. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at least one user position includes a command to mute the call.

162. A call management system in accordance with claim 1
20 wherein said interaction with said workstation of said at least one user position includes a command to transfer the call to another destination.

163. A call management system in accordance with claim 162 wherein said another destination is a voice mailbox.

25 164. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at least one user position includes a command to route the call

to a plurality of user positions for answer by the first available user from that plurality.

165. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at least one user position includes a command to put the call on hold.

166. A call management system in accordance with claim 101 wherein said interaction with said workstation of said at least one user position includes a command to add the caller to a specific rule.

167. A call management system in accordance with claim 70 wherein said interaction with said workstation of said at least one user position includes a command to apply a selected rule to the call.

168. A call management system in accordance with claim 101 wherein said interaction with said workstation of said at least one user position includes a command to apply a selected rule to the call.

169. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at least one user position includes a command to record a call.

170. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at least one user position includes a command to playback a selected recorded call or a portion thereof.

171. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at

least one user position includes a command to conference at least one other party in on the call.

172. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at
5 least one user position includes a command to associate an electronic message with the call.

173. A call management system in accordance with claim 172 wherein said associated electronic message is displayed on the workstation along with the call.

10 174. A call management system in accordance with claim 173 wherein said displayed associated electronic message is displayed on the associated workstation of another user whenever the call is transferred to or conferenced with that user.

15 175. A call management system in accordance with claim 1 wherein said interaction with said workstation of said at least one user position includes a command to ask the caller for additional information.

176. A call management system in accordance with claim 171
20 wherein said additional information is requested to be entered in voice.

177. A call management system in accordance with claim 171 wherein said additional information is requested to be entered using DTMF signals.

25 178. A call management system in accordance with claim 171 wherein said additional entered information is transmitted to the user position.

179. A call management system in accordance with claim 58 wherein said interaction with said workstation of said at least one user position includes a command to play a pre-recorded message to the caller.

5 180. A call management system in accordance with claim 179 wherein the pre-recorded message is selected from a list by the user.

181. A call management system in accordance with claim 179 wherein the user may specify actions to be taken following
10 the playing of the pre-recorded message.

182. A call management system in accordance with claim 2 wherein said interaction with said workstation of said at least one user position includes a command to play a pre-recorded message to the caller which is personalized for the
15 specific caller.

183. A call management system in accordance with claim 1 wherein a log of call information is maintained for calls placed to and/or from system users.

184. A call management system in accordance with claim 183
20 wherein said interaction with said workstation of said at least one user position includes a command to display some or all of that user's calls as recorded in the call log on said workstation.

185. A call management system in accordance with claim 2
25 wherein a log of call information is maintained for calls placed to and/or from system users.

186. A call management system in accordance with claim 185 wherein said interaction with said workstation of said at

least one user position includes a command to display some or all of that user's calls as recorded in the call log on said workstation.

187. A call management system in accordance with claim 186
5 wherein said interaction with said workstation of said at least one user position includes a command to display call information from the call log relating to a particular caller.

188. A call management system in accordance with claim 186
10 wherein said displayed information from said call log may be restricted to calls which did not reach the user.

189. A call management system in accordance with claim 186 wherein said displayed information from said call log may be restricted to incoming calls to the user.

190. A call management system in accordance with claim 186
15 wherein said displayed information from said call log may be restricted to outbound calls from the user.

191. A call management system in accordance with claim 186 wherein said displayed information from said call log may be
20 restricted to calls received and/or placed after a certain time or event.

192. A call management system in accordance with claim 186 wherein the user may select a particular call from the call log and command that a call be placed to that caller.

193. A call management system in accordance with claim 1
25 wherein said interaction with said workstation of said at least one user position includes a facility for composing an

electronic message for at least one other user and a command for delivering said message to said at least one other user.

194. A call management system in accordance with claim 193 wherein each of said workstations includes means to receive
5 electronic messages from other users, means to alert the user of receipt of such electronic messages, and means to display such electronic messages when desired.

195. A call management system in accordance with claim 194 wherein each of said user workstations includes means to
10 reply to received electronic messages.

196. A call management system in accordance with claim 194 wherein each of said user workstations includes a command to initiate a call to the sender of received electronic
messages.

15 197. A call management system in accordance with claim 1 wherein the present status of users of the system is maintained.

198. A call management system in accordance with claim 197 wherein said present status of users includes whether or not
20 such users are currently available to receive calls.

199. A call management system in accordance with claim 197 wherein said present status of users includes whether or not such users are currently handling a telephone call.

200. A call management system in accordance with claim 197
25 wherein said present status of users includes whether or not such users are currently available only to receive calls from selected callers.

201. A call management system in accordance with claim 197 wherein said present status of users includes when said users are expected to be available to receive calls.
202. A call management system in accordance with claim 197
5 wherein said present status of users includes at least one optional electronic message entered by each user.
203. A call management system in accordance with claim 197 wherein the present status of other users may be viewed at any time on a user's workstation.
- 10 204. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes popping up a window on the computer workstation associated with said at least one user position.
- 15 205. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes flashing an icon on the computer workstation associated with said at least one user position.
- 20 206. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes playing an audible signal on the computer workstation associated with said at least one user position.
- 25 207. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes flashing a window

on the computer workstation associated with said at least one user position.

208. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes notifying the user when a call is received for that user.

209. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes notifying the user when a fax is received for that user.

210. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes notifying the user when an e-mail message is received for that user.

211. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes notifying the user when a call is transferred to the voice mailbox associated with that user.

212. A call management system in accordance with claim 2 wherein said means for interacting with the workstation of said at least one user position includes notifying the user when a call is transferred to the voice mailbox associated with that user.

213. A call management system in accordance with claim 212 wherein said notification includes the identity of the caller.

214. A call management system in accordance with claim 1 wherein said means for interacting with the workstation of said at least one user position includes a command to activate the e-mail software system for that user.

5 215. A call management system in accordance with claim 19 wherein said means for interacting with the workstation of said at least one user position includes a command to activate the fax viewing software system for that user.

216. A call management system in accordance with claim 1
10 further including a directory database with entries of at least names and associated telephone addresses.

217. A call management system in accordance with claim 216 wherein said directory database further includes entries which are private to each user of the system.

15 218. A call management system in accordance with claim 216 wherein said directory database further includes entries which are associated with groups of users.

219. A call management system in accordance with claim 216 wherein said means for interacting with the workstation of
20 said at least one user position includes a command to view the directory database at least in part on the workstation.

220. A call management system in accordance with claim 219 wherein said command further includes an instruction to sort the directory database or a portion thereof according to
25 selected criteria.

221. A call management system in accordance with claim 219 wherein said command further includes instruction to limit the displayed entries according to selected criteria.

222. A call management system in accordance with claim 216 wherein an entry may be selected by the user.

223. A call management system in accordance with claim 222 wherein the selection is made by finding a match in the
5 database with data entered on the workstation keyboard.

224. A call management system in accordance with claim 222 wherein the selection is made by using a pointing device associated with the workstation.

225. A call management system in accordance with claim 222
10 wherein the selected entry is used to transfer calls to a corresponding destination.

226. A call management system in accordance with claim 222 wherein the selected entry is used to originate calls to a corresponding destination.

15 227. A call management system in accordance with claim 222 wherein the selected entry is used to conference calls with a corresponding destination.

228. A call management system in accordance with claim 222 wherein the selected entry is used to originate fax calls to
20 a corresponding destination.

229. A call management system in accordance with claim 222 wherein the selected entry is used to originate data calls to a corresponding destination.

230. A call management system in accordance with claim 222
25 wherein the selected entry is used to review the current status of the selected party.

231. A call management system in accordance with claim 222 wherein the selected entry is used to route electronic messages to the selected party.

232. A call management system in accordance with claim 222
5 wherein the selected entry is used to access the voice mailbox of the selected party.

233. A call management system in accordance with claim 216 further including means for updating the directory database from user workstations.

10 234. A call management system in accordance with claim 1 further including means for originating calls in response to commands from user workstations.

235. A call management system in accordance with claim 234 wherein calls are originated in response to user selection
15 from speed dial buttons displayed on the user workstation screen.

236. A call management system in accordance with claim 234 wherein calls are originated in response to user commands using a dial pad displayed on the user workstation screen.

20 237. A call management system in accordance with claim 234 wherein calls are originated in response to user typed commands from the workstation keyboard.

238. A call management system in accordance with claim 237 wherein said typed commands include the name of the party to
25 be called.

239. A call management system in accordance with claim 237 wherein said typed commands include the telephone number of the party to be called.

240. A call management system in accordance with claim 234 further including a log of recent calls from each user position.

241. A call management system in accordance with claim 240
5 wherein calls may be re-dialed in response to user commands from the log of recent calls from that user.

242. A call management system in accordance with claim 2 further including means to activate a personal information manager or other software program in the user workstation in
10 response to the receipt of a call from one of a group of specified callers.

243. A call management system in accordance with claim 1 wherein callers who are on hold hear music while on hold.

244. A call management system in accordance with claim 1
15 further including one or more speed transfer buttons displayed on user workstations to command that a selected call be transferred to a destination associated with each button.

245. A call management system in accordance with claim 244
20 wherein speed dial buttons which originate calls replace the speed transfer buttons when no calls are active at the user position.

246. A call management system in accordance with claim 1 further including means for receiving multiple calls for a
25 single user at the same time.

247. A call management system in accordance with claim 246 further including means for displaying the multiple calls on the called party's computer workstation.

248. A call management system in accordance with claim 246 further including:

means for establishing a bi-directional voice path from each caller to the call management computer;

5 means for establishing a bi-directional voice path to the associated telephone apparatus of the called party; and

means for connecting the bi-directional voice path from a selected caller to the bi-directional voice path of the called party.

10 249. A call management system in accordance with claim 248 further including means responsive to user commands to switch the bi-directional voice path to the called party from one caller to another.

15 250. A call management system in accordance with claim 249 further including means to put the first caller on hold when the user commands that the bi-directional voice path be switched to a second caller.

20 251. A call management system in accordance with claim 249 further including means to hang up the call to the first caller when the user commands that the voice path be switched to a second caller.

25 252. A call management system in accordance with claim 248 further including means for preserving the bi-directional call path to the called party after all calls have been completed for use in handling subsequent calls.

253. A call management system in accordance with claim 1 wherein said associated telephone apparatus is integrated with said computer workstation.

254. A call management system in accordance with claim 1
5 wherein said means for intercepting a call for at least one user position further includes telephone trunk lines to a telephone service provider's central office.

255. A call management system in accordance with claim 254
10 wherein said means for intercepting a call for at least one user position further includes telephone trunk lines to on-premises telephone equipment.

256. A call management system in accordance with claim 255 wherein said on-premises telephone equipment includes a private branch exchange or PBX telephone system.

15 257. A call management system in accordance with claim 255 wherein said on-premises telephone equipment includes a telephone key system.

258. A call management system in accordance with claim 255
20 wherein said on-premises telephone equipment includes user telephone apparatus directly controlled by said call management computer.

259. A call management system in accordance with claim 255 wherein said on-premises telephone equipment includes telephone apparatus integrated with user workstations.

25 260. A call management system in accordance with claim 1 wherein said means for intercepting a call for at least one user position further includes:

telephone trunk lines to a telephone service provider
and;

telephone trunk lines to on-premises telephone
equipment.

5 261. A call management system in accordance with claim 260
wherein said trunk lines to a telephone service provider and
said telephone trunk lines to on-premises telephone
equipment are of the same type.

262. A call management system in accordance with claim 261
10 further including switching means to bridge the telephone
trunk lines to the telephone service provider to the
telephone trunk lines to the on-premises telephone
equipment, removing the call management computer.

263. A call management system in accordance with claim 262
15 wherein said switching means bridges automatically whenever
the call management computer experiences a failure.

264. A call management system in accordance with claim 260
wherein said trunk lines to a telephone service provider and
said telephone trunk lines to on-premises telephone
20 equipment are of different types and/or numbers.

265. A call management system in accordance with claim 260
further including switching means to switch all telephone
trunks to a second call management computer.

266. A call management system in accordance with claim 265
25 wherein said switching means switches automatically whenever
the first call management computer experiences a failure.

267. A call management system in accordance with claim 1
further including at least another call management computer,

wherein each call management computer intercepts and processes a portion of the calls.

268. A call management system in accordance with claim 267 further including means to remove one call management
5 computer from active call handling, with the remaining call management computer(s) assuming all call interception and processing.

269. A call management system in accordance with claim 268 wherein said means to remove one call management computer
10 from active call handling operates automatically whenever a call management computer fails.

270. A call management system in accordance with claim 4 wherein each user has a single telephone number for both voice and fax calls.

15 271. A call management system in accordance with claim 5 wherein each user has a single telephone number for voice, fax and data calls.

272. A call management system in accordance with claim 6 wherein each user has a single telephone number for both
20 voice and data calls.

273. A call management system in accordance with claim 7 wherein each user has a single telephone number for voice, fax and data calls.

274. A call management system in accordance with claim 1
25 further including:

means for each computer workstation to transmit a document to said call management computer and;

means for said call management computer to transmit said document to at least one destination via facsimile.

275. A call management system in accordance with claim 274 further including means for logging successful and
5 unsuccessful fax transmissions.

276. A call management system in accordance with claim 275 further including means for viewing said log from said computer workstation.

277. A call management system in accordance with claim 274
10 further including a user-specified facsimile banner for each user.

278. A call management system in accordance with claim 1 further including:

means for each computer workstation to transmit a data
15 file to said call management computer and;

means for said call management computer to transmit said data file to at least one destination.

279. A call management system in accordance with claim 278 further including means for logging successful and
20 unsuccessful data file transmissions.

280. A call management system in accordance with claim 279 further including means for viewing said log from said computer workstation.

281. A call management system in accordance with claim 1
25 further including a voice mailbox for each user and means for storing voice messages in each voice mailbox and means for retrieving said voice messages.

282. A call management system in accordance with claim 1 wherein calls received for non-users are routed to appropriate destinations without further processing.

283. A call management system in accordance with claim 4
5 wherein fax calls received for specified numbers are accepted as though directed to a specified user.

284. A call management system in accordance with claim 7 wherein fax calls received for specified numbers are accepted as though directed to a specified user.

10 285. A call management system in accordance with claim 5 wherein data calls received for specified numbers are accepted as though directed to a specified user.

286. A call management system in accordance with claim 6
15 wherein data calls received for specified numbers are accepted as though directed to a specified user.

287. A call management system in accordance with claim 1 further including means to receive a call from a remote destination, determine the telephone number of that remote destination, and originate a call to the remote destination,
20 whether or not the original call was answered.

288. A call management system in accordance with claim 1 further including:

means for intercepting a call placed by a system user to his or her voice mailbox;

25 means for identifying said system user;

means for determining if said system user has received new electronic messages;

means for notifying said system user of these new electronic messages;

means for accepting delivery instructions for some or all of said new electronic messages from said system user

5 and;

means for delivering the specified new electronic messages according to said instructions.

289. A call management system in accordance with claim 288 wherein said new electronic messages include fax documents.

10 290. A call management system in accordance with claim 288 wherein said new electronic messages include e-mail messages.

291. A call management system in accordance with claim 288 wherein said new electronic messages include data files.

15 292. A call management system in accordance with claim 1 further including:

means for intercepting a call placed by a system user to a specified telephone number or group of numbers;

means for identifying said system user;

20 means for determining if said system user has received new electronic messages;

means for notifying said system user of these new electronic messages;

25 means for accepting delivery instructions for some or all of said new electronic messages from said system user and;

means for delivering the specified new electronic messages according to said instructions.

293. A call management system in accordance with claim 288 wherein said new electronic messages include fax documents.

294. A call management system in accordance with claim 288 wherein said new electronic messages include e-mail

5 messages.

295. A call management system in accordance with claim 288 wherein said new electronic messages include data files.

296. A call management system in accordance with claim 288 wherein said new electronic messages include voice messages.

10 297. A call management system comprising:

a plurality of user positions, comprising a computer workstation and associated telephone apparatus;

a call management computer;

15 a digital data network connecting each workstation of said plurality of user positions with said call management computer;

said call management computer including means for intercepting an incoming call and routing it to a first user position;

20 means for accepting instructions from said user position to direct the call to a sub-set of said plurality of user positions;

means for presenting the call to said sub-set of user positions and;

25 means responsive to actions at one of said sub-set of user positions for removing the notification at the remaining positions within the sub-set.

298. A call management system in accordance with claim 297 further including means for associating an electronic message with said call at said first user position and presenting said associated electronic message along with the call notification on the workstations of said sub-set of said plurality of user positions.

299. A call management system in accordance with claim 298 wherein the content of the associated electronic message is determined at least in part by which number was dialed by the caller.

300. A call management system in accordance with claim 298 wherein the content of the electronic message is determined at least in part by the telephone number or a portion thereof of the caller.

301. A call management system comprising:

a plurality of user positions, comprising a computer workstation and associated telephone apparatus;

a call management computer;

a digital data network connecting each workstation of said plurality of user positions with said call management computer;

said call management computer including means responsive to receipt of a call dialed to a specified number or group of numbers for presenting the call to a specified sub-set of said user positions and;

means responsive to actions at one of said sub-set of user positions for removing the notification at the remaining positions within the sub-set.

302. A call management system in accordance with claim 301 further including means for associating an electronic message with said call and presenting said associated electronic message along with said call presentation on the workstations of said sub-set of said plurality of user positions.

303. A call management system in accordance with claim 302 wherein the content of the associated electronic message is determined at least in part by which number was dialed by the caller.

304. A call management system in accordance with claim 302 wherein the content of the electronic message is determined at least in part by the telephone number or a portion thereof of the caller.

305. A call management system in accordance with claim 292 wherein specified telephone number is the telephone number of the system user's user position.

306. A call management system in accordance with claim 301 wherein the sub-set of said user positions is determined at least in part by the telephone number which the caller dialed or a portion thereof.

307. A call management system in accordance with claim 301 wherein the sub-set of said user positions is determined at least in part by the telephone number from which the call originated or a portion thereof.

308. A call management system in accordance with claim 297 wherein the sub-set of said user positions is determined at

least in part by the telephone number which the caller dialed or a portion thereof.

309. A call management system in accordance with claim 297 wherein the sub-set of said user positions is determined at least in part by the telephone number from which the call originated or a portion thereof.

310. A call management system comprising:

a plurality of user positions, each with an associated telephone apparatus;

10 a call management computer;

said call management computer including means for receiving incoming calls;

means for identifying a called user position for one incoming call;

15 means for establishing a call path to said called user position associated telephone apparatus;

means for completing said one incoming call via said call path; and

20 means for preserving said call path for use with a second received call.

311. A call management system in accordance with claim 310, comprising:

means for notifying said called user position of calls available to be switched to said called user position

25 telephone apparatus.

312. A call management system in accordance with claim 311, further comprising:

means for said called user position to instruct said call management computer to switch said call path to one of said calls available to be switched.

313. A call management system in accordance with claim 310; 5 comprising:

means for releasing said preserved call path.

314. A call management system in accordance with claim 310, wherein:

said identifying means is responsive to DNIS signals.

10 315. A call management system in accordance with claim 310, wherein:

said identifying means is responsive to ISDN signals.

316. A call management system in accordance with claim 310, wherein:

15 said identifying means comprising voice recognition apparatus to identify said called user from a received spoken name.

317. A call management system in accordance with claim 310, wherein:

20 said identifying means uses Internet screen forms filled in by a calling party.

318. A call management system in accordance with claim 310, wherein:

25 said identifying means comprises means for requesting that a calling party enter information, and means for receiving and using said information to identify the calling party.

319. A call management system in accordance with claim 318,
wherein:

said information includes said called party's extension
number.

5 320. A call management system in accordance with claim 318,
wherein:

said information comprises information generated by
said calling party spelling or partial spelling of said
called party's name on a telephone keypad.

10 321. A call management system in accordance with claim 318,
wherein:

said information includes said called party's name or a
portion thereof as spoken by said calling party.

15 322. A call management system in accordance with claim 310,
wherein:

said call management computer includes means for
identifying a calling party.

323. A call management system in accordance with claim 322,
further comprising:

20 means for notifying said called party of the identity
of said calling party.

324. A call management system in accordance with claim 322,
wherein:

said identifying means is responsive to ANI signals.

25 325. A call management system in accordance with claim 322,
wherein:

said identifying means is responsive to BCLID signals.

326. A call management system in accordance with claim 322,
wherein:

said identifying means is responsive to ISDN signals.

327. A call management system in accordance with claim 322,
5 wherein:

said identifying means is responsive to Caller ID
signals.

328. A call management system in accordance with claim 322,
wherein:

10 said identifying means is responsive to DTMF signals.

329. A call management system in accordance with claim 322,
wherein:

said identifying means is responsive to FSK signals.

330. A call management system in accordance with claim 322,
15 wherein:

said identifying means comprises means for requesting
that said calling party enter information and means for
using said information to identify said calling party.

331. A call management system in accordance with claim 330,
20 wherein:

said information comprises a telephone number.

332. A call management system in accordance with claim 331,
wherein:

25 said telephone number is a home telephone number of
said calling party.

333. A call management system in accordance with claim 331,
wherein:

said telephone number is a business telephone number of said calling party.

334. A call management system in accordance with claim 331, wherein:

5 said telephone number is a business telephone number and an extension number of said calling party.

335. A call management system in accordance with claim 331, wherein:

10 said information comprises a personal identification number.

336. A call management system in accordance with claim 330, wherein:

 said information comprises one or more spoken words.

15 337. A call management system in accordance with claim 336, wherein:

 said one or more spoken words comprises at least a portion of the name of said calling party.

338. A call management system in accordance with claim 322, wherein:

20 said identifying means comprises at least one caller ID database.

339. A call management system in accordance with claim 338, comprising:

25 means for updating said database with information received from a calling party not in said caller ID database.

340. A call management system in accordance with claim 339, wherein:

said database contains telephone numbers and listed names of calling parties.

341. A call management system in accordance with claim 339, wherein:

5 said database contains voice representations of the calling party.

342. A call management system in accordance with claim 339, wherein:

10 said database contains Internet addresses of calling parties.

343. A call management system in accordance with claim 339, wherein:

 said database contains e-mail addresses of calling parties.

15 344. A call management system in accordance with claim 338, comprising:

 means for updating said database with information entered from at least one user position.

20 345. A call management system in accordance with claim 310, comprising:

 means for playing a pre-recorded message to said calling party.

346. A call management system in accordance with claim 322, comprising:

25 means for playing a pre-recorded message to said calling party.

347. A call management system in accordance with claim 346, comprising:

means responsive to said identifying means identifying a calling party to determine at least in part which pre-recorded message is played.

348. A call management system in accordance with claim 346,
5 wherein:

said identifying means is responsive to the identity of a called party to determine at least in part which pre-recorded message is played.

349. A call management system in accordance with claim 346,
10 wherein:

said identifying means is responsive to the identity of said calling party and the identity of the called party to select said pre-recorded message.

350. A call management system in accordance with claim 311,
15 further comprising:

means at each said user position for notifying said call management computer to place a received call on hold and to switch said call path to another call.

351. A call management system in accordance with claim 311,
20 comprising:

means at said user position for notifying said call management computer to disconnect a first calling party coupled to said call path and to couple said call path to a second party.

25 352. A call management system in accordance with claim 310, comprising:

means at each said user position for notifying said call management computer to release said preserved call path.

353. A call management system in accordance with claim 310,
5 wherein:

said call path includes a destination on the public switched telephone network.

354. A call management system in accordance with claim 310,
wherein:

10 said call path includes a destination on a private telephone network.

355. A call management system in accordance with claim 310,
wherein:

said call path includes a destination on the Internet.

15 356. A call management system in accordance with claim 310,
wherein:

said call path includes a destination on a private digital network.

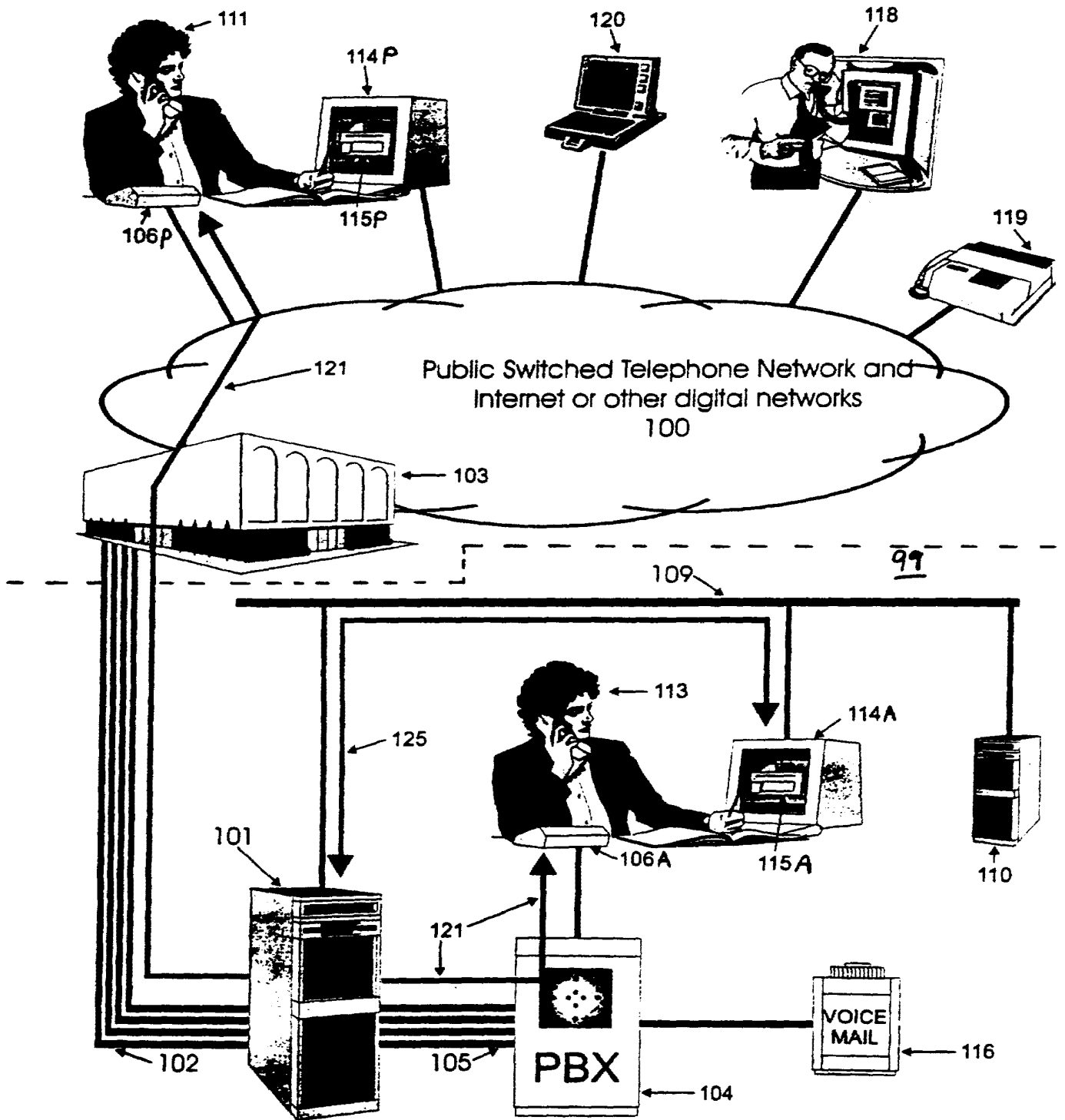


Fig. 1.

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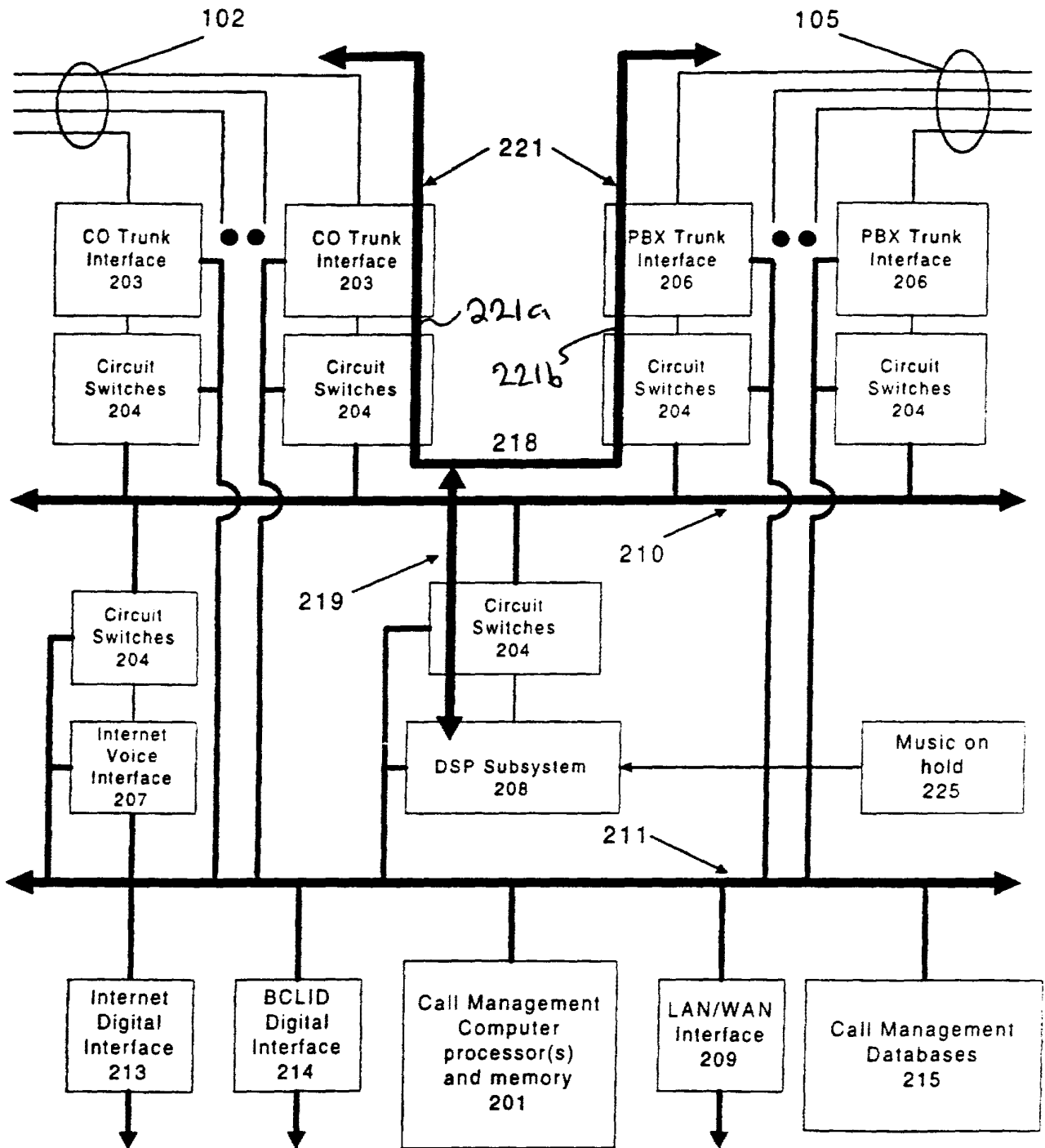


Fig. 2.

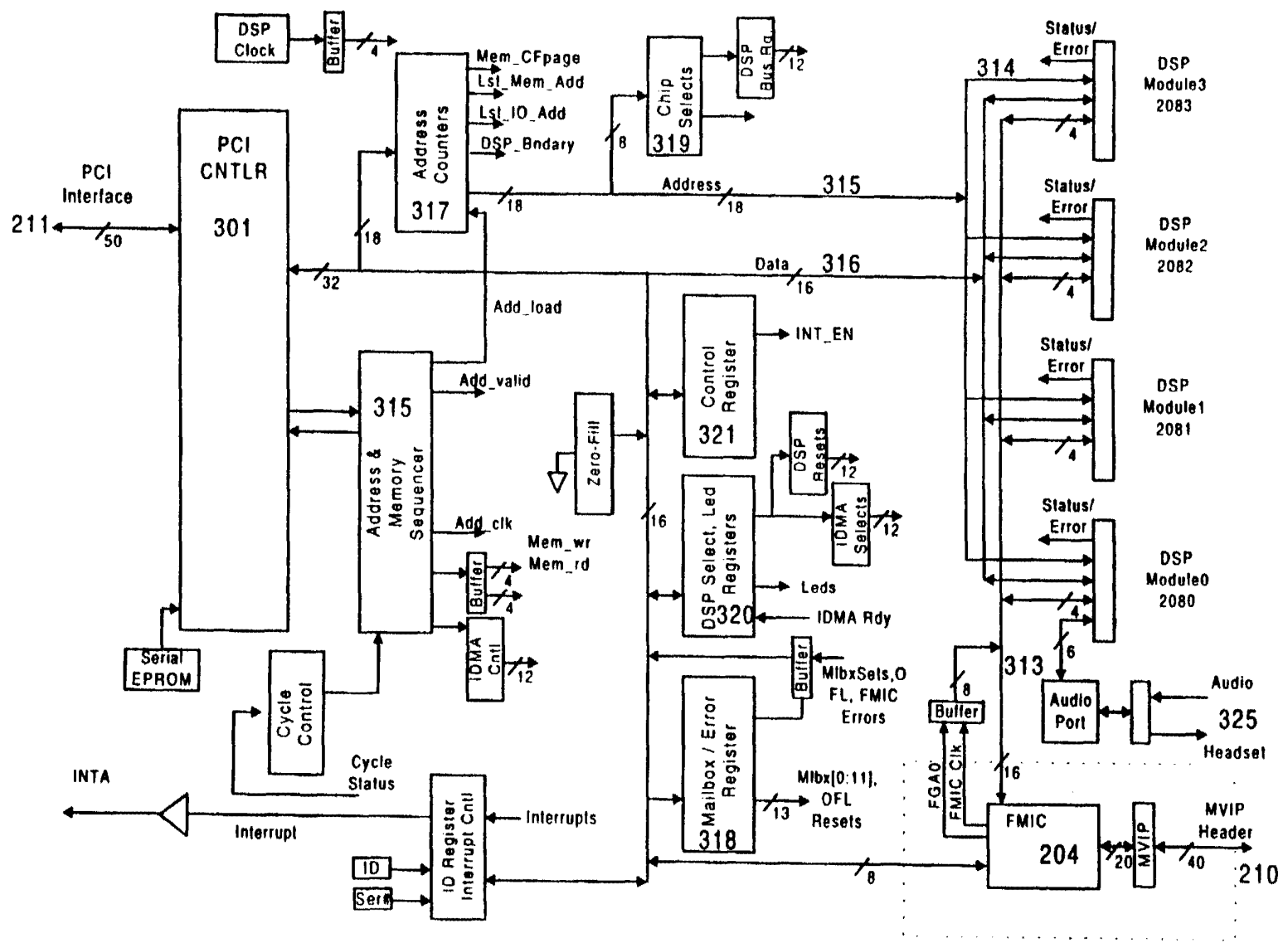


Fig. 3.

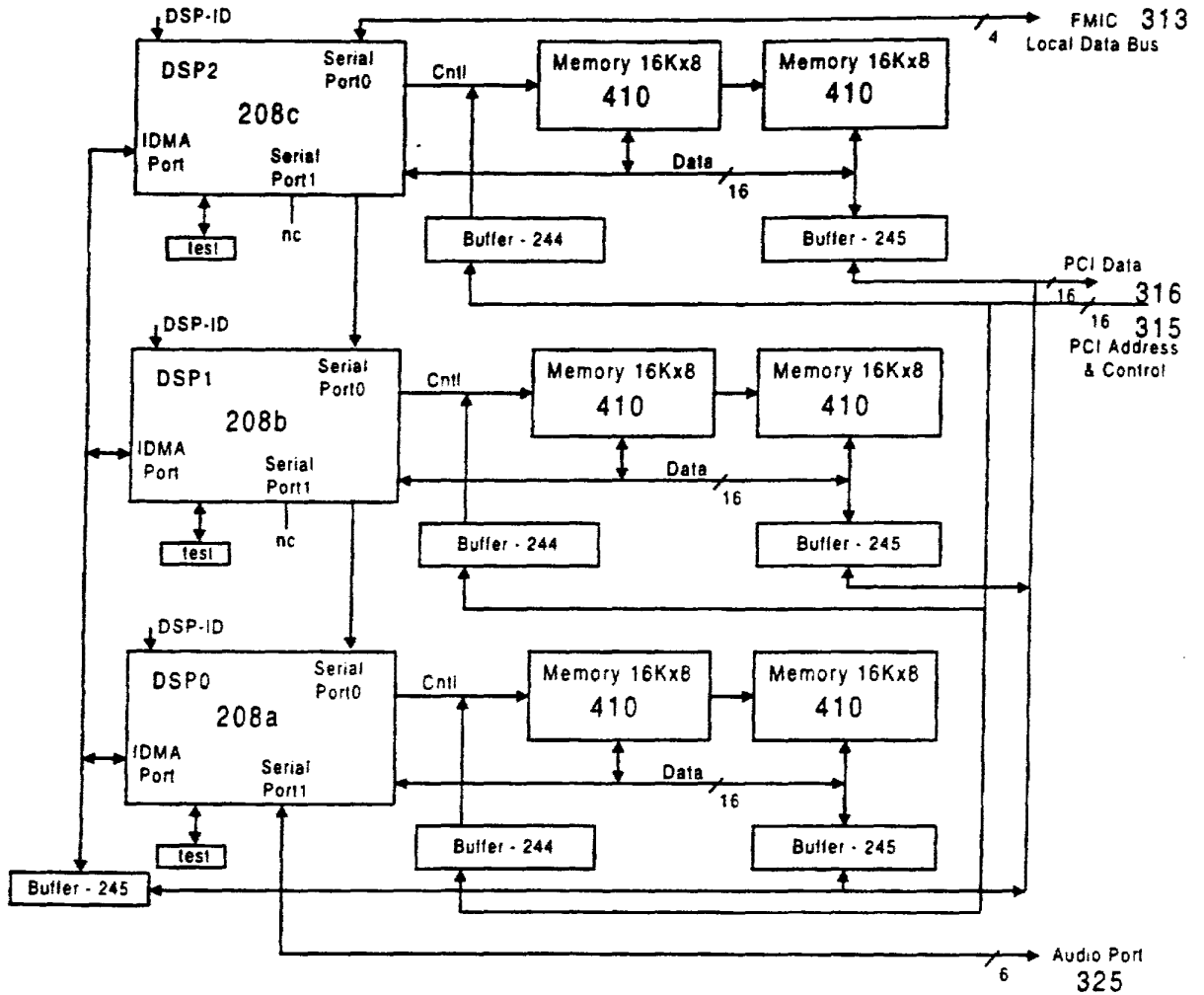


Fig. 4.

5 / 11

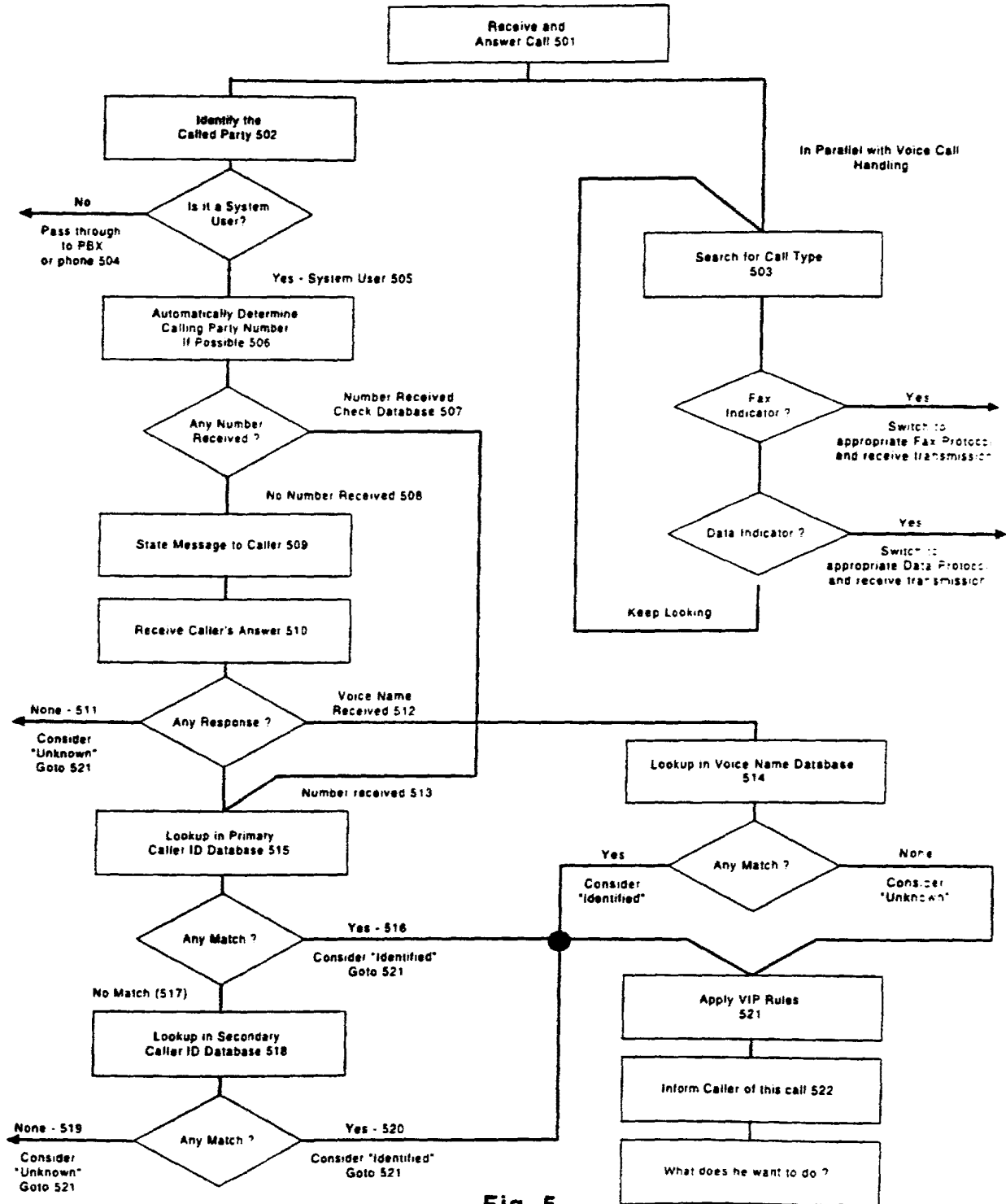


Fig. 5.

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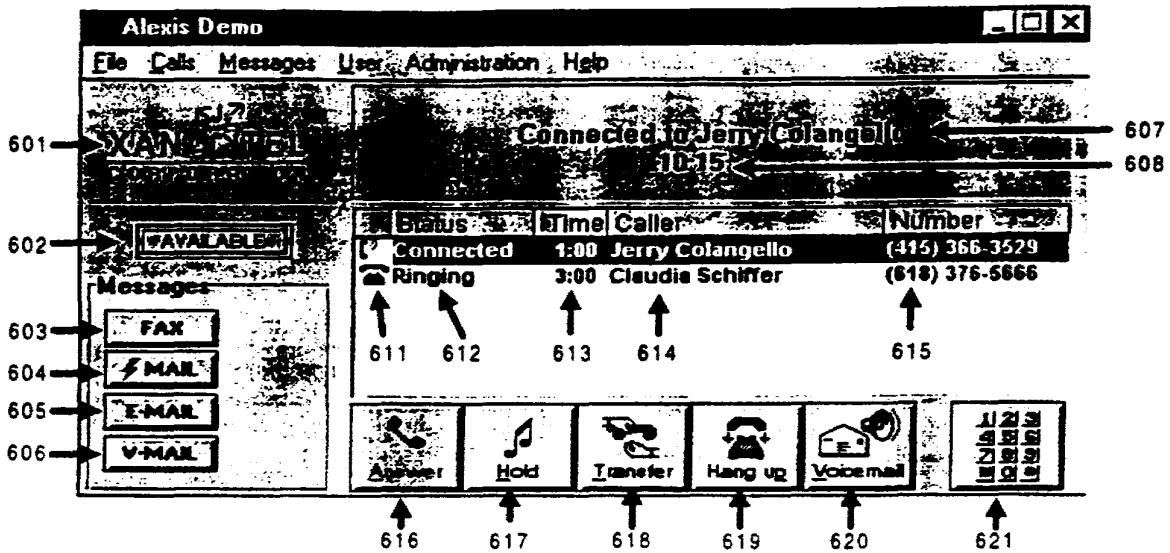


Fig. 6a.

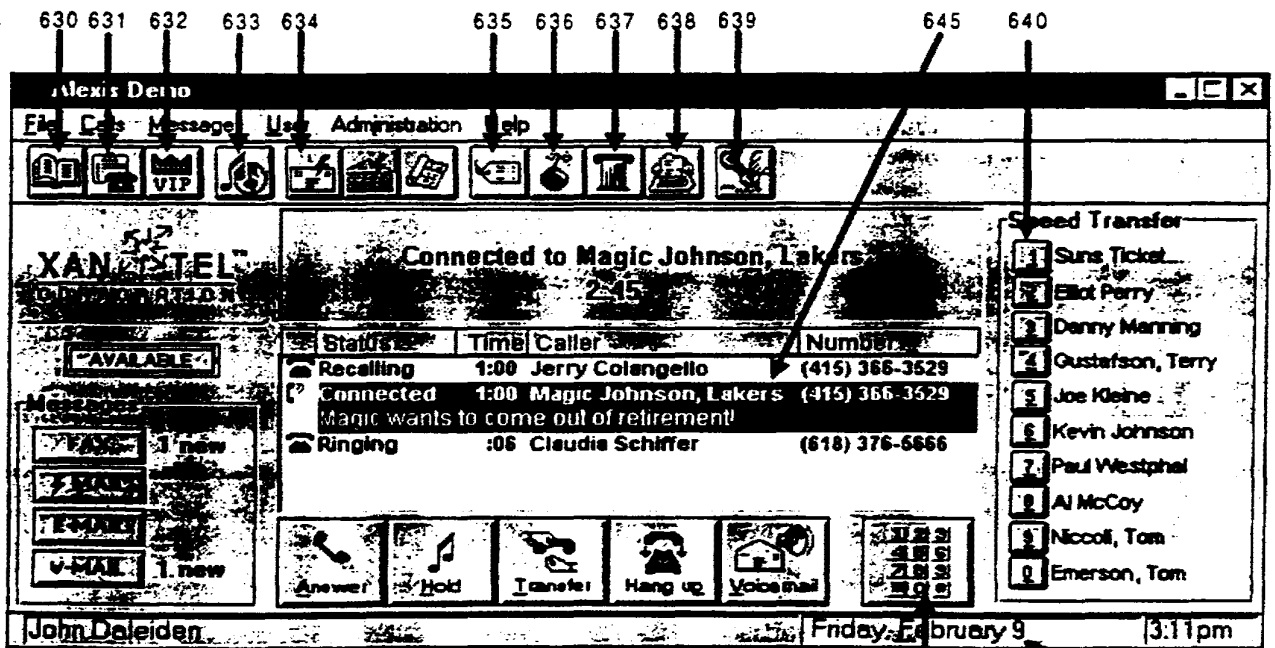


Fig. 6b.

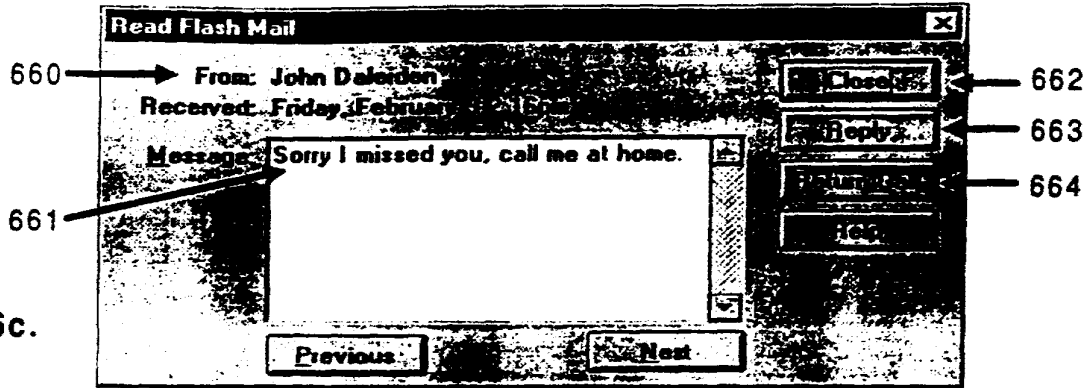


Fig. 6c.

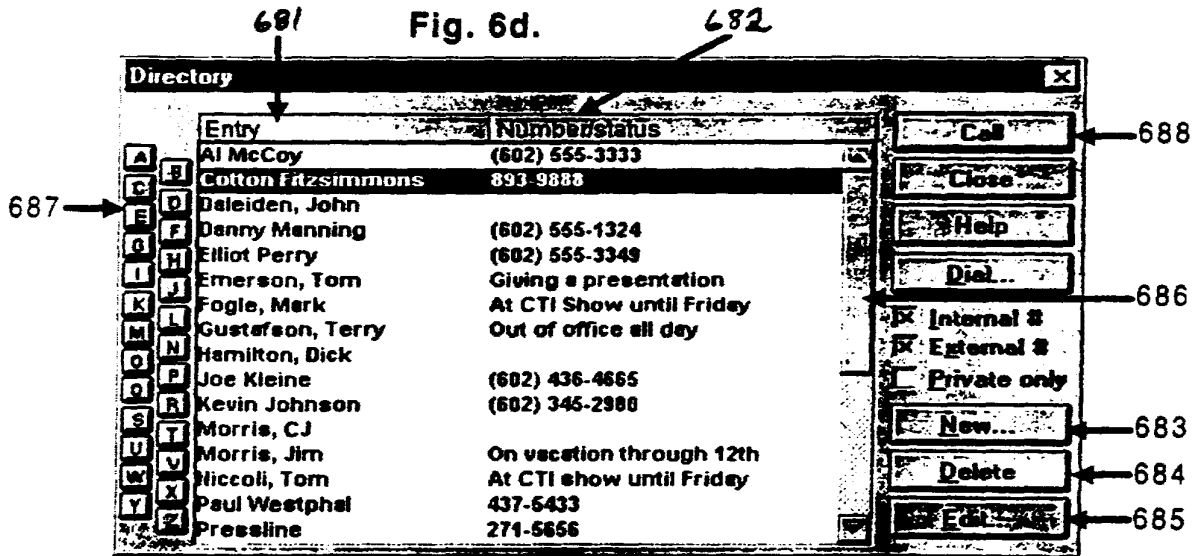


Fig. 6d.

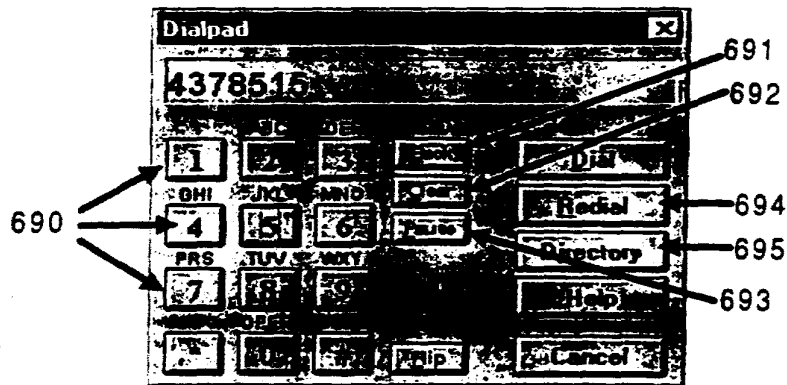


Fig. 6e.

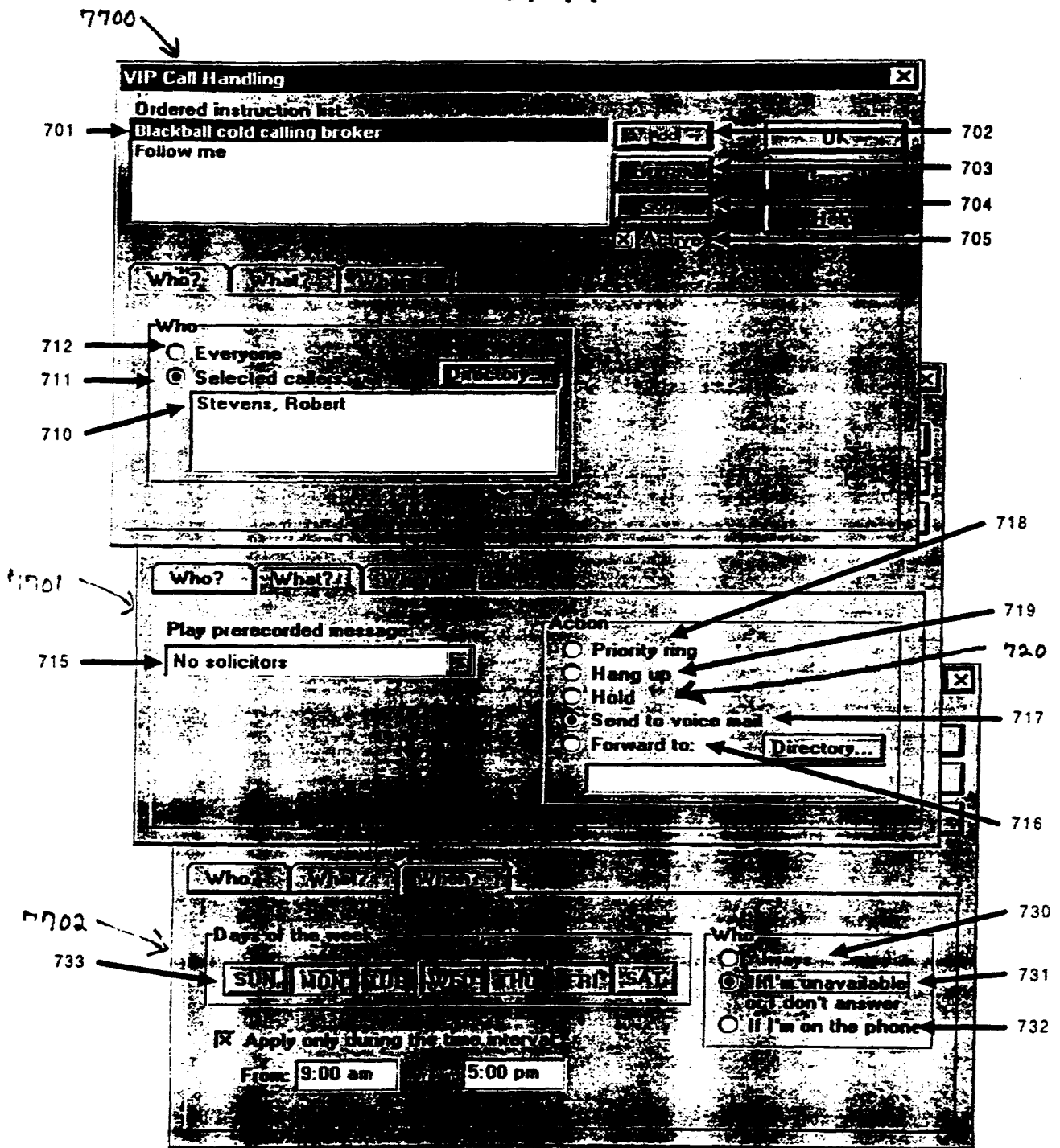


Fig. 7

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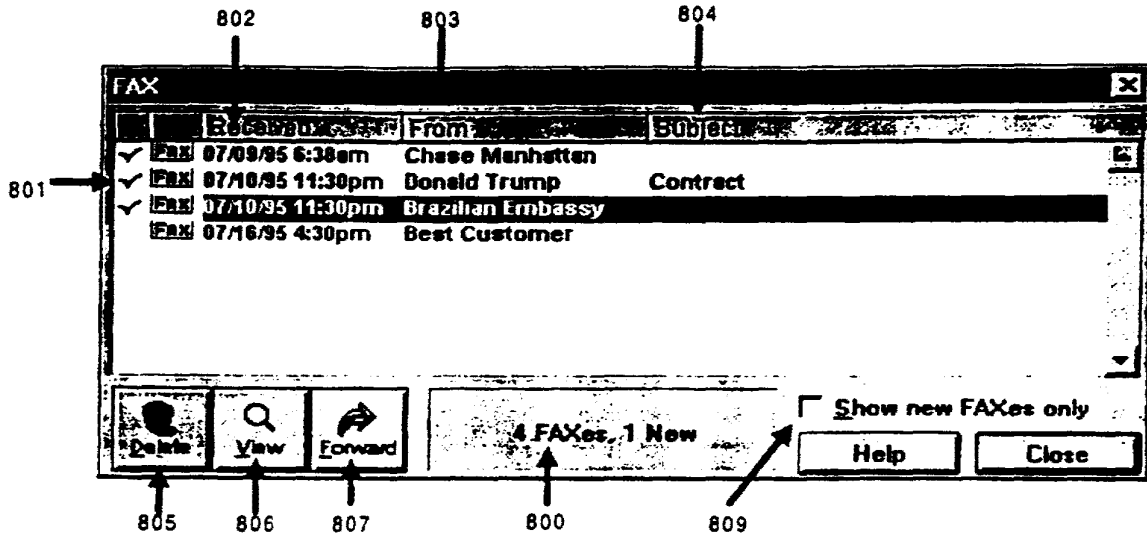


Fig. 8.

10 / 11

905 906 907 908 909 910 912

Date	Time	Length	Number	Caller
02-09-96	3:50 pm	:00	(602) 415-9576	Joe
02-09-96	3:50 pm	:00	(415) 244-1444	Charles Barkley
02-09-96	3:55 pm	4:00	(224) 235-2446	Jerry Jones, Cowboys
02-09-96	3:55 pm	:00	(342) 235-5555	Michael Jordan, Chicago Bulls
02-09-96	3:55 pm	:56	(617) 344-3248	Harry Newton
02-09-96	3:56 pm	46:00	(202) 452-5555	Newt Gingrich
OUT 02-09-96	4:00 pm	6:00	271-5656	Pressline
02-09-96	4:02 pm	:00	(224) 235-2446	Jerry Jones, Cowboys
02-09-96	4:02 pm	:00	(617) 344-3248	Harry Newton
02-09-96	4:02 pm	:00	(202) 452-5555	Newt Gingrich
02-09-96	4:02 pm	:00	(342) 235-5555	Michael Jordan, Chicago Bulls
OUT 02-09-96	4:02 pm	3:50	5552222	Outside Party
OUT 02-09-96	4:02 pm	:00	(602) 555-1324	Danny Manning

Outgoing
Unanswered

Add to Directory Return Calls Options Help Close

Fig. 9b

Call

Call Log Options

Include in log:

Unanswered (missed) calls

Incoming calls

Outgoing calls

Only calls since unavailable

Calls of the last 30 day(s)

Only calls with: Charles Barkley

OK
Cancel
Help

Fig. 9a

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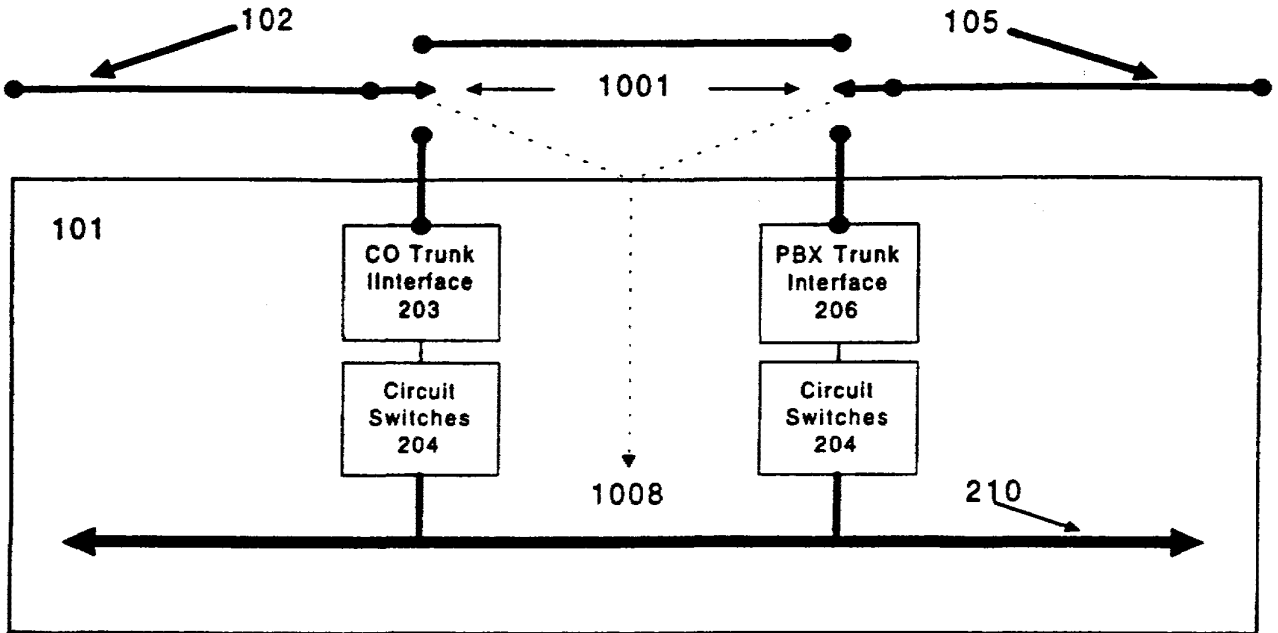


Fig. 10b

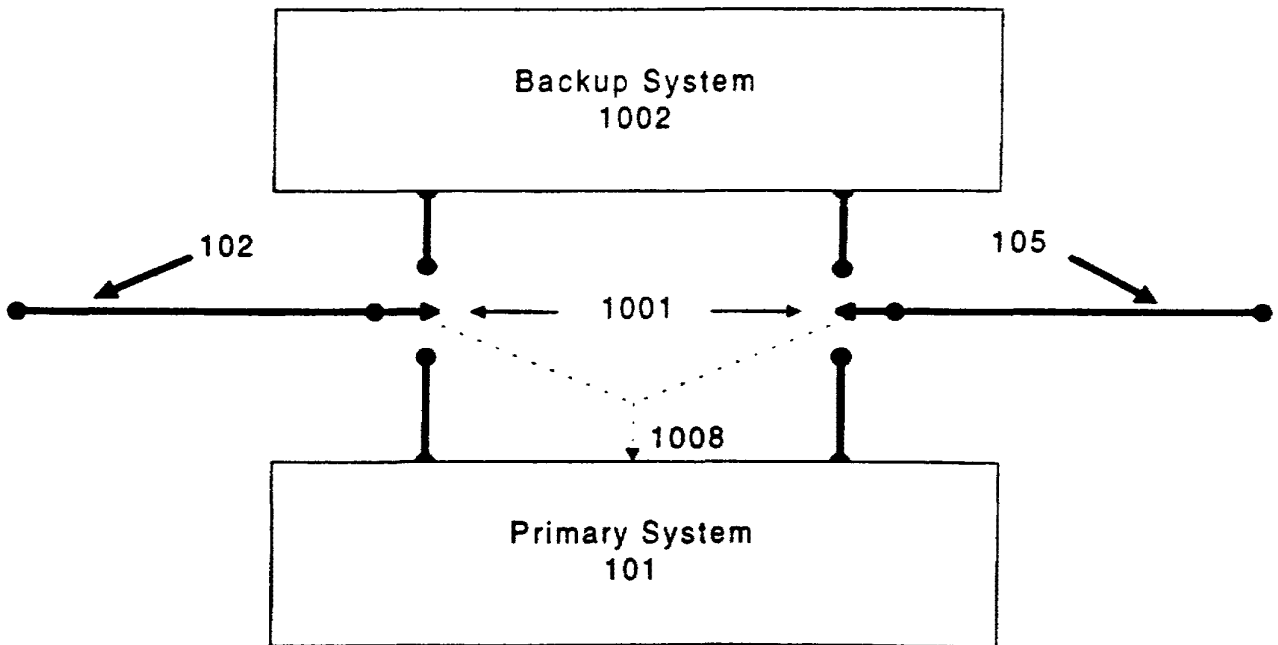


Fig. 10a

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/04689

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(6) : H04M 1/64, 11/00, 3/00
 US CL : 379/67, 100, 242
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 379/67, 100, 242

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US, A, 4,797,911 (Szlam et al) 10 January 1989, Fig.1 and columns 12-14, 16.	1 ----- 2-296
X --- Y	US, A, 5,097,528 (Gursahaney et al) 17 March 1992, Figs 2-5	1 ----- 2-296
X --- Y	US, A, 5,214,688 (Szlam et al) 25 May 1993, columns 2-3.	297,301 ----- 298-300, 302-309
X	US, A, 4,313,035 (Jordan et al) 26 January 1982, columns 2-4	310-356

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be part of particular relevance	*X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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P document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 25 JUNE 1997	Date of mailing of the international search report 11 AUG 1997
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer: <i>S. Howard</i> FAN TSANG Telephone No. (703)3054700
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/04689

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claim(s) 1-296 AND 305, drawn to VOICE MESSAGING SYSTEM, classified in U.S. class 379, subclass 67.

Group II, claim(s) 297-304, 306-309, drawn to ELECTRONIC MESSAGING SYSTEM, classified in U.S. class 379, subclass 100.

Group III, claim(s) 310-356, drawn to CENTRALIZED SWITCHING SYSTEM, classified in U.S. class 379, subclass 242.

The inventions listed as Groups I, II AND III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: A voice messaging system is used for storing, retrieving and processing voice signals. However, a electronic messaging system handles only non-voice electrical messages. It is clear that these two messaging systems are different from each other. Also, a centralized switching system deals with routing calls which is different from voice/electronic messaging systems for storing, processing or retrieving messages.

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**SYSTEM FOR INTEGRATED MANAGEMENT
OF MESSAGING AND COMMUNICATIONS**

This application claims priority to U.S. Provisional Application Serial No.

5 60/031,301, filed November 18, 1996.

Background of the Invention

The present invention relates generally to communication technologies such as electronic mail (e-mail), voice mail, paging, conference calling and facsimile (fax) mail messaging. Particularly, the present invention relates to systems for integrating
10 conventional telephony-based communication management services and capabilities with Internet-based communication management applications and capabilities.

Current communication technology utilizes several media, such as e-mail, voice, voice messaging, paging, video, video messaging, conference calling and facsimile. Such messages and media may be accessed through a wide variety of interfaces such as pagers,
15 wireline telephones, cellular and PCS telephones and computers (through direct dial modem, network or Internet access). With such a wide array of options in both medium and interface, systems have been provided for centralizing a user's communications in order to simplify access to these communications while at home, in the office or traveling. For example, U.S. Patent Application No. 08/665,564, filed June 18, 1996
20 entitled "System For Integrated Electronic Communications" (James Arthur Kitchen, David Gregory Smith, Leonard A. DeNittis, Kyle S. Brown, Michael S. Finney, Thomas Francis Johnson, III, Steve Feinstein, and Stephen J. H. Owens, inventors) which is incorporated herein in its entirety by this reference, describes a "universal mailbox" which comprises a fax server, an e-mail server and a voice mail server. Each server

receives and stores messages for a given user. The messages can thereafter be retrieved by the user at his or her convenience, using only a telephone interface. The servers are networked together and may be accessed from a single telephone interface; cross media capability allows e-mail messages, for instance, to be converted to voice. Moreover, the user is able to route messages to desired destinations; for instance, the user can access the system, designate a nearby telephone number, and have his or her communications sent to devices at that number. Thus, communications directed to a user are brought together in one place. Nonetheless, the means for accessing the communications are restricted to telephones and, in some cases, direct dial modem hookups.

Universal mailboxes are limited in that they typically do not support real-time communications. For instance, upon receiving a message from a universal mailbox, a user may wish to contact one or more persons, either sequentially or simultaneously. In the current environment, the user must sever his or her connection with the universal mailbox and then individually dial each person he or she wishes to contact. This can be time consuming and inefficient. Performing a conference call can be, paradoxically, even more difficult, requiring the assistance of an operator for dealing with complex command sets through a PBX. Thus, it would be desirable to provide a user-friendly interface which allows a user to access the features of a universal mailbox and engage in real-time communications without having to leave the mailbox environment.

Accessing universal mailboxes, even through computers, also provides limited flexibility because specialized software is required. Thus, users must learn how to operate the software, which may be time consuming. Also, as new versions of the

software are released, compatibility problems between the users' platforms and the universal mailbox arise. These problems may be related to inconsistent software compatibility across the multitude of platforms employed by users or compatibility problems between the user and the mailbox as different users use different versions of the
5 access software. Thus, it would be desirable to provide a network-based interface that relies on global standards, such as World Wide Web (WWW) protocols, so that each user need not have specialized hardware or software in order to access an use the system. Thus, a user could employ any browser or Internet protocol to establish communications with and use the system to manage his or her communications and messaging.

10 Communications delivered to a user may be multiple messages delivered over various media from one sender or many. Thus, a user may need to respond to various senders' e-mails, voice messages and faxes. Keeping track of the e-mail address, fax number and voice number of even a single person can be very difficult, particularly when one is away from the office. This problem is compounded when a user must maintain
15 communications over multiple media with multiple persons. Thus, it would be desirable to provide an interface which allows a user to direct messages and communications to any number of individuals across any number of media while relying on information stored in the system to direct the messages and communications appropriately.

 Furthermore, while a message may be received in one medium, such as e-mail, it
20 may be desirable to receive it and/or direct a response in a different medium, such as voice mail. This may be because the individual to whom the message is addressed may prefer one medium over another; it may simply be because at that point in time, the user

has no computer handy. Also, if the same message is to be delivered to several individuals, the user may wish to deliver the message via e-mail to some, fax to others and voice mail to the remainder. Thus, it would be desirable to provide functionality for directing a single message to one or more individuals in multiple formats.

5 Mass communications, such as fax broadcasting and conference calling, while particularly useful, are often complicated and cumbersome to implement. Thus it would be desirable to provide a communications management interface that allows mass communications to be easily and efficiently implemented.

 While the Internet has emerged as a source of information and communications
10 for many, the current universal mailboxes do not provide accessibility to the Internet. It would be desirable to provide a system which allows users to access their communications via the Internet, and, when possible, take advantage of the lower communications costs associated with the Internet to communicate with others. For instance, in sending out multiple responses to a message, a user may wish to attach a
15 voice file to an e-mail message for delivery over the Internet, rather than pay the cost of multiple traditional telephone hookups. Furthermore, it would be desirable to allow others to contact the user via the Internet. This would allow the user to present to others considerably more information than would be traditionally available, for instance, on a voice mail system.

20 Existing systems provide the user only with information specifically addressed to the user. Thus, in order to access generally available information, such as news, sports, weather, financial, or other information, a user must subscribe to services which will

identify and forward that information to the user's address. Much of this information is available, however, from publicly accessible areas, such as Internet World Wide Web (WWW or Web) pages. Thus, it would be desirable to allow the user to customize the interface such that he or she may easily access such sources of information, either using a
5 computer or a telephone interface.

Although a computer is often the simplest and most powerful means of accessing information, situations may arise in which access to a computer may be limited or non-existent. Thus, it would be desirable to provide an interface which, while accessible via computer, is still accessible from other interface units such as telephones.

10 Current telephony-based universal mailbox systems are relatively mature technologies and therefore have many desirable features that are established and fully operational. Thus, while it may be desirable to provide standalone systems for integrated computer/telephony communications, it may also be desirable to provide computer communication systems which can be added to existing computerized telephony
15 communications systems in order to take advantage of the mature technology embedded in the exiting telephony systems.

Summary of the Invention

The present invention provides network-based communication and information systems that leverage existing computer telephony information processing, storage and
20 retrieval platforms with the power and economies of the Internet and private data networks. The systems make communication and access to information more efficient and save users time and money. In a first embodiment, certain communications hardware

and features of a computer telephony-based system are off-loaded to a separate hardware node. For instance, fax boards, voice mail boards and text to speech boards are removed from the telephony management node and placed in one or more stand alone computers, such as "hardware nodes." An Internet node is then added to the system. Computer

5 telephony communication management nodes, which can be conventional telnodes that are thin on hardware (the hardware having been placed in the hardware nodes) but on which the applications reside (the "telapps"), and the Internet node then access the hardware nodes as various functionalities are required, using Internet protocols. The applications on the telnodes are therefore accessible to fax boards, T1 boards, and other

10 components of the hardware nodes in a manner that is far more flexible than in conventional computer telephony systems which rely on conventional networking techniques and protocols. For instance, if a user, accessing the system via the Internet wishes to send a fax, a command is sent through the Internet node to the appropriate hardware node, which handles the actual fax process; the hardware node runs the

15 application from the telapp, and the telapp interfaces with the network server for billing and administration purposes. Such billing systems have the capacity, preferably, to interface with remote credit or payment sources, such as those of banks or credit card companies, in real time, in order to transfer funds as required or otherwise maintain proper account status.

20 Likewise, a user accessing the system through telephony generates a command to the telapp, which commands the hardware node to process and deliver the fax; billing and administration can be handled in conventional ways or as otherwise desired. Both the

telapps and the Internet node have access to data in the billing information systems concerning customer accounts, preferences, contact information, etc. in order to process and bill the transaction. Common or distributed databases may be provided to serve this need. If distributed databases are employed, i.e., one database for the Internet node and
5 one for the telapp, it may be desirable to have the information mirrored from one database to the other to ensure synchronization of customer data. Either the telephony network manager or the Internet network manager may be responsible for synchronizing the distributed databases.

An integrated computer/telephony communications system may also be provided
10 which does not utilize existing telephony-based communications management systems infrastructure. In such a system, a single database may be used. One or more hardware nodes can be provided which use Internet protocols to communicate with applications functionality for flexibility, and a single network management system can be utilized. The network management system draws on a plurality of applications which in turn
15 access hardware elements on the hardware node to provide system functionality. In other words, a user can access the network manager via either telephony or the Internet. User commands to the network manager access applications stored therein or on a separate applications node. The applications then access hardware (such as fax boards, TTS boards, voicemail boards, etc.) on the hardware node and the user's commands are
20 implemented.

Regardless of which embodiment is used, the combination of computer and telephony communications provides a user with powerful tools and features for managing

his or her communications needs. Because the computer and telephony networks are integrated, a user no longer need sever his or her connection with the computer network to conduct real-time communications via the telephony network - live phone calls and even conference calls can be placed via the computer interface. Likewise, with the advent
5 of text to speech conversion capabilities, e-mail- and word processing document-to-fax conversion capabilities and other media conversion capabilities, access to communications from a telephone are not limited to voice mail messages. A user can direct e-mails, faxes and other communications to a fax machine of his or her choice. A user can even "listen" to his or her text based communications.

10 Traditionally, users of computer telephony based servers could instantly retrieve all voice, fax, e-mail, or other information from any telephone. The present invention allows users to retrieve all messages and other information from their desktop PC and also respond or forward messages to other people with a click of their mouse or a simple keystroke from any telephone. Conference calling is so simple that two clicks of the
15 mouse creates a normal telephone conference call in seconds and for a fraction of the cost of using an operator.

Because the system is network-based, users may access advanced computer telephony functionality without purchasing or installing any new hardware or software. The system can be completely platform independent and can be effectively used by
20 customers with literally no computer or Internet skills. This approach gives users the ability to communicate with anyone and access information anytime, anywhere. Whether on the Internet or by any telephone, the system allows users to access their personal on-

line phone directory, custom information such as stock reports and news, fully automated conference call and fax capabilities, and the power of “people centered communication”.

People centered communication is a data base structure and program which simplifies the process of communicating and accessing information. The system
5 eliminates the need to remember and organize the myriad of fax machine numbers, pagers, cell phones, multiple office and home numbers, and voice mail box addresses that now clutter business communications. Its on-line personal directory allows the user to send voice, fax or page messages to anyone without looking up or dialing any numbers. The on-line directory organizes personal and business contacts into logical groups to
10 which the user can instantly broadcast voice, fax, or pager notifications.

Communications preferences and technical skills vary widely. While some prefer pagers to cell phones, others use e-mail instead of faxes. Every company seems to have a unique system for receiving and responding to business communications. For this reason, systems according to the present invention employ a “cross media messaging” strategy.
15 Cross media messaging means that each person receives communications according to their own preferences - independent of how the message was originally sent or the technology employed. If a message were forwarded to a group of nine people; four might receive a fax at their office, three might receive it as an attachment to an e-mail message (cost savings and convenience), and two would be paged. Likewise, voice messages and
20 other communications or information can be instantly sent to individuals or groups of people using the system’s innovative cross media messaging component.

The distributed computer telephony systems according to the present invention utilize Internet or conventional network-based platforms that allow users direct access to existing telecommunication infrastructures without any investment in premise-based hardware or any specialized software. By leveraging the open standards of the Internet, 5 the systems allow users to access and/or configure their personal assistant from any standard Web browser without purchasing or installing any software on their computer, private network, or existing phone system. Thus, systems according to the present invention can be completely platform independent.

Since all data and equipment are resident in a single facility, users can access their 10 information and communication resources from anywhere in the world – from either a PC connected to the Internet or any touch tone telephone. When at the office or connected to the Internet, users can take advantage of the economies of packet-switched communications such as no cost e-mail transport, low cost retrieval of voice and other data, and direct access to their personal on-line directory. Significantly, if a user logs off 15 the Internet or does not even own a computer, he or she is still in touch with all of the system's communication and information resources from any touch tone phone -- worldwide.

For example, a business person on the road or in an airplane can send multiple messages with a single phone call, set up conference calls from a cell phone, or send a 30- 20 person fax broadcast from any telephone or PC within seconds. All of this is made possible through computer telephony platforms according to the present invention which allow the customer to initiate complex telecommunication transactions with great ease.

Systems according to the present invention can include a universal in-box which provides a single mailbox where users can retrieve, listen to, view, download, forward and/or save all of their inbound communications including voice mail, faxes, pages, and e-mail. All messages can be viewed or downloaded from any PC with an Internet
5 connection and can be forwarded to others by e-mail, fax, or voice regardless of whether or not they have Internet access or are customers of the system provider. Since the system is wholly Internet, intranet or network-based, all features of the universal in-box can be accessed from any touch tone telephone.

Systems according to the present invention can also provide simplified conference
10 calling. Whether at a PC or at any touch tone telephone, the user finds setting up conference calls a procedure that is simplified to a few mouse clicks or telephone keystrokes. The user eliminates the need for a conference call operator and takes control of the call. This feature replaces complex, confusing PBX systems. Seconds after requesting a conference call with a group of people, the user's phone rings and the
15 system's automated attendant does the rest. Each party is called by the system which retrieves all required numbers and automatically places all phone calls. Since the customer is actually in control of the system's resources, muting and dropping of callers can be accomplished with a single click of the mouse.

Each system user may have a personal on-line directory which is fully accessible
20 from any touch tone telephone or any PC with an Internet connection. The on-line directory can store and organize contact names, addresses, phone numbers, pager information, notes, and other data. To place a call, send a fax, or page anyone in the on-

line directory, the user simply clicks on the person's name from a PC or spells the name using a telephone key pad. Users can easily communicate with anyone in their on-line directory without having to keep track of multiple phone numbers and other contact information.

5 Each user may receive a personalized public home page on the Internet which is simple to configure and which serves as virtual receptionist to the world. The public page may be turned on or off by the user and may contain a wide array of information which the user chooses to place on the page. The user can select the most convenient way for people to contact them at any time. Real time messages, for example, can be sent to the
10 user by simply clicking on the "contact-me-now" button. Users may publish their name, address, contact information, automated street level maps and/or driving instructions, and direct access telecommunication and e-mail functions. If selected, direct e-mail, pager, and fax links can be placed on the public page giving Internet users a simple way to find the user and contact him or her directly from the Internet. In addition memos and a voice
15 greeting can be placed on the public page making it a personal message board to the world.

 Systems according to the present invention can provide all users direct access to news, sports, financial, travel and other custom content directly from their PC or from any telephone. After using a PC to select and customize the content the user desires, the
20 content can be linked directly to the public page and is made available from any touch tone telephone.

Accordingly, an object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages across one medium or across various media to and from various persons.

5 Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages which can be accessed via telephony or computer.

 Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating
10 communications and messages which are platform independent.

 Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages which manage communications over multiple media including, but not limited to, telephony networks and the Internet.

15 Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages which manage communications over multiple media including, but not limited to, telephony networks and the Internet and may intelligently select one available medium over another to optimize communication efficiency.

20 Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating

communications and messages which provide cross media messaging capability for message broadcasts.

Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating
5 communications and messages in which the interface and functionality is network-based and platform independent.

Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages in which the interface and functionality distribute
10 applications and system functionality so that resources may be allocated in the system flexibly and reliably using Internet or other distributed protocol and techniques.

Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages in which the generation of message broadcasts and
15 conference calls is greatly simplified.

Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages in which one portion of the interface may be dedicated to an individual user and a second portion of the interface may be accessible to the public,
20 thereby allowing members of the public to contact the user or access information provided by the user.

Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages in which one portion of the interface may be dedicated to an individual user and the user may customize that portion so that information resources
5 may be accessed directly from that portion.

Another object of the present invention is to provide integrated interfaces, functionality and processes for managing, generating, accessing and manipulating communications and messages which may be implemented in conjunction with existing computer telephony based message server systems.

10 Another object of the present invention is to provide an Internet or other network based graphical or computer interface to existing or new computer telephony systems.

Another object of the present invention is to provide computer network (Internet or otherwise) access to individuals' telephone numbers, pagers, fax machines and other devices which allow the Internet user to contact individuals in real time using the
15 computer network.

Other objects, features, and advantages of the present invention will become apparent with reference to the remainder of the written portion and the drawings of this document.

Brief Description of the Drawings

20 FIG. 1 illustrates one embodiment of a system for managing, generating, accessing and manipulating communications and messages in accordance with the present invention.

FIG. 2 illustrates the universal mailbox portion of the system of FIG. 1.

FIG. 3 illustrates the telapp of the system of FIG. 1

FIG. 4 illustrates the interface portion of the system of FIG. 1.

FIG. 5 illustrates the network management system file system organization of the
5 system of FIG. 1.

FIG. 6 illustrates the object, structure, and information flow of the system of FIG.
1.

FIG. 7 illustrates the structure of a second embodiment of a system for managing,
generating, accessing and manipulating communications and messages in accordance
10 with the present invention.

FIG. 8 illustrates a process by which the system of FIG. 7 can initiate a telephone
action.

FIG. 9 illustrates a process by which the system of FIG. 7 can initiate an Internet
action.

FIG. 10 illustrates one form of communication structure and applications
15 development structure of the system of FIG. 7.

FIG. 11 illustrates a user screen interface which can be generated by the systems
of FIGS. 1 and 7.

FIG. 12A illustrates an alternative embodiment of the screen of FIGS. 11.

FIG. 12 illustrates the configuration screen of the screen interface of FIG. 11.
20

FIG. 13 illustrates the personal page configuration screen of the screen interface
of FIG. 11.

FIG. 13A illustrates the default configuration screen accessed via the screen of FIG. 13.

FIG. 13B illustrates a billing screen of the interface of the system of FIGS. 1 and 7.

5 FIG. 13C illustrates the configuration selection screen of the interface of the system of FIGS. 1 and 7.

FIG. 14 illustrates a portion of the screen of FIG. 13 in which WWW hyperlinks may be entered.

10 FIG. 15 illustrates a portion of the screen of screen 13 in which a personal memo may be entered.

FIG. 16 illustrates the personal page generated by the interface screens illustrated in FIGS. 13-15.

15 FIG. 17 illustrates a configuration screen of a screen interface which may be generated by the systems of FIGS. 1 and 7 and in which addressing groups may be selected.

FIG. 17A illustrates the group editing option screen of the interface of FIG. 17.

FIG. 17B illustrates the group creation option screen of the interface of FIG. 17.

FIG. 17C illustrates the message creation screen of the interface of FIG. 17.

20 FIG. 18 shows a screen portion of the screen of FIG. 17 in which the information relating to addressing groups may be edited.

FIG. 19 shows another portion of the screen of FIG. 18.

FIG. 20 illustrates a configuration screen of a screen interface which may be generated by the systems of FIGS. 1 and 7 and in which individual persons' contact information may be selected and edited.

FIG. 20A shows an "Add Name" accessed via the screen of FIG 20.

5 FIG. 21 illustrates a personal inbox screen of a screen interface which may be generated by the systems of FIG. 1 and 7.

FIG. 22A illustrates a screen displaying an e-mail message accessed via the personal inbox screen of FIG. 21.

10 FIG. 22B illustrates an alternative embodiment of a screen displaying an e-mail message accessed via the personal inbox screen of FIG. 21.

FIG. 23A illustrates a screen showing a fax message accessed via the personal inbox of FIG. 21.

FIG. 23B illustrates an alternative embodiment of a screen showing a fax message accessed via the personal inbox of FIG. 21.

15 FIG. 24A illustrates a screen showing a voicemail message accessed via the screen FIG. 21

FIG. 24B illustrates an alternative embodiment of a screen showing a voicemail message accessed via the screen FIG. 21

20 FIG. 25A illustrates a contact screen of a screen interface which may be generated by the systems of FIGS. 1 and 7 and by which messages may be distributed to individual or group contacts.

FIG. 25B illustrates a contact screen of a screen interface which may be generated by the systems of FIGS. 1 and 7 and by which messages may be distributed to individual or group contacts with an area in which to enter the recipients address.

FIG. 26 illustrates a contact screen of a screen interface which may be generated
5 by the systems of FIGS. 1 and 7 and by which conference calls may be established.

FIG. 27 illustrates the screen of FIG. 26 once a conference call has been established.

Detailed Description of the Drawings

10 FIG. 1 shows one embodiment of a system 10 for managing, generating, accessing and manipulating communications and messages in accordance with the present invention. It should not be viewed as limiting, but rather to disclose in detail one particular way for carrying out the invention. The illustrative embodiment illustrated in FIGS. 1-6 reflects a system configuration driven by the desire to take advantage of the
15 hardware and capabilities of existing conventional telephony based messaging systems. As illustrated in FIGS. 7-10, another embodiment of a system according to the present invention may be provided which does not rely on conventional or existing infrastructure.

Referring to FIG. 1, telephony subsystem 12 of system 10 comprises many of the components of a conventional telephony-based universal mailbox system. Internet
20 subsystem 14 of system 10 comprises the components for providing the integrated interface through which telephony subsystem 12 may be accessed and information stored therein manipulated.

FIG. 2 illustrates telephony subsystem 12 of the system of FIG. 1. Telephony subsystem 12 comprises server 16, telephony application nodes (telapps) 18A-N, network manager 20, special purpose telephony nodes (telnodes) 22A-N and database 24. In the illustrative embodiment, server 16 is a Novell Server, consequently, communication
5 among the elements of telephony subsystem 12 is via SPX, IPX or other desirable network protocol. Of course other networking standards and components could be employed, such as Microsoft NT or Unix based systems, in which case other protocols, including IP, could be used. Server 16, in combination with database 24, stores all of the messages delivered to any users as well as all information relating to user accounts for
10 configuration control and billing purposes.

In the present invention, in order to provide Internet functionality to existing computer telephony systems, the inventors have replaced certain conventional telnodes with hardware nodes and telephone application nodes, or "Telapps." A primary reason for this approach is to provide a first platform which is primarily hardware-centric and a
15 second in which the applications are made available to the hardware node across an Internet protocol or other suitable transfer protocol network. Telapps 18A-N manage Internet based system functionality according to the present invention such as voicemail, e-mail, and other media messaging and communications functions. Conventional telnodes 22A-N also continue to manage conventional computer telephony functionality
20 such as provision of voice, e-mail, T1, and fax communications to system 10 via a conventional or other telephone switch.

As illustrated in FIGS. 1 and 3, hardware nodes 26A-N provide standalone hardware units. For instance, all communications boards, such as digital network interface (T1), fax, text-to-speech (TTS), conference, etc., may be transferred to hardware node 26A. Thus, telapps 18A-N are platforms for applications which access the hardware
5 elements as necessary to implement functionality, such as control of call flow, TTS processing, etc. Telapps 18A - N communicates with hardware nodes 26A - N, for instance, through a suitable high level API for controlling call flow and telephony resources. A user communicates with telapps 18A-N to access and manipulate communications. Telapps 18A-N, upon receiving user commands, access applications
10 which in turn access hardware on hardware nodes 26A-N to perform the desired functionality. All transactions are tracked from, and relevant information for each transaction is provided by server 16. Network manager 20 coordinates the interaction between telapps 18A-N, server 16 and, when used, specialized nodes 22A-N.

Hardware nodes 26A-N of the illustrative embodiment are Pentium® based
15 SCO/UNIXWARE units with rack-mount passive backplane systems (such as those with an SCSI bus) populated with T1, voice, conference, fax, TTS, voice recording and voice recognition boards. The use of SCO/UNIXWARE is desirable in the illustrative embodiment because it allows compatibility between the UNIX network file system (NFS) used in Internet subsystem 14 and the Novell proprietary file system (which
20 supports NFS) employed in telephony subsystem 12. Hardware node 26A will be completely configurable based on the boards that are populated therein.

A benefit of dividing the resources among telapps 18A - N and hardware nodes 26A - N is to allow the platforms to become independent of the DOS environment, be supported by industry standards such as UNIX, and increase scalability. The functionality split also serves to eliminate the need to transfer calls through the switch and coordinate function of the net manager 20 eliminating cost, time consumption and inefficiency associated with providing conference, fax, TTS, and other features during a call. The functionality split also provides a method for allowing a conventional telephony subsystem to communicate with an Internet-based subsystem thereby enabling the interface according to the present invention. In other words, an existing system, with established telephony capability, a customer base and an established database can easily be integrated with a computer communications network, such as the Internet, without losing the benefit of those valuable assets.

FIGS. 4 and 5 illustrate Internet subsystem 14 of system 10, which comprises web manager 28, DB server 30, database 32 and encoder 34. All communications within Internet subsystem 14 is via IP protocol. Web manager 28 communicates with hardware nodes 26A-N via IP protocol. Web manager 28 communicates with server 16, however, via IPX protocol since server 16 is on the existing computer telephony Novell net. Web manager 28 acts as the conduit for all communications between telephony subsystem 12 and any processes which utilize the Internet or communicate via TCP/IP. Web manager 28 also acts to coordinate and synchronize all databases in system 10.

DB server 30 stores all of the information required for operation of the Internet related functions of system 10. Server 30 holds all information necessary for the Internet

interface of system 10, including messages, contact data, customer records, etc. Server 30 is kept synchronized by web manager 28 which coordinates with telapps 18A-N. Web manager 28 also keeps the files stored on server 30 in synch with those stored on server 16. Also, server 30 stores all of the messaging information for the messages stored on the system for a user. In other words, although the message itself is stored on server 16, descriptive information regarding the message, such as time received, return address, etc. may be generated and stored on server 30 for access via a graphical interface as described more fully below. Database 32 is a storage system for data stored by server 30 and in the illustrative embodiment comprises an Informix database. Encoder 34 is responsible for converting file formats of information sent out or received so that it is compatible for its ultimate use.

Server 30 serves as centralized storage for subsystem 14. Web manager 28, e-mail server 36 and encoder 34 may refer to files thereon regardless of on which platform they reside. Voice mail, fax and other customer data stored on server 16 may be mirrored on server 30.

Web manager 28 handles the transfer of files from server 16 to server 30 upon command from telapps 18. E-mail server 36 stores new e-mails on server 30 and inserts a message record in database 32, which makes it accessible to the Internet interface process which require the information so that it may be displayed to the user. In order for telapps 18 to access the message, the e-mail directory may be mapped to as a shared directory with server 16. Telapps 18 query web manager 28 in order to query server 30 for a given user's list of e-mail messages.

As illustrated in FIGS. 1 and 6 (which illustrates the object structure of the system of FIG. 1), it can be seen that system 10 comprises two primary elements - an Internet communications system (Internet subsystem 14) and a telephony system (telephony subsystem 12). Both of these elements draw on hardware nodes 26A-N for hardware resources used in performing services required by the user. Web manager 28, in addition to managing the Internet functions, manages the communication and cooperation of the telephony and Internet portions to create the desired functionality of the present invention. Thus, when a message, such as an e-mail message, arrive via the Internet addressed to a user, the message is delivered from web manager 28 to servers 16 and 30. The message itself is stored on server 16, while information identifying the message and its location on server 16 are generated by web manager 28 and stored on server 30. Server 30 has the drive of server 16 mounted via NFS. Thus, database 46 is a single shared disk which is accessed from the IPX/DOS nodes (such as telapp 18) as a Netware Directory and from the IP/UNIX nodes (such as web manager 28) as an NFS mounted directory. The one directory is shared by two different means for different types of clients or nodes. If a user accesses the message via the Internet connection, appropriate information may be forwarded to server 16 and on to net manager 20 which operates node 22A to generate a bill for the user.

The information stored on server 30 may then be displayed to the user via a visual display on a computer connected to web manager 28 over the Internet. In other words, a user may install a web browser on his or her computer. By accessing the Internet and his or her account with system 10 therethrough the user can manipulate his or her messages

and generate and deliver new messages. No interface software need be installed on the user's computer as the interface is a network application made available by the web manager and is compatible with web browser protocols. Thus, regardless of what type of computer is used by the user he or she will see a consistent interface (provided, of course, 5 that the computer has a web browser installed thereon). An illustrative example of an interface of the present invention is discussed below with reference to FIGS. 11-27. Alternatively, a user may request, via telephone commands to network 12 such as through telapps 18, that the message be converted to voice mail, in which case the telapps will retrieve the message from server 16 and direct it to hardware node 26A where it is 10 converted per the user's command. The message, in its new form is then delivered to the user over the telephone line.

In another example transaction, a fax message may be delivered to the user via a telephone line. As before, the message itself is stored on server 16, while identifying information is stored on server 30. If the user commands the fax to be delivered via 15 telephony, it is retrieved by the telapps 18 which forward it to hardware node 26, whereupon it is sent out over the telephony network to the desired address (phone number). If the user wishes to look at the fax via the Internet interface, telapps 18 retrieve the message and forward it to hardware node 26A which converts the fax to a bitmap image which can be displayed as desired.

20 A user may also perform mass communications through one or more media. For example, a user, accessing the system via the Internet, may wish to deliver a text message to one or more recipients. The user creates the message in the interface program and

addresses the message to various recipients. The user can indicate which medium is to be used for each recipient. Assuming that three recipients are selected, one to receive a voicemail version, one to receive an e-mail version and one to receive a fax version, the process is implemented as follows. The e-mail version is sent directly through the web to
5 the intended recipient and a marker is forwarded to NFS share database 46. When database 46 and database 24 are synchronized by web manager 28, the transaction is logged to the billing system for billing to the user. Both the voice mail and fax messages are sent, in text form, to telapps 18 which accesses hardware nodes 26 to convert the text to a bitmap (for faxing) and to speech (for voice mailing). Once the files are converted,
10 telapps 18 direct hardware nodes 26 to deliver the messages via the telephony network. The transactions are logged in database 24 for billing purposes.

If the user, accessing system 10 through the Internet, wishes to conduct a conference call, he or she accesses a portion of the interface which allows the selection of intended conferees. Once the conferees are selected, web manager 28 notifies telapps 18
15 of the need for conference telephony. Telapps 18 access the conference call hardware, which may be resident on hardware node 26 or on a specialized node 22. The hardware establishes the connection with each of the conferees and the connection is routed to the user's computer (which is configured to allow audio communication) and the conference call takes place. Again, the transaction is logged to database 24 for billing purposes.

20 These features may be accessed via telephone as well. For most functions, none of the commands or messages need be routed through any portion of Internet subsystem 14. Of course, any information routed to an Internet address or recipient will be routed

appropriately. For instance, a user may wish to deliver a fax to a recipient's e-mail address. The fax is sent through the telephony system, converted to an e-mail attachment and forwarded by web manager 28 to the recipient's e-mail address. Conversion may be performed by encoder 34 which encodes the fax to its final form, such as a GIF image,
5 text (using optical character recognition), etc., and e-mail server 36 or web manager 28 may attach the file (in its final format) and send it as an e-mail. The same process is also used for encoding and e-mail attaching audio messages.

In this illustrative embodiment, all transactions are routed through telapps 18A-N, even if they are wholly Internet transactions, primarily because billing functions are
10 performed in telephony subsystem 12.

As illustrated in FIGS 7-10, in an alternative illustrative embodiment, system 10 may be implemented with systems independent of conventional telephony systems.

System client 38, or service, uses library 40 which resides on the local host on which the application runs. A service may be transient or permanent. Transient services
15 are applications which are invoked to perform some task, and which terminate on completion of that task. Examples of such services would be a CGI script that faxes the input from a HTML form to a specific number. Permanent services are services that are always running, and which respond to events. Those events invoke some sort of action. Examples of such services include a service which answers calls on a given range of
20 DNIS values. This application can handle from 0 to the maximum number of channels worth of calls. The service starts up, initializes and registers itself, and waits for an event - an incoming call. Another example would be a process that handles all audio file

encoding/conversion for a machine. This process waits for an event, an audio file that requires encoding, and responds by encoding the file.

Services may or may not require the telephony resources managed by server 42; they may simply perform a task for other services. And it is for this purpose that services
5 may communicate with one another through the computer telephony interface (“CT/I”) API with *peer messages*.

Any desired Internet or other distributed transfer protocol (here, simply for shorthand reference called, “Computer Telephony Transfer Protocol” or “CTTP”) allows access of the library 40 functions by the Server 42 and vice versa. CTTP is an application
10 layer protocol which can use TCP/IP as transport. The protocol itself need not be defined since the API allows for the abstraction of all communication between the CT/I Service and the CT/I Server.

Each service 38 can have a distinct connection to server 42. Server 42 may have connections to multiple client applications, and a service may even connect to multiple
15 servers 42. Anything having to do with the actual connection to server 42 is hidden from service 38 through API 40.

The client/server relationship allows for very complex and diverse computer telephony related applications for intranets as well as for the Internet. The model allows for resource sharing between servers on a network. It gives the application developer an
20 abstract view of their servers 42 (as well as other servers) with disparate hardware and operating systems, as resources providing specific function and generating specific events

- all handled through a single API. It allows applications 38 (the services) to run locally or remotely.

Under this architecture server 42 is highly scaleable in that it can be a complete system unto itself for small operations - it could contain a database, web services, and call
5 flow applications, or it may be several servers 42, all performing no other function other than managing telephony resources and outsourcing the actual applications to other machines on the network.

Example of Services 38 include:

- An application that waits for an incoming fax on a predetermined 800 number, and
10 which encodes the fax from the .TIF image format to .GIF and posts it to the web.
- A CGI script that places an outbound call, page and fax notifying the recipient of the fields filled out in the HTML form.
- An E-Mail reader application with the capability to respond with an audio message to the sender.
- 15 • A telephone web browser which allows the user to select a URL, and which reads the corresponding document using text to speech functionality.
- An audio encoding process which waits for a peer message that transfers the audio file, and then encodes the audio file into the appropriate format.
- A web based application generator written in Java or other applet inclusive language
20 that allows a user to map out a call flow and then assign that call flow to run on a specific 800 number.

API 40 allows services 38 to communicate with one another using peer messages.

This allows distributed processing which offers several advantages:

Applications which control call flow can send messages to another service (a helper service) to perform a function that may block (a database call for example). This
5 keeps the call flow application in control of the call at all times, and greatly reduces latency.

Operations which take a lot of processing power or which need to run on specific operating systems can be accessed through peer messaging from a call flow application running on separate machines.

10 Users may also extend API 40 to include their own functions. These functions are wrappers for peer messaging, which allow the user to provide their own API functions and events to their services. An example of such an extension would be the addition of a function `cti_email(email_address, audio_file)` which mime encodes the audio file and attaches it to an e-mail message which is sent to the given e-mail address. This function
15 would receive an event indicating, at a minimum, success or failure. This function may actually do nothing more than send a peer message to the delivery service and deliver the responding peer message as an event to the calling service. In fact, standard services may also be added to the API to provide functions such as audio and graphic file encoding/conversion.

20 The CT/I Server program forks into a Communications Server and a computer telephony "CT" Resource Manager. The Communications Server binds to a port and listens for incoming connections. When a client program (a CT/I service) connects to the

port, the Communications Server forks off a relay process that attaches the client to the CT/I Resource Manager through a pipe. When the CT/I service quits, the forked relay process also quits and returns the pipe to the Communications Server for use by another service.

- 5 The CT Resource Manager process contains the main event loop. Events from the telephony hardware spur signals to the client programs, and commands from the client programs trigger function calls to the CT hardware through the vendor specific API.

 The CT/I Server serves as the glue binding these two interfaces (Communications Server and the CT Resource Manager). The CT/I API (ti_* functions and events) is a
10 hardware independent API through which the CT/I service can control call flow, fax, page, etc. Each distinct CT platform (Dialogic, NMS, conversant, etc.) has its own set of corresponding hw_* events and related events. These functions and events correspond directly to the similarly named CT/I API functions.

 The CT/I API is a library which may be written in C or other suitable language
15 that can be compiled into a client program on any machine on the Internet, and from the remote client program can attach to the CT/I server and handle a multitude of calls. The CT/I API functions are designed to be easy to use, so that client application programs can be written by programmers without specific knowledge of the intrinsics of the specific CT platform and API. The ti_* functions are asynchronous and will not block, so a client
20 program can handle multiple connections at once. Some of the CT/I API functions are listed below:

```
int*ti_initialize(name,host,port,digit_event_mode);
```

```

char *name;

char *host;

int port;

int digit_event_mode;

```

5

Description:

ti_initialize initiates a connection to a dispatch server running on a Dialogic™ host. The client must also provide a string identifier name by which the dispatcher will know the client. host is a string which identifies the host machine, for example

10 “dialog.tc.net”. port is an integer that specifies the port number on the host machine. digit_event_mode is an integer which specifies how dtmf digit events are reported to the client; a value of 0 puts the connection into immediate single-digit reporting mode. If digit_event_mode is non-zero, the connection is put into digit-block request mode.

ti_initialize returns a pointer which is the “handle” used for further communication with

15 the dispatch server.

Events:

```

event_connect, subevent_incoming

event_disconnect, subevent_incoming

20 event_digit (if digit_event_mode is ON)

```

```

struct ti_event*ti_wait_event(conn,timeout);

```

```

int *conn;

struct timeval *timeout;

```

Description:

5 ti_wait-event waits for a duration of timeout for an event. conn specifies the
handle of a dialogic dispatch server (returned by ti_initialize). If an event is obtained, the
event structure referenced in the return value will specify the details of the event. If no
event was obtained before timeout microseconds elapsed, a NULL pointer is returned.
The event structure is composed of a major number, a minor number, and an auxiliary
10 pointer.

Events:

```

event_ring, event_connect, event_disconnect
        subevent_incoming
15        subevent_outgoing
event_digit
        subevent_dtmf,subevent_mf,subevent_pulse
        aux = digit string
event_play_done
20        subevent_EOF
        subevent_digit
event_record_done

```

```

        subevent_maxtime
        subevent_maxsilence
        subevent_digit
    event_prompt_done
5       subevent_maxdigits
        subevent_finaldigit
        subevent_maxtime
        subevent_maxsilence
        aux = digit string
10      event_peer_message
        aux = message

void ti_event_timeout(conn,channel,major,timeout);
        int *conn;
15     int major;
        struct timeval *timeout;

```

Description:

ti_event_timeout requests notification if, after timeout, a specific event is not
20 received. If the event is received before timeout, the event_timeout request is canceled.
If the event is not received before timeout, then the specific event is generated with a

minor event identifier of subevent_timeout. conn specifies the handle of a dialogic dispatch server (returned by ti_initialize).

Events:

5 event_*,subevent_timeout

void ti_play(conn,channel,filename,interruptable_by_digit);

int *conn;

int channel;

10 char *filename;

int interruptable_by_digit;

Description:

ti_play plays the audio file filename over a desired channel. The format of the
 15 audio file is automatically determined from either the filename extension, or the first few
 bytes of the file. conn is the connection handle of a dialogic dispatch server (returned by
 ti_initialize). If interruptable_by_digit is non-zero, then the play operation can be
 interrupted by a digit event. ti_stop_io() may be called to interrupt the playing process.

20 Events:

event_play_done,subevent_EOF

event_play_done,subevent_digit

```
void ti_record(conn,channel,filename,maxtime,maxsilence,int_by_digit);
```

```
    int *conn;
```

```
    int channel;
```

```
5    char *filename;
```

```
    long maxtime;
```

```
    long maxsilence;
```

```
    int int_by_digit;
```

10 Description:

ti_record creates an audio file filename with data from a desired channel. The recording process continues until ti_stop_io() is called, or until maxtime milliseconds have elapsed, or until maxsilence milliseconds have elapsed, or until a digit event occurs (if int_by_digit is nonzero). conn is the connection handle of a dialogic dispatch server (returned by ti_initialize). If maxtime is zero, then the recording time is unlimited. If maxsilence is zero, then silence will not stop the recording. If int_by_digit is zero, then a digit event will not stop the recording.

Events:

```
20    event_record_done,subevent_maxtime
    event_record_done,subevent_maxsilence
    event_record_done,subevent_digit
```

```

void ti_prompt(conn,channel,filename,interruptable_by_digit),
max_digits,final_digit,initial_timeout,idle_timeout);

    int *conn;
5    int channel;
    char *filename;
    int interruptable_by_digit;
    int max_digits;
    int final_digit;
10    long initial_timeout;/*milliseconds*/
    long idle_timeout;/*milliseconds*/

```

Description:

ti_prompt plays the audio file filename over a desired channel. The format of the
 15 audio file is automatically determined from either the filename extension, or the first few
 bytes of the file. conn is the connection handle of a dialogic dispatch server (returned by
 ti_initialize). If interruptable_by_digit is nonzero, then the play operation can be
 interrupted by a digit event. After the play is completed or interrupted, a digit block of
 max_digits is expected. If no digits are received after initial_timeout milliseconds, or
 20 after a special digit final_digit is received, or after an idle (silence) time of idle_timeout
 milliseconds after one or more digits were received, a digit block event is returned.
 ti_stop_io() may be called to interrupt the prompting process.

Events:

event_prompt_done,subevent_maxdigits
 event_prompt_done,subevent_finalldigit
 5 event_prompt_done,subevent_maxtime
 event_prompt_done,subevent_maxsilence

```

void ti_speak_string(conn,channel,text,interruptable_by_digit);

    int *conn;
10    int channel;

    char *text;

    int interruptable_by_digit;
  
```

Description:

15 `ti_text_to_speech_string` converts the string text into a voice signal which is
 output over channel. `conn` is the connection handle of a Dialogic dispatch server returned
 by `ti_initialize`). If `interruptable_by_digit` is nonzero, then the speech can be interrupted
 by a digit event.

```

20 void ti_speak_file(conn,channel,filename,interruptable_by_digit);

    int *conn;

    int channel;
  
```



```
char *filename;  
int interruptable_by_digit;
```

Description:

5 ti_text_to_speech_file converts the text file filename into a voice signal which is output over channel. conn is the connection handle of a dialogic dispatch server returned by ti_initialize). If interruptable_by_digit is nonzero, then the speech can be interrupted by a digit event.

10 Events:

```
event_speak_done
```

```
void ti_stop_io(conn,channel);
```

```
int *conn;
```

15 int.channel;

Description:

ti_stop_io stops all play, record, and get_digit_block operations on channel. conn is the connection handle of a dialogic dispatch server (returned by ti_initialize).

20

Events:

```
(none)
```

```
void ti_hangup(conn,channel);
```

```
    int *conn;
```

```
    int channel;
```

5

Description:

ti_hangup disconnects the call on channel. conn is the connection handle of a dialogic dispatch server (returned by ti_initialize).

10 Events:

```
    event_disconnect,subevent_incoming
```

```
    event_disconnect,subevent_outgoing
```

```
void ti_exit(conn);
```

15 int *conn;

Description:

ti_exit disconnects the client from the dialogic dispatch server. conn is the connection handle of a dialogic dispatch server (returned by ti_initialize).

20

Events:

```
    (none)
```

```
void ti_die(s);  
    char *s;
```

5 Description:

ti_die prints the error message s, prints a perror message, and exits the client program abnormally with an exit value of -1.

Events:

10 (none)

FIGS. 11-27 illustrate various aspects and functionalities of an illustrative embodiment of an Internet interface presented to a user of system 10. Because of the myriad of combinations of communications media and message distribution options, it is impossible to catalog each and every possible function that may be performed via the present invention. The following description identifies many options for generating, accessing, manipulating and delivering messages and information via system 10; however, many other capabilities and functionalities may be added or included in such a system which take advantage of the integration of telephony and computer network capabilities and function.

The interface may allow a user to provide information about himself or herself (including how s/he may be contacted), information about his or her communications

preferences, and information about individuals and groups with whom s/he plans to communicate. These communication preferences may be configured by selecting certain options that define rules to be applied to inbound and outbound communications. For example, the user may request that inbound voice messages be forwarded to an e-mail mailbox for later viewing. Alternatively, the user may request that e-mail messages be forwarded to a voice mailbox for later retrieval. The user may also request pager notification any time s/he receives a new e-mail message. This cross-media messaging and notification feature of the present invention (which are provided by the message servers) automatically perform as part of the forwarding operation any reformatting or conversion of messages that may be required.

Computer access to inbound voice, fax, and e-mail communications is provided through a series of personal, secure Web pages. FIG. 11 shows a screen shot of a login page which can be generated by a system 10 according to the present invention. In this example, the Netscape Navigator Web browser is used to access the Web site through which the features and functionality of the present invention are provided. The Web site may be accessed through a Uniform Resource Locator (URL) such as "http://www.tc.net/pc3" or "http://www.premierecomm.com" 70. At this page, the user may be asked to provide a login identifier (such as a name) 72 and a password 74. Alternatively, as shown in FIG. 11A, the screen of FIG. 11 may include button by which destinations within the interface may be selected.

FIG. 12 shows a screen shot of a configuration management page. Information line 80, identifies the user, his or her location, the date and time, and an indicator of the

current task (e.g., Configuration). Tab 82 also indicates the current task. From the main configuration management page, the user may select one of several options as indicated by the buttons on page 84. The user may also select one of the buttons at the bottom of page 86.

5 FIG. 13 shows a screen shot of a personal contact information page. The user provides contact information such as a telephone number, a pager number, fax number, and e-mail address by completing the fields in form 90. The user may also provide a preferred contact method such as e-mail 92. As shown in FIG. 13A, the user may also configure his or her default contact information. Referring to FIG. 14, the user also may
10 provide in additional fields URLs in field 100. These URLs on “hyperlinks” will provide links to other Web sites through which s/he may be contacted directly. By completing field 110, a user may provide street maps and driving instructions that may be useful to other users (not shown). Referring to FIG. 15, the user may enter a short memo 110 - for example, regarding his or her plans for the day.

15 The user may also access account information as illustrated in FIG. 13B. As shown in FIG. 13C, a user may have several different configuration for varied personal scenarios, i.e., vacation, travel, etc., which will result in different setups specific to those needs.

In addition to providing the personal contact information (so inbound messages
20 may be routed properly), the URL information, and the memo, the user may indicate whether s/he would like any or all of the information he provided (e.g., name, address, contact information, street maps, driving instructions, etc.) to appear on a “Virtual

Receptionist” Web page. The “Virtual Receptionist” Web page provides personal contact information for an individual user and may be accessed by other users of the present invention or other Internet users so they may contact the individual preferably, by simply selecting a “contact-me-now” button. FIG. 16 shows an example of a “Virtual

5 Receptionist” Web page. The page contains the same personal contact information provided by the user, but reformats it so other users may easily find the information and interact with the page through the buttons and links appearing on the page.

In addition to providing personal contact information, a user of the present invention has a personal on-line directory in which to store and organize the names,
10 addresses, telephone numbers, pager information, notes, and other data regarding the individuals with whom the user communicates regularly. These individuals may provide their own personal contact information so that they may be contacted according to their own personal preferences. At the on-line directory, an individual may be contacted by simply selecting the individual’s name from a list. A user may also define groups of
15 people with whom he communicates frequently. The user may send the same communication to each person in the group simply by selecting the group name from a list of groups. Members of the group who have provided their own personal contact information may then receive the communication according their preferred communication method.

20 FIG. 17 shows a screen shot of an on-line directory page. Initially, the user is presented with the list of groups 120 s/he has defined previously and the list of individuals (Contacts) 122 with whom s/he communicates. In addition, the user is

presented with options 124 for managing the Groups and Contacts. For example, the user may add or delete names for either list (see FIG. 17A for group editing screen), add or remove entire groups (see FIG. for screen configuration for group creation option) or create a message for a selected group (see FIG. 17C for message screen). FIG. 18 shows

5 a screen shot of an "Add Name" page. After selecting the group to which the user would like to add a name (e.g., Sales Group) 130, a form for adding a new name is presented 132. Referring to FIG. 19, the form 140 continues so contact information for reaching the individual through a variety of methods may be provided (e.g., more than one office number, fax number, home phone number, pager number, e-mail address, cellular phone

10 number, etc.). FIG. 20 shows a screen shot of a Contacts page for individuals. Information regarding individuals with whom the user communicates 150 may be provided by completing an "Add Name" form as shown in FIG. 20A. A user may communicate easily with anyone in his on-line directory without having to keep track of multiple phone numbers and other contact information.

15 FIG. 21 shows a screen shot of a message center screen or page or "personal inbox." All of a user's communications - regardless of the type - may be accessed through the personal inbox. Preferably, the page lists in field 160 the type, time, date, sender, and subject of each communication that has been addressed to the user. Additional information may be accessed from this page by selecting one of the buttons

20 162 at the bottom of the page. As the user selects each communication, a communication display page for the individual communication is presented. The communication display page changes based on the type of message.

FIG. 21 show the message center screen of the interface. Message Center is intended to be the default location for the interface. The principle sections of this layout (which are analogous to the layout of other screens of the interface, are as follows:

Sidebar 161 - on the left of the screen is a side bar consisting of three tabs labeled
5 Inbox, Contact, and Configure. By pressing on any one of these three tabs, the program opens up to the corresponding interface for that action.

Work Area 160 - The large center section is work area 160. There is a default
work area for each of the primary sections. Within the work area appears content
appropriate for the section of the program that is active (i.e., messages in the Inbox, faxes
10 in the fax viewer, names in the Contact Manager, etc.). The Work Area can contain
hyperlinks that call other sections of the program depending on current status. The
current work area determines the current function bar.

Function Bar 163 - On the top of the browser's display area is the function bar.
It contains the Exit button which will shut down the program, and leave the user at an
15 Exist screen (which may show advertising, account status information, or may be a return
to Licensee's content). In addition it will contain several buttons whose functions are
determined by the current Work Area (i.e., the Inbox Area will have related function
buttons such as Forward Reply, etc.). The Function buttons call actions which effect their
specific work area's content. The Exit button will be common to all Function bars in all
20 screens of the interface.

Status Bar 164 - Just below the Function bar is the Status Bar - by default it
indicates the User's name, the current date, and the time as of the most recent refresh.

The Status bar could also potentially include any combination of the following: Banner Advertising, Stock Ticker, News or Sports wire, License specific content, etc.

Menu Bar 165 - At the bottom of the browser's display area is the Menu bar.

The Menu Bar contains link buttons 162 for various Work Areas to be displayed. The
5 Menu bar is determined by the sidebar tax - each of the tree primary sections has only one related Menu bar (i.e., the Menu bar for the Inbox contains buttons for each of the content sections of the Inbox). In addition the Menu Bar contains links to an Audio Tip (a streaming audio file giving a tip or hint for ease of use in the current section) and Help (a separate html section giving detailed help on how to use the interface. Help are available
10 from every Menu bar of all screens of the interface. The buttons corresponding with each work area shall appear highlighted when that button is selected.

The message center is the first primary section. It delivers inbound messages to the user, and allows the user to respond to and re-direct those messages. Messages may be in the following forms.

15 **Fax** - A Fax, .tif file converted to one or more .gif files for viewing on the web.

E-mail - Standard E-mail - attachments will appear as download links.

Voice Mail - A voice message that has been digitally encoded and electronically delivered.

The message center is also the section which delivers customized content to the
20 user. For example, content may consist of any one or more of the following:

Sports - linking to a Sports provider such as ESPN.

News - linking to a news provider such as CNN.

Weather - linking to a Weather provider such as The Weather Channel.

Travel - linking to an airline or other Travel service such as Delta

Stocks - linking to NASDAQ or Quote.com

Of course, other information providers may also be included:

5 Menu Bar 165 for the message center contain links to any of the above content as determined by the users configuration. There is also a link to the incoming Message (Inbox). Each of the content links brings it's corresponding content into the interface frameset, in the frame set aside for the Work Area.

 The Messages will be displayed in a Work Area in a table sorted by arrival time of
10 the messages wit the most recent at the bottom. Each Message will occupy a row in the table indicting the following:

1. Type of message 166A - Fax, Voice Mail, or E-mail. This will be indicated by a graphic, which will also be a link to a message viewing Work Area for that particular type.
- 15 2. Time of Arrival 166B
3. Date of Arrival 166C
4. Sender 166D (for E-mail) or phone number (for fax)
5. Subject 166E (for E-Mail, # of pages for fax)
6. Select Box 166F- that is used to indicate if a particular message or group of
20 messages is tagged to be acted on by a function.

 Function bar 163 is inactive when custom content is displayed. When the Messages are displayed, the following functions are available:

1. Refresh 167A- Checks the server for any new messages and redraws the screen.
 2. Select All 167B - Selects all messages to be acted on.
 3. Deselect all 167C - De-selects all messages.
 4. Download 167D - forwards all selected files as E-mail attachments to an E-mail
 - 5 address pre-configured by the user. A user may, as an option, choose to have all transferred messages, removed from the server.
 5. Delete 167E - Deletes all selected files from the server (the files may be expunged immediately, or as part of the Exit process).
 6. Exit 167F - exits system.
- 10 As shown in FIGS. 22A-B, an e-mail message may be displayed in a scrolling text window 170. The user may then reply to the message, store it, or forward it by selecting one of the buttons at the bottom of the page 172. FIGS 22A-B show screen shots of the E-mail viewer portion of the interface. By clicking on the image used to indicate an E-mail message in the Inbox Message Work Area 160, a new Work Area 170 and Function
- 15 bar 171 are called. Sidebar 161, Menu 165 and Status bar 164 may remain the same. Alternatively, Menu bar 165 may call additional buttons for accessing and manipulating messages. The new Work Area 170 is the E-mail viewer which contains the header and body of the corresponding E-mail message.

Available Functions for the E-mail Viewer are:

- 20 1. **Forward** - this commences a forward mail sequence allowing the user to re-direct the E-mail with an added memo.
2. **Reply** - similar to Forward, but directed specifically to the sender.

3. **Download** - send the current E-mail to a pre-configured E-mail address. The message may then be removed from the server or returned in fax or message.
4. **Delete** - delete selected E-mail from server with Confirmation Dialog (e.g. Are you sure?) return to Messages Work Area.
- 5 5. **Next Message** - Jump to next Message in chronological queue (may require shifting to another type of message viewer)
6. **Previous Message** - jump to previous Message in chronological queue (may require shifting to another type of message viewer).

These functions may be provided as buttons on function bar 171 or menu bar 165 or other
10 desirable locations on the screen.

As shown in FIGS. 23A-B, a fax message may be displayed as a graphical image (e.g., TIFF image) in a scrolling window 180. In addition, the fax message may be printed or forwarded by selecting a button and entering a fax number in a form field.

FIGS. 23A-B show screen shots of the fax viewer portion of the interface. By
15 clicking on the image used to indicate a Fax message in the Inbox Message Work Area 160 (FIGS. 21A-B), a new Work Area and Function bar are called (Sidebar 161, Menu 165 and Status 164 bars may remain the same). The new Work Area 180 is the Fax viewer which indicates all available information about the sender: Name (if caller ID is available). Time and Date, and number of pages in transmission.

20 Available Functions for the Fax Viewer are:

1. **Forward** - this will commence a forward mail sequence allowing the user to re-direct the fax with an added memo.

2. **Reply** - similar to Forward, but directed specifically to the sender.
3. **Download** - send the current Fax to a pre-configured E-mail address - the message may then be removed from the server or returned in fax or message.
4. **Delete** - delete selected Fax from server with Confirmation Dialog (e.g. Are you
5 sure?) return to Messages Work Area.
5. **Next Message** - Jump to next Message in chronological queue (may require shifting to another type of message viewer)
6. **Previous Message** - jump to previous Message in chronological queue (may require shifting to another type of message viewer).
- 10 7. **Next Page** - display next page of Fax (if any).
8. **Previous Page** - display previous page of Fax (if any)

These functions may provided in the menu bar 165 (FIG 23A) or in the function bar 163 (FIG. 23B) or other desirable locations on the screen.

Information regarding an inbound voice mail message (e.g., date, time, sender's
15 number) may be displayed in a page as shown in FIGS. 24A-B. For computers equipped with a sound card, following selection of a button 190, a digitized voice message may be played back to the user. For computers without a sound card, the user may be given an 800 number to call to listen to the voice message. The voice mail message may then be saved, stored, or forwarded to individuals or groups.

20 FIGS. 24A-B show screen shots of the voice mail viewer portion of the interface. By clicking on the image used to indicate a Voice mail message in the Inbox Message Work Area 160 (FIGS. 21A-B), a new Work Area 191 and Function bar 163 are called

(Sidebar 161, Menu 165 and Status 164 bars may remain the same). The new Work Area 191 is the Voice Mail viewer which indicates all available information about the sender: Name (if caller ID is available). Time and Date of arrival, and length of message. The work Area will feature a DialWeb link and will have a RealAudio player embedded
 5 therein which will both be used to call a ram file which will play the appropriate audio stream.

Available Functions for the Voice mail Viewer area:

1. **Forward** - this will commence a forward mail sequence allowing the user to re-direct the Voice mail with added memo.
- 10 2. **Reply** - similar to Forward, but directed specifically to the sender.
3. **Download** - send the current Voice mail to a pre-configured E-mail address. The message may then be removed from the server or returned in fax or message.
4. **Delete** - delete selected Voice mail from server with Confirmation Dialog (e.g. Are you sure?) return to Messages Work Area.
- 15 5. **Next Message** - Jump to next Message in chronological queue (may require shifting to another type of message viewer)
6. **Previous Message** - jump to previous Message in chronological queue (may require shifting to another type of message viewer).

These functions may provided in the menu bar (not shown) or in the function bar 163
 20 (FIG. 23B) or other desirable locations on the screen.

In addition to retrieving inbound messages, the user may compose and send outbound messages. FIG. 25A shows an outbound message page where the message is a

reply (thus the user need not enter an address). FIG. 25B shows an outbound message page where the message is not a reply and must therefore be addressed. The user first selects the intended recipients by selecting one or more groups or individuals to whom the message may be sent 200. The user then enters the text of the message in a scrolling
5 window 202. The message may then be sent to each of the selected recipients by selecting one of the delivery modes appearing in the buttons at the bottom of the page 204. Using the "Preferred Delivery" option, the message may converted or reformatted according to the preferred communication method of the recipient, preferably upon retrieval of the message by the recipient.

10 In another aspect of the present invention, the computer interface may be used to place outbound calls - for example, conference calls. Referring to FIG. 26 to place a conference call, a user first selects a list of participants by selecting one or more of the groups and/or individuals from the Contacts list 210. The user then selects the conference call button 212 to establish the call. The user waits for his telephone to ring.
15 The user is informed of the status of the call through a page as shown in FIG. 27.

Another outbound messaging feature of the present invention that is available via the computer interface is fax broadcasting. To take advantage of this feature, the user simply enters the text of his fax message and provides a list of recipient fax numbers, preferably by selecting a group or individuals from his on-line directory. The message
20 and fax numbers are then forwarded to the telecommunications switch so the necessary calls may be made. For those recipients who prefer e-mail over fax messaging, the cross-media messaging feature of the present invention processes the fax message as an

attachment to an e-mail message so that the recipient may retrieve the message according to his or her preferred communication medium. Upon retrieval by the recipient, the fax message may be displayed as an image in a scrolling window. In another aspect of the present invention, the fax message may be sent as e-mail to any recipient who happens to
5 be logged in to the Web site of the present invention at the time the fax is sent. This approach may result in a significant cost savings as fewer phone calls are needed to deliver the message to the intended recipients.

In addition to using the computer interface to present invention, a user may access his personal on-line directory, his personal inbox, and his personal contact information
10 using a telephone. The same information that is available to the user via the computer interface is accessible to the user via the telephone interface. Therefore, the user is assured of access to his communications regardless of the interface he chooses at any given time. The user may also arrange for conference calling and fax broadcasting through the telephone interface. The telephone thus gives the user an alternative device
15 through which the features and functionality of the present invention may be accessed.

Although the invention is described in detail with specific reference to illustrative embodiments, it is not limited to those particular embodiments. For example, the configuration of the components that provide the features and functionality of the present invention may change and nevertheless fall within the scope and spirit of the present
20 invention. The scope of the present invention is defined by the following claims.

Claims:

- 1 1. A system for accessing, creating and managing communications and messages
2 comprising:
3 a) a server;
4 b) a first database in communication with the server;
5 c) at least one telephone application node in communication with the server;
6 d) at least one telephony node in communication with the server;
7 e) at least one Internet node in communication with the server; and
8 f) at least one hardware node in communication with the at least one telephone
9 application node, at least one Internet node and server.
- 1 2. The system of claim 1 further comprising at least one Internet based messaging and
2 communications management application resident on the at least one telephone
3 application node.
- 1 3. The system of claim 2 in which the at least one Internet based messaging and
2 communications management application provides voicemail functionality.
- 1 4. The system of claim 2 in which the at least one Internet based messaging and
2 communications management application provides electronic mail functionality.
- 1 5. The system of claim 2 in which the at least one Internet based messaging and
2 communications management application provides facsimile functionality.

- 1 6. The system of claim 1 further comprising at least one telephony based messaging and
2 communications management application resident on the at least one telephone
3 application node.
- 1 7. The system of claim 6 in which the at least one telephony based messaging and
2 communications management application provides voicemail functionality.
- 1 8. The system of claim 6 in which the at least one telephony based messaging and
2 communications management application provides electronic mail functionality.
- 1 9. The system of claim 6 in which the at least one telephony based messaging and
2 communications management application provides facsimile functionality.
- 1 10. The system of claim 1 in which the hardware node further comprises at least one
2 communications processing board.
- 1 11. The system of claim 10 in which the at least one communications processing board is a
2 digital network interface.
- 1 12. The system of claim 10 in which the at least one communications processing board is a
2 facsimile board.
- 1 13. The system of claim 10 in which the at least one communications processing board is a
2 text to speech processor.

- 1 14. The system of claim 10 in which the at least one communications processing board is a
2 conference call board.
- 1 15. The system of claim 10 in which the at least one communications processing board is a
2 voice recording board.
16. The system of claim 1 further comprising at least one user interface.
17. The system of claim 16 in which the interface is telephony based.
18. The system of claim 16 in which the interface is keypad based.
19. The system of claim 16 in which the interface is an Internet browser.
- 1 20. The system of claim 16 in which the interface provides access to stored messages and
2 real-time communications.
21. The system of claim 16 in which the interface provides people centered communications.
22. The system of claim 16 in which the interface provides cross media messaging.
- 1 23. The system of claim 16 in which the interface allows a user to initiate and control
2 conference call.

- 1 24. The system of claim 16 in which the interface allows a user to direct a single message to
2 multiple recipients.
- 1 25. The system of claim 16 in which the interface allows a user to create a publicly accessible
2 web page.
- 1 26. The system of claim 16 in which the interface allows a user to identify at least one
2 information source and periodically retrieve selected data from the information source.
- 1 27. The system of claim 16 further comprising an application which selects the optimal
2 communications medium for sending or receiving a message.
- 1 28. The system of claim 1 in which the Internet node further comprises:
2 a) a web manager;
3 b) an encoder in communication with the web manager; and
4 c) a second database in communication with the web manager.
- 1 29. The system of claim 28 in which the web manager periodically synchronizes the first and
2 second databases.
- 1 30. A system for managing personal communications comprising:
2 a) telephony subsystem;
3 b) an Internet subsystem in communication with the telephony subsystem; and

4 c) a hardware node in communication with the telephony subsystem and the Internet
5 subsystem.

31. The system of claim 30 further comprising at least one user interface.

32. The system of claim 31 in which the interface is telephony based.

33. The system of claim 31 in which the interface is keypad based.

34. The system of claim 31 in which the interface is an Internet browser.

1 35. The system of claim 31 in which the interface provides access to stored messages and
2 real-time communications.

36. The system of claim 31 in which the interface provides people centered communications.

37. The system of claim 31 in which the interface provides cross media messaging.

1 38. The system of claim 31 in which the interface allows a user to initiate and control
2 conference call.

1 39. The system of claim 31 in which the interface allows a user to direct a single message to
2 multiple recipients.

1 40. The system of claim 31 in which the interface allows a user to create a publicly accessible
2 web page.

1 41. The system of claim 31 in which the interface allows a user to identify at least one
2 information source and periodically retrieve selected data from the information source.

1 42. The system of claim 31 further comprising an application which selects the optimal
2 communications medium for sending or receiving a message.

1 43. A system for accessing, creating and managing communications and messages
2 comprising:

3 a) a system client;

4 b) a computer telephony interface library in communication with the client; and

5 c) a computer telephony interface server in communication with the library.

44. The system of claim 43 in which the system client provides at least one service.

45. The system of claim 44 in which the service is facsimile message management.

1 46. The system of claim 44 in which the service is automated message delivery to a
2 predetermined recipient.

47. The system of claim 44 in which the service is electronic mail management

48. The system of claim 44 in which the service is electronic mail text to speech conversion.
49. The system of claim 44 in which the service is an automated response to electronic mail.
50. The system of claim 44 in which the service is call flow mapping.
51. The system of claim 43 further comprising at least one user interface.
52. The system of claim 51 in which the interface is telephony based.
53. The system of claim 51 in which the interface is keypad based.
54. The system of claim 51 in which the interface is an Internet browser.
- 1 55. The system of claim 51 in which the interface provides access to stored messages and
2 real-time communications.
56. The system of claim 51 in which the interface provides people centered communications.
57. The system of claim 51 in which the interface provides cross media messaging.
- 1 58. The system of claim 51 in which the interface allows a user to initiate and control
2 conference call.

- 1 59. The system of claim 51 in which the interface allows a user to direct a single message to
2 multiple recipients.
- 1 60. The system of claim 51 in which the interface allows a user to create a publicly accessible
2 web page.
- 1 61. The system of claim 51 in which the interface allows a user to identify at least one
2 information source and periodically retrieve selected data from the information source.
- 1 62. The system of claim 51 further comprising an application which selects the optimal
2 communications medium for sending or receiving a message.
- 1 63. A method for permitting a user to manage personal communications comprising the steps
2 of:
3 a) providing a telephony subsystem;
4 b) providing an Internet subsystem in communication with the telephony subsystem;
5 c) providing a hardware node in communication with the telephony subsystem and
6 the Internet subsystem; and
7 d) providing a user interface.
- 1 64. The system of claim 63 further comprising the step of providing access to stored
2 messages and real-time communications.

- 1 65. The system of claim 63 further comprising the step of providing people centered
2 communications.
66. The system of claim 63 further comprising the step of providing cross media messaging.
- 1 67. The system of claim 63 further comprising the step of allowing a user to initiate and
2 control conference call.
- 1 68. The system of claim 63 further comprising the step of allowing a user to direct a single
2 message to multiple recipients.
- 1 69. The system of claim 63 further comprising the step of allowing a user to create a publicly
2 accessible web page.
- 1 70. The system of claim 63 further comprising the step of allowing a user to identify at least
2 one information source and periodically retrieve selected data from the information
3 source.
- 4 71. The system of claim 63 further comprising the step of automatically selecting the optimal
5 communications medium for sending or receiving a message.
- 1 72. A system for managing personal communications comprising:
2 a) telephony subsystem;

- 3 b) an Internet subsystem in communication with the telephony subsystem;
- 4 c) a hardware node in communication with the telephony subsystem and the Internet
- 5 subsystem;
- 6 d) at least one keypad based interface in communication with the telephony
- 7 subsystem;
- 8 e) at least one web browser interface in communication with the Internet subsystem;
- 9 and
- 10 f) a billing information system in communication with the telephony and Internet
- 11 subsystems and with a payment source.

73. The system of claim 72 in which the payment source is a credit card account.

74. The system of claim 72 in which the payment source is a bank account.

75. The system of claim 72 in which the keypad interface is a telephone.

1 76. The system of claim 72 in which the interfaces provides access to stored messages and

2 real-time communications.

77. The system of claim 72 in which the interfaces provide people centered communications.

78. The system of claim 72 in which the interfaces provide cross media messaging.

- 1 79. The system of claim 72 in which the interfaces allows a user to initiate and control
2 conference call.
- 1 80. The system of claim 72 in which the interfaces allows a user to direct a single message to
2 multiple recipients.
- 1 81. The system of claim 72 in which the interfaces allow a user to create a publicly accessible
2 web page.
- 1 82. The system of claim 72 in which the interfaces allow a user to identify at least one
2 information source and periodically retrieve selected data from the information source.
- 1 83. The system of claim 72 further comprising an application which selects the optimal
2 communications medium for sending or receiving a message.

Phase One--NMS Migration and PC3 Integration

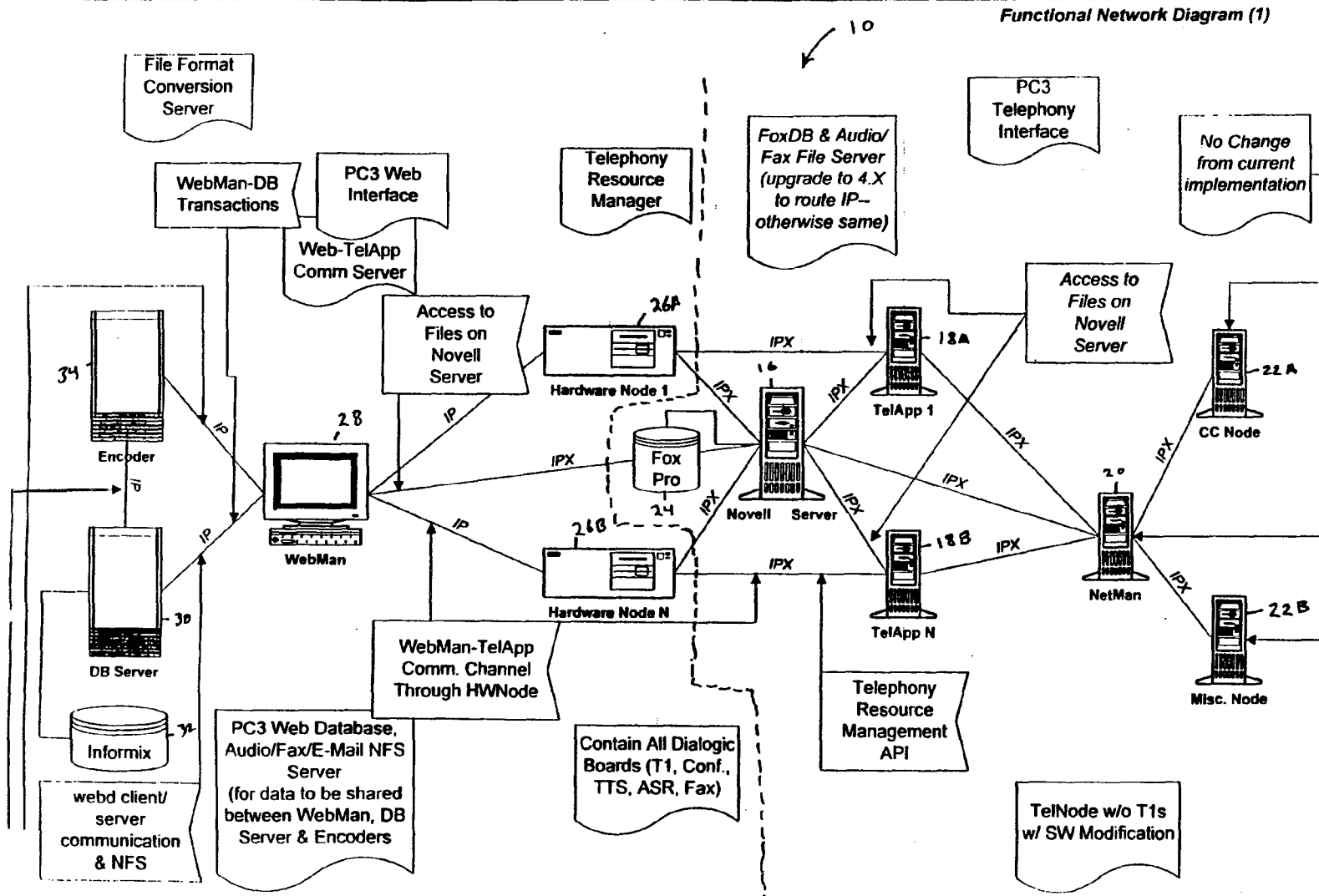


Fig. 1

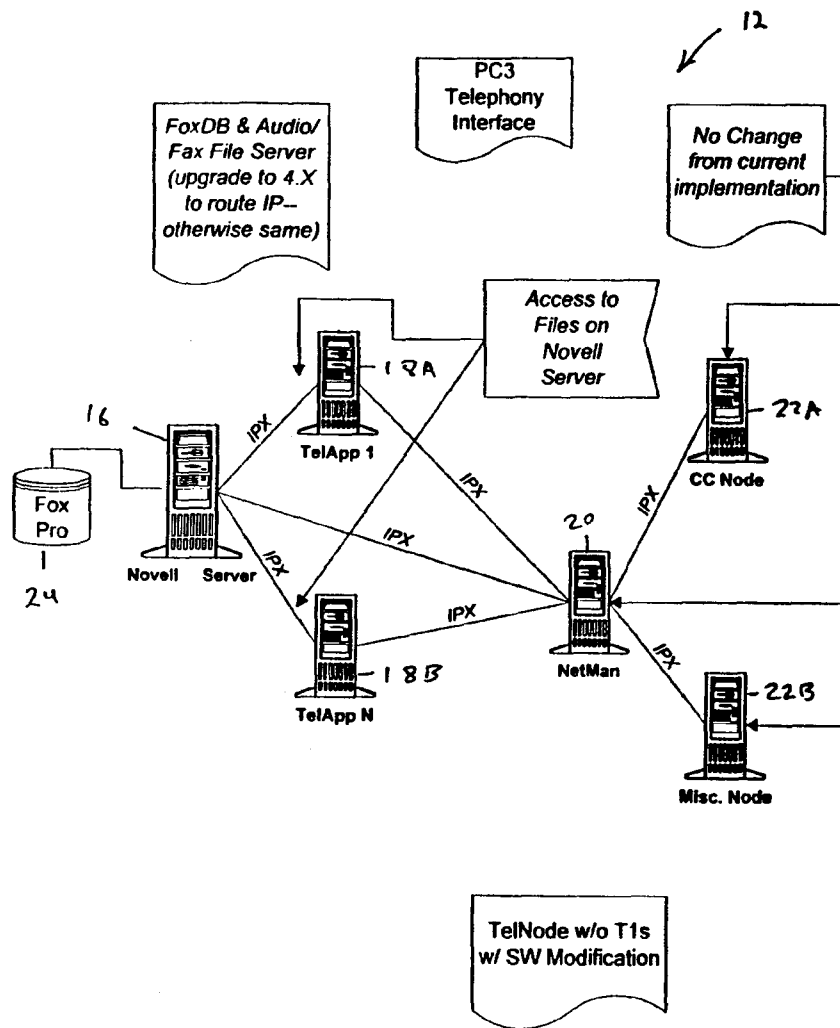
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Phase One--Uneffected NMS Segment

Functional Network Diagram (2)



This Section of the NMS is relatively untouched by Phase I of the migration. The NetMan, Novell File Server/Fox Pro Database, Credit Card/Billing Nodes, and TelNodes (now TelApps) interact with each other just as they always have.

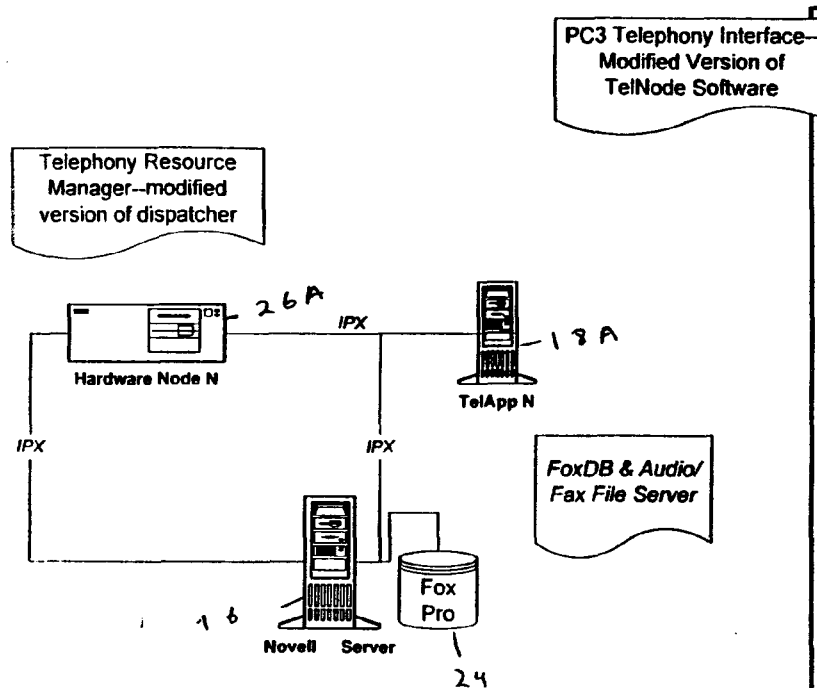
Special Purpose TelNodes (FaxNode, TTS Node, Conference Node) are removed from the system, as this role will be distributed between the Hardware Node and the TelApp.

The TelApp is a TelNode stripped of all Digital Network Interface (T1) boards. A TelApp is dependent upon its Hardware Node which contains all necessary boards (T1, fax, TTS, conference, etc.) and which manages those resources.

Fig. 2

Phase One--TelApp & Hardware Node (TelNode Split)

Functional Network Diagram (3)



The intention of reworking the telnode (to include all special case telnodes such as fax or conference nodes) is:

- 1) to start a natural migration away from the DOS platform towards a platform which is more scaleable and better supported by Dialogic (unix at this point in time)
- 2) to eliminate the need to transfer calls through the switch & coordinate through the NetMan in order to provide conference, fax, tts and other features during a call (current strategy is costly, time consuming, and limiting)
- 3) to provide an initial method for allowing the telephony subsystem to communicate with the web subsystem thereby enabling the development of the PC3

The Plan for reworking the TelNode is as follows

- 1) All special purpose TelNodes (Fax, Conference, TTS, ...) will not be included in the new telephony subsystem.
- 2) The TelNode itself will be stripped of all telephony resource boards (T1). It will be a simple computer which controls call flow much as it does today by communicating with a Hardware Node.
- 3) The Hardware Node will be a UnixWare rack mount passive backplane system stocked with T1, voice, conference, fax, tts, & voice rec. boards. The Hardware Node will eventually be completely configurable as to how much of each it has. For Phase I there will be two or three styles of Hardware Nodes...
- 4) The TelNode will be modified to talk to the Hardware Node through a high level API for controlling call flow and telephony resources. Any current code which uses the Dialogic API will be reworked to conform to the API. The TelNode will be paired with a Hardware Node. The Hardware Node will run a modified version of the dispatcher software (Telet's system) to manage telephony resources and to communicate with the TelNode (using SPX/IPX).

Fig. 3

Phase One--Integration of NMS and the Internet

Functional Network Diagram (4)

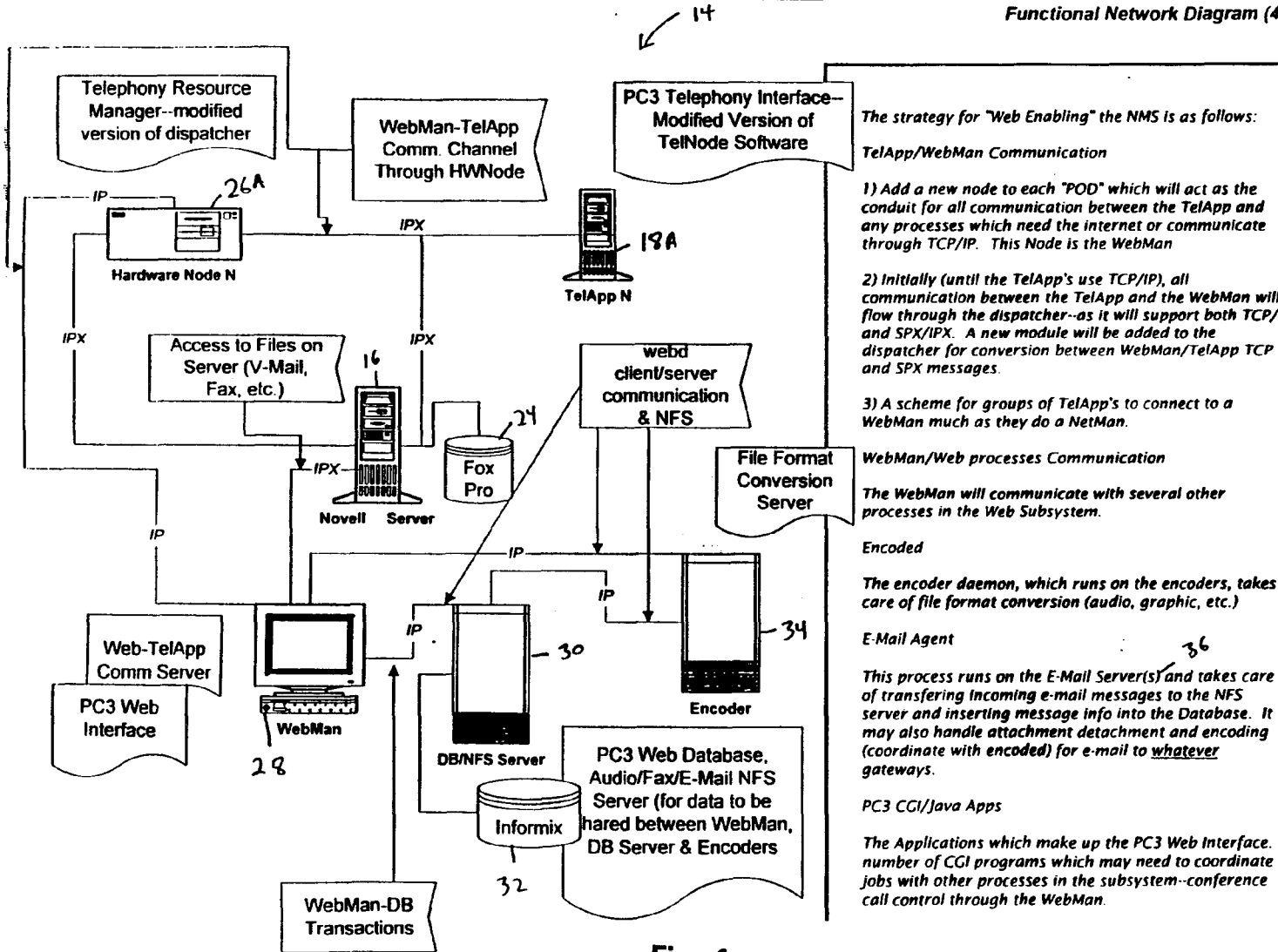


Fig. 4

The strategy for "Web Enabling" the NMS is as follows:

TelApp/WebMan Communication

- 1) Add a new node to each "POD" which will act as the conduit for all communication between the TelApp and any processes which need the internet or communicate through TCP/IP. This Node is the WebMan
- 2) Initially (until the TelApp's use TCP/IP), all communication between the TelApp and the WebMan will flow through the dispatcher--as it will support both TCP/IP and SPX/IPX. A new module will be added to the dispatcher for conversion between WebMan/TelApp TCP and SPX messages.
- 3) A scheme for groups of TelApp's to connect to a WebMan much as they do a NetMan.

WebMan/Web processes Communication

The WebMan will communicate with several other processes in the Web Subsystem.

Encoded

The encoder daemon, which runs on the encoders, takes care of file format conversion (audio, graphic, etc.)

E-Mail Agent

This process runs on the E-Mail Server(s) and takes care of transferring incoming e-mail messages to the NFS server and inserting message info into the Database. It may also handle attachment detachment and encoding (coordinate with encoded) for e-mail to whatever gateways.

PC3 CGI/Java Apps

The Applications which make up the PC3 Web Interface. A number of CGI programs which may need to coordinate jobs with other processes in the subsystem--conference call control through the WebMan.

Phase One--NMS File System Organization

Software Diagram (1)

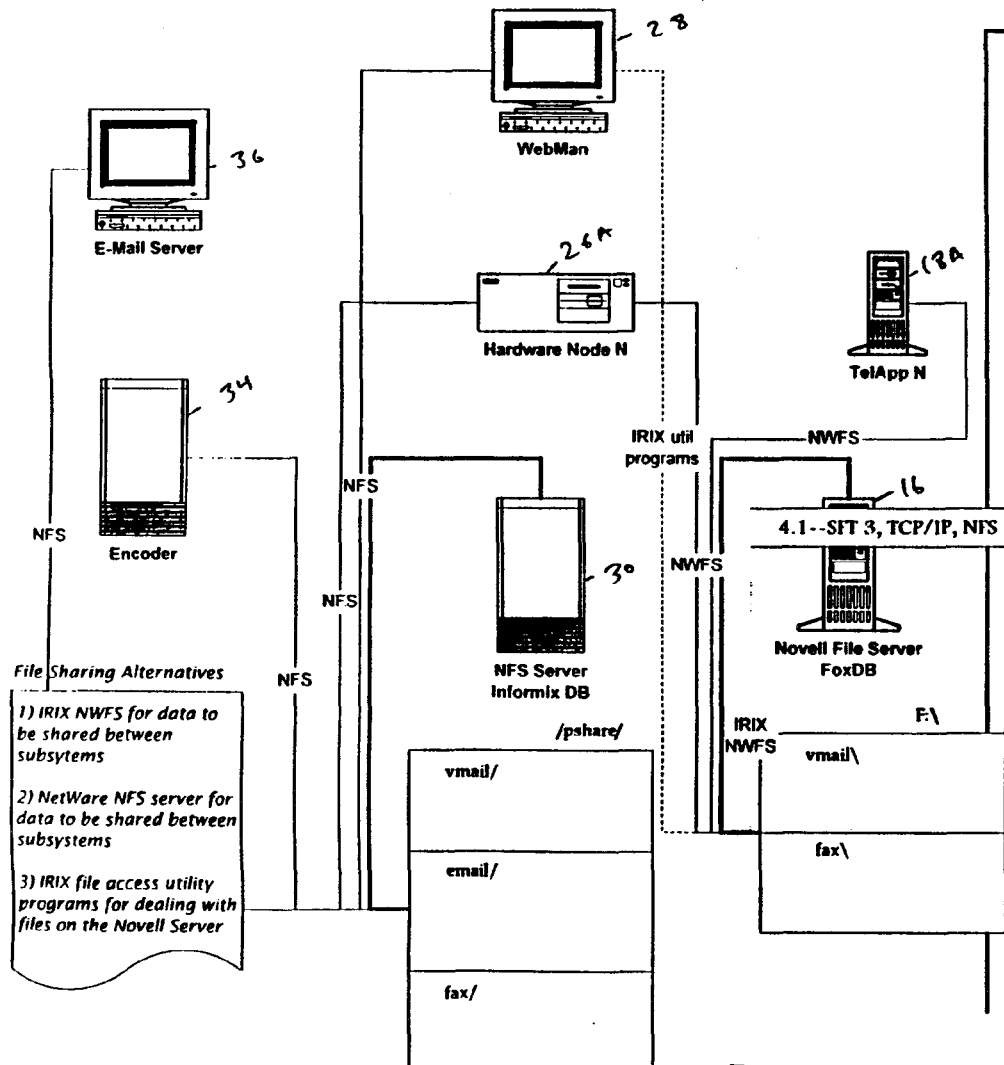


Fig 5

The Telephony Subsystem and the Web Subsystem each have their own specific database and file server. The role of the Telephony Subsystem's File Server (Novell/Fox Pro) remains virtually unchanged in this first phase.

The Web Subsystem Database holds all information necessary in the PC3 Web Interface--messages, contact data, customer records, etc. The Web Subsystem Database is kept synchronized by the WebMan which coordinates with the TelApp. The WebMan also keeps the files stored on the NFS server (voice mail, fax, etc.) in sync with those stored on the Novell Server.

The Web Subsystem File Server serves as centralized storage for the subsystem. The WebMan, Encoder, and E-Mail Server each NFS mount the file system and may refer to files without regard for which machine they are on Voice Mail, Fax, and other customer data stored on the Novell File Server is duplicated (possibly in different file formats) on the NFS server.

The WebMan handles the transfer of files (Voice Mail, Fax) from Novell Server to NFS server on TelApp's command. Incoming E-Mail is handled in the following way. The E-Mail Server stores the new E-Mail on the NFS server and inserts a message record in the database. It is now easily accessible to the web processes (PC3) which need to get at it. In order for the TelApp to access the e-mail, the e-mail directory may be mapped as a Novell Shared Directory (IRIX supports this). The TelApp still needs to communicate with the WebMan in order to query the Web DB for a given customer's list of email messages.

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Phase One--Subsystem IPC

Software Diagram (2)

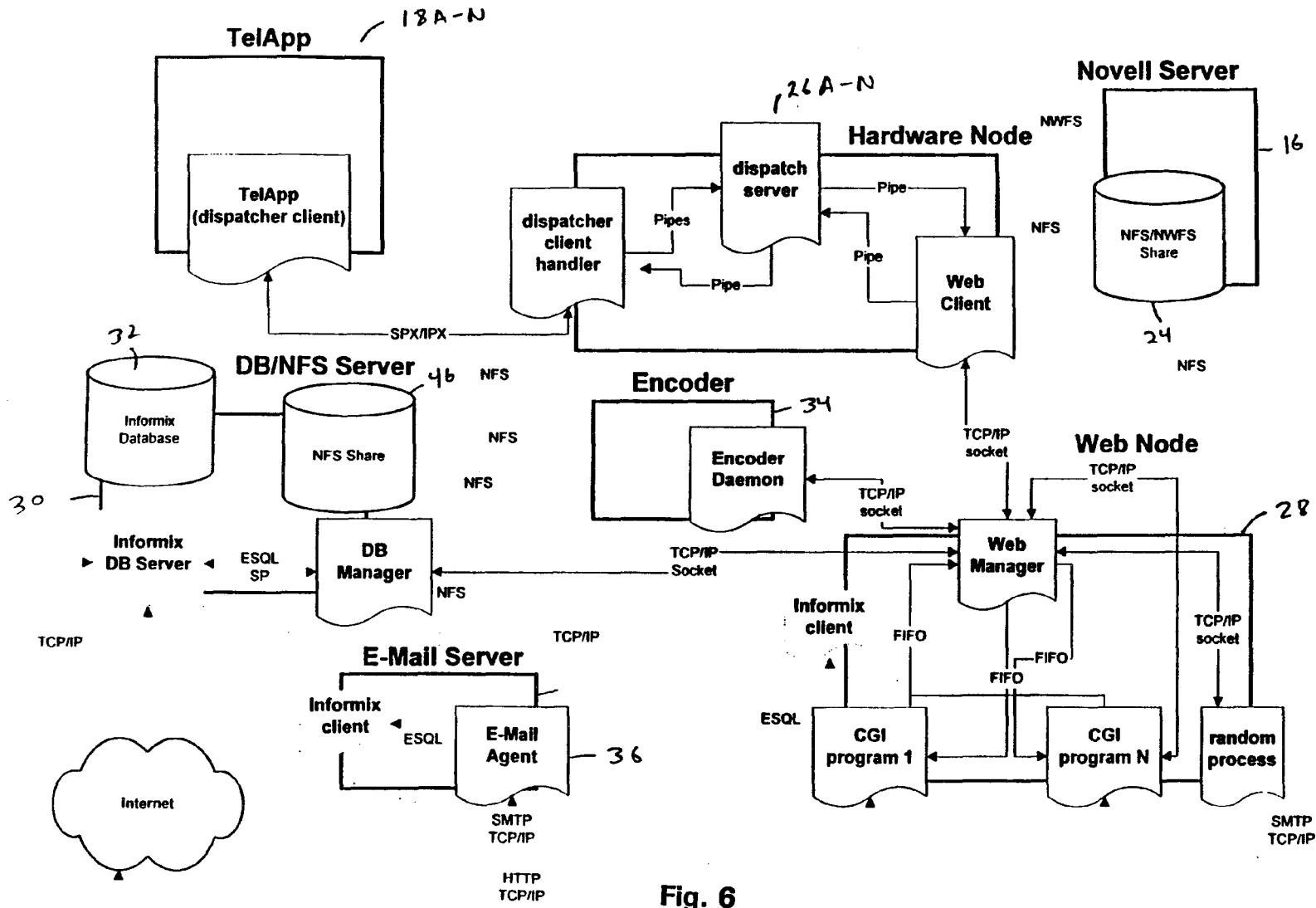


Fig. 6

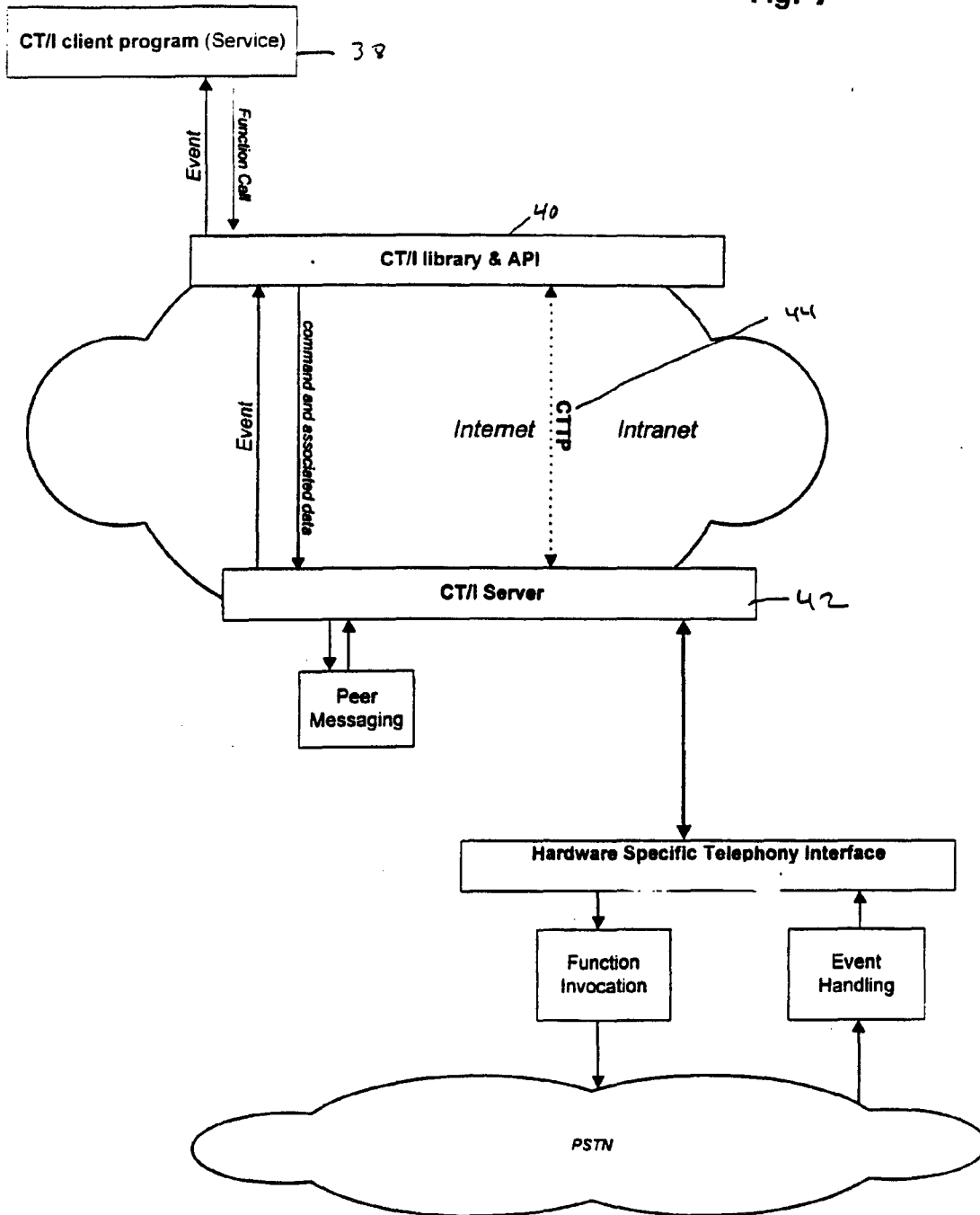
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PCT/US97/20986

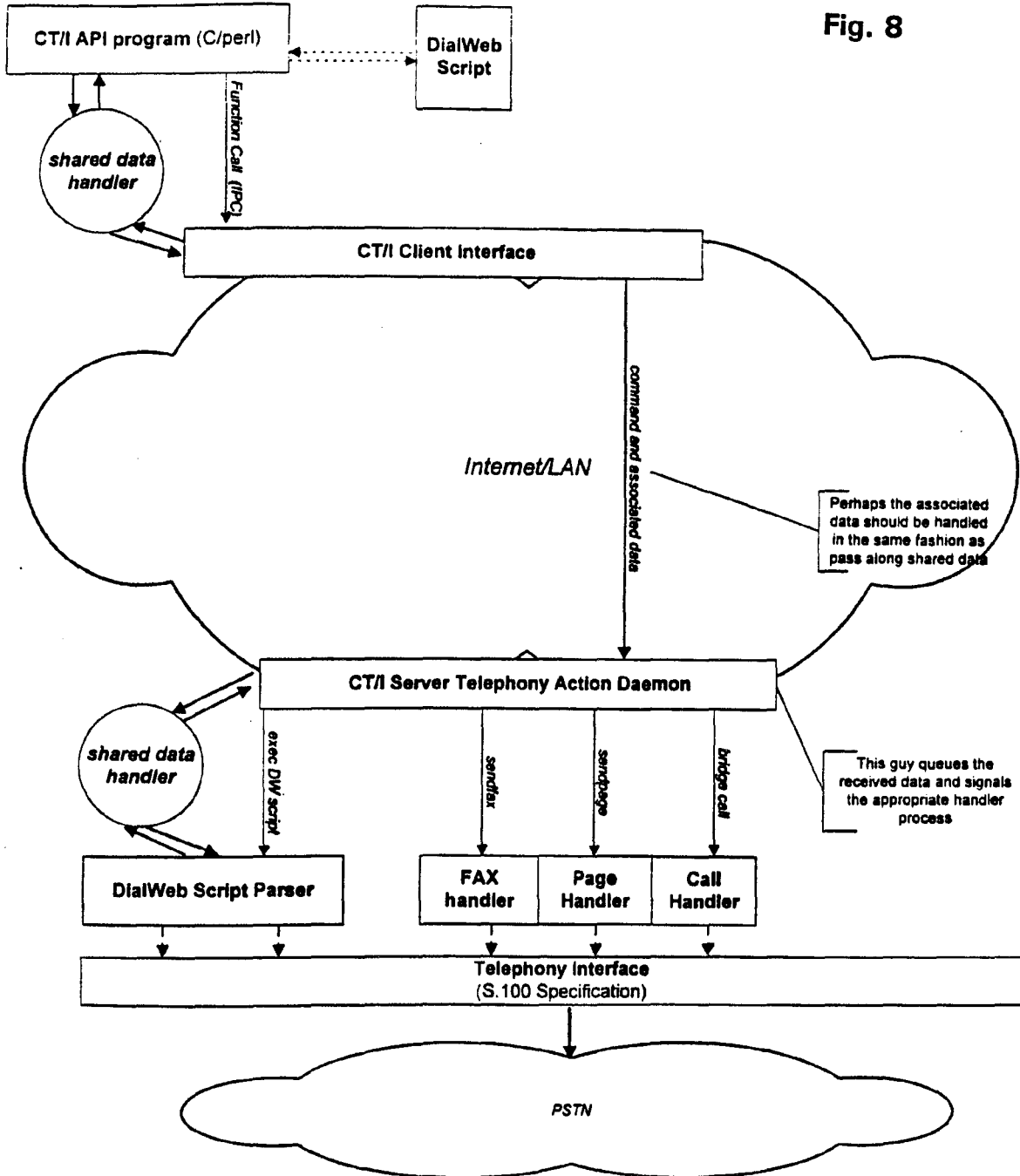
CT/I Client/Server Diagram

Fig. 7



Web process initiates a telephone action

Fig. 8



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Telephone process initiates an internet action

Fig. 9

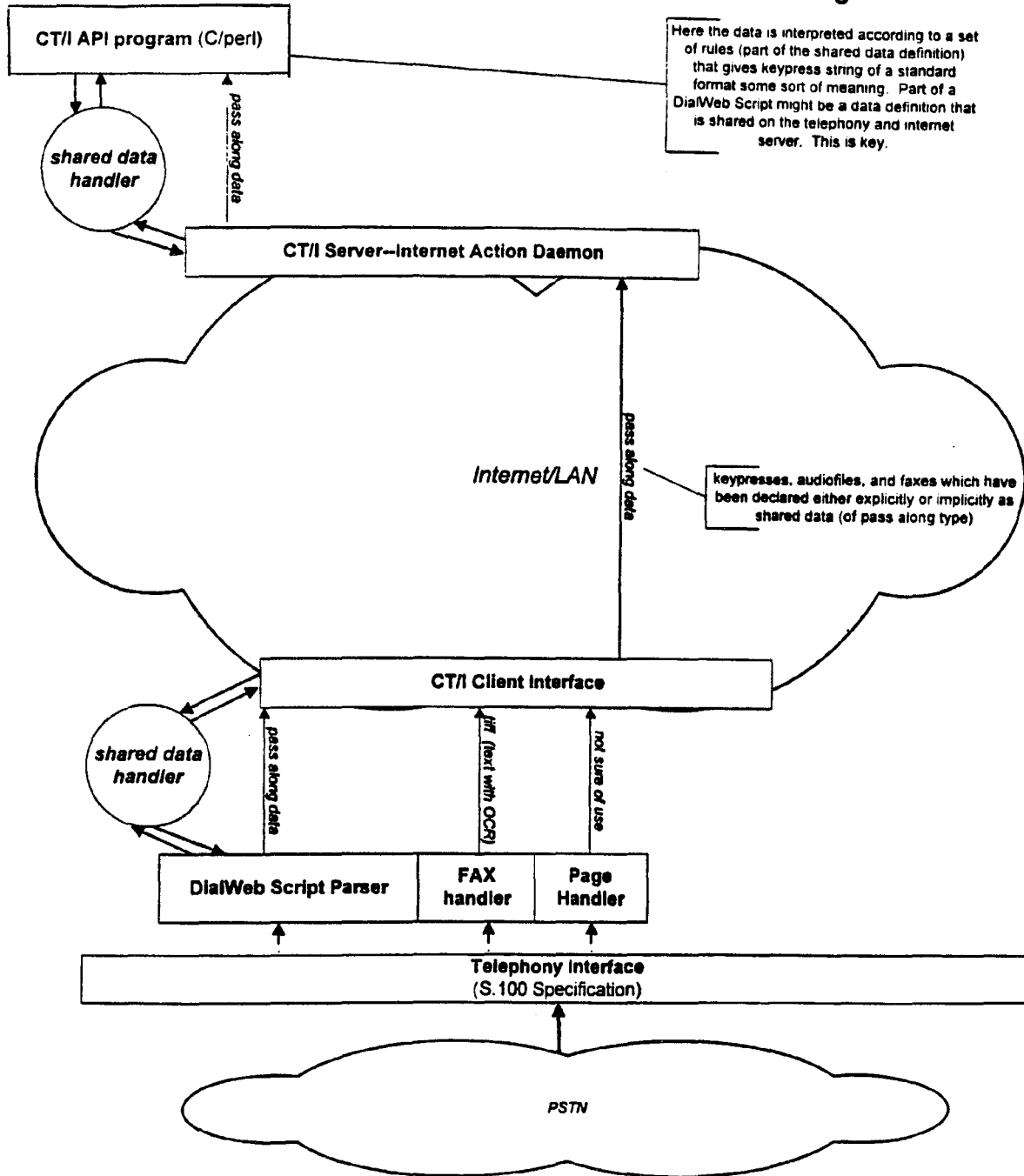
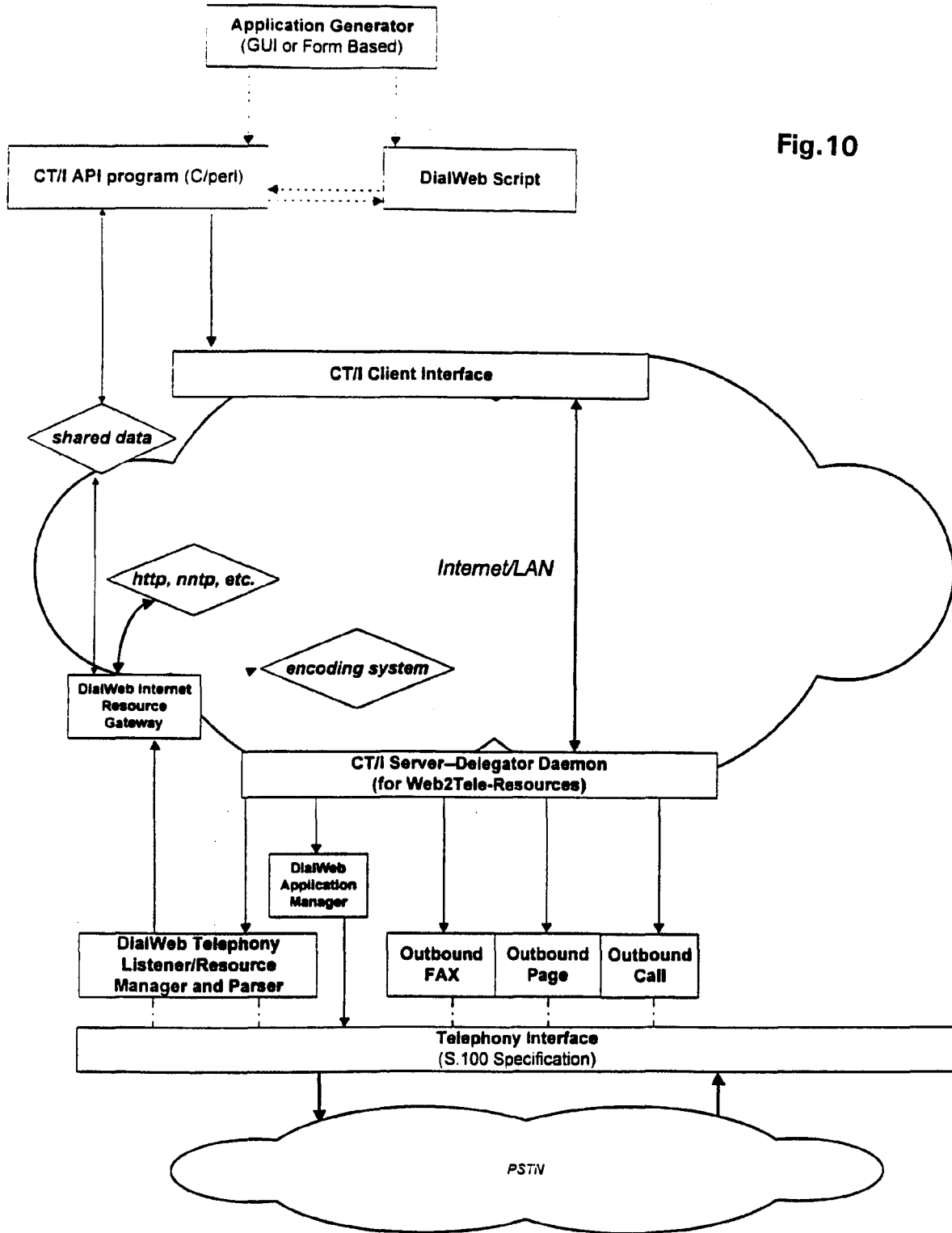


Fig. 10



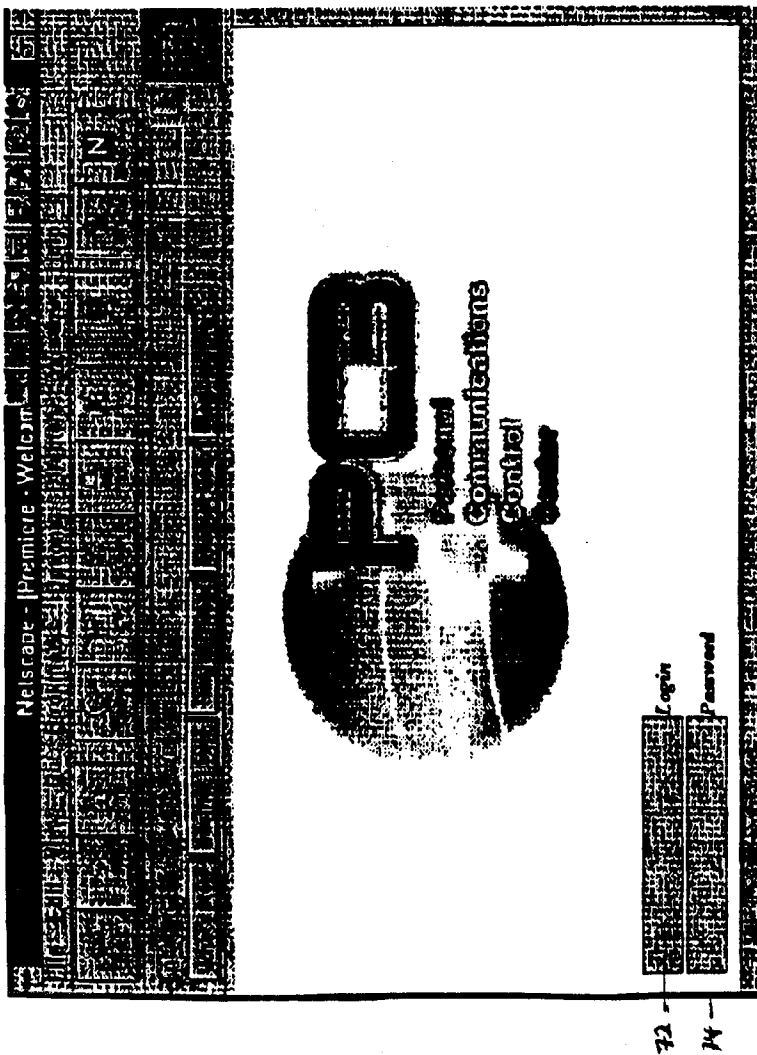
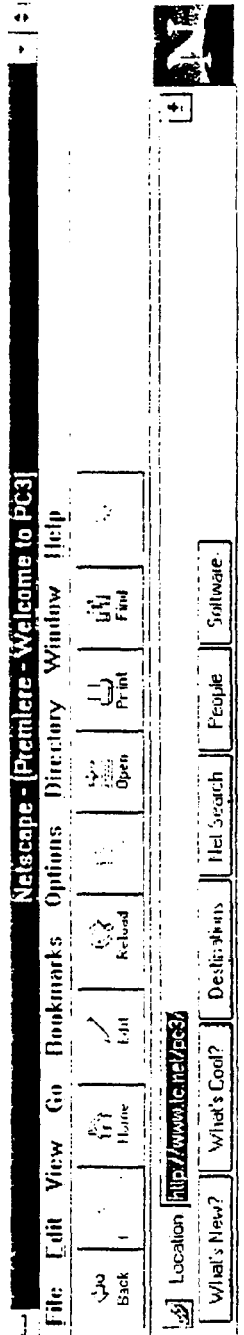


Fig. 11



Document Date

Fig. 11A

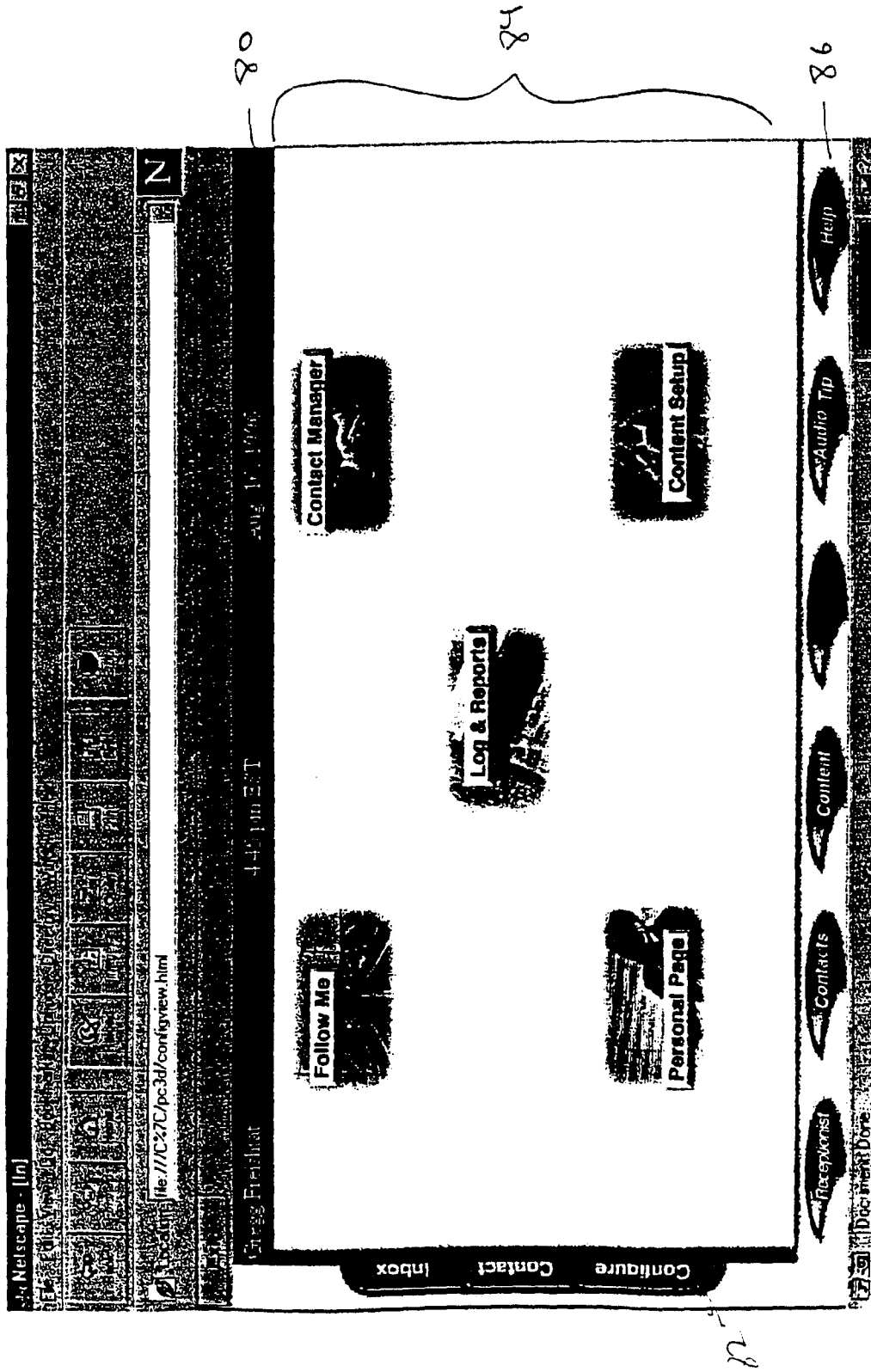


Fig. 12

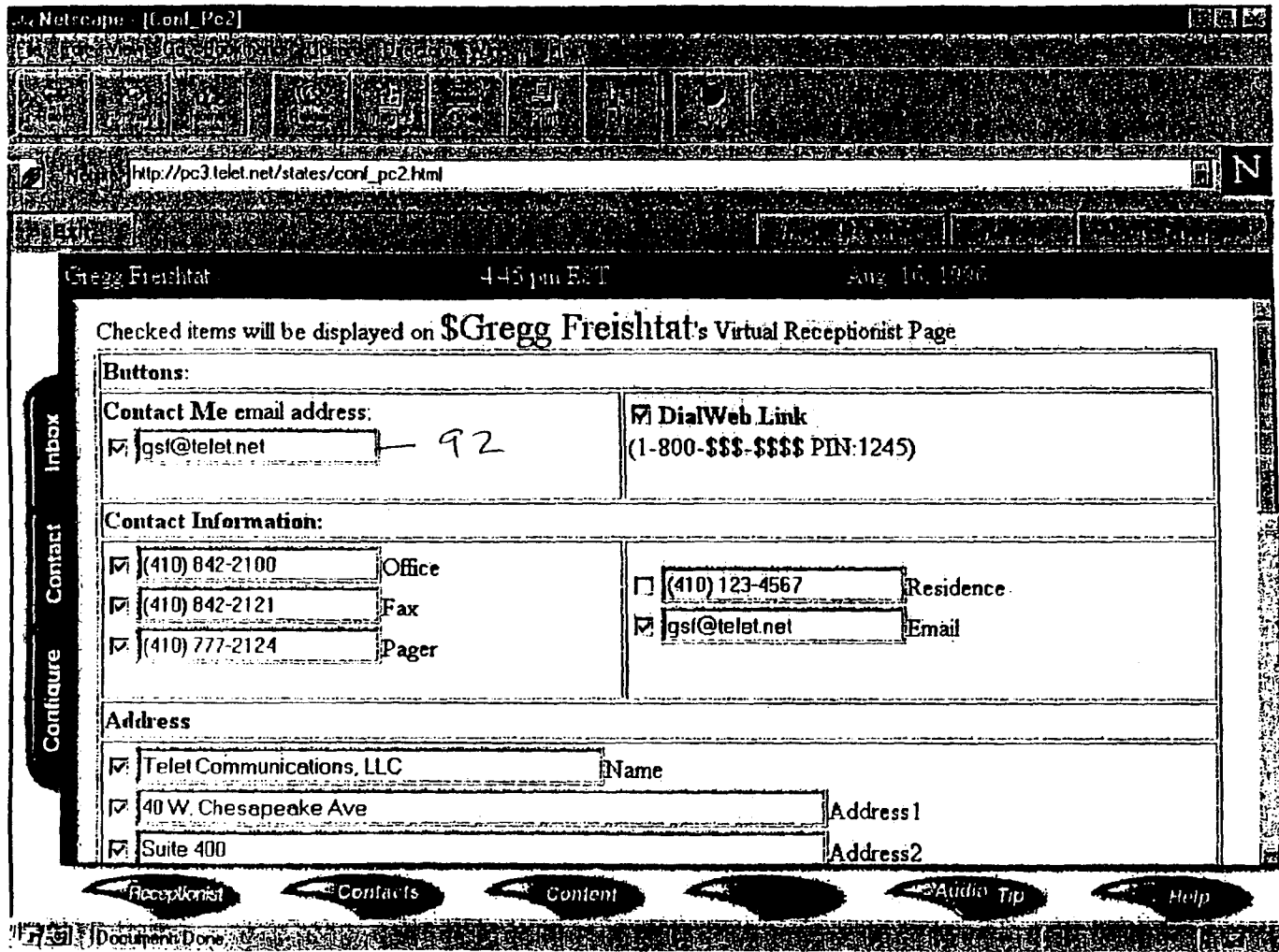


Fig. 13

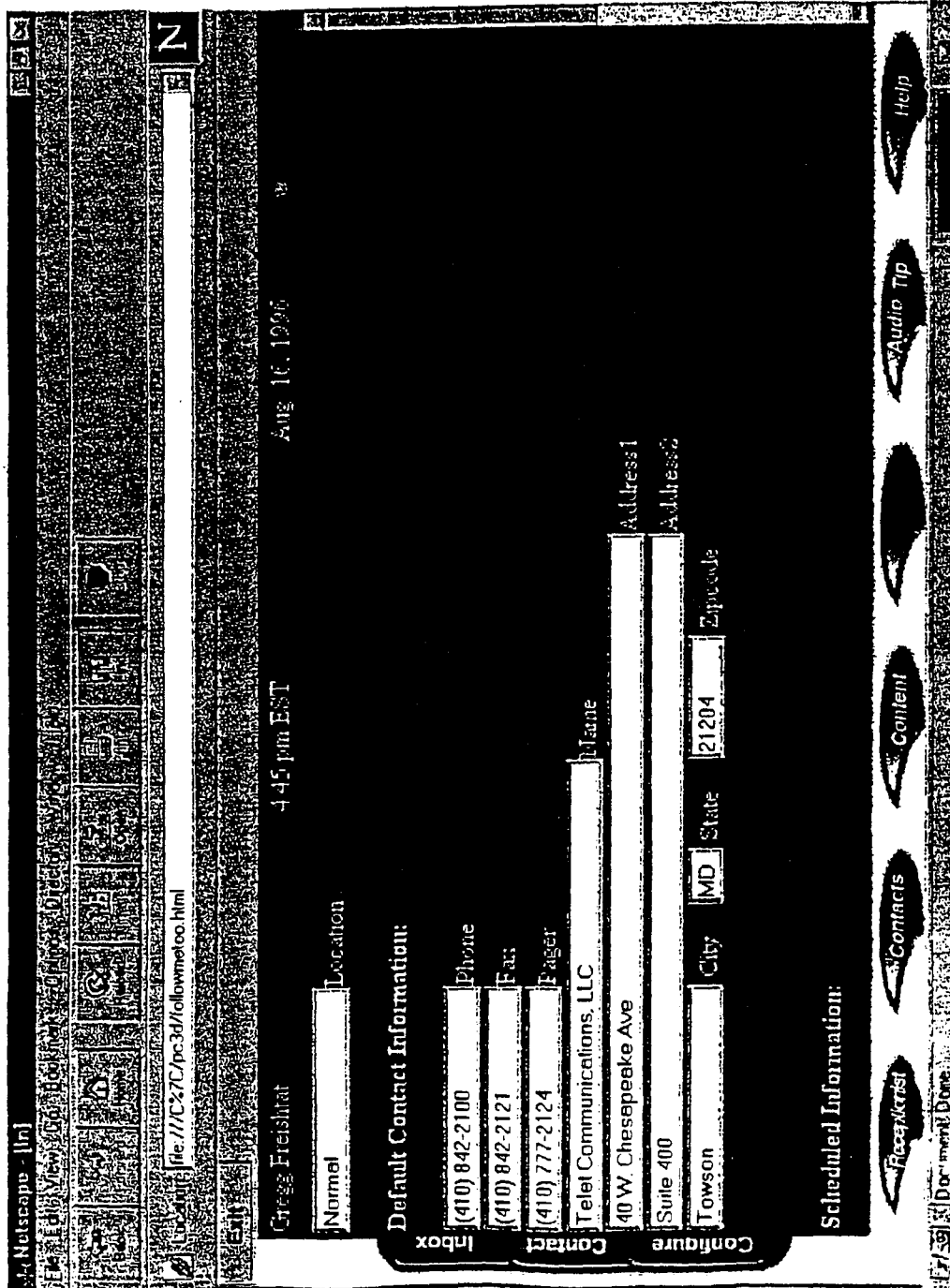


Fig. 13A

Netcape - [In] [Close] [Maximize] [Refresh]

File Edit View Go Bookmarks Options Directory Window Help

Back Forward Home Reload Images Open Print Find

Location: file:///C:/7C/pc3d/logsview.html N

Exit

Gregg Freishtat -145 pm EST Aug 16, 1996

Current Charges for Gregg Freishtat

	Charges	Credits	Total
Inbox			
Monthly Service Charges 07/25/96 thru 08/24/96			Details
A-Mail Service	\$5.55		
Voice Mail Service	\$3.55		
E-mail Service	\$3.55		
Faxing Service	\$1.55		
Paging Service	\$1.55		
Total Monthly Service Charges			\$5.55
Contact			
Configure			
A-Mail Charges 07/25/96 thru 08/24/96			Details
Outgoing	\$1.55		
Incomming	\$1.55		
Total A-Mail Charges			\$5.55
Voice Mail Charges 07/25/96 thru 08/24/96			
			Details

Receptionist Contacts Content Audio Tip Help

Document Done

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Fig. 13B

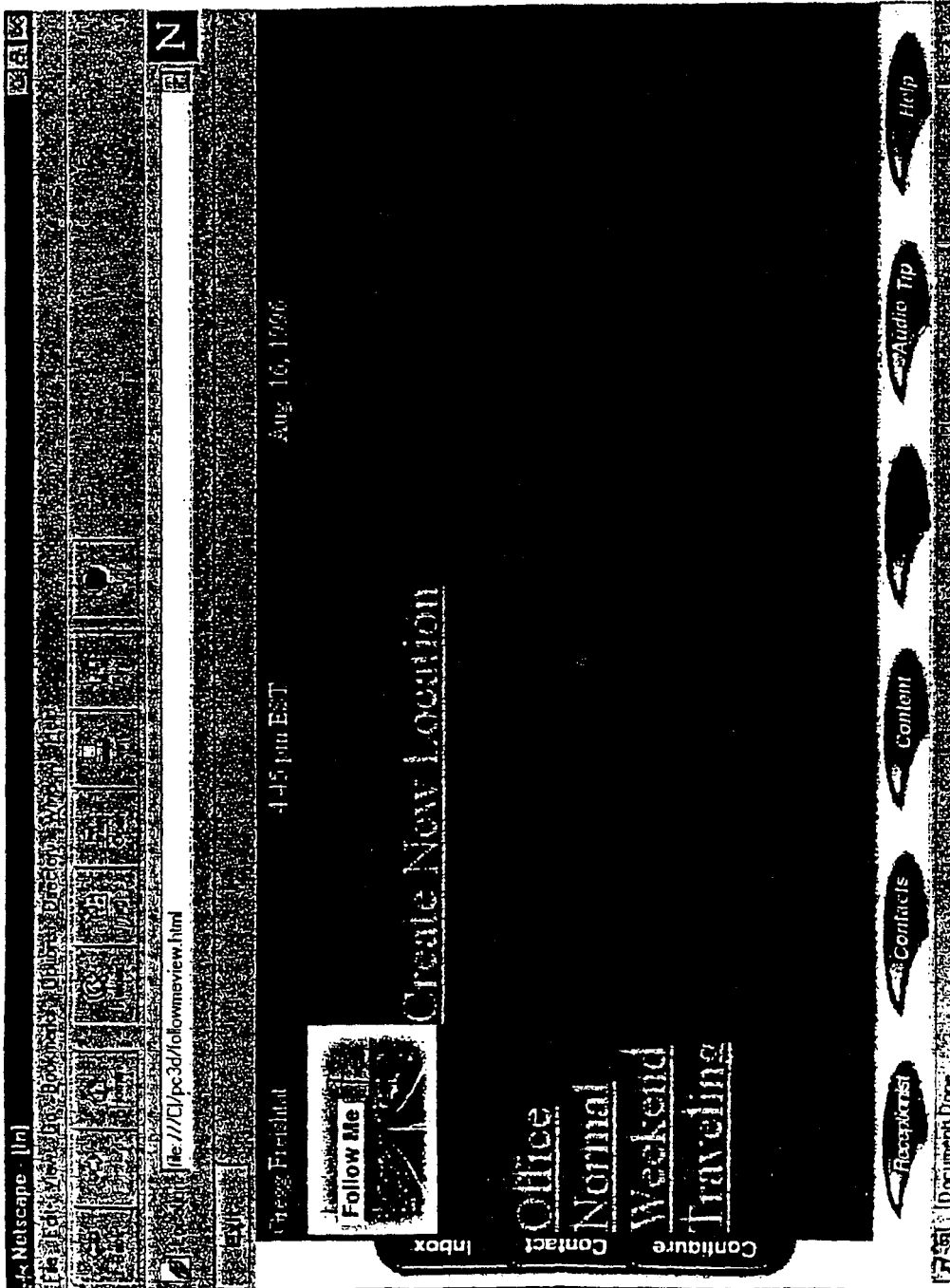


Fig. 13C

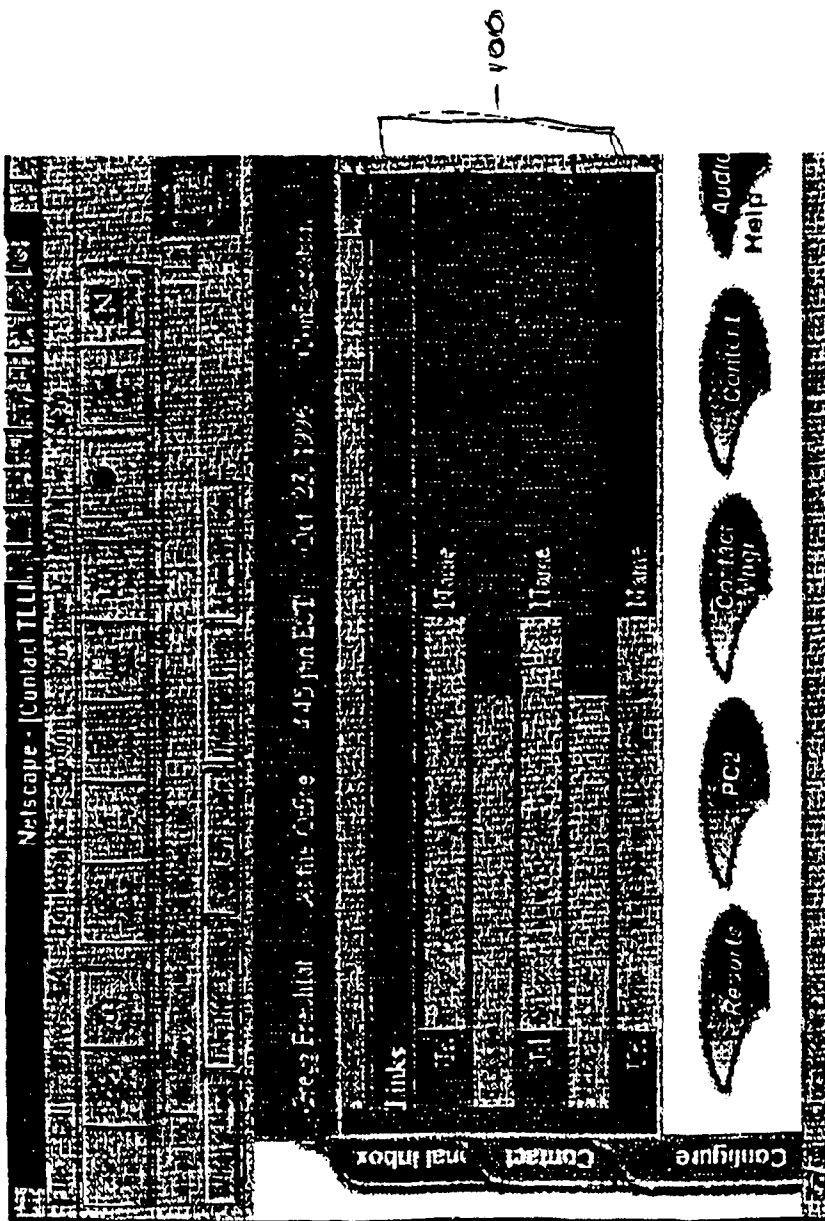


Fig. 14

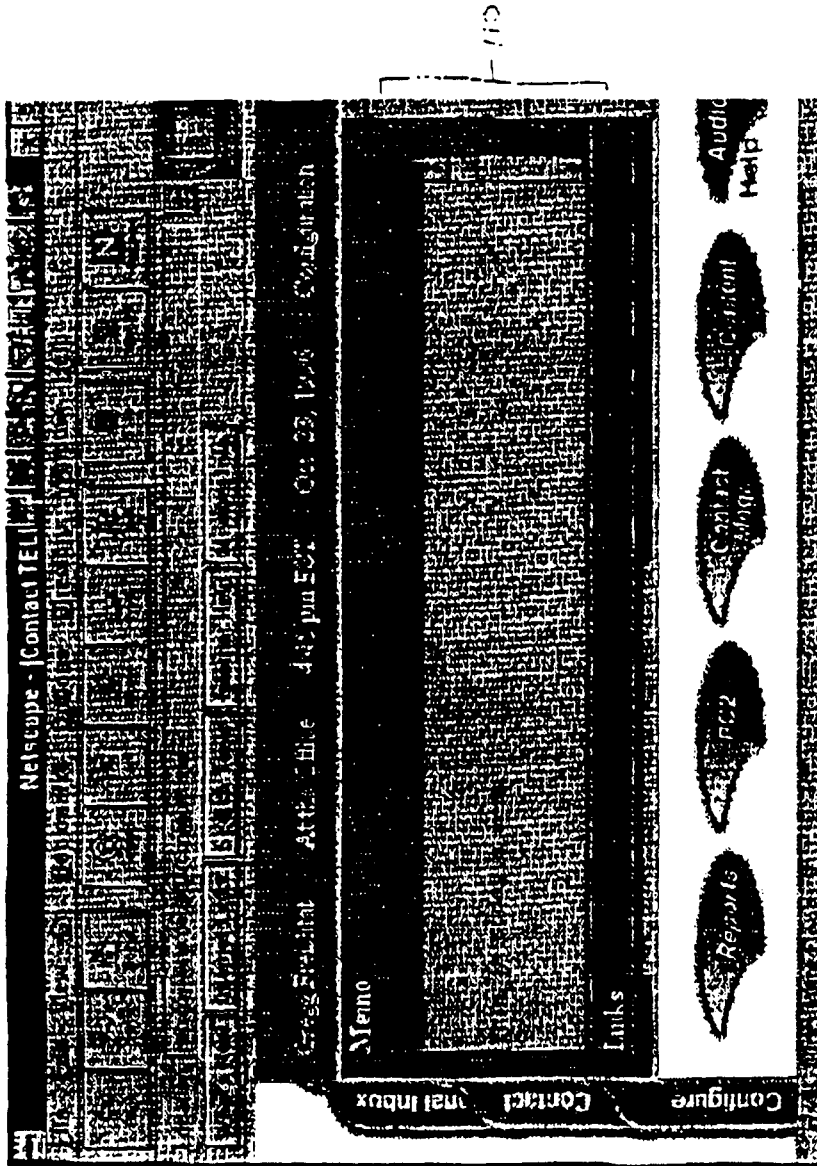
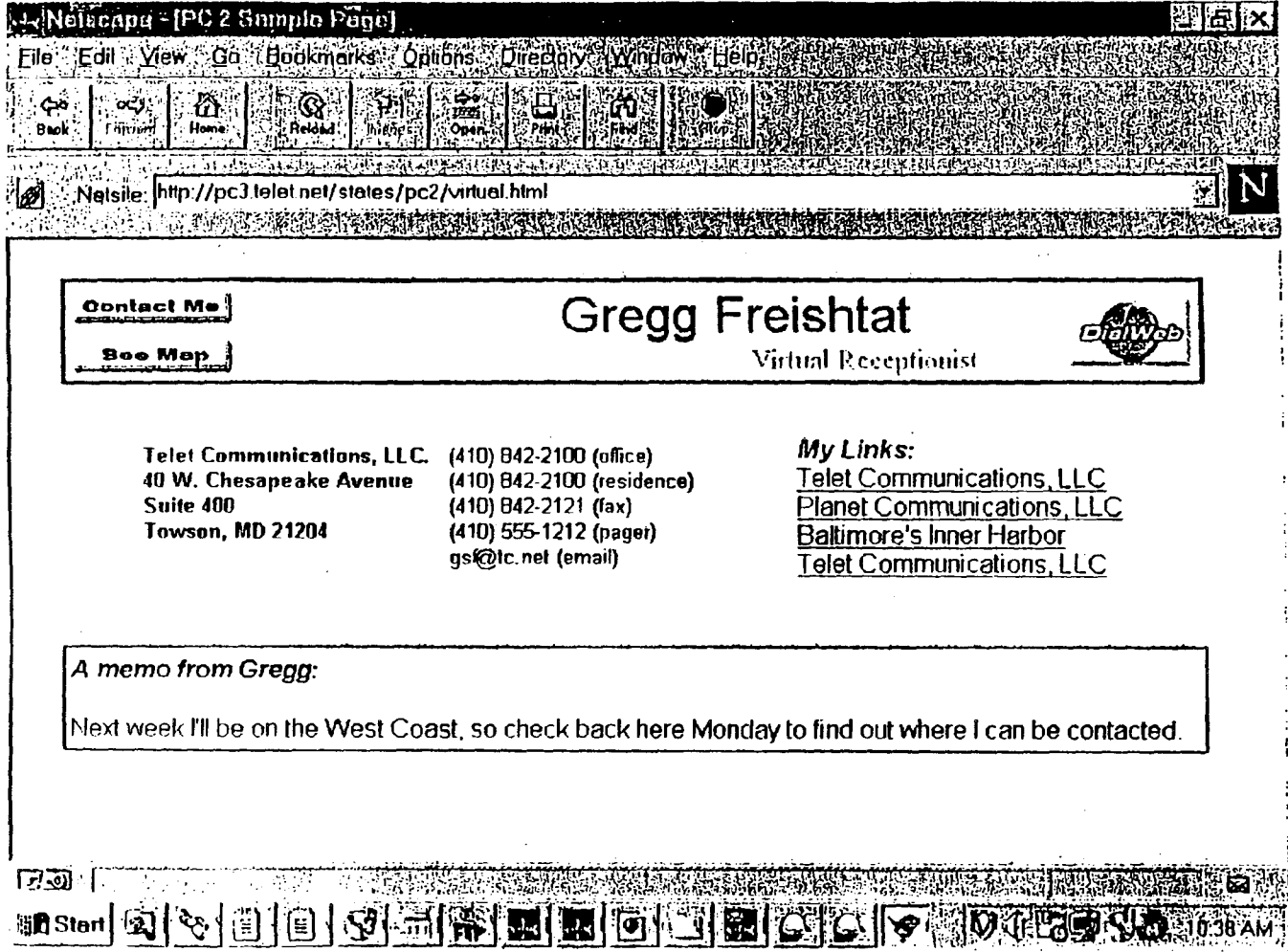


Fig. 15



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Fig. 16

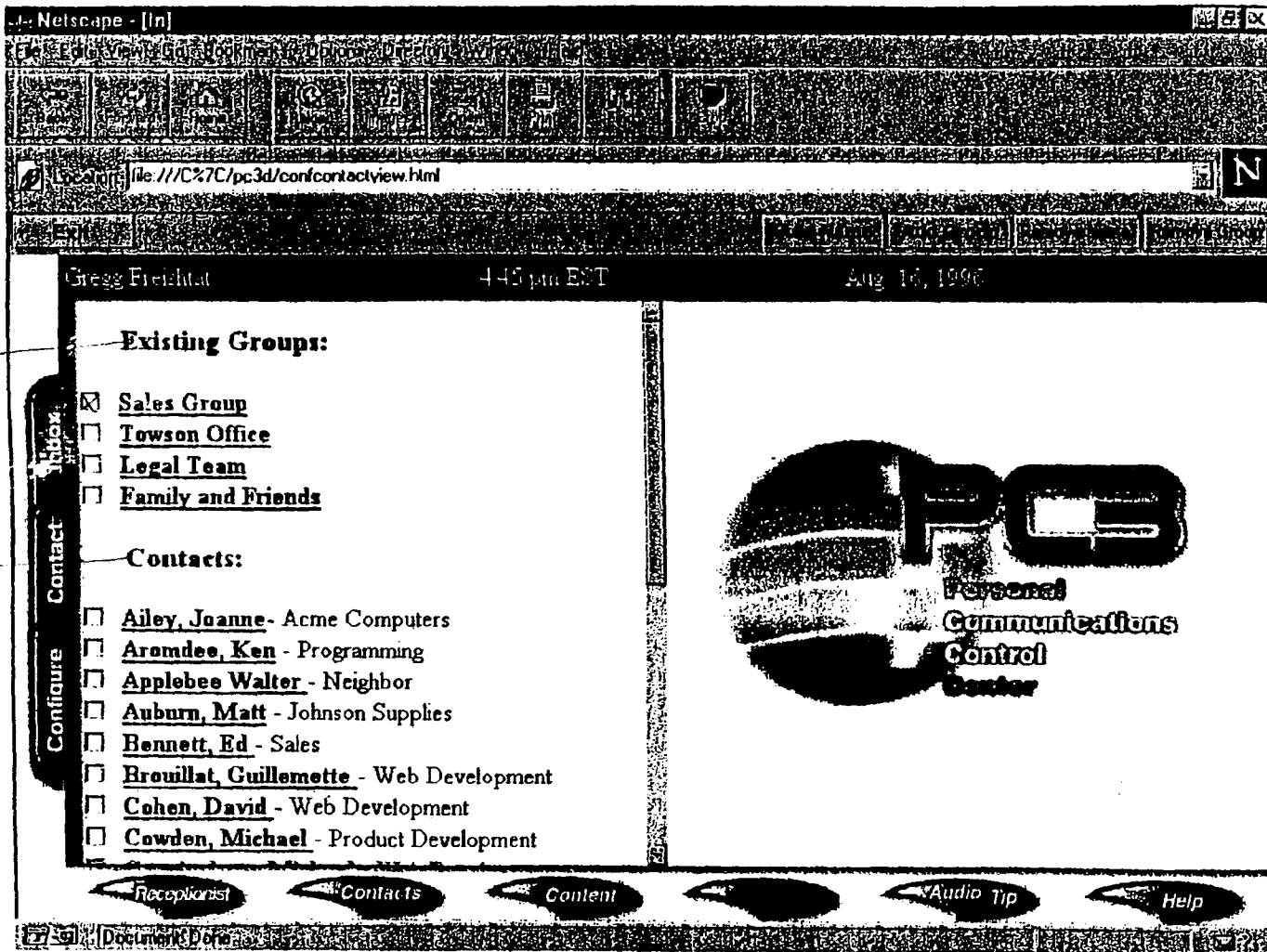
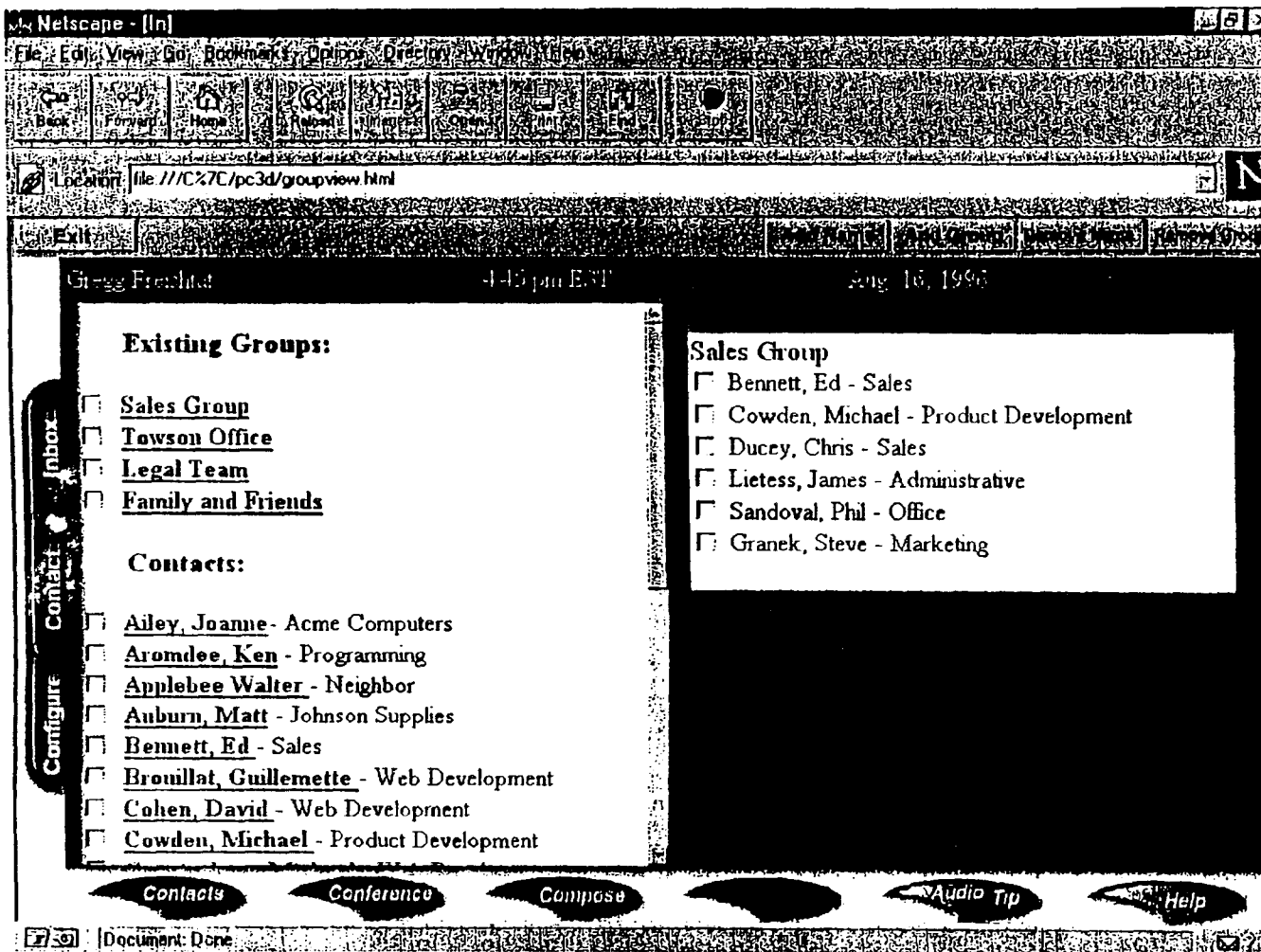


Fig. 17



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Fig. 17A

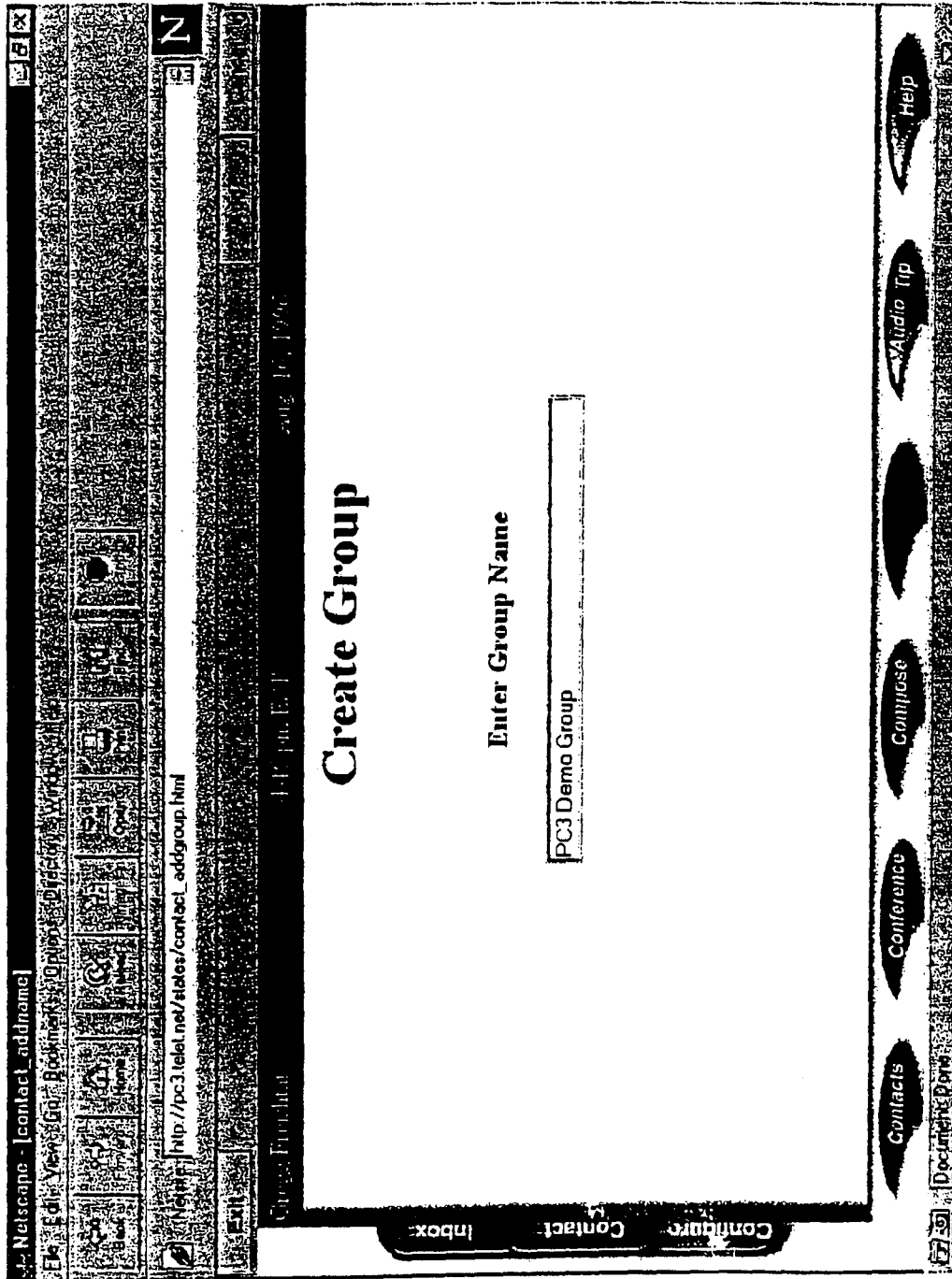
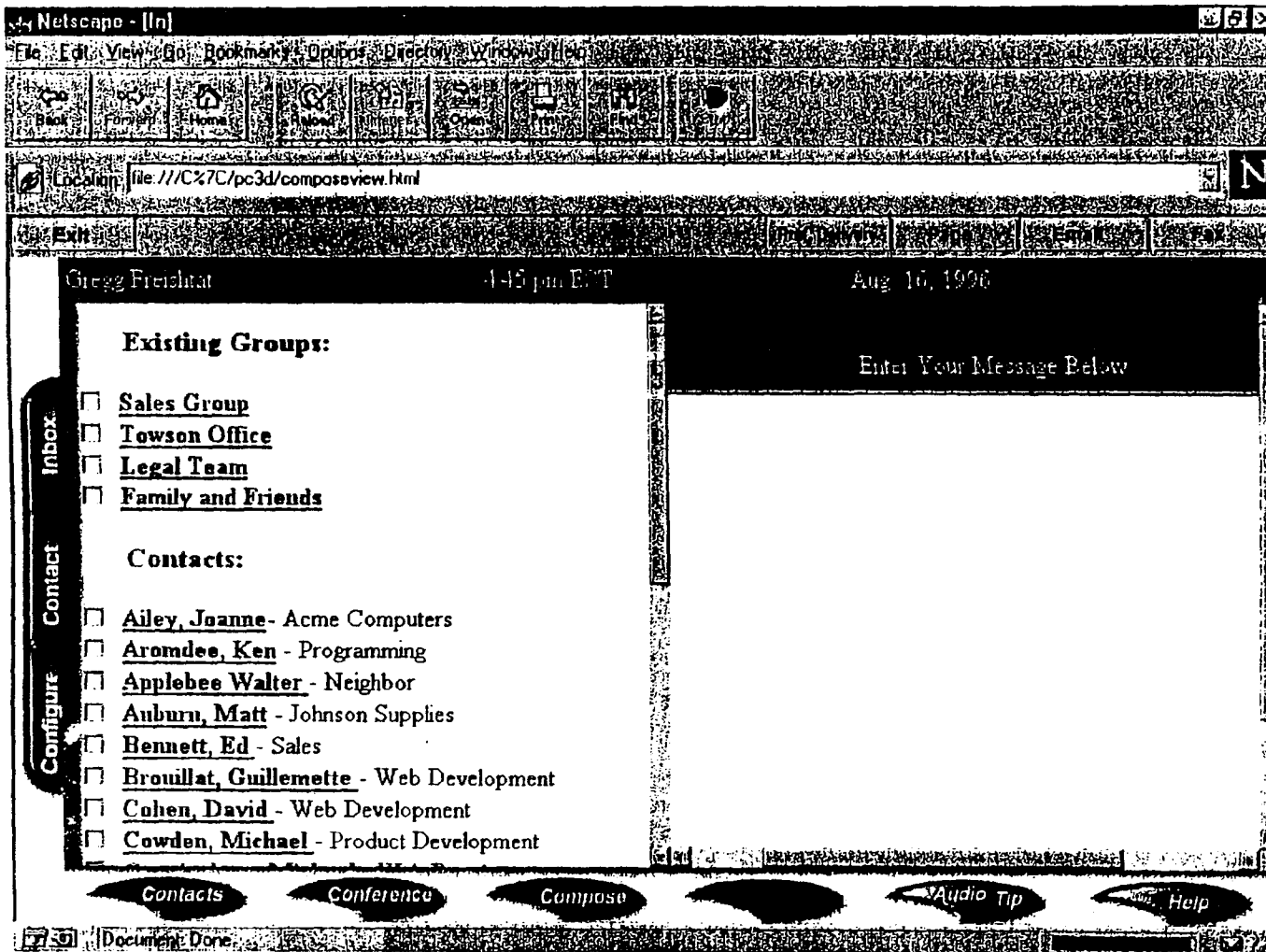


Fig. 17B



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24/39

PCT/US97/20986

Fig. 17C

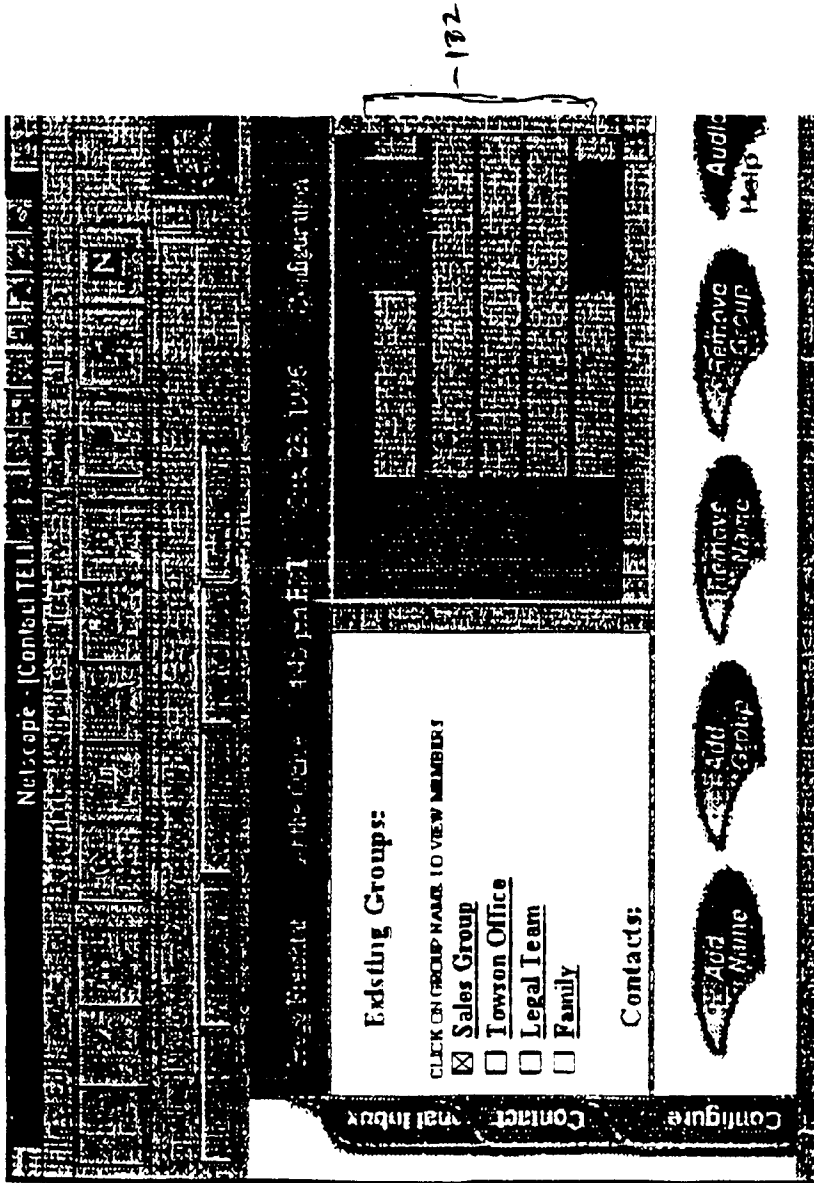
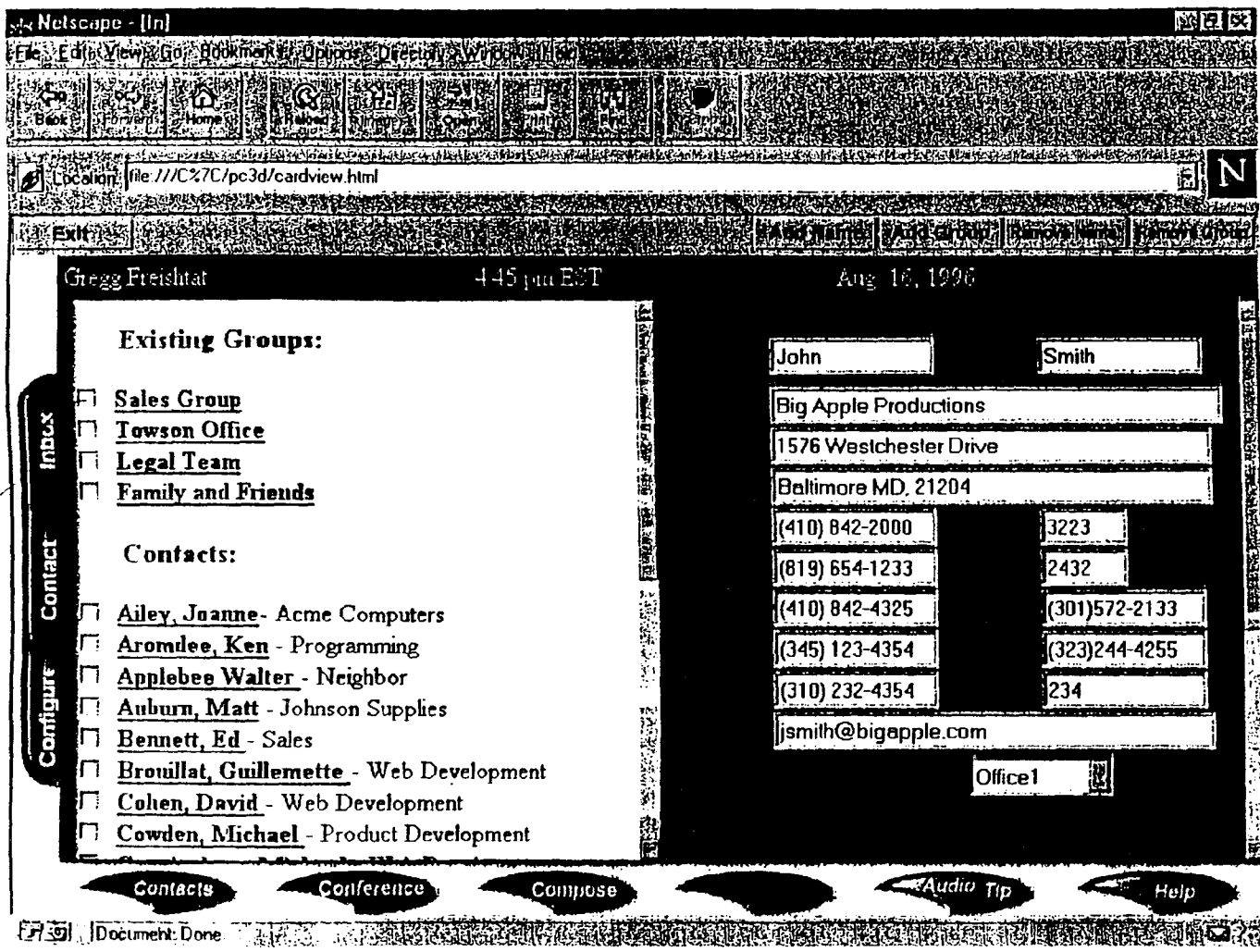


Fig. 18

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Fig. 19

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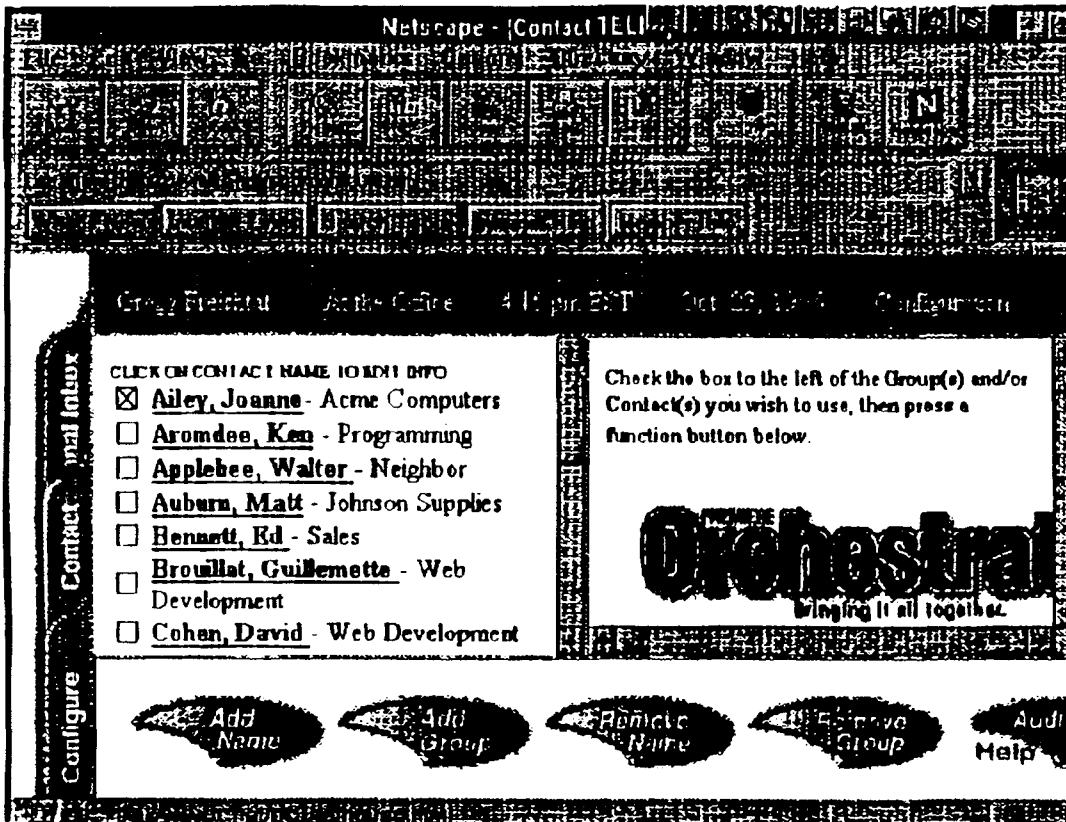


Fig. 20

Netscape - [contact_adlname]

File Edit View Go Bookmarks Open Directory View Mail

Go Back Home Stop Reload Print Home

Netscape http://pc3.lelet.net/states/contact_adlname.html

Exit

Gregg Freishtat 4:45 pm EST Aug 16, 1996

First Name	John			Preferred Delivery:	Office1
Last Name	Smith				
Company	Big Apple Productions				
Address	1576 Westchester Drive				
	Baltimore MD, 21204				
Office 1	(410) 842-2000	Ext.	3223		
Office 2	(819) 654-1233	Ext.	2432		
Fax	(410) 842-4325	Home	(301)572-2133		
Cell Ph.	(345) 123-4354	Pager	(323)244-4255		
V-Mail	(310) 232-4354	Mailbox#	234		
E-Mail	jsmith@bigapple.com				

Notes:

Contacts Conference Compose Audio Tip Help

Document Done

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28/39

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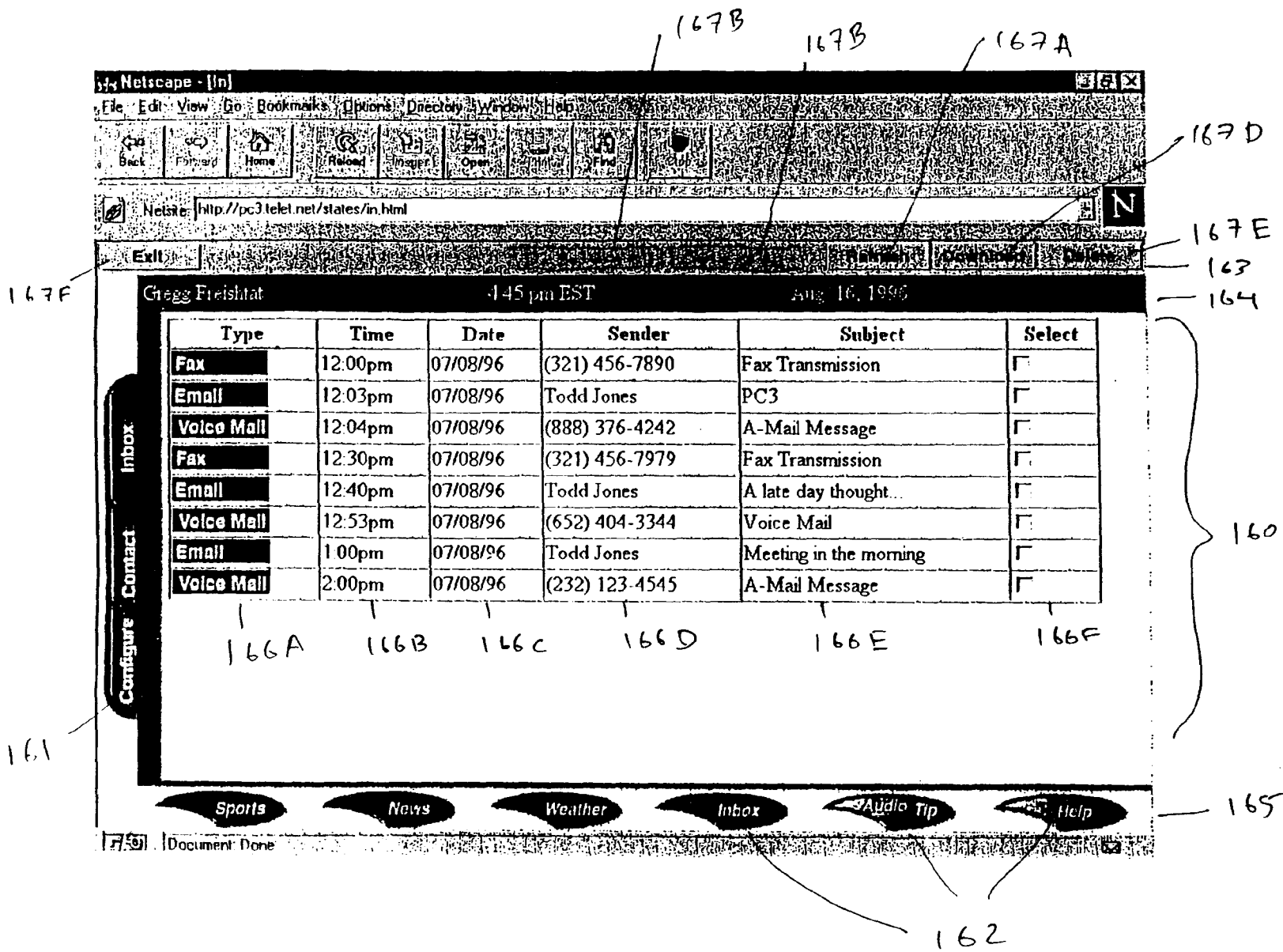
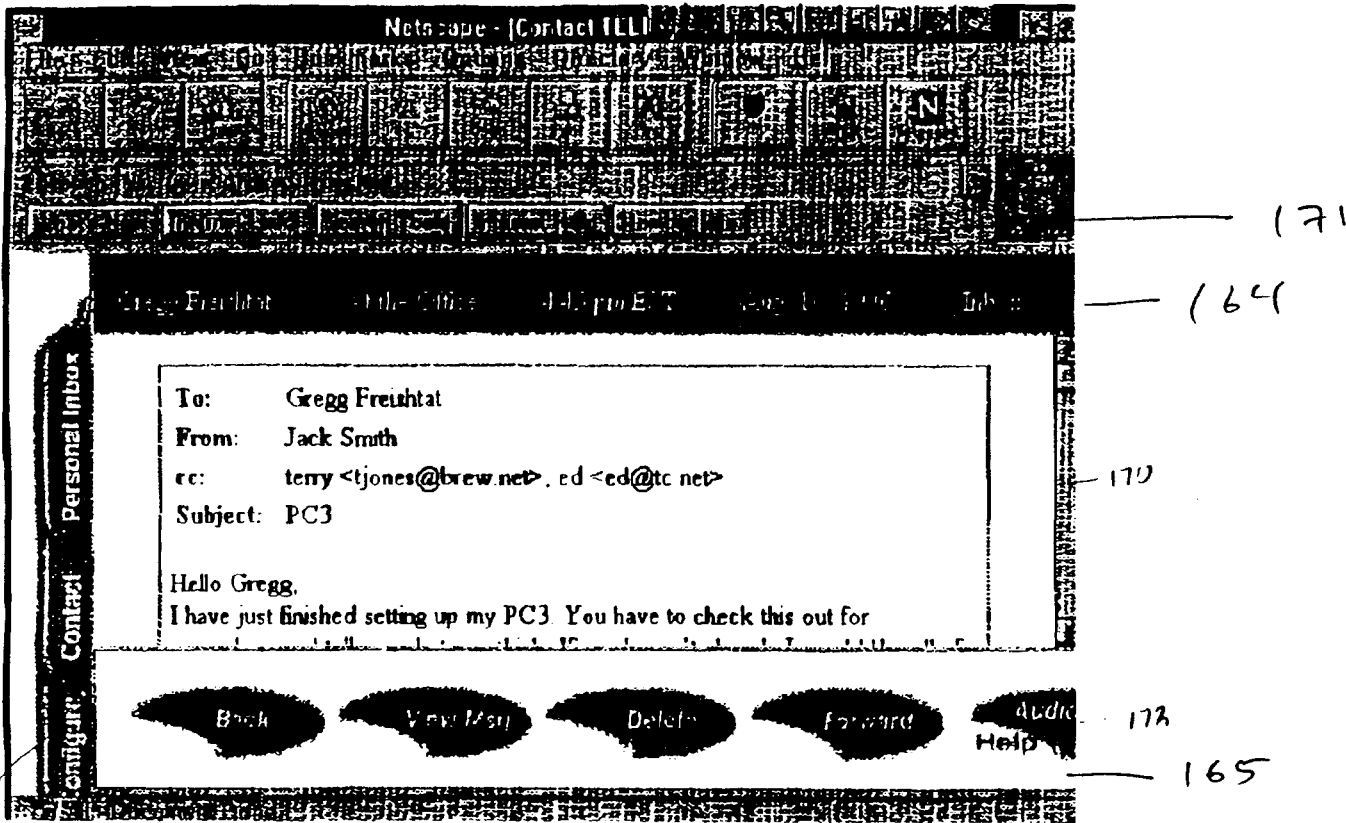
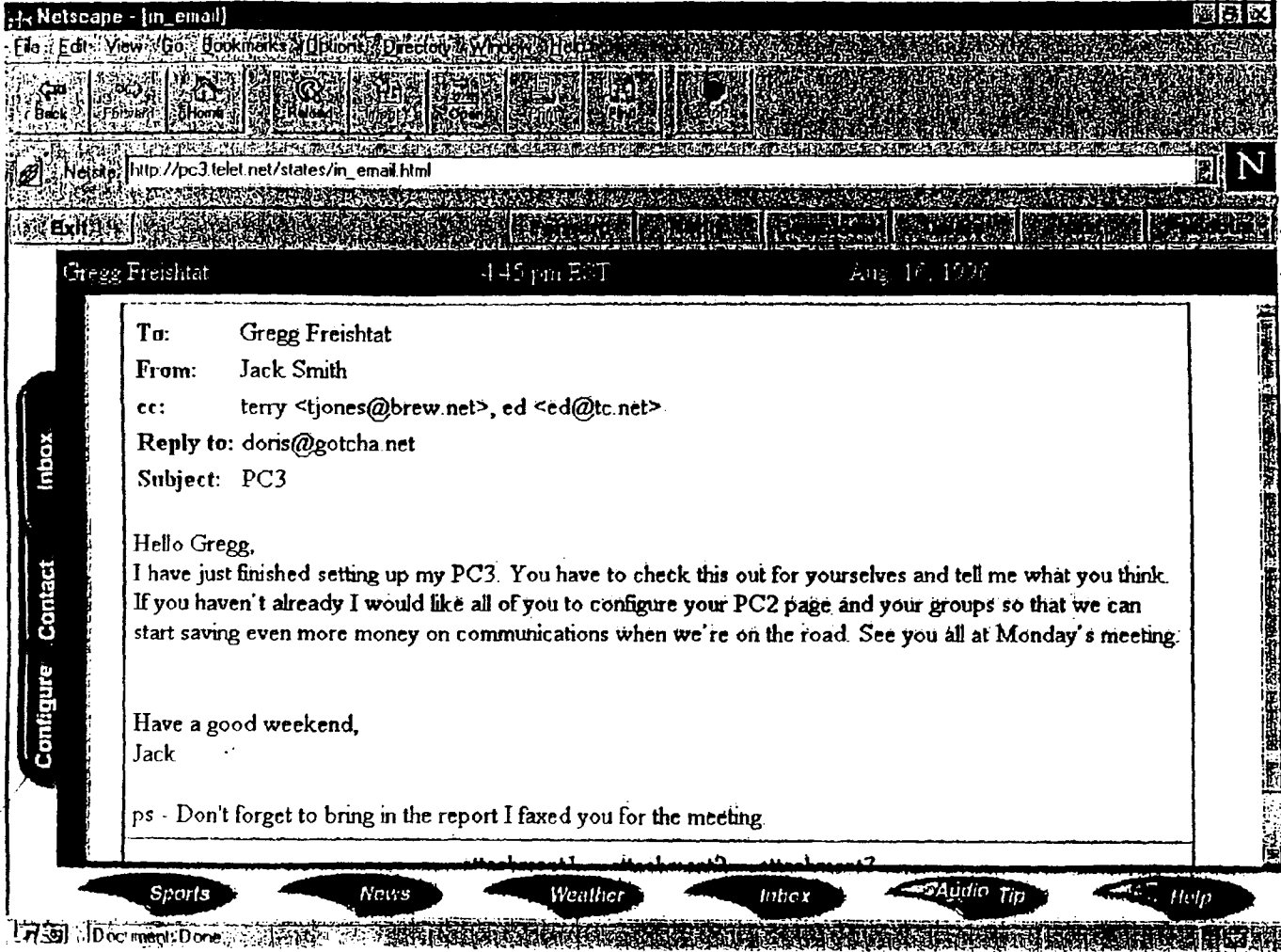


Fig. 21



161

Fig. 22A



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Inbox

Configure Contact

Gregg Freishtat 4:45 pm EST Aug 16, 1996

To: Gregg Freishtat
 From: Jack Smith
 cc: terry <tjones@brew.net>, ed <ed@tc.net>
 Reply to: doris@gotcha.net
 Subject: PC3

Hello Gregg,
 I have just finished setting up my PC3. You have to check this out for yourselves and tell me what you think. If you haven't already I would like all of you to configure your PC2 page and your groups so that we can start saving even more money on communications when we're on the road. See you all at Monday's meeting.

Have a good weekend,
 Jack

ps - Don't forget to bring in the report I faxed you for the meeting.

Sports

News

Weather

Index

Audio Tip

Help

Fig. 22B

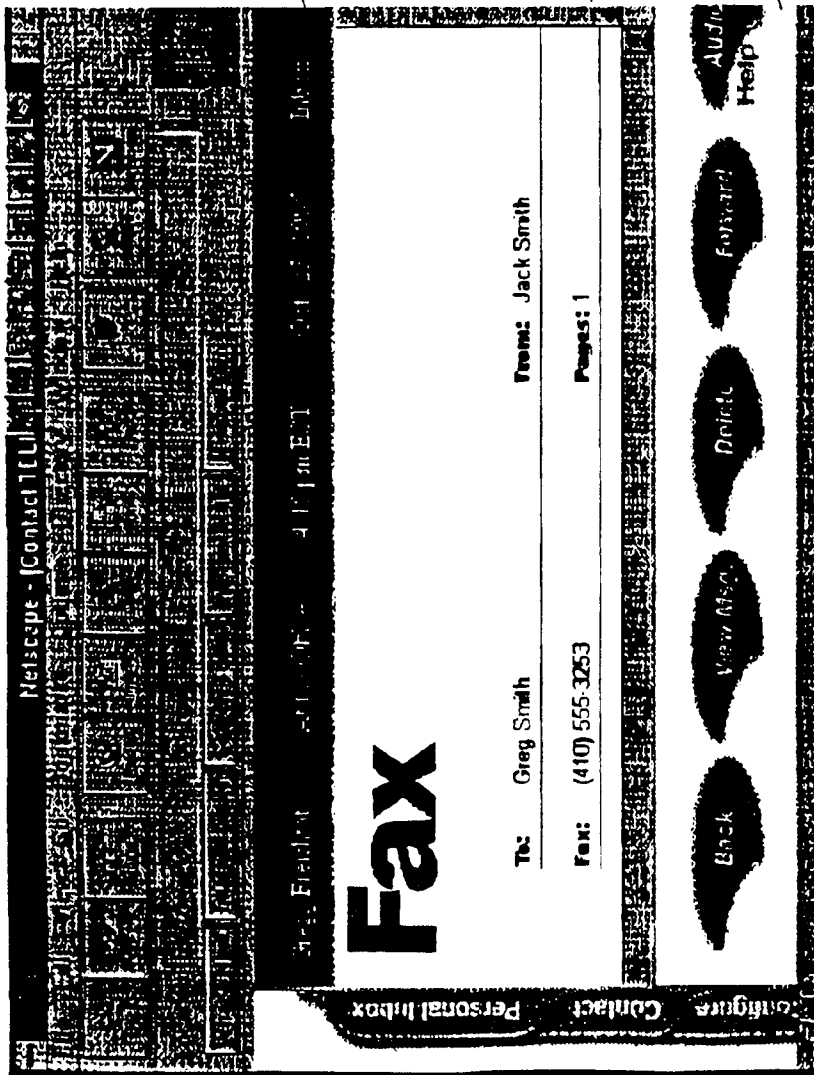


Fig. 23A

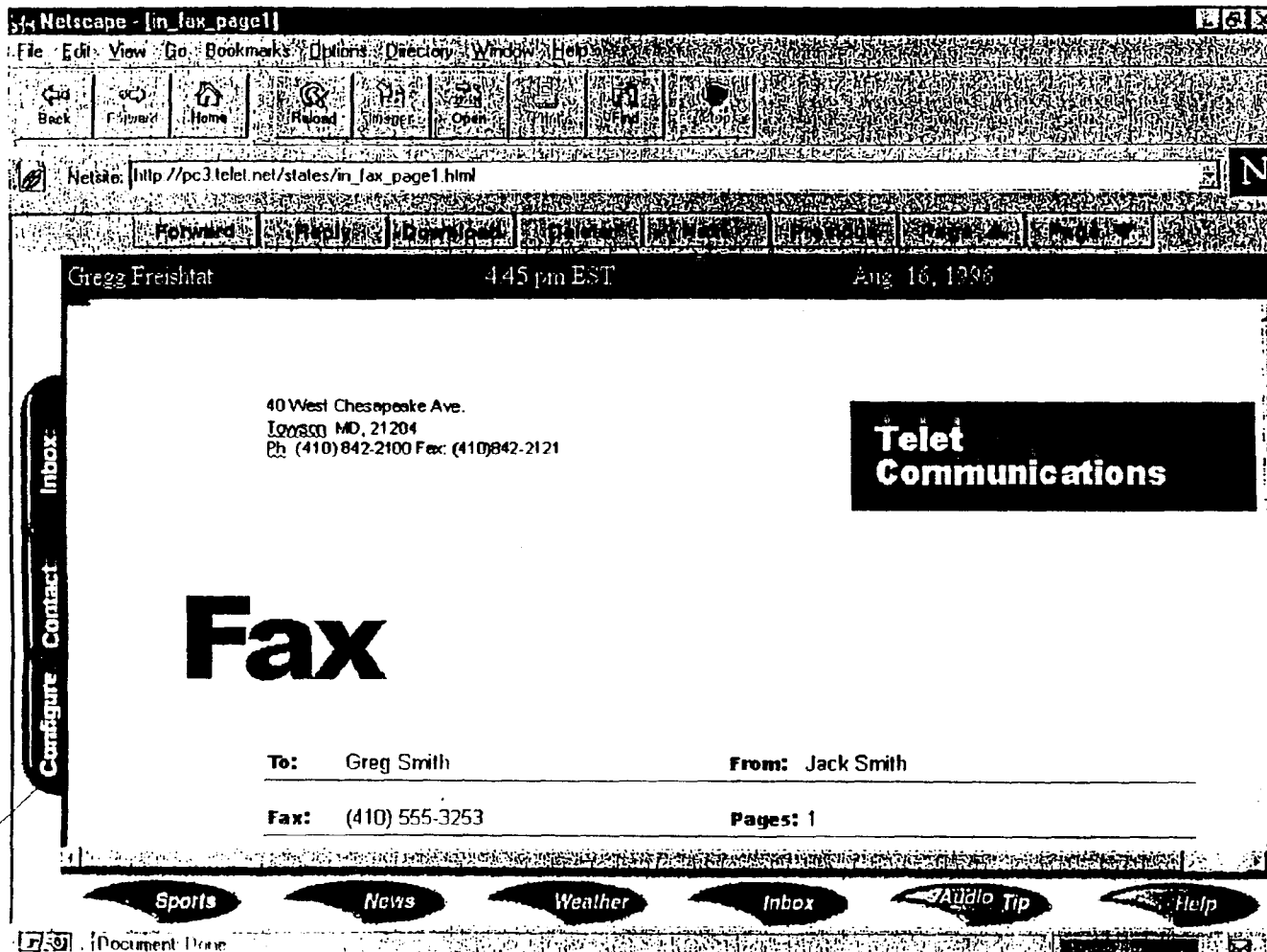


Fig. 23B

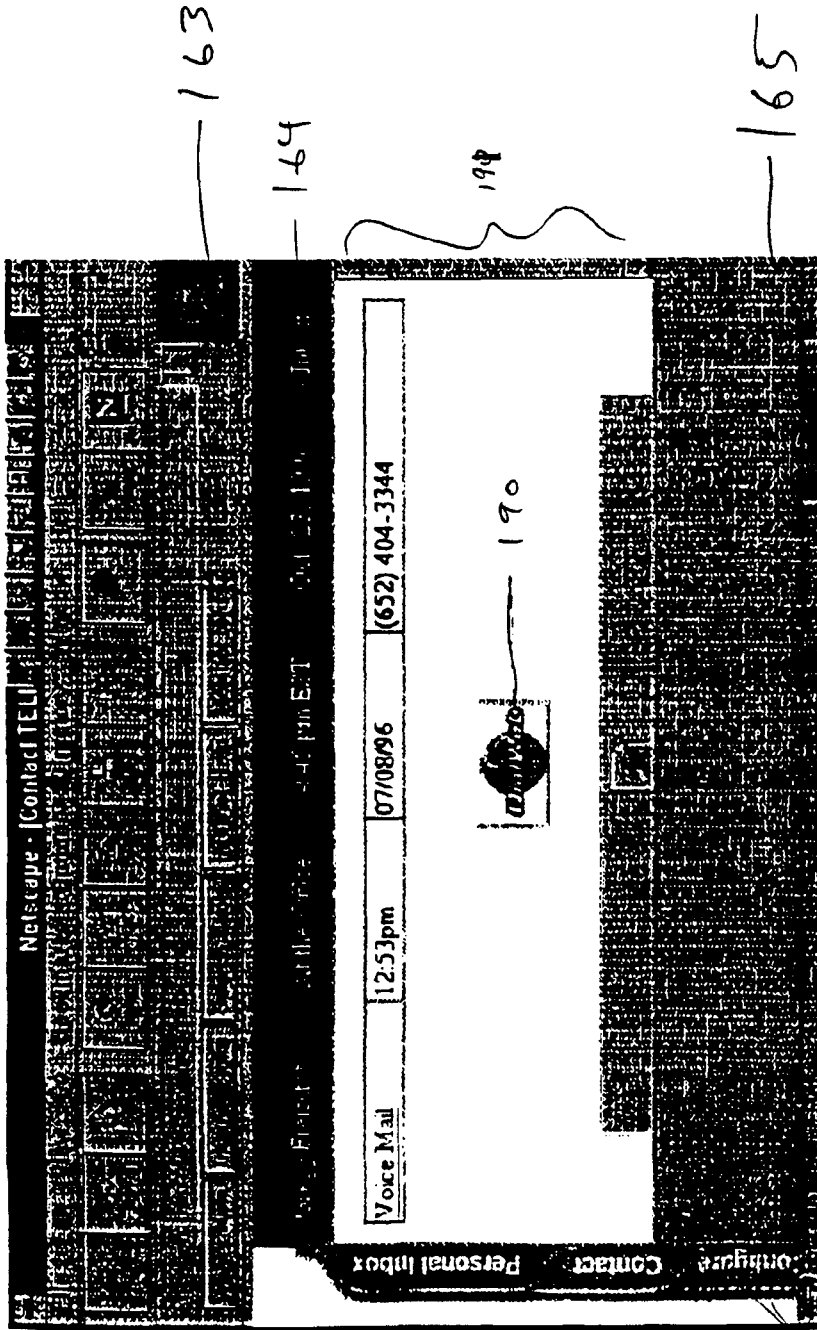


Fig. 24A

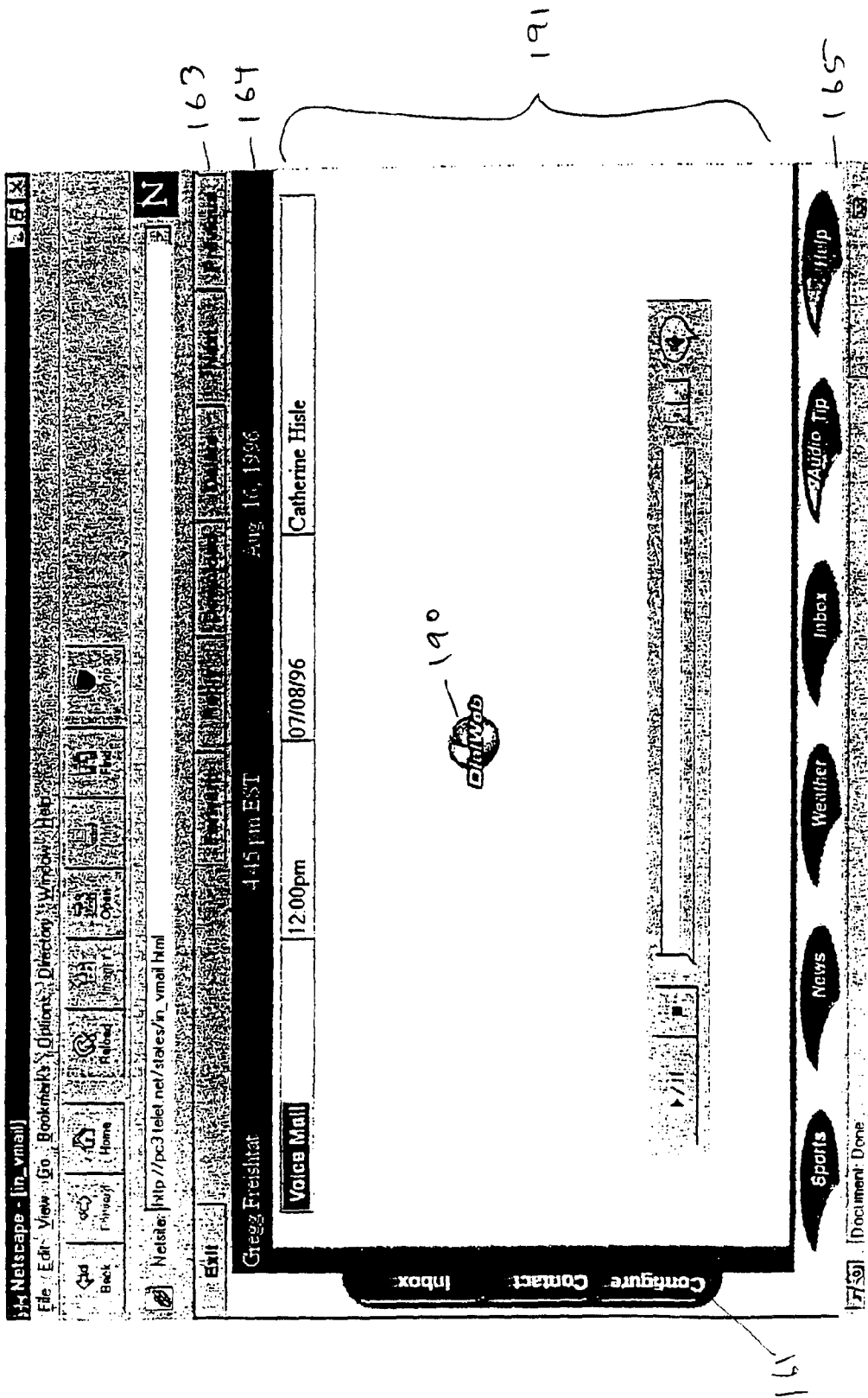
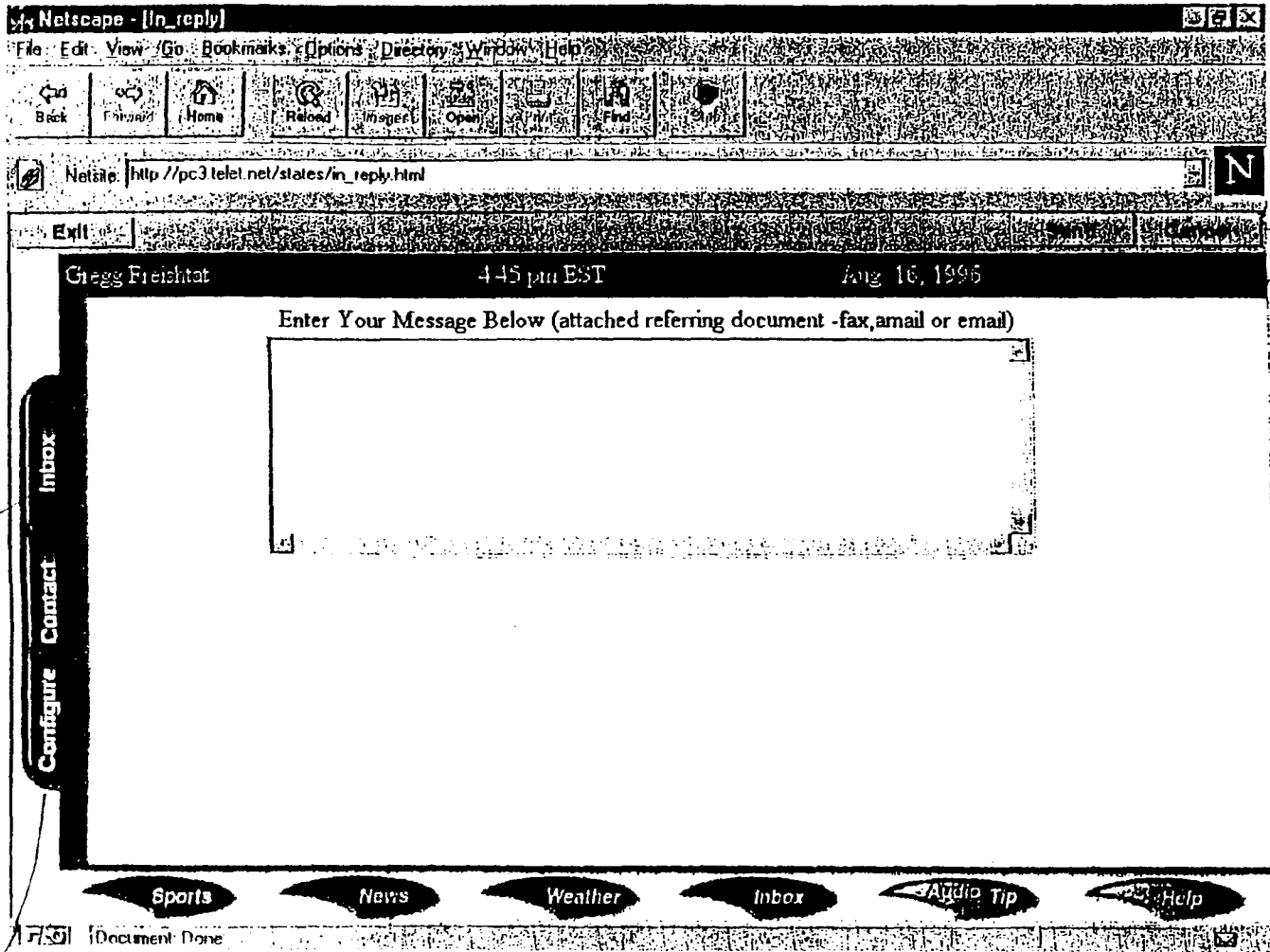


Fig. 24B



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Fig. 25A

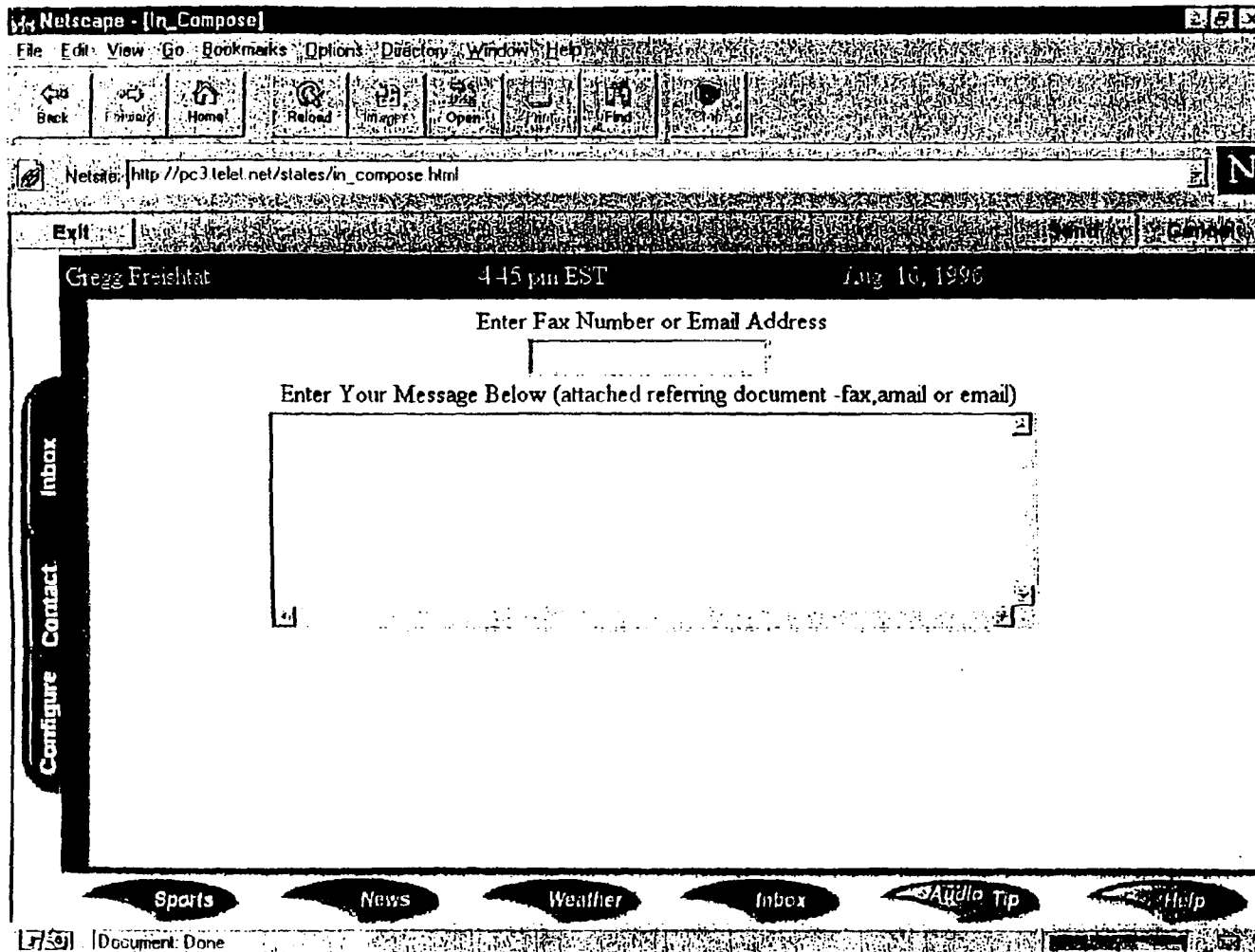
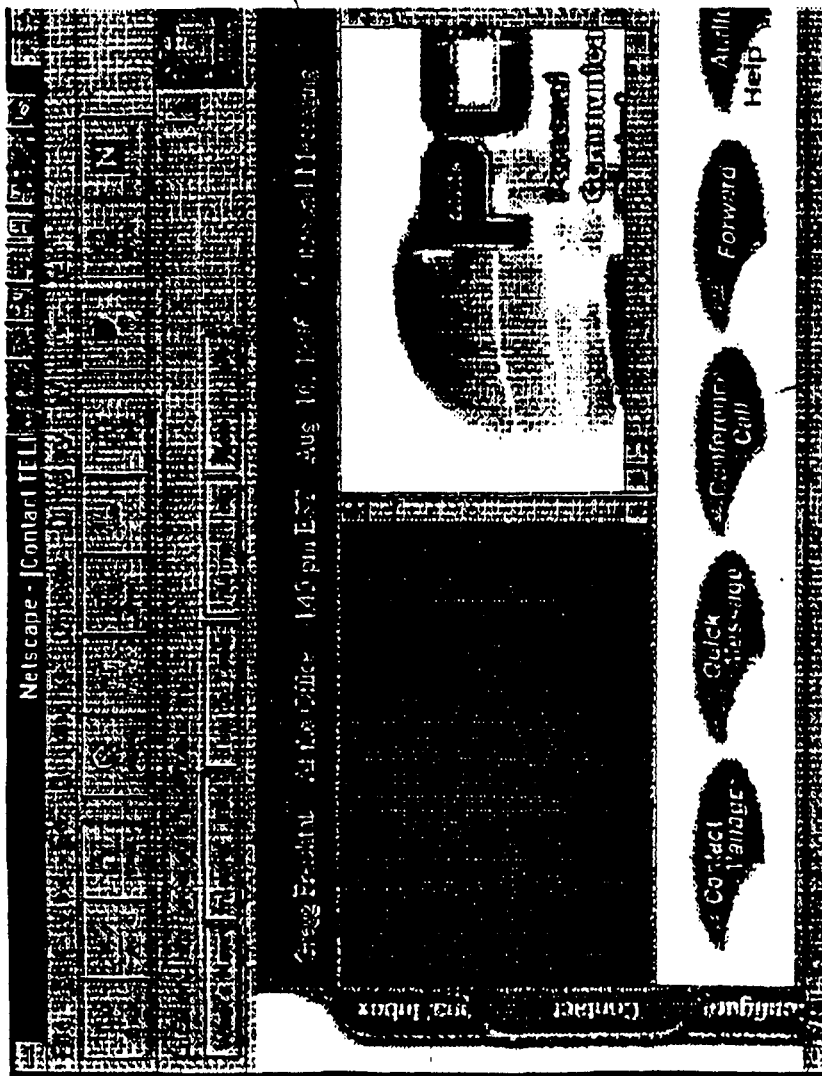


Fig. 25B



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Fig. 26

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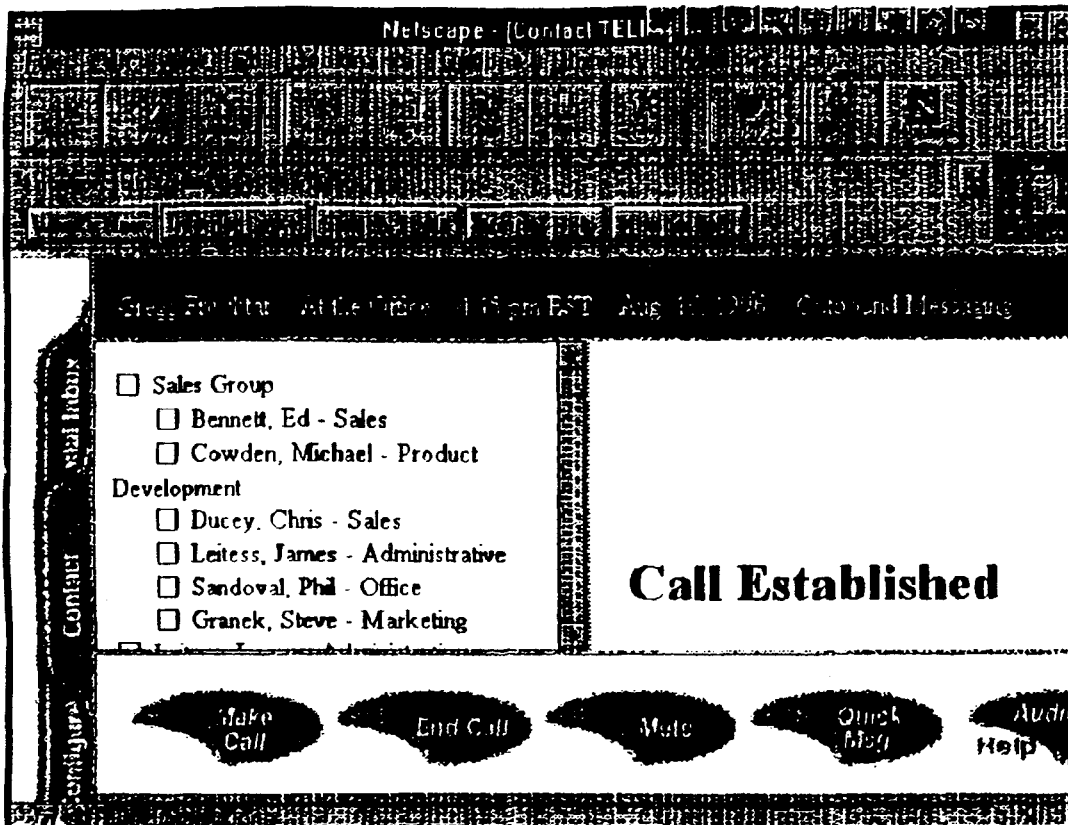


Fig. 27

Electronic Patent Application Fee Transmittal

Application Number:	13462819
Filing Date:	03-May-2012
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Reena Kuyper/Esther Kim
Attorney Docket Number:	10115-04042 US

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

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

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
RCE- 2nd and Subsequent Request	2820	1	850	850
Total in USD (\$)				850

Electronic Acknowledgement Receipt

EFS ID:	26147036
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	93219
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	10115-04042 US
Receipt Date:	22-JUN-2016
Filing Date:	03-MAY-2012
Time Stamp:	19:28:55
Application Type:	Utility under 35 USC 111(a)

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Payment Type	Credit Card
Payment was successfully received in RAM	\$850
RAM confirmation Number	5781
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	Filing Date	2012-05-03
	First Named Inventor	Alexander Kurganov
	Art Unit	2658
	Examiner Name	Susan Iris McFadden
	Attorney Docket Number	10115-04042 US

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	3	4903291		1990-02-20	Tsurufuji et al.		
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STATEMENT BY APPLICANT**
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Filing Date	2012-05-03
First Named Inventor	Alexander Kurganov
Art Unit	2658
Examiner Name	Susan Iris McFadden
Attorney Docket Number	10115-04042 US

1	0794650	EP	A2	1997-09-10	International Business Machines Corporation
2	1997034401	WO		1997-09-18	Xantel Corporation
3	1998023058	WO		1998-09-03	Premiere Communications, Inc.

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	1	Examples: Abstract Ideas, 2014, 20 pages.	
	2	BM AIX DirectTalk/6000 Version 1 Release 6 Improves Your Voice Processing Services to Callers and Customers, Announcement Number: 295-489, November 28, 1995, 27 pages.	
	3	BM Announcement Letter Number A95-893, retrieved on March 9, 2015, 10 pages.	
	4	BM, AIX DirectTalk/6000 Release 6: Speech Recognition with the BBN Hark Recognizer, SC33-1734-00, Feb. 1996, 250 pages.	
	5	BM, AIX DirectTalk/6000: General Information and Planning, Release 6, GC33-1720-00, Dec. 1995, 162 pages.	
	6	BM, DirectTalkMail: Administration, Release 6, SC33-1733-00, Feb. 1996, 274 pages.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13462819
Filing Date	2012-05-03
First Named Inventor	Alexander Kurganov
Art Unit	2658
Examiner Name	Susan Iris McFadden
Attorney Docket Number	10115-04042 US

7	"McGraw-Hill Dictionary of Scientific & Technical Terms 1101, 6th ed. 2003," (Referenced in Amendment and Reply Under 37 CFR 1.111 filed for US Patent Application No. 10/877,366 on April 24, 2009) No copy is provided but please inform if a copy of this dictionary is required.
8	Newton, Harry, Newtons Telecom Dictionary - The Official Glossary of Telecommunications and Voice Processing Terms, December 1992, 6 pages.
9	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00109 and CBM2015-00149, Nov. 9, 2015, 19 pages.
10	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00110 and CBM2015-00150, Nov. 9, 2015, 20 pages.
11	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00111 and CBM2015-00151, Nov. 9, 2015, 19 pages.
12	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00112 and CBM2015-00152, Nov. 9, 2015, 18 pages.
13	PUTZ, Steve, "Interactive Information Services Using World-Wide Web Hypertext, First Int'l Conference on World-Wide Web (May 25-27, 1994), 10 pages.
14	Memorandum Opinion and Order, October 8, 2015, 27 pages
15	Update Subject Matter Eligibility, July 2015, 33 pages
16	Wikipedia Definition of "Internet", available at http://en.wikipedia.org/wiki/Internet Retrieved on February 10, 2016, pp. 24-26.
17	Opening Brief of Appellant Parus Holdings, Inc., submitted on March 8, 2016, to the United States Court of Appeals for the Federal Circuit, 236 pages.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13462819
Filing Date	2012-05-03
First Named Inventor	Alexander Kurganov
Art Unit	2658
Examiner Name	Susan Iris McFadden
Attorney Docket Number	10115-04042 US

18	Brief of Appellees, submitted on June 20, 2016, to the United States Court of Appeals for the Federal Circuit, 53 pages
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If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819
	Filing Date	2012-05-03
	First Named Inventor	Alexander Kurganov
	Art Unit	2658
	Examiner Name	Susan Iris McFadden
	Attorney Docket Number	10115-04042 US

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Reena Kuyper/	Date (YYYY-MM-DD)	2016-06-22
Name/Print	Reena Kuyper	Registration Number	33830

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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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 the Freedom of Information Act requires disclosure of these records.
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 inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

FIRST INVENTOR: Alexander Kurganov
APPLICATION NO: 13/462,819
FILING DATE: May 3, 2012
TITLE: Robust Voice Browser System and Voice Activated Device
Controller
EXAMINER: Susan Iris McFadden
GROUP ART UNIT: 2658
ATTY. DKT. NO: 10115-04042 US
CONFIRMATION NO: 8402

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Eastern Time Zone of the United States on the local date shown below:

Dated: June 22, 2016 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33830

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

**LETTER SUBMITTED WITH REQUEST FOR CONTINUED EXAMINATION (“RCE”)
& INFORMATION DISCLOSURE STATEMENT**

Further to the notice of allowance graciously issued by the Examiner, Applicant submits a Request for Continued Examination (“RCE”) with an information disclosure statement filed contemporaneously.

REMARKS

Claims 2-16 are allowed. By submission of a Request for Continued Examination (“RCE”), Applicant requests the Examiner to consider an Information Disclosure Statement filed contemporaneously, citing 1) additional prior art from eight Covered Business Method (CBM) Review proceedings before the PTAB, 2) copies of decisions denying institution of Covered Business Method (CBM) review, and 3) a Memorandum Opinion and an Order by District Judge Robinson of the District Court for the District of Delaware, granting a motion filed under Federal Rule of Civil Procedure 12(b)(6) by defendants, in a pending suit on patents (U.S. Patent Nos. 8,098,600, 8,843,120, 8,838,074, and 8,843,141) with different claims[‡] from those allowed in the present application. In addition, 4) copies of the Opening Brief of Appellant, Parus Holdings Inc., submitted on March 8, 2016, to the United States Court of Appeals for the Federal Circuit and the 5) Brief of Appellees, submitted on June 20, 2016, to the same court, are also provided for the Examiner's consideration. Applicants respectfully request the Examiner to enter the information disclosure statement in the record. In the event there are any outstanding issues, the Examiner is kindly requested to contact the undersigned to resolve them.

[‡] The present application is in a different family of patents held by the same Assignee and sharing a common inventor.

Respectfully submitted,
ALEXANDER KURGANOV ET AL.

Dated: June 22, 2016

By: /Reena Kuyper/

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**IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE**

FIRST INVENTOR: Alexander Kurganov et al.
APPLICATION NO: 13/462,819
FILING DATE: May 3, 2012
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ATTY. DKT. NO: 10115-04042 US
CONFIRMATION NO: 8402

CERTIFICATE OF EFS-WEB TRANSMISSION

Pursuant to 240 OG 45 and the Legal Framework For EFS-Web, I hereby certify that this follow-on correspondence is being officially submitted through the USPTO EFS-Web system from the Pacific Time Zone of the United States on the local date shown below:

Dated: June 24th, 2016 By: /Reena Kuyper/
Reena Kuyper, Reg. No. 33,830

COMMISSIONER FOR PATENTS
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ALEXANDRIA, VA 22313-1450

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

Sir/Madam:

A Notice to File Corrected Application Papers dated March 30, 2016 was received for the above-identified application. The applicant is requested to provide legible text for pages 15-23 of the Specification filed on May 3, 2012. In response to the Notice, enclosed is:

a copy of the Notice to File Corrected Application Papers;

a substitute specification to replace pages 1-37 of the originally filed

specification (now numbered as 1-36).

(continued)

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

No new subject matter has been added. The text in the Substitute Specification is identical to the original specification but has been reproduced and resized for greater legibility. As a result, the line numbers and page count of the specification has changed. The paragraph numbering remains identical.

Respectfully submitted,
ALEXANDER KURGANOV ET AL.

Dated: June 24th, 2016

By: /Reena Kuyper/

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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

13/462,819 05/03/2012 Alexander Kurganov 10115-04042 US 8402

93219 7590 03/30/2016
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EXAMINER

MCFADDEN, SUSAN IRIS

ART UNIT PAPER NUMBER

2658

NOTIFICATION DATE DELIVERY MODE

03/30/2016 ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@patentlawworks.net
patents@patentlawworks.net



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 13462819
Applicant : Kurganov
Filing Date : 05/03/2012
Date Mailed : 03/30/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
"Mail Stop Issue Fee, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450".*

/Carlota Erana/
Publication Branch
Office of Data Management
(571) 272-4200

**IDENTIFICATION OF APPLICATION DEFICIENCIES
IN APPLICATION FILED BEFORE SEPTEMBER 16, 2012**

- Applicant must provide legible text for the following item(s).
- Specification filed 05/03/2012, page(s) 15-23.
 - Claims filed , claim(s) .
 - Other:
- Applicant must provide missing information on the following page(s) of the specification by amending the specification to add the missing text. No new matter may be added.
Page/line no(s).
- The specification refers to one or more applications by attorney docket number and does not show the U.S. application number(s). Applicant must supply the U.S. application number in place of each attorney docket number.
Page/line no(s).
- Applicant must provide an Abstract of the Disclosure.
- The Application Data Sheet (ADS dated) did not show the inventor's residence at all, or did not show both a city and state in the U.S. inventor's residence, or did not show both a city and country in the non-U.S. inventor's residence. Applicant must supply a Supplemental Application Data Sheet (ADS) that shows each U.S. inventor's city and state of residence and each non-U.S. inventor's city and country of residence. To be in compliance with 37 CFR 1.76, the Supplemental Application Data Sheet must identify the information being changed by using underlining for additions and strikethroughs or brackets for deletions.
- Other:

ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE
CONTROLLER

CROSS REFERENCE TO RELATED APPLICATIONS

5 **[0001]** This application is a continuation of Application Serial No. 12/973,475, entitled
"Robust Voice Browser System And Voice Activated Device Controller," filed December 20,
2010, which is a continuation of Application Serial No. 12/030,556, entitled "Robust Voice
Browser System And Voice Activated Device Controller," filed February 13, 2008, now U.S.
Patent No. 7,881,941, which is a continuation application of Application Serial No. 11/409,703,
10 entitled "Robust Voice Browser System And Voice Activated Device Controller," filed April 24,
2006, now US Patent No. 7,386,455, which is a continuation application of Application Serial
No. 10/821,690, entitled "Robust Voice Browser System And Voice Activated Device
Controller," filed April 9, 2004, now US Patent No. 7,076,431, which is a continuation
application of Application Serial No. 09/776,996, entitled "Robust Voice Browser System And
15 Voice Activated Device Controller," filed February 5, 2001, now US Patent No. 6,721,705,
which claims priority to U.S. Provisional Application Serial No. 60/180,344, entitled "Voice
Activated Information Retrieval System," filed February 4, 2000 and U.S. Provisional
Application No. 60/233,068, filed September 15, 2000, entitled "Robust Voice Browser System
and Voice Activated Device Controller, all assigned to the assignee of the present application.
20 The subject matter in the above-identified co-pending and commonly owned applications is
incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a robust and highly reliable system that allows users to browse web sites and retrieve information by using conversational voice commands. Additionally, the present invention allows users to control and monitor other systems and devices that are connected the Internet or any other network by using voice commands.

5

BACKGROUND OF THE INVENTION

[0003] Currently, three options exist for a user who wishes to gather information from a web site accessible over the Internet. The first option is to use a desktop or a laptop computer connected to a telephone line via a modem or connected to a network with Internet access. The second option is to use a Personal Digital Assistant (PDA) that has the capability of connecting to the Internet either through a modem or a wireless connection. The third option is to use one of the newly designed web-phones or web-pagers that are now being offered on the market. Although each of these options provide a user with access to the Internet to browse web sites, each of them have their own drawbacks.

15 [0004] Desktop computers are very large and bulky and are difficult to transport. Laptop computers solve this inconvenience, but many are still quite heavy and are inconvenient to carry. Further, laptop computers cannot be carried and used everywhere a user travels. For instance, if a user wishes to obtain information from a remote location where no electricity or communication lines are installed, it would be nearly impossible to use a laptop computer. Oftentimes, information is needed on an immediate basis where a computer is not accessible. Furthermore, the use of laptop or desktop computers to access the Internet requires either a direct or a dial-up connection tan an Internet Service Provider (ISP). Oftentimes, such connections are not available when a user desires to connect to the Internet to acquire information.

20

[0005] The second option for remotely accessing web sites is the use of PDAs. These devices also have their own set of drawbacks. First, PDAs with the ability to connect to the Internet and access web sites are not readily available. As a result, these PDAs tend to be very expensive. Furthermore, users are usually required to pay a special service fee to enable the web browsing feature of the PDA. A further disadvantage of these PDAS is that web sites must be specifically designed to allow these devices to access information on the web site. Therefore, a limited number of web sites are available that are accessible by these web-enabled PDAs. Finally, it is very common today for users to carry cell phones, however, users must also carry a separate PDA if they require the ability to gather information from various web sites. Users are therefore subjected to added expenses since they must pay for both cellular telephone service and also for the web-enabling service for the PDA. This results in a very expensive alternative for the consumer.

[0006] The third alternative mentioned above is the use of web-phones or web-pagers. These devices suffer many of the same drawbacks as PDAs. First, these devices are expensive to purchase. Further, the number of web sites accessible to these devices is limited since web sites must be specifically designed to allow access by these devices. Furthermore, users are often required to pay an additional fee in order to gain wireless web access. Again, this service is expensive. Another drawback of these web-phones or web-pagers is that as technology develops, the methods used by the various web sites to allow access by these devices may change. These changes may require users to purchase new web-phones or web-pagers or have the current device serviced in order to upgrade the firmware or operating system stored within the device. At the least, this would be inconvenient to users and may actually be quite expensive.

[0007] Therefore, a need exists for a system that allows users to easily access and browse the Internet from any location. Such a system would only require users to have access to any type of telephone and would not require users to subscribe to multiple services.

[0008] In the rapidly changing area of Internet applications, web sites change frequently.

5 The design of the web site may change, the information required by the web site in order to perform searches may change, and the method of reporting search results may change. Web browsing applications that submit search requests and interpret responses from these web sites based upon expected formats will produce errors and useless responses when such changes occur. Therefore, a need exists for a system that can detect modifications to web sites and adapt
10 to such changes in order to quickly and accurately provide the information requested by a user through a voice enabled device, such as a telephone.

[0009] When users access web sites using devices such as personal computers, delays in receiving responses are tolerated and are even expected, however, such delays are not expected when a user communicates with a telephone. Users expect communications over a telephone to
15 occur immediately with a minimal amount of delay time. A user attempting to find information using a telephone expects immediate responses to his search requests. A system that introduces too much delay between the time a user makes a request and the time of response will not be tolerated by users and will lose its usefulness. Therefore, it is important that a voice browsing system that uses telephonic communications selects web sites that provide rapid responses since
20 speed is an important factor for maintaining the system's desirability and usability. Therefore, a need exists for a system that accesses web sites based upon their speed of operation.

SUMMARY OF THE INVENTION

[0010] It is an object of an embodiment of the present invention to allow users to gather information from web sites by using voice enabled devices, such as wireline or wireless telephones.

[0011] An additional object of an embodiment of the present invention is to provide a system and method that allows the searching and retrieving of publicly available information by controlling a web browsing server using naturally spoken voice commands.

[0012] It is an object of another embodiment of the present invention to provide a robust voice browsing system that can obtain the same information from several web sites based upon a ranking order. The ranking order is automatically adjusted if the system detects that a given web site is not functioning, is too slow, or has been modified in such a way that the requested information cannot be retrieved any longer.

[0013] A still further object of an embodiment of the present invention is to allow users to gather information from web sites from any location where a telephonic connection can be made.

[0014] Another object of an embodiment of the present invention is to allows users to browse web sites on the Internet using conversational voice commands spoken into wireless or wireline telephones or other voice enabled devices.

[0015] An additional object an embodiment of the present invention is to provide a system and method for using voice commands to control and monitor devices connected to a network.

[0016] It is an object of an embodiment of the present invention to provide a system and method which allows devices connected to a network to be controlled by conversational voice commands spoken into any voice enabled device interconnected with the same network.

[0017] The present invention relates to a system for acquiring information from sources on a network, such as the Internet. A voice browsing system maintains a database containing a list of information sources, such as web sites, connected to a network. Each of the information sources is assigned a rank number which is listed in the database along with the record for the information source. In response to a speech command received from a user, a network interface system accesses the information source with the highest rank number in order to retrieve information requested by the user.

[0018] The a preferred embodiment of the present invention allows users to access and browse web sites when they do not have access to computers with Internet access. This is

accomplished by providing a voice browsing system and method that allows users to browse web sites using conversational voice commands spoken into any type of voice enabled device (i.e., any type of wireline or wireless telephone, LP phone, wireless PDA, or other wireless device).

These spoken commands are then converted into data messages by a speech recognition software engine running on a user interface system. These data messages are then sent to and processed by a network interface system. This network interface system then generates the proper requests that are transmitted to the desired web site over the Internet. Responses sent from the web site are received and processed by the network interface system and then converted into an audio message via a speech synthesis engine or a pre-recorded audio concatenation application and finally transmitted to the user's voice enabled device.

[0019] A preferred embodiment of the voice browser system and method uses a web site polling and ranking methodology that allows the system to detect changes in web sites and adapt to those changes in real-time. This enables the voice browser system of a preferred embodiment to deliver highly reliable information to users over any voice enabled device. This ranking system also enables the present invention to provide rapid responses to user requests. Long

delays before receiving responses to requests are not tolerated by users of voice-based systems, such as telephones. When a user speaks into a telephone, an almost immediate response is expected. This expectation does not exist for non-voice communications, such as email transmissions or accessing a web site using a personal computer. In such situations, a reasonable amount of transmission delay is acceptable. The ranking system of implemented by a preferred embodiment of the present invention ensures users will always receive the fastest possible response to their request.

[0020] An alternative embodiment of the present invention allows users to control and monitor the operation of a variety of household devices connected to a network using speech commands spoken into a voice enabled device.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0021] FIG. 1 is a depiction of the voice browsing system of the first embodiment of the present invention;
- 15 [0022] FIG. 2 is a block diagram of a database record used by the first preferred embodiment of the present invention;
- [0023] FIG. 3 is a block diagram of a media server used by the preferred embodiment;
- [0024] FIG. 4 is a block diagram of a web browsing server used by the preferred embodiment; and
- 20 [0025] FIG. 5 is a depiction of the device browsing system of the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0026] A first embodiment of the present invention is a system and method for allowing users to browse information sources, such as web sites, by using naturally spoken, conversational voice commands spoken into a voice enabled device. Users are not required to learn a special language or command set in order to communicate with the voice browsing system of the present invention. Common and ordinary commands and phrases are all that is required for a user to operate the voice browsing system. The voice browsing system recognizes naturally spoken voice commands and is speaker-independent; it does not have to be trained to recognize the voice patterns of each individual user. Such speech recognition systems use phonemes to recognize spoken words and not predefined voice patterns.

[0027] The first embodiment allows users to select from various categories of information and to search those categories for desired data by using conversational voice commands. The voice browsing system of the first preferred embodiment includes a user interface system referred to as a media server. The media server contains a speech recognition software engine. This speech recognition engine is used to recognize natural, conversational voice commands spoken by the user and converts them into data messages based on the available recognition grammar. These data messages are then sent to a network interface system. In the first preferred embodiment, the network interface system is referred to as a web browsing server. The web browsing server then accesses the appropriate information source, such as a web site, to gather information requested by the user.

[0028] Responses received from the information sources are then transferred to the media server where speech synthesis engine converts the responses into audio messages that are transmitted to the user. A more detailed description of this embodiment will now be provided.

[0029] Referring to FIG. 1, a database 100 designed by Webley Systems Incorporated is connected to one or more web browsing servers 102 as well as to one or more media servers 106.

The database may store information on magnetic media, such as a hard disk drive, or it may store information via other widely acceptable methods for storing data, such as optical disks. The database 100 contains a separate set of records for each web site accessible by the system. An example of a web site record is shown in FIG. 2. Each web site record 200 contains the rank number of the web site 202, the associated Uniform Resource Locator (URL) 204, and a command that enables the appropriate "extraction agent" 206 that is required in order to generate proper requests sent to and to format data received from the web site. The database record 200 also contains the timestamp 208 indicating the last time the web site was accessed. The extraction agent is described in more detail below. The database 100 categorizes each database record 200 according to the type of information provided by each web site. For instance, a first category of database records 200 may correspond to web sites that provide "weather" information. The database 100 may also contain a second category of records 200 for web sites that provide "stock" information. These categories may be further divided into subcategories. For instance, the "weather" category may contain subcategories depending upon type of weather information available to a user, such as "current weather" or "extended forecast". Within the "extended forecast" subcategory, a list of web site records may be stored that provide weather information for multiple days. The use of subcategories may allow the web browsing feature to provide more accurate, relevant, and up-to-date information to the user by accessing the most relevant web site. The number of records contained in each category or subcategory is not limited. In the preferred embodiment, three web site records are provided for each category.

[0030] Table 1 below depicts two database records 200 that are used with the preferred embodiment. These records also contain a field indicating the "category" of the record, which is "weather" in each of these examples.

[0031]

TABLE 1

```

category: weather
URL:URL=http://cgi.cnn.com/cgi-
bin/weather/redirect?zip=_zip
rank: 1
command:    web_dispatch.pl weather_cnn
browsingServer: wportal1
browsingServerBackup: wportal2
dateTime:   Dec 21 2000  2:15PM

category: weather
URL: URL= http: //weather.lycos.com/wcfiveday.asp?city=zip
rank:      2
command:   web_dispatch.pl weather_lycos
browsingServer: wportal1
browsingServerBackup:    wportal2
dateTime:   Dec 21 2000  1:45PM

```

[0032] The database also contains a listing of pre-recorded audio files used to create concatenated phrases and sentences. Further, database 100 may contain customer profile information, system activity reports, and any other data or software servers necessary for the

5 testing or administration of the voice browsing system.

[0033] The operation of the media servers 106 will now be discussed in relation to FIG. 3. The media servers 106 function as user interface systems. In the preferred embodiment, the media servers 106 contain a speech recognition engine 300, a speech synthesis engine 302, an Interactive Voice Response (IVR) application 304, a call processing system 306, and telephony

10 and voice hardware 308 required to communicate with the Public Switched Telephone Network (PSTN) 116. In the preferred embodiment, each media server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

[0034] The speech recognition function is performed by a speech recognition engine 300 that converts voice commands received from the user's voice enabled device 112 (i.e., any type

of wireline or wireless telephone, Internet Protocol (IP) phones, or other special wireless units) into data messages. In the preferred embodiment, voice commands and audio messages are transmitted using the PSTN 116 and data is transmitted using the TCP/IP communications protocol. However, one skilled in the art would recognize that other transmission protocols may be used for either voice or data. Other possible transmission protocols would include SIP/VoIP (Session Initiation Protocol/Voice over IP), Asynchronous Transfer Mode (ATM) and Frame Relay. A preferred speech recognition engine is developed by Nuance Communications of 1380 Willow Road, Menlo Park, Calif. 94025 (www.nuance.com). The Nuance engine capacity is measured in recognition units based on CPU type as defined in the vendor specification. The natural speech recognition grammars (i.e., what a user can say that will be recognized by the speech recognition engine) were developed by Webley Systems.

[0035] Table 2 below provides a partial source code listing of the recognition grammars used by the speech recognition engine of the preferred embodiment for obtaining weather information.

[0036]

TABLE 2

?WHAT_IS	?the weather?[info information report conditions]
	?((?like in)
]
UScities:n	
	{<param1 \$n.zip> <param2 \$n.city> <param3 \$n.state>}
	((area code) AREA_CODE:n) {<param1 \$n>}
	(AREA_CODE:n (area code)) {<param1 \$n>}
	((ZIP_CODE:n (zip ?code)) {<param1 \$n>}
]
)
) {<mem 194>}

[0037] The media server 106 uses recognition results generated by the speech recognition engine 300 to retrieve a web site record 200 stored in the database 100 that can provide the information requested by the user. The media server 106 processes the recognition result data identifying keywords that are used to search the web site records 200 contained in the database 100. For instance, if the user's request was "What is the weather in Chicago?", the keywords "weather" and "Chicago" would be recognized. A web site record 200 with the highest rank number from the "weather" category within the database 100 would then be selected and transmitted to the web browsing server 102 along with an identifier indicating that Chicago weather is being requested.

[0038] The media servers 106 also contain a speech synthesis engine 302 that converts the data retrieved by the web browsing servers 102 into audio messages that are transmitted to the user's voice enabled device 112. A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third Avenue, Burlington, Mass. 01803 (www.lhsl.com).

[0039] A further description of the web browsing server 102 will be provided in relation to FIG. 4. The web browsing servers 102 provide access to any computer network such as the Internet 110. These servers are also capable of accessing databases stored on Local Area Networks (LANs) or Wide Area Networks (WANs). The web browsing servers receive responses from web sites and extract the data requested by the user. This task is also known as "content extraction." The web browsing servers 102 also perform the task of periodically polling or "pinging" various web sites and modifying the ranking numbers of these web sites depending upon their response and speed. This polling feature is further discussed below. The web browsing server 102 is comprised of a content extraction agent 400, a content fetcher 402, a polling and ranking agent 404, and the content descriptor files 406. Each of these are software applications and will be discussed below.

- [0040] Upon receiving a web site record 200 from the database 100 in response to a user request, the web browsing server 102 invokes the "content extraction agent" command 206 contained in the record 200. The content extraction agent 400 allows the web browsing server 102 to properly format requests and read responses provided by the web site 114 identified in the URL field 204 of the web site record 200. Each content extraction agent command 206 invokes the content extraction agent and identifies a content description file associated with the web page identified by the URL 204. This content description file directs the extraction agent where to extract data from the accessed web page and how to format a response to the user utilizing that data. For example, the content description for a web page providing weather information would indicate where to insert the "city" name or ZIP code in order to retrieve Chicago weather information. Additionally, the content description file for each supported URL indicates the location on the web page where the response information is provided. The extraction agent 400 uses this information to properly extract from the web page the information requested by the user.
- [0041] Table 3 below contains source code for a content extraction agent 400 used by the preferred embodiment.

[0042]

TABLE 3

```

#!/usr/local/www/bin/sybper15
#$Header:
/usr/local/cvsroot/webley/agents/service/web_dispatch.pl,v
1.6
# Dispatches all web requests
#http://wcorp.itn.net/cgi/flstat?carrier=ua&flight_no=155&mo
n_abbr=jul&date=
6&stamp=OhLN~PdbuuE*itn/ord,itn/cb/sprint_hd
#http://cgi.cnnfn.com/flightview/rlm?airline=amt&number=300
require "config_tmp.pl" ;
#check parameters
die "Usage: $0 service [params]\n" if $#ARGV < 1;
#print STDERR @ARGV;
#get parameters
my %Services = (
    weather_cnn => 'webget.pl weather_cnn',
    weather_lycos => 'webget.pl
weather_lycos',
    weather_weather => 'webget.pl
weather_weather',
    weather_snap => 'webget.pl
weather_snap',
    weather_infospace => 'webget.pl
weather_infospace',
    stockQuote_yahoo => 'webget.pl stock',
    flightStatus_itn => 'webget.pl
flight_delay',
    yellowPages_yahoo => 'yp_data.pl',
    yellowPages_yahoo => 'yp_data.pl',
    newsHeaders_newreal => 'news.pl',
    newsArticle_newsreal => 'news.pl',
);
# test param
my $date = 'date';
chop ( $date );
my ( $short_date ) = $date =~ /\s+ (\w{3}\s+\d{1,2}\s+);
my %Test = (
    weather_cnn => '60053',
    weather_lycos => '60053',

```

TABLE 3-continued

```

weather_weather => '60053',
weather_snap => '60053',
weather_infospace => '60053',
stockQuote_yahoo => 'msft',
flightStatus_itn => 'ua 155' .

$short_date,
yellowPages_yahoo => 'tires 60015',
newsHeaders_newsreal => '1',
newsArticle_newsreal => '1 1',
);
die "$date: $0: error: no such service: $service (check this
script)\n"
unless $Services { $service };

# prepare absolute path to run other scripts
my ( $path, $script ) = $0 =~ m!^(*/)([/]*)| ;

# store the service to compare against datatable
my $service_stored = $service;

# run service
While ( !( $response = '$path$Services [ $service ] @param' ) )
{
    # response failed
    # check with test parameters
    $response = '$path$Services { service } $Test { $service
}';
    if ( $response ) {
        $service = &switch_service ( $service );
        # print "Wrong parameter values were supplied:
$service -
@param\n";
        # die "$date: $0: error: wrong parameters: $service
-
@param\n";
    }
    else {
        # change priority and notify
        $service = &increase_attempt ( $service );
    }
}

# output the response

```

TABLE 3-continued

```

print $response;
sub increase_attempt {
    my ( $service ) = @_;
    my ( $service_name ) = split ( /_/, $service );
    print STDERR "$date: $0: attn.: changing priority for
service:
$service\n";
    # update priority
    &db_query( "update mcServiceRoute "
        / "set priority = ( select max ( priority )
from
mcServiceRoute "
        . "where service = '$service_name' ) + 1
"
        . " date = getdate( ), "
        . "attempt = attempt + 1 "
        . "where route = '$script $service' " );
    # print "---$route===\n";
    # find new route
    my $route = @ { &db_query ( "select route from
mcServiceRoute "
        . "where service =
'$service_name' "
        . "and attempt < 5
"
        . "order by
priority " )
        } -> [0] {route };
    &db_query ( "update mcServiceRoute "
        . "set attempt = "
        . "where route = '$script $service' " )
        if ( $route eq "$script $service_stored" );
        or $route eq "$script $service_stored" );
    ( $service_name, $service ) = split ( /\s +/, $route );
    die "$date: $0: error: no route for the service:
$service (add
more) \n"
        unless $service;
    return $service;
}
sub switch_service {
    my ( $service ) = @_;
    my ( $service_name ) = split ( /_/, $service );
    print STDERR "$date: $0: attn.: changing priority for

```


TABLE 3-continued

```

service:
$service\n";
    # update priority
    &db_query ( "update mcServiceRoute "
                . "set priority = ( select max ( priority )
from
mcServiceRoute "
                . " where service = '$service_name' ) + 1,
"
                . " date = getdate ( ) "
                . " where route = '$script $service' " );
#    print "---$route====\n";
#    find new route
my $route = @ { $db_query ( "select route from
mcServiceRoute "
                            . "where service =
'$service_name' "
                            . " and attempt < 5
"
                            . " order by priority " )
                } - > [0] { route };
die " $date: $0: error: there is the only service:
$route (add
more) \n"
    if ( $route eq "$script $service"
        or $route eq "$script $service_stored" );
( $service_name, $service ) = split ( /\s+/, $route );
die " $date: $0: error: no route for the service:
$service (add
more) \n"
        unless $service;
return $service;
} -

```

[0043] Table 4 below contains source code of the content fetcher 402 used with the content extraction agent 400 to retrieve information from a web site.

TABLE 4

```

#!/usr/local/www/bin/sybper15
#-T
# -w
# $Header:
/usr/local/cvsroote/Webley/agents/service/webget.pl,v 1.4
# Agent to get info from the web.
# Parameters: service_name [service_parameters], i.e. stock
msft or weather
60645
# Configuration stored in files service_name.ini
# if this file is absent the configuration is received from
mcServices table
# This script provides autoupdate to datatable if the .ini
file is newer.
$debug= 1;
use URI :: URL;
use LWP :: UserAgent;
use HTTP :: Request :: Common;
use Vail :: VarList;
use Sybase :: CTlib;
use HTTP :: Cookies;
#print "Sybase: : CTlib $DB_USER, $DB_PWD, $DB_SRV;" ;
open (STDERR, ">>$0.log" ) if $debug;
#open ( STDERR, ">&STDOUT" ) ;
$log = 'date';
#$response = './url.pl
http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605" ';
#$response = 'pwd';
#print STDERR "ls = $response\n" ;
#$response = 'ls';
#print STDERR "ls = $response\n";
chop ( $log ) ;
$log .= "pwd=" . 'pwd';
chop ( $log );
#$debug2 = 1;
my $service = shift;
$log .= " $service: ". Join( ' ', @ARGV ) . "\n" ;
Print STDERR $log if $debug;
#$response = './url.pl
"/http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605" ';
my @ini = &read_ini ( $service );
chop ( @ini );
my $section = " " ;
do ( $section = &process_section ( $section ) ) while $section;

```

TABLE 4-continued

```

#$response = './url/pl
"http://cgi.cnn.com/cgi-bin/weather/redirect?zip=60605" ';
exit;
sub read_ini {
    my ( $service ) = @_;
    my @ini= ( );
    # first, try to read file
    $0 =~ m|^ (.*\/) [^\]*|;
    $service = $1 . $service;
    if ( open ( INI, "$service.ini" ) ) {
        @ ini = ( <INI> );
        return @ ini unless ( $DB_SRV );
        # update datatable
        My $file_time = time - int ( ( -M "$service.ini" )
* 24*
3600 ) );
#         print "time $file_time\n";
        my $dbh = new Sybase: : CTlib $DB_USR, $DB_PWD,
$DB_SRV;
        unless ( $dbh ) {
            print STDERR "webget.pl: Cannot connect to
dataserver $DB_SRV:$DB_USR:$DB_PWD\n";
            return @ini;
        }
        my @row_refs = $dbh ->ct_sql ( "select lastUpdate
from
mcServices where service = '$service' ", undef, 1 );
        if ( $dbh -> RC } == CS_FAIL ) {
            print STDERR "webget.pl: DB select from
mcServices
failed\n";
            return @ini;
        }
        unless ( defined @ row_refs ) {

            # have to insert
            my ( @ini_escaped ) = map {
                ( my $x = $_ ) =~ s / \ ' / \ ' \ ' / g;
                $x;
            } @ini;
            $dbh-> ct_sql ( "insert mcServices values (
'$service',
'@ini_escaped', $file_time )" );
            if ( $dbh-> {RC } == CS_FAIL ) {
                print STDERR "webget.pl: DB insert to

```

TABLE 4-continued

```

mcServices failed\n";
    }
    return @ini;
}
Print "time $file_time:". $row_refs [ 0 ] -
>{'lastUpdate'
}. "\n";
    if ( $file_time > $row_refs [0] => {'lastUpdate' })
{
    # have to update
    my ( @ini_escaped ) = map {
        (my $x = $_) =~ s/\'/\'\'/g;
        $x;
    } @ini;
    $dbh->ct_sql ( "update mcServices set config =
'@ini_escaped', lastUpdate = $file_time where service =
'$service' " );
    if ( $dbh -> {RC } == CS_FAIL ) {
        print STDERR "webget.pl: DB update to
mcServices failed\n";
    }
}
return @ini;

}
else {
    print STDERR "$0: WARNING: $service.ini n/a in" .
'pwd'
        . "Try to read DB\n";
}
# then try to read datatable
die "webget.pl: Unable to find service $service\n"
unless ( $DB_SRV )
);
my $dbh = new Sybase : : CTlib $DB_USR, $DB_PWD, $DB_SRV;
die "webget.pl: Cannot connect to dataserver
$DB_SRV : $DB_USR: $DB_PWD\n" unless ( $dbh );
my @row_refs = $dbh -> ct_sql ( "select config from
mcServices where
service = '$service' ", undef, 1 );
die "webget.pl: Unable to find service $service\n"
unless ( defined
@row_refs );
$row_refs [0] -> {'config' } =~ s/\n /\n\r/g;
@ini = split ( /\r /, $row_refs [0] -> {'config' } );

```

TABLE 4-continued

```

    return @ini;
}
-
#####
sub process_section {
    my ( $prev_section ) = @_;
    my ( $section, $output, $content );
    my %Param;
    my %Content;
#   print "#####\n";
    foreach ( @ini ) {
#       print;
#       chop;
        s/ \s+ $ // ;
        s/ ^\s + // ;
        # get section name
        if ( /^\[ (.*) / ] ) {
#           print "$_: $section:$prev_section\n";
            last if $section;
            next if $1 eq "print" ;
            next if $prev_section ne " " and $prev_section
ne $1;

                if ( $prev_section eq $1 ) {
                    $prev_section = " "
                    next;
                }
                $section = $1;
            }
            # get parameters
            push ( @{$Param{$1 }}, $2 ) if $section and
/ ( [^=]+ ) - ( .*) / ;
        }
#       print "+++++++\n";
        return 0 unless $section;
#       print "section $section\n";
        # substitute parameters with values
        map { $Param{URL } -> [ 0 ] =~ s/$Param{ Input } -> [ $
_] / $ARGV [ $_
_] / g
        } 0 .. $#{$Param{Input } };

        # get page content
        ( $Content{'TIME' }, $content ) = &get_url_content (
${$ Param {URL
} } [ 0 ] );

```

TABLE 4-continued

```

# filter it
map {
    if (/\' ([^\' ]+) \\' ([^\' ]*) \\' / or
    /\ / ([^\ / ]+) \ / ([^\ / ]*) \ / /)
    {
        my $out = $2; $content =~ s/$1/$out/g;
    }
    -}@{$Param {"Pre-filter" } };

#print STDERR $content;
#do main regular expression
unless ( @values = $content =~
/$ {$Param {Regular_expression } } [ 0
] / ) {
    &die_hard ( $ {$Param {Regular_expression } } [ 0 ],
$content
);
    return $section;
}
%Content = map { ( $Param [Output] -> [ $_, $values [ $_
] )
} 0 .. $# { $Param {Output} } ;

# filter it
map {
    if ( / ([^\' ]+) \\' ([^\' ]+) \ = ([^\' ]+) \ " /
    or / ([^\ / ]+) \ / ([^\ / ]+) \ / ([^\ / ]*) \ / / ) {
        my $out = $3;
        $Content { $1 } =~ s/$2/$out/g;
    }
    _}@{Param {"Pre-filer" } };

#print STDERR $content;
# do main regular expression
unless ( @values = $content =~
/$ {$Param {Regular_expression } } [ 0
] / ) {
    &die_hard( $ {$Param {Regular_expression} } [ 0 ],
$content
);
    return $section;
}
%Content= map { ( $Param {Output} ->[ $_, $values [ $_
] )
} 0 .. $# { $Param {Output} } ;

```

TABLE 4-continued

```

#filter it
map {
    if (/([\^\"]+)\\" ([^\"]+)\\" ([^\\" ]*)\\" /
        or /([\^\/]+\\" ([^\\"\/]+\\" ([^\\"\/]*)\\"\/) /) {
        my $out = $3;
        $Content {$1 } =~ s/$2/$out/g;
    }
} @{$Param{"Post-filter" }};

# calculate it
map {
    if { /([\^=]+\\" (=.*\/) /) {
        my $eval = $2;
        map { $eval =~ s/$_/$Content {$_} / g
            } keys %Content;
        $Content {$1 } = eval ($eval );
    }
} @{$Param{Calculate }};

# read section [print]
foreach $i ( 0 .. $#ini ) {
    next unless $ini [ $i ] =~ /\\" [print \ ] /;
    foreach ( $i + 1 .. $#ini ) {
        last if $ini [ $_ ] =~ /\\" [.\\" ] /;
        $output .= $ini [ $_ ] . "\n";
    }
    last;
}

# prepare output
map { $output =~ s/$_/$Content {$_} / g
} keys %Content;
print $output;
-return 0;
}
#####
sub get_url_content {
    my ( $url ) = @_ ;
    print STDERR $url if $debug;
    # $response= '/url.pl '$url' ' ;
    $response= '/url.pl '$url' ' ;
    return( $time - time, $response );
    my $ua = LWP: :UserAgent->new;
    $ua->agent ( 'Mozilla/4.0 [en] (X11; I; freeBSD 2.2.8-

```

TABLE 4-continued

```

STABLE i386)'
);
#   $ua->proxy( ['http', 'https'],
'http://proxy.webley:3128/' );
#   $ua->no_proxy( 'webley', 'vail' );
my $cookie= HTTP::Cookies->new;
$ua->cookie_jar( $cookie );
$url = url $url;
    print "$url\n" if $debug2;
my $time = time;
my $res= $ua->request( GET $url );
print "Response: " . ( time - $time "sec\n" if
$debug2;
    return ( $time - time, $res->content );
}]
#####
sub die_hard {
    my ( $re, $content ) = @_ ;
    my ( $re_end, $pattern );
    while ( $content !~ /$re/ ) {
        if ( $re =~ s/(("[\(\)]+)|("[\(\)| *$) // ) {
            $re_end = $1 . $re_end;
        }
        else {
            $re_end = $re;
            last;
        }
    }
    $content =~ /$re/;
    Print STDERR "The regular expression did not match:\n
$re\n
Possible misuse:
$re end:\n
Matched:
$&\n
Mismatched:
$\n
" if $debug;
    if ( $debug ) {
        print STDERR "Content:\n $content\n" unless
    }
}
#####

```

[0044] Table 5 below contains the content descriptor file source code for obtaining weather information from the web site www.cnn.com that is used by the extraction agent 400 of 5 the preferred embodiment.

TABLE 5

```
[cnn]
Input=_zip
URL=http://cgi.cnn.com/cgi-bin/weather/redirect?zip=_zip
Pre-filter="\n"
Pre-filter="<[^< >]+>"
Pre-filter=/\s+/
Pre-filter=" [ \ ( \) \ | ] " !"
Output=_location
Output=first_day_name
Output=first_day_weather
Output=first_day_high_F
Output=first_day_high_C
Output=first_day_low_F
Output=first_day_low_C
Output=second_day_name
Output=second_day_weather
Output=second_day_high_F
Output=second_day_high_C
Output=second_day_low_F
Output=second_day_low_C
Output=third_day_name
Output=third_day_weather
Output=third_day_high_F
Output=third_day_high_C
Output=third_day_low_F
Output=third_day_low_C
Output=fourth_day_name
Output=fourth_day_weather
Output=fourth_day_high_F
Output=fourth_day_high_C
Output=fourth_day_low_F
Output=fourth_day_low_C
Output=undef
Output=_current_time
Output=_current_month
```

TABLE 5-continued

Output=_current_day
 Output=_current_weather
 Output=_current_temperature_F
 Output=_current_temperature_C
 Output=_humidity
 Output=_wind
 Output=_pressure
 Output=_sunrise
 Output=_sunset
 Regular_expression=Author (.+) Four Day Forecast
 (\S+) (\S+) HIGH
 (\S+) F (\S+) C LOW (\S+) F (\S+) C (\S+) (\S+) HIGH (\S+) F
 (\S+) C LOW
 (\S+) F (\S+) C (\S+) (\S+) HIGH (\S+) F (\S+) C LOW (\S+) F
 (\S+) C (\S+)
 (\S+) HIGH (\S+) F (\S+J C LOW (\S+) F (\S+) C (.+) Current
 Conditions (. +)
 ! local ! , (\S+) (\S+) (. t) Temp: (\S+) F, (\S+) C Rel.
 Humidity: (\S+) Wind:
 (. +) Pressure: (.+) Sunrise: (.+) Sunset: (.+) Related Links
 Post-filter=_current_weather" p/" partly "
 Post-filter=_current weather"l/"little "
 Post-filter=_current_weather"m/"mostly "
 Post-filter=_current weather"t-/"thunder" -
 Post-filter=_wind"N"North"
 Post-filter=_wind"E"East "
 Post-filter=_wind"S"South " --
 Post-filter=_wind"W"West *fl*
 Post-filter=_wind/mph/miles per hour/
 Post-filter=_wind/kph!/kilometers per hour/
 Post-filter=_wind" \s+ !", ""
 [print]
 Current weather in_location is_current_weather.
 Temperature is_current_temperature_F Fahrenheit,
 _current_temperature_C
 Celsius.
 Humidity is_humidity.
 Wind from the _wind.

[0045] Table 6 below contains the content descriptor file source code for obtaining weather information from the web site www.lycos.com that is used by the extraction agent 400 of the preferred embodiment.

TABLE 6

[lycos]
Input=zip
Input=_city
URL=http://weather.lycos.com/wcfiveday.asp?city=zip
Pre-filter="\n" "
Pre-filter="</TD>"td"
Pre-filter="<!.*?->" "
Pre-filter="
"_br_" "
Pre-filter="/alt="/>alt="/ "
Pre-filter="<[^<>]+>" "
Pre-filter=" " " "
Pre-filter="/\s+/" "
Output=_location
Output=_current_weather
Output=_current_temperature_F
Output=_humidity
Output=_winddir
Output=_windspeed
Output=_windmeasure
Output=_pressure

TABLE 6-continued

```

Output=first_day_name
Output=second_day_name
Output=third_day_name
Output=fourth_day_name
Output=fifth_day_name
Output=first_day_weather
Output=second_day_weather
Output=third_day_weather
Output=fourth_day_weather
Output=fifth_day_weather
Output=first_day_high_F
Output=first_day_low_F
Output=second_day_high_F
Output=second_day_low_F
Output=third_day_high_F
Output=third_day_low_F
Output=fourth_day_high_F
Output=fourth_day_low_F
Output=fifth_day_high_F
Output=fifth_day_low_F
Output=_windkmh
Regular expression=Guide My Lycos (.+) Click image to
enlarge
alt=("[^"]+) " (?:.+) Temp: (\(d+\) (?:.+)F _br_ Humidity:
(\(S+\) (?:.+) Wind: (.+?)
_br_
Output=_current_temperature_C
Post-filter=_location"_br_" "
Post-filter=_current_weather"p/"partly "
Post-filter=_current_weather"m/"mostly "
Post-filter=_current weather"t/"thunder "
Post-filter=_winddir"@ " at"
Post-filter=_winddir/mpH/miles per hour/
Post-filter=_wind/kph!/kilometers per hour/
Calculate=_current_temperature_C=int (( _current_temperature_F
-32) * 5/9)
Calculate=_windkmh=int(_windspeed*1.6)
[print]
The current weather in _location is _current_weather.
The current temperature is _current_temperature_F Fahrenheit
_current_temperature_C Celcius.
Humidity is _humidity.
Winds _winddir.

```

[0046] Once the web browsing server 102 accesses the web site specified in the URL 204 and retrieves the requested information, the information is forwarded to the media server 106.

5 The media server uses the speech synthesis engine 302 to create an audio message that is then transmitted to the user's voice enabled device 112. In the preferred embodiment, each web browsing server 102 is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

[0047] Referring to FIG. 1, the operation of the robust voice browser system will be described. A user establishes a connection between his voice enabled device 112 and a media
10 server 106. This may be done using the Public Switched Telephone Network (PSTN) 116 by calling a telephone number associated with the voice browsing system 118. Once the connection is established, the media server 106 initiates an interactive voice response (WR) application 304. The IVR application plays audio messages to the user presenting a list of options, such as, "stock quotes", "flight status", "yellow pages", "weather", and "news". These options are based upon the
15 available web site categories and may be modified as desired. The user selects the desired option by speaking the name of the option into the voice enabled device 112.

[0048] As an example, if a user wishes to obtain restaurant information, he may speak into his telephone the phrase "yellow pages". The FIR application would then ask the user what he would like to find and the user may respond by stating "restaurants". The user may then be
20 provided with further options related to searching for the desired restaurant. For instance, the user may be provided with the following restaurant options, "Mexican Restaurants", "Italian Restaurants", or "American Restaurants". The user then speaks into the telephone 112 the restaurant type of interest. The IVR application running on the media server 106 may also request additional information limiting the geographic scope of the restaurants to be reported to
25 the user. For instance, the IVR application may ask the user to identify the zip code of the area

where the restaurant should be located. The media server 106 uses the speech recognition engine 300 to interpret the speech commands received from the user. Based upon these commands, the media server 106 retrieves the appropriate web site record 200 from the database 100. This record and any additional data, which may include other necessary parameters needed to perform the user's request, are transmitted to a web browsing server 102. A firewall 104 may be provided that separates the web browsing server 102 from the database 100 and media server 106. The firewall provides protection to the media server and database by preventing unauthorized access in the event the firewall for web browsing server 108 fails or is compromised. Any type of firewall protection technique commonly known to one skilled in the art could be used, including packet filter, proxy server, application gateway, or circuit-level gateway techniques.

[0049] The web browsing server 102 then uses the web site record and any additional data and executes the extraction agent 400 and relevant content descriptor file 406 to retrieve the requested information.

[0050] The information received from the responding web site 114 is then processed by the web browsing server 102 according to the content descriptor file 406 retrieval by the extraction agent. This processed response is then transmitted 30 to the media server 106 for conversion into audio messages using either the speech synthesis software 302 or selecting among a database of prerecorded voice responses contained within the database 100.

[0051] As mentioned above, each web site record contains a rank number 202 as shown in FIG. 2. For each category searchable by a user, the database 100 may list several web sites, each with a different rank number 202. As an example, three different web sites may be listed as searchable under the category of "restaurants". Each of those web sites will be assigned a rank number such as 1, 2, or 3. The site with the highest rank (i.e., rank=1) will be the first web site accessed by a web browsing server 102. If the information requested by the user cannot be found

at this first web site, then the web browsing server 102 will search the second ranked web site and so forth down the line until the requested information is retrieved or no more web sites left to check.

[0052] The web site ranking method and system of the present invention provides
5 robustness to the voice browser system and enables it to adapt to changes that may occur as web sites evolve. For instance, the information required by a web site 114 to perform a search or the format of the reported response data may change. Without the ability to adequately monitor and detect these changes, a search requested by a user may provide an incomplete response, no response, or an error. Such useless responses may result from incomplete data being provided to
10 the web site 114 or the web browsing server 102 being unable to recognize the response data messages received from the searched web site 114.

[0053] The robustness and reliability of the voice browsing system of the present invention is further improved by the addition of a polling mechanism. This polling mechanism continually polls or "pings" each of the sites listed in the database 100. During this polling
15 function, a web browsing server 102 sends brief data requests or "polling digital data" to each web site listed in database 100. The web browsing server 102 monitors the response received from each web site and determines whether it is a complete response and whether the response is in the expected format specified by the content descriptor file 406 used by the extraction agent 400. The polled web sites that provide complete responses in the format expected by the
20 extraction agent 400 have their ranking established based on their "response time". That is, web sites with faster response times will be assigned higher rankings than those with slower response times. If the web browsing server 102 receives no response from the polled web site or if the response received is not in the expected format, then the rank of that web site is lowered. Additionally, the web browsing server contains a warning mechanism that generates a warning

message or alarm for the system administrator indicating that the specified web site has been modified or is not responsive and requires further review.

[0054] Since the web browsing servers 102 access web sites based upon their ranking number, only those web sites that produce useful and error-free responses will be used by the voice browser system to gather information requested by the user. Further, since the ranking numbers are also based upon the speed of a web site in providing responses, only the most time efficient sites are accessed. This system assures that users will get complete, timely, and relevant responses to their requests. Without this feature, users may be provided with information that is not relevant to their request or may not get any information at all. The constant polling and reranking of the web sites used within each category allows the voice browser of the present invention to operate efficiently. Finally, it allows the voice browser system of the present invention to dynamically adapt to changes in the rapidly evolving web sites that exist on the Internet.

[0055] It should be noted that the web sites accessible by the voice browser of the preferred embodiment may use any type of mark-up language, including Extensible Markup Language (XML), Wireless Markup Language (WML), Handheld Device Markup Language (HDML), Hyper Text Markup Language (HTML), or any variation of these languages.

[0056] A second embodiment of the present invention is depicted in FIG. 5. This embodiment provides a system and method for controlling a variety of devices 500 connected to a network 502 by using conversational speech commands spoken into a voice enabled device 504 (i.e., wireline or wireless telephones, Internet Protocol (IP) phones, or other special wireless units). The networked devices may include various household devices. For instance, voice commands may be used to control household security systems, VCRs, TVs, outdoor or indoor lighting, sprinklers, or heating and air conditioning systems.

[0057] Each of these devices 500 is connected to a network 502. These devices 500 may contain embedded microprocessors or may be connected to other computer equipment that allow the device 500 to communicate with network 502. In the preferred embodiment, the devices 500 appear as "web sites" connected to the network 502. This allows a network interface system, such as a device browsing server 506, a database 508, and a user interface system, such as a media server 510, to operate similar to the web browsing server 102, database 100 and media server 106 described in the first preferred embodiment above. A network 502 interfaces with one or more network interface systems, which are shown as device browsing servers 506 in FIG. 5. The device browsing servers perform many of the same functions and operate in much the same way as the web browsing servers 102 discuss above in the first preferred embodiment. The device browsing servers 506 are also connected to a database 508.

[0058] Database 508 lists all devices that are connected to the network 502. For each device 500, the database 508 contains a record similar to that shown in FIG. 2. Each record will contain at least a device identifier, which may be in the form of a URL, and a command to "content extraction agent" contained in the device browsing server 506. Database 508 may also include any other data or software necessary to test and administer the device browsing system.

[0059] The content extraction agent operates similarly to that described in the first embodiment. A device descriptor file contains a listing of the options and functions available for each of the devices 500 connected on the network 502. Furthermore, the device descriptor file contains the information necessary to properly communicate with the networked devices 500. Such information would include, for example, communication protocols, message formatting requirements, and required operating parameters.

[0060] The device browsing server 506 receives messages from the various networked devices 500, appropriately formats those messages and transmits them to one or more media

servers 510 which are part of the device browsing system. The user's voice enabled devices 504 can access the device browsing system by calling into a media server 510 via the Public Switched Telephone Network (PSTN) 512. In the preferred embodiment, the device browsing server is based upon Intel's Dual Pentium III 730 MHz microprocessor system.

5 **[0061]** The media servers 510 act as user interface systems and perform the functions of natural speech recognition, speech synthesis, data processing, and call handling. The media server 510 operates similarly to the media server 106 depicted in FIG. 3. When data is received from the device browser server 506, the media server 510 will convert the data into audio messages via a speech synthesis engine that are then transmitted to the voice enabled device of
10 the user 504. Speech commands received from the voice enabled device of the user 504 are converted into data messages via a speech recognition engine running on the media server 510. A preferred speech recognition engine is developed by Nuance Communications of 1380 Willow Road, Menlo Park, Calif. 94025 (www.nuance.com). A preferred speech synthesis engine is developed by Lernout and Hauspie Speech Products, 52 Third Avenue, Burlington, Mass. 01803
15 (www.lhsl.com). The media servers 510 of the preferred embodiment are based on Intel's Dual Pentium III 730 MHz microprocessor system. A specific example for using the system and method of this embodiment of the invention will now be given.

[0062] First, a user may call into a media server 510 by dialing a telephone number associated with an established device browsing system. Once the user is connected, the IVR
20 application of the media server 510 will provide the user with a list of available systems that may be monitored or controlled based upon information contained in database 508.

[0063] For example, the user may be provided with the option to select "Home Systems" or "Office Systems". The user may then speak the command "access home systems". The media server 510 would then access the database 508 and provide the user with a listing of the home

subsystems or devices 500 available on the network 502 for the user to monitor and control. For instance, the user may be given a listing of subsystems such as "Outdoor Lighting System", "Indoor Lighting System", "Security System", or "Heating and Air Conditioning System". The user may then select the indoor lighting subsystem by speaking the command "Indoor Lighting System". The IVR application would then provide the user with a set of options related to the indoor lighting system. For instance the media server 510 may then provide a listing such as "Dining Room", "Living Room", "Kitchen", or "Bedroom". After selecting the desired room, the IVR application would provide the user with the options to hear the "status" of the lighting in that room or to "turn on", "turn off", or "dim" the lighting in the desired room. These commands are provided by the user by speaking the desired command into the users voice enabled device 504. The media server 510 receives this command and translates it into a data message. This data message is then forwarded to the device browsing server 506 which routes the message to the appropriate device 500.

[0064] The device browsing system 514 of this embodiment of the present invention also provides the same robustness and reliability features described in the first embodiment. The device browsing system 514 has the ability to detect whether new devices have been added to the system or whether current devices are out-of-service. This robustness is achieved by periodically polling or "pinging" all devices 500 listed in database 508. The device browsing server 506 periodically polls each device 500 and monitors the response. If the device browsing server 506 receives a recognized and expected response from the polled device, then the device is categorized as being recognized and in-service. However, if the device browsing server 506 does not receive a response from the polled device 500 or receives an unexpected response, then the device 500 is marked as being either new or out-of-service. A warning message or a report may

then be generated for the user indicating that a new device has been detected or that an existing device is experiencing trouble.

[0065] Therefore, this embodiment allows users to remotely monitor and control any devices that are connected to a network, such as devices within a home or office. Furthermore, no special telecommunications equipment is required for users to remotely access the device browser system. Users may use any type of voice enabled device (i.e., wireline or wireless telephones, IP phones, or other wireless units) available to them. Furthermore, a user may perform these functions from anywhere without having to subscribe to additional services. Therefore, no additional expenses are incurred by the user.

[0066] The descriptions of the preferred embodiments described above are set forth for illustrative purposes and are not intended to limit the present invention in any manner.

Equivalent approaches are intended to be included within the scope of the present invention.

While the present invention has been described with reference to the particular embodiments illustrated, those skilled in the art will recognize that many changes and variations may be made thereto without departing from the spirit and scope of the present invention. These embodiments and obvious variations thereof are contemplated as falling within the scope and spirit of the claimed invention.

Electronic Patent Application Fee Transmittal

Application Number:	13462819
Filing Date:	03-May-2012
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Reena Kuyper
Attorney Docket Number:	10115-04042 US

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

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

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 1 month with \$0 paid	2251	1	100	100
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt

EFS ID:	26173304
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	93219
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	10115-04042 US
Receipt Date:	24-JUN-2016
Filing Date:	03-MAY-2012
Time Stamp:	18:59:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$100
RAM confirmation Number	5018
Deposit Account	
Authorized User	

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

IPR2020-00686

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	04042US_ResponseAndNotice.pdf	604637 <small>25f8404fa27cf35259021fc1a8de051c4520d862</small>	no	6

Warnings:

Information:

2	Specification	04042US_SubstituteSpecification.pdf	214768 <small>caabba2a4f3856fo919e27071e28b5839c4fa7e6</small>	no	36
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Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30743 <small>6ef698ad5bffb2983d1b797c01d82f438725d034</small>	no	2
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Warnings:

Information:

Total Files Size (in bytes):			850148		
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



NOTICE OF ALLOWANCE AND FEE(S) DUE

93219 7590 07/12/2016
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111

Table with 2 columns: EXAMINER (MCFADDEN, SUSAN IRIS), ART UNIT (2658), PAPER NUMBER

DATE MAILED: 07/12/2016

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

13/462,819 05/03/2012 Alexander Kurganov 10115-04042 US 8402
TITLE OF INVENTION: ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies. If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above. If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)". For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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

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

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

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)

93219 7590 07/12/2016
Patent Law Works, LLP
 201 South Main Street, Suite 250
 Salt Lake City, UT 84111

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.
13/462,819	05/03/2012	Alexander Kurganov	10115-04042 US	8402

TITLE OF INVENTION: ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	10/12/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
MCFADDEN, SUSAN IRIS	2658	704-275000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "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.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(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</p> <p>_____ 3</p>
---	---

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

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
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5. **Change in Entity Status** (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



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UNITED STATES DEPARTMENT OF COMMERCE
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
13/462,819 05/03/2012 Alexander Kurganov 10115-04042 US 8402

93219 7590 07/12/2016
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111

EXAMINER

MCFADDEN, SUSAN IRIS

ART UNIT PAPER NUMBER

2658

DATE MAILED: 07/12/2016

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

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

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

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

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

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

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

Privacy Act Statement

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

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

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

IPR2020-00686

Notice of Allowability	Application No. 13/462,819	Applicant(s) KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	AIA (First Inventor to File) Status No

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

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

1. This communication is responsive to RCE Filed 6-22-16.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 2-16. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

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

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

/SUSAN MCFADDEN/
Primary Examiner, Art Unit 2658

Notice of References Cited	Application/Control No. 13/462,819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	Page 1 of 1

U.S. PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A US-7,050,977 B1	05-2006	Bennett; Ian M.	G06F17/2775	704/270.1
*	B US-6,665,640 B1	12-2003	Bennett; Ian M.	G06F17/3043	704/257
*	C US-6,633,846 B1	10-2003	Bennett; Ian M.	G06F17/3043	704/257
	D US-				
	E US-				
	F US-				
	G US-				
	H US-				
	I US-				
	J US-				
	K US-				
	L US-				
	M US-				


FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	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.

Issue Classification 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.	
	Examiner SUSAN MCFADDEN	Art Unit 2658	

CPC						
Symbol					Type	Version
H04M		3		4938	F	2013-01-01
G06F		3		16	A	2013-01-01
H04M		2201		39	A	2013-01-01
H04M		2201		40	A	2013-01-01
Y10S		707		99943	A	2013-01-01
Y10S		707		99942	A	2013-01-01
G10L		15		26	I	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	15	
/SUSAN MCFADDEN/ Primary Examiner.Art Unit 2658	7-5-16	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

<input checked="" type="checkbox"/> Claims renumbered in the same order as presented by applicant																<input type="checkbox"/> CPA		<input checked="" type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original						
1	2																				
2	3																				
3	4																				
4	5																				
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13	14																				
14	15																				
15	16																				

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 15	
/SUSAN MCFADDEN/ Primary Examiner.Art Unit 2658 (Primary Examiner) _____ (Date) _____		O.G. Print Claim(s) 1	O.G. Print Figure 5

WEST Search History for Application 13462819

Creation Date: 2016070517:49

Interference Searches

Query	DB	Hits	Op.	Plur.	Thes.	Date
((speech or voice) near4 command and speech near4 synthesis and recognition near4 grammar and address and web near site).clm.	PGPB	6	OR	YES		03-14-2016
speaker-independent near6 speech near recognition and command and grammar and speech near6 synthesis and (network or Internet) and web near site and (browser and voice-enabled) and audio and phoneme and content and plurality near6 web near site	PGPB	0	OR	YES		07-05-2016
speaker-independent near6 speech near recognition and command and grammar and speech near6 synthesis and (network or Internet) and web near site and (browser and voice-enabled) and audio and phoneme and content and plurality near6 web near site	USPT	0	OR	YES		07-05-2016

Prior Art Searches

Query	DB	Hits	Op.	Plur.	Thes.	Date
kurganov.in.	USPT	n/a	OR	YES		02-06-2013
kurganov.in. and speech near recognition	USPT	n/a	OR	YES		02-06-2013
kurganov.in. and (speech near recognition).clm.	USPT	n/a	OR	YES		02-06-2013
speech near recognition and voice	USPT	n/a	OR	YES		02-06-2013
(speech near recognition and voice).clm.	USPT	n/a	OR	YES		02-06-2013
zhuoff.in.	USPT	n/a	OR	YES		02-06-2013
zhukoff.in.	USPT	n/a	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition	USPT	n/a	OR	YES		02-06-2013
(zhukoff.in.) and speech near recognition and voice	USPT	n/a	OR	YES		02-06-2013
kurganov.in.	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and speech near recognition	USPT	n/a	OR	YES		09-23-2013

kurganov.in. and speech near recognition and speaker-independent	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent and address	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and speech near recognition and speaker-independent and address and grammar	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and (speech near recognition and speaker-independent and address and grammar).clm.	USPT	n/a	OR	YES		09-23-2013
kurganov.in. and (speech near recognition and speaker-independent and address and grammar and synthesis).clm.	USPT	n/a	OR	YES		09-23-2013
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(speech near recognition and speaker-independent and address and grammar and synthesis and network).clm.	USPT	n/a	OR	YES		09-23-2013
(speech near recognition and speaker-independent and address and grammar and synthesis and network).clm.	PGPB	n/a	OR	YES		09-23-2013
8185402.pn.	USPT	n/a	OR	YES		09-23-2013
8098600.pn.	USPT	n/a	OR	YES		09-23-2013
7516190.pn.	USPT	n/a	OR	YES		09-23-2013
7516190.pn. and speaker-independent	USPT	n/a	OR	YES		09-23-2013
7327723.pn.	USPT	n/a	OR	YES		09-23-2013
7327723.pn. and web near site	USPT	n/a	OR	YES		09-23-2013
7327723.pn. and web near site near address	USPT	n/a	OR	YES		09-23-2013
6807257.pn. and web near site near address	USPT	n/a	OR	YES		09-23-2013
6807257.pn.	USPT	n/a	OR	YES		09-23-2013
6721705.pn.	USPT	n/a	OR	YES		09-23-2013
kurganov.in.	USPT	24	OR	YES		03-09-2016
kurganov.in. and voice	USPT	13	OR	YES		03-09-2016
kurganov.in. and voice and speech	USPT	13	OR	YES		03-09-2016
kurganov.in. and voice and speech near synthesis	USPT	6	OR	YES		03-09-2016

kurganov.in. and voice and speech near synthesis and command	USPT	6	OR	YES		03-09-2016
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kurganov.in. and voice and speech near synthesis and command and address and grammar	USPT	6	OR	YES		03-09-2016
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(speech or voice) near4 command and speech near4 synthesis	USPT	1501	OR	YES		03-14-2016
(speech or voice) near4 command and speech near4 synthesis and grammar	USPT	459	OR	YES		03-14-2016
(speech or voice) near4 command and speech near4 synthesis and grammar and address	USPT	288	OR	YES		03-14-2016
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voice near5 browser and speech near recognition and speaker-independent and commands and speech near5 synthesis and address and recognition near5 grammar	USPT	25	OR	YES		06-30-2016
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kurganov.in.	USPT	25	OR	YES		07-05-2016
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kurganov.in. and speaker-independent near6 speech near recognition and command and grammar	USPT	4	OR	YES		07-05-2016
	USPT	3	OR	YES		07-05-2016

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speaker-independent near6 speech near recognition and command and grammar and speech near6 synthesis and (network or Internet) and web near	PGPB	0	OR	YES		07-05-2016

site and (browser and voice-enabled) and audio and phoneme and content and plurality near6 web near site and recognition near5 grammar						
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819
	Filing Date	2012-05-03
	First Named Inventor	Alexander Kurganov
	Art Unit	2658
	Examiner Name	Susan Iris McFadden
	Attorney Docket Number	10115-04042 US

U.S.PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	0174465		1876-03-07	Bell	
	2	4852170		1989-07-25	Bordeaux	
	3	4903291		1990-02-20	Tsurufuji et al.	
	4	5794205		1998-08-11	Walters	

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13462819
Filing Date	2012-05-03
First Named Inventor	Alexander Kurganov
Art Unit	2658
Examiner Name	Susan Iris McFadden
Attorney Docket Number	10115-04042 US

1	0794650	EP	A2	1997-09-10	International Business Machines Corporation
2	1997034401	WO		1997-09-18	Xantel Corporation
3	1998023058	WO		1998-09-03	Premiere Communications, Inc.

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1	Examples: Abstract Ideas, 2014, 20 pages.	
	2	BM AIX DirectTalk/6000 Version 1 Release 6 Improves Your Voice Processing Services to Callers and Customers, Announcement Number: 295-489, November 28, 1995, 27 pages.	
	3	BM Announcement Letter Number A95-893, retrieved on March 9, 2015, 10 pages.	
	4	BM, AIX DirectTalk/6000 Release 6: Speech Recognition with the BBN Hark Recognizer, SC33-1734-00, Feb. 1996, 250 pages.	
	5	BM, AIX DirectTalk/6000: General Information and Planning, Release 6, GC33-1720-00, Dec. 1995, 162 pages.	
	6	BM, DirectTalkMail: Administration, Release 6, SC33-1733-00, Feb. 1996, 274 pages.	

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13462819
Filing Date	2012-05-03
First Named Inventor	Alexander Kurganov
Art Unit	2658
Examiner Name	Susan Iris McFadden
Attorney Docket Number	10115-04042 US

7	"McGraw-Hill Dictionary of Scientific & Technical Terms 1101, 6th ed. 2003," (Referenced in Amendment and Reply Under 37 CFR 1.111 filed for US Patent Application No. 10/877,366 on April 24, 2009) No copy is provided but please inform if a copy of this dictionary is required.
8	Newton, Harry, Newtons Telecom Dictionary - The Official Glossary of Telecommunications and Voice Processing Terms, December 1992, 6 pages.
9	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00109 and CBM2015-00149, Nov. 9, 2015, 19 pages.
10	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00110 and CBM2015-00150, Nov. 9, 2015, 20 pages.
11	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00111 and CBM2015-00151, Nov. 9, 2015, 19 pages.
12	Paper No. 10, Denying Institution of Covered Business Method Patent Review CBM2015-00112 and CBM2015-00152, Nov. 9, 2015, 18 pages.
13	PUTZ, Steve, "Interactive Information Services Using World-Wide Web Hypertext, First Int'l Conference on World-Wide Web (May 25-27, 1994), 10 pages.
14	Memorandum Opinion and Order, October 8, 2015, 27 pages
15	Update Subject Matter Eligibility, July 2015, 33 pages
16	Wikipedia Definition of "Internet", available at http://en.wikipedia.org/wiki/Internet Retrieved on February 10, 2016, pp. 24-26.
17	Opening Brief of Appellant Parus Holdings, Inc., submitted on March 8, 2016, to the United States Court of Appeals for the Federal Circuit, 236 pages.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13462819
	Filing Date	2012-05-03
	First Named Inventor	Alexander Kurganov
	Art Unit	2658
	Examiner Name	Susan Iris McFadden
	Attorney Docket Number	10115-04042 US

18	Brief of Appellees, submitted on June 20, 2016, to the United States Court of Appeals for the Federal Circuit, 53 pages
----	---


If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/Susan McFadden/	Date Considered	06/30/2016
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***EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

Search Notes 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

CPC- SEARCHED		
Symbol	Date	Examiner
G06F 3/167	3-14-16	SM
G06F 17/3043	7-5-16	SM

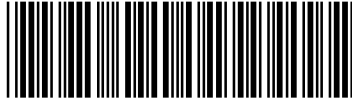
CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
704	275	3-10-16	SM
704	270.1	7-5-16	SM

SEARCH NOTES		
Search Notes	Date	Examiner
Searched WEST	2-6-13	SM
Updated Search	9-23-13	SM
Updated Search	3-10-16	SM
Updated Search	7-5-16	SM

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
G06F	3/167	3-14-16	SM
704	275	3-14-16	SM
G06F	3/167	7-5-16	SM
704	275	7-5-16	SM

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Index of Claims 	Application/Control No. 13462819	Applicant(s)/Patent Under Reexamination KURGANOV ET AL.
	Examiner SUSAN MCFADDEN	Art Unit 2658

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	02/06/2013	09/23/2013	03/10/2016	07/05/2016				
	1	✓	-	-	-				
1	2		✓	=	=				
2	3		✓	=	=				
3	4		✓	=	=				
4	5		✓	=	=				
5	6		✓	=	=				
6	7		✓	=	=				
7	8		✓	=	=				
8	9		✓	=	=				
9	10		✓	=	=				
10	11		✓	=	=				
11	12		✓	=	=				
12	13		✓	=	=				
13	14		✓	=	=				
14	15		✓	=	=				
15	16		✓	=	=				

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.

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.

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

93219 7596 07/12/2016
Patent Law Works, LLP
 201 South Main Street, Suite 250
 Salt Lake City, UT 84111

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.
13/462,819	05/03/2012	Alexander Kurganov	10115-04042 US	8402

TITLE OF INVENTION: ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	10/12/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
MCPADDEN, SUSAN IRIS	2658	704-275000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <input type="checkbox"/> "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 <u>Patent Law Works LLP</u> 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: **Parus Holdings, Inc.**

(B) RESIDENCE: (CITY and STATE OR COUNTRY) **Buffalo Grove, IL**

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: <input checked="" type="checkbox"/> Issue Fee <input type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____	4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. <input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).
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5. Change in Entity Status (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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

Authorized Signature /Reena Kuyper/ Date August 12, 2016

Typed or printed name Reena Kuyper Registration No. 33830

Electronic Patent Application Fee Transmittal

Application Number:	13462819
Filing Date:	03-May-2012
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Filer:	Reena Kuyper/Esther Kim
Attorney Docket Number:	10115-04042 US

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	26633030
Application Number:	13462819
International Application Number:	
Confirmation Number:	8402
Title of Invention:	ROBUST VOICE BROWSER SYSTEM AND VOICE ACTIVATED DEVICE CONTROLLER
First Named Inventor/Applicant Name:	Alexander Kurganov
Customer Number:	93219
Filer:	Reena Kuyper
Filer Authorized By:	
Attorney Docket Number:	10115-04042 US
Receipt Date:	12-AUG-2016
Filing Date:	03-MAY-2012
Time Stamp:	19:58:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$480
RAM confirmation Number	5285
Deposit Account	
Authorized User	

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

IPR2020-00686

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	04042US_IssueFeeTransmittal.pdf	178216 bb4c070916079c0d59aa042d57b8b430cb46d357	no	1

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30709 fe990f081ce91bd82ddcb1092b81513af37482c6	no	2
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Warnings:

Information:

Total Files Size (in bytes):	208925
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	13462819	13462819 - GAU: 2658
Filing Date	2012-05-03	
First Named Inventor	Alexander Kurganov	
Art Unit	2658	
Examiner Name	Susan Iris McFadden	
Attorney Docket Number	10115-04042 US	

	31	6215858		2001-04-10	Bartholomew et al.	
	32	6366575		2002-04-02	Barkan et al.	
	33	6445694		2002-09-03	Swartz	
Change(s) applied to document /C.C.B./ 7/28/2016	34	6490627		2002-12-03	Kaira et al. Kalra et al.	
	35	6560604		2003-05-06	Fascenda	
	36	6593944		2003-07-15	Nicolas et al.	
	37	6618763		2003-09-09	Steinberg	
	38	6654814		2003-11-25	Britton et al.	
	39	6704024		2004-03-09	Robotham et al.	
	40	6763388		2004-07-13	Tsimelzon	
	41	6812939		2004-11-02	Flores et al.	

LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

APPLICANT:

Kurganov

FILING DATE:

5/3/12

GROUP:

2626

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	6,922,733	07-2005	Kuiken et al.			
	6,941,273	09-2005	Loghmani et al.			
Change(s) applied to document, /C.C.B./ 7/28/2016	6,964,012	11-2005	Zirngibl et al. Zirngibl et al.			
	6,964,023	11-2005	Maes et al.			
	6,965,864	11-2005	Thrift et al.			
	6,996,609	02-2006	Hickman et al.			
	7,003,463	02-2006	Maes et al.			
	7,050,977	05-2006	Bennett			
	7,076,431	07-2006	Kurganov et al.			
	7,386,455	06-2008	Kurganov et al.			
	7,516,190	04-2009	Kurganov			
	2001/0032234	10-2001	Summers et al.			
2001/0040885	11-2001	Jonas et al.				
2001/0048676	12-2001	Jimenez et al.				
	2002/0006126	07-2002 01/2002	Johnson et al.			

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB CLASS	TRANSLATIO YES	TRANSLATIO NO
	CA 1,329,852	05-1994	Canada				
	EP 0 572 544	09-1996	Europe				
	GB 2 211 698	07-1989	Great Britain				
	GB 2 240 693	08-1991	Great Britain				
	GB 2,317,782	04-1998	Great Britain				

EXAMINER:

/Susan Mcfadden/

DATE CONSIDERED:

02/06/2013

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

LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

APPLICANT:

Kurganov

FILING DATE:

5/3/12

GROUP:

2626

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	5,884,032	03-1999	Bateman et al.			
	5,884,262	03-1999	Wise et al.			
	5,884,266	03-1999	Dvorak			
	5,890,123	03-1999	Brown et al.			
	5,915,001	06-1999	Uppaluru			
	5,917,817	06-1999	Dunn et al.			
	5,943,399	08-1999	Bannister et al.			
	5,946,389	08-1999	Dold			
	5,953,392	09-1999	Rhie et al.			
	5,974,413	10-1999	Beauregard et al.			
	5,999,525	12-1999	Krishnaswamy et al.			
	6,012,088	01-2000	Li et al.			
	6,014,437	01-2000	Acker et al.			
	6,018,710	01-2000	Wynblatt et al.			
	6,021,181	02-2000	Miner et al.			
	6,031,904	02-2000	An et al.			
	6,038,305	03-2000	McAllister et al.			
	6,047,053	04-2000	Miner et al.			
	6,067,516	05-2000	Levay et al.			
	6,078,580	06-2000	Mandalia et al.			
Change(s) applied to document, /C.C.B./	6,081,518	06/2000	Bowman-Amuah			
	6,081,782	07-2000	Rabin			

7/28/2016

EXAMINER:

/Susan Mcfadden/

DATE CONSIDERED:

02/06/2013

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

LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

APPLICANT:

Kurganov

FILING DATE:

5/3/12

GROUP:

2626

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	5,365,524	11-1994	Hiller et al.			
	5,375,161	12-1994	Fuller et al.			
Change(s) applied to document, /C.C.B./ 7/28/2016	5,384,771	10-1995 01/1995	Isidoro et al.			
	5,404,231	04-1995	Bloomfield			
	5,408,526	04-1995	McFarland et al.			
	5,414,754	05-1995	Pugh et al.			
	5,416,834	05-1995	Bales et al.			
	5,432,845	07-1995	Burd et al.			
	5,436,963	07-1995	Fitzpatrick et al.			
	5,459,584	10-1995	Gordon et al.			
	5,463,684	10-1995	Morduch et al.			
	5,475,791	12-1995	Schalk et al.			
	5,479,487	12-1995	Hammond			
	5,495,484	02-1996	Self et al.			
	5,497,373	03-1996	Hulen et al.			
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	5,517,558	05-1996	Schalk			
	5,526,353	06-1996	Henley et al.			
	5,533,115	07-1996	Hollenbach et al.			
	5,537,461	07-1996	Bridges et al.			
	5,555,100	09-1996	Bloomfield et al.			

EXAMINER:

/Susan Mcfadden/

DATE CONSIDERED:

02/06/2013

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LIST OF PATENTS AND OTHER ITEMS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT

APPLICANT:

Kurganov

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5/3/12

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(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE
	4,748,656	05-1988	Gibbs et al.			
	4,755,932	07-1988	Diedrich			
	4,757,525	07-1988	Matthews et al.			
	4,761,807	08-1988	Matthews et al.			
	4,763,317	08-1988	Lehman et al.			
	4,769,719	09-1988	Endo			
	4,771,425	09-1988	Baran et al.			
	4,776,016	10-1988	Hansen			
	4,782,517	11-1988	Bernardis et al.			
Change(s) applied to document, /C.C.B./ 7/28/2016	4,792,968	12-1988	Katz			
	4,799,144	01-1989	Paruch Parruck et al.			
	4,809,321	02-1989	Morganstein et al.			
	4,811,381	03-1989	Woo et al.			
	4,837,798	06-1989	Cohen et al.			
	4,847,891	07-1989	Kotani			
	4,850,012	07-1989	Mehta et al.			
	4,852,149	07-1989	Zwick et al.			
	4,866,758	09-1989	Heinzelmann			
	4,873,719	10-1989	Reese			
	4,879,743	11-1989	Burke et al.			
	4,893,333	01-1990	Baran et al.			
	4,893,335	01-1990	Fuller et al.			

EXAMINER:

/Susan Mofadden/

DATE CONSIDERED:

02/06/2013

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



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/462,819	09/20/2016	9451084	10115-04042 US	8402

93219 7590 08/31/2016
Patent Law Works, LLP
201 South Main Street, Suite 250
Salt Lake City, UT 84111

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 334 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):

Alexander Kurganov, Buffalo Grove, IL;
Valery Zhukoff, Deerfield, IL;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Western District of Texas - Waco Division on the following

Trademarks or Patents. (the patent action involves 35 U.S.C. § 292.);

DOCKET NO. 6:19-cv-00433	DATE FILED 7/22/2019	U.S. DISTRICT COURT Western District of Texas - Waco Division
PLAINTIFF PARUS HOLDINGS INC.		DEFENDANT GOOGLE, LLC
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 SEE ATTACHED		
2 7076431		
3 9451084		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY <input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> Other Pleading		
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK	
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK Jeannette J. Clack	(BY) DEPUTY CLERK <i>Michael</i>	DATE 7/22/2019
-----------------------------	-------------------------------------	-------------------

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

