AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
4:22-cv-840	9/30/2022	Eastern District of Texas

PLAINTIFF	DEFENDANT
STA GROUP LLC	MOTOROLA SOLUTIONS, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,324,802	1/29/2008	STA GROUP LLC
2	8,489,134	7/16/2013	STA GROUP LLC
3	8,994,830	3/31/2015	STA GROUP LLC
4	8,831,664	9/9/2014	STA GROUP LLC
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:22-cv-381	9/30/2022	Eastern District of Texas

PLAINTIFF	DEFENDANT
STA GROUP LLC	MOTOROLA SOLUTIONS, INC.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,324,802	1/29/2008	STA GROUP LLC
2	8,489,134	7/16/2013	STA GROUP LLC
3	8,994,830	3/31/2015	STA GROUP LLC
4	8,831,664	9/9/2014	STA GROUP LLC
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/210,967	09/09/2014	8831664	03919-0117-CON (976240)	3197

86421 7590 08/20/2014

Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

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 470 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):

Shmuel Shaffer, Palo Alto, CA;
Steven Christenson, Campbell, CA;

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.

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

WO0191485	25	~~WO2001/191485~~	11/2001	WIPO			X	
	26	WO2002/074051	9/2002	WIPO			X	
	27	WO2006/135533	12/21/2006	WIPO			X	
	28	WO2007/021586	2/22/2007	WIPO			X	
Change(s) applied	29	WO2007/027356	3/8/2007	WIPO			X	
to document.	30	WO2007/142961	12/13/2007	WIPO			X	

Other Documents (include Author, Title, Date, and Place of Publication)

/L.M./ 6/24/2014 Examiner Initial

Desig. ID	Document
31	U.S. Patent Application Serial No. 12/722,389, entitled "System and Method for Providing Data Channel Management in a Network Environment," filed March 11, 2010; Inventors: Shmuel Shaffer, et al.; Attorney Docket No. 03919.0165
32	PCT 2001-2-10 International Search Report from PCT/EP01/04570; 1 page
33	PCT 2007-02-27 Notification of Transmittal of the International Search Report for PCT/US06/30447; 2 pages
34	PCT 2007-04-09 Notification of Transmittal of the International Search Report from PCT/US06/30294; 1 page
35	PCT 2007-09-04 International Search Report from PCT/US02/08419; 2 pages
36	PCT 2007-09-04 International Search Report and Written Opinion from PCT/US06/19227; 7 pages
37	PCT 2007-12-11 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (3 pages), for PCT/US06/19227
38	PCT 2008-2-12 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (14 pages), from PCT/US06/30447
39	PCT 2008-3-14 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority or the Declaration (4 pages) for PCT/US06/30294
40	PCT 2008-9-17 Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority for PCT/US07/12728; 6 pages
41	PCT 2008-12-3 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (5 pages) from PCT/US07/12728
42	USPTO 2011-6-27 Notice of Allowance from U.S. Application No. 12/340,417 [Attorney Docket No. 03919-0117]
43	USPTO 2011-7-11 Nonfinal Office Action from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	28	7,010,275	3/2006	Davies			
	29	7,013,279	3/2006	Nelson			
	30	7,031,700	4/2006	Weaver et al.			
	31	7,034,678	4/2006	Burkley et al.			
	32	7,035,385	4/2006	Levine et al.			
	33	7,058,168	6/2006	Knappe et al.			
	34	7,062,286	6/2006	Grivas et al.			
	35	7,079,857	7/2006	Maggenti et al.			
	36	7,149,477	12/2006	Ogami			
	37	7,237,117	6/2007	Weiss			
	38	7,292,544	11/2007	Roher et al.			
	39	7,379,961	5/2008	Matsuoka			
	40	7,418,090	~~3/2005~~	Reding et al.		August 26, 2008	
	41	7,426,192	9/2008	Amano et al.			
	42	7,466,812	12/2008	Mahy et al.			
	43	7,508,840	3/2009	Delaney			
	44	7,526,306	4/2009	Brems et al.			
	45	7,558,221	7/2009	Nelson et al.			
	46	7,606,256	10/2009	Vitebsky et al.			
	47	7,633,914	12/2009	Shaffer et al.			
	48	7,636,339	12/2009	Shaffer et al.			
	49	7,706,339	4/2010	Shaffer et al.			
	50	7,821,978	10/2010	Staack			
	51	7,831,270	11/2010	Kalley et al.			
	52	7,860,070	12/2010	Shaffer et al.			
	53	7,860,958	12/2010	Yoon et al.			
	54	7,869,386	1/2011	Shaffer et al.			
	55	7,933,286	04/2011	Vitebsky et al.			

Change(~~s~~) applied to document, /P.H./ 6/24/2014

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
/L.M./	1	2003/0055711	3/2003	Doherty			
/L.M./	2	2007/0293240	12/2007	Drennan			
/L.M./	3	2011/0239252	~~01/2006~~	Kazama et al.			September 29, 2011
	4						
	5						

Change(s) applied to document, /P.H./ 6/24/2014

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	8	USPTO 2012-3-9 Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
	9	
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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)

86421 7590 05/12/2014
Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

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.

Roseanne Cisneros de Chairez	(Depositor's name)
/Roseanne Cisneros de Chairez/	(Signature)
August 4, 2014	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)	3197

TITLE OF INVENTION: SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	08/12/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
MAI, LAM T	2845	455-521000

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

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

1 PATENT CAPITAL GROUP
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: CISCO TECHNOLOGY, INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): SAN JOSE, CA

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

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

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-4889 (enclose an extra copy of this form).

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

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

Authorized Signature /Rachel L.I. Davis/ Date August 4, 2014

Typed or printed name Rachel L.I. Davis Registration No. 63,459

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

Motorola Solutions, Inc., Ex1003, p. 7

Electronic Patent Application Fee Transmittal

Application Number:	13210967
Filing Date:	16-Aug-2011
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Filer:	Rachel L.I. Davis/Roseanne Cisneros de Chairez
Attorney Docket Number:	03919-0117-CON (976240)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

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

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

Electronic Acknowledgement Receipt	
EFS ID:	19769968
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Rachel L.I. Davis/Roseanne Cisneros de Chairez
Filer Authorized By:	Rachel L.I. Davis
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	04-AUG-2014
Filing Date:	16-AUG-2011
Time Stamp:	17:57:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$960
RAM confirmation Number	4719
Deposit Account	504889
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Post Allowance Communication - Incoming	03919-0117-CON-NOA-Comments.pdf	92150 d1cf5992ee01b3cd90a57f6fa5b86d571493cd7a	no	2
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	03919-0117-CON-PartBFeesTransmittal.pdf	83607 f9cadd8ef0fe996db5f7f34395bc60c536ebf4dc	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30605 e160fefa60e632fe75f6966b24b7123cf532e9ac	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	206362		

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer, et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2845
Examiner:	Lam T. Mai
Title:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

MAIL STOP ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DEAR SIR:

APPLICANT'S COMMENTS ON REASONS FOR ALLOWANCE

These comments are responsive to the Notice of Allowance mailed on May 12, 2014 which sets forth the Examiner's statement of reasons for allowance. Applicant appreciates the Examiner's allowance of Claims 25-44. Pursuant to 37 C.F.R. §1.104, Applicant respectfully issues a statement commenting on the Examiner's reasons for allowance.

Applicant respectfully disagrees with the Examiner's reasons for allowance to the extent that they are inconsistent with applicable case law, statutes, and regulations. Furthermore, Applicant does not admit to any characterization or limitation of the claims or to any characterization of a reference by the Examiner, particularly any that are inconsistent with the language of the claims considered in their entirety and including all of their constituent limitations.

Applicant respectfully reserves the right to introduce, articulate, or otherwise comment on any additional reasons for allowances as may be appropriate in any future proceedings concerning the one or more claimed embodiments.

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Rachel L.I. Davis/
Rachel L.I. Davis
Reg. No. 63,459

Date: August 4, 2014

Customer No. 86421 (Cisco)

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

86421 7590 05/12/2014

Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

EXAMINER
MAI, LAM T

ART UNIT	PAPER NUMBER
2845	

DATE MAILED: 05/12/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)	3197

TITLE OF INVENTION: SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	08/12/2014

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)

86421 7590 05/12/2014
Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

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.
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)	3197

TITLE OF INVENTION: SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	08/12/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
MAI, LAM T	2845	455-521000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

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

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

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

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

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

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

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

❑ A check is enclosed.

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

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

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

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

❑ Applicant asserting small entity status. See 37 CFR 1.27

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

❑ Applicant changing to regular undiscounted fee status.

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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

Motorola Solutions, Inc., Ex1003, p. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)	3197

86421 7590 05/12/2014

Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

EXAMINER	
MAI, LAM T	

ART UNIT	PAPER NUMBER
2845	

DATE MAILED: 05/12/2014

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.

Notice of Allowability	Application No. 13/210,967	Applicant(s) SHAFFER ET AL.	
	Examiner LAM T. MAI	Art Unit 2845	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 *4/29/2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *25-44*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

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

   * Certified copies not received: _____.

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

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

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

Attachment(s)

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

/LAM T MAI/
Primary Examiner, Art Unit 2845

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

DETAILED ACTION

Response to Amendments/TD

Applicant's amendments/TD filed on 4/29/2014 has been carefully considered.

Terminal Disclaimer

The terminal disclaimer filed on 4/29/2014 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of USP 8,041,378 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Allowable Subject Matter

Claims 25-44 are allowable.

The following is an examiner's statement of reasons for allowance: Claim 25 is allowed over the prior art of record. The prior art of record, considered individually or in combination, fails to fairly teach or suggest claimed features, which is, "as amended" structurally and functionally interconnected with other limitations in the manner as cited in the claim and dependent claims.

Claim 35 is allowed over the prior art of record. The prior art of record, considered individually or in combination, fails to fairly teach or suggest claimed features, which is, "elevating a priority associated with the media stream receiving the alert" structurally and functionally interconnected with other limitations in the manner as cited in the claim and dependent claims.

Claim 40 is allowed over the prior art of record. The prior art of record, considered individually or in combination, fails to fairly teach or suggest claimed features, which is, "elevating a priority associated with the media stream receiving the alert" structurally and functionally interconnected with other limitations in the manner as cited in the claim and dependent claims.

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

Cited References

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cited references are related to instant application subject matters.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM T. MAI whose telephone number is (571)272-1807. The examiner can normally be reached on 5:30 am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dameon E. Levi can be reached on (571) 272-2105. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/LAM T MAI/
Primary Examiner, Art Unit 2845

Notice of References Cited	Application/Control No. 13/210,967	Applicant(s)/Patent Under Reexamination SHAFFER ET AL.	
	Examiner LAM T. MAI	Art Unit 2845	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,721,284	04-2004	Mottishaw et al.	370/255
*	B	US-7,953,859	05-2011	Kiefhaber et al.	709/227
*	C	US-7,710,983	05-2010	Zheng et al.	370/396
*	D	US-8,619,586	12-2013	Hanes et al.	370/241
*	E	US-8,041,378	10-2011	Shaffer et al.	455/521
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	**Art Unit**
	LAM T MAI	2845

CPC						
Symbol					**Type**	**Version**
H04H		20	/	59	F	2013-01-01
H04W		84	/	08	A	2013-01-01
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/LAM T MAI/ Primary Examiner.Art Unit 2845 (Primary Examiner)	5/1/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	**Art Unit**
	LAM T MAI	2845

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
455	521	H	0	4	W	4 / 22 (2009.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
370	331	465	266	270	
709	204	227	239	224	239
709	206	223			

NONE		Total Claims Allowed:
(Assistant Examiner)	(Date)	20
/LAM T MAI/ Primary Examiner.Art Unit 2845	5/1/2014	O.G. Print Claim(s): 1 — O.G. Print Figure: 5
(Primary Examiner)	(Date)	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	**Art Unit**
	LAM T MAI	2845

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

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17	9	33										
	2		18	10	34										
	3		19	11	35										
	4		20	12	36										
	5		21	13	37										
	6		22	14	38										
	7		23	15	39										
	8		24	16	40										
	9	1	25	17	41										
	10	2	26	18	42										
	11	3	27	19	43										
	12	4	28	20	44										
	13	5	29												
	14	6	30												
	15	7	31												
	16	8	32												

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 20	
/LAM T MAI/ Primary Examiner.Art Unit 2845 (Primary Examiner)	5/1/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 5

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

BIB DATA SHEET

CONFIRMATION NO. 3197

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/210,967	08/16/2011	455	2845	03919-0117-CON (976240)

APPLICANTS

INVENTORS

Shmuel Shaffer, Palo Alto, CA;
Steven Christenson, Campbell, CA;

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

This application is a CON of 12/340,417 12/19/2008 PAT 8041378

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

08/25/2011

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /Lam T Mai/ Examiner's Signature	☑ Met after Allowance Im Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		CA	5	20	3

ADDRESS

Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032
UNITED STATES

TITLE

SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

FILING FEE RECEIVED		
1090	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	Art Unit
	LAM T MAI	2845

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	521	5/1/2014	lammai
370	331,465,266,270	5/1/2014	lammai
709	204,227,239,224,239,206,223	5/1/2014	lammai

SEARCH NOTES		
Search Notes	Date	Examiner
east/plus/IEEE/Internet	5/1/2014	lammai
consulted with Raymond Dean	5/1/2014	lammai
consulted with Philip Sobutka	5/1/2014	lammai

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
455	521	5/1/2014	lammai

	/LAM T MAI/ Primary Examiner, Art Unit 2845

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	672	455/521.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:24
L4	0	(monitor$3 adj1 media adj1 stream$3) and (receiv$3 adj1 alert$3) and (elevat$3 adj1 priority) and (adjust$5 correct$5 modif$5) and endpoint and (communicat$5 near enviroment)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:32
L5	0	(monitor$3 adj1 media adj1 stream$3) and (receiv$3 adj1 alert$3) and (elevat$3 adj1 priority) and endpoint and (communicat$5 near enviroment)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:32
L6	0	(monitor$3 adj1 media adj1 stream$3) and (receiv$3 adj1 alert$3) and endpoint and (communicat$5 near enviroment)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:32
L7	2	(monitor$3 adj1 media adj1 stream$3) and (receiv$3 adj1 alert$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:32
L8	0	(monitor$3 adj1 media adj1 stream$3) and (elevat$3 adj1 priority) and (adjust$5 correct$5 modif$5) and endpoint and (communicat$5 near enviroment)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:33
L9	0	(monitor$3 adj1 media adj1 stream$3) and (elevat$3 adj1 priority) and (communicat$5 near enviroment)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2014/05/01 09:33
L10	49	(("20060029147") or ("20060029148") or ("20070199040") or ("20070283379") or ("20100159977") or ("20110200183") or ("20110280545") or ("20110299404") or ("4246453") or ("4249514") or ("4272373") or ("4289187") or ("4298360") or ("4300748") or ("4305053") or ("4341240") or ("4358080") or ("4385359") or ("4388083") or ("4421363") or ("4477809") or ("4559624") or ("4562581") or ("4621879") or ("4623854") or ("4794376") or ("4872385") or ("4890527") or ("5243651") or ("5254081") or	US-PGPUB; USPAT; USOCR	OR	OFF	2014/05/01 09:33

Motorola Solutions, Inc., Ex1003, p. 28

		("5255308") or ("5355126") or ("5413375") or ("5424727") or ("5563509") or ("5649302") or ("5689501") or ("5794144") or ("5809012") or ("5835779") or ("5910777") or ("5940071") or ("6108537") or ("6125275") or ("6154648") or ("6198407") or ("6272190") or ("8041378") or ("8041378") or ("8306204")).PN.				
L11	682	shaffer.in. and shmuel	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L12	130	christenson.in. and steven	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L13	3	L10 and L11	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L14	3	L10 and L12	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L15	18893	media adj stream	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L16	176	monitor$4 adj media adj stream	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L17	1	monitor$4 adj media adj stream with alert	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L18	24150	receiv$4 near3 alert	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33
L19	4	L16 and L18	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/05/01 09:33

5/1/2014 9:34:17 AM
C:\Users\lmai1\Documents\EAST\Workspaces\13210967.wsp

Motorola Solutions, Inc., Ex1003, p. 29

EAST Search History

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L2	0	((monitor$3 adj1 media adj1 stream$3) and (receiv$3 adj1 alert$3) and (elevat$3 adj1 priority) and (adjust$5 correct$5 modif$5) and endpoint and (communicat$5 near enviroment)).clm. and "455"/$.ccls.	US-PGPUB; USPAT; UPAD	OR	ON	2014/05/01 09:29
L3	0	((monitor$3 adj1 media adj1 stream$3) and (receiv$3 adj1 alert$3) and (elevat$3 adj1 priority) and (adjust$5 correct$5 modif$5) and endpoint and (communicat$5 near enviroment)).clm.	US-PGPUB; USPAT; UPAD	OR	ON	2014/05/01 09:31

5/1/2014 9:31:33 AM
C:\Users\lmai1\Documents\EAST\Workspaces\13210967.wsp

Motorola Solutions, Inc., Ex1003, p. 30

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	Art Unit
	LAM T MAI	2845

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

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

CLAIM		DATE								
Final	Original	01/13/2014	05/01/2014							
	1	-								
	2	-								
	3	-								
	4	-								
	5	-								
	6	-								
	7	-								
	8	-								
	9	-								
	10	-								
	11	-								
	12	-								
	13	-								
	14	-								
	15	-								
	16	-								
	17	-								
	18	-								
	19	-								
	20	-								
	21	-								
	22	-								
	23	-								
	24	-								
1	25	✓	=							
2	26	✓	=							
3	27	✓	=							
4	28	✓	=							
5	29	✓	=							
6	30	✓	=							
7	31	✓	=							
8	32	✓	=							
9	33	✓	=							
10	34	✓	=							
11	35	✓	=							
12	36	✓	=							

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	Art Unit
	LAM T MAI	2845

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

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

CLAIM		DATE								
Final	Original	01/13/2014	05/01/2014							
13	37	✓	=							
14	38	✓	=							
15	39	✓	=							
16	40	✓	=							
17	41	✓	=							
18	42	✓	=							
19	43	O	=							
20	44	O	=							

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	13210967
Filing Date	16-Aug-2011
First Named Inventor	Shmuel Shaffer
Attorney Docket Number	03919-0117-CON (976240)
Title of Invention	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Cisco Technology, 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)

8041378

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 63459

○ 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	/Rachel L.I. Davis/
Name	Rachel L.I. Davis

*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:	13210967
Filing Date:	16-Aug-2011
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Filer:	Rachel L.I. Davis/Pat Bradford
Attorney Docket Number:	03919-0117-CON (976240)

Filed as Large 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:				

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.: 13210967

Filing Date: 16-Aug-2011

Applicant/Patent under Reexamination: Shaffer et al.

Electronic Terminal Disclaimer filed on April 29, 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:	18892542
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Rachel L.I. Davis/Pat Bradford
Filer Authorized By:	Rachel L.I. Davis
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	29-APR-2014
Filing Date:	16-AUG-2011
Time Stamp:	15:55:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$160
RAM confirmation Number	2774
Deposit Account	504889
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 1.17 (Patent application and reexamination processing fees) Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)	

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

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	33461 d7d8dfec35e4b154a0d71170c8d064bdb9a4951a	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30484 d1446658b99e9610e215a758f1c50e6f626fecfe	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	63945		

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer, et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2845
Examiner:	Lam T. Mai
Title:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

RESPONSE TO EXAMINER'S ACTION

In response to the Office Action mailed January 17, 2014, Applicant respectfully requests the Examiner to reconsider the claims in view of the following amendments and comments as set forth below.

Amendments to the Abstract

Please delete previous ABSTRACT OF THE DISCLOSURE at page 25 and add the following new abstract:

A method is provided in one example embodiment and includes monitoring media streams associated with channels in a communication environment. The method also includes receiving an alert in one of the media streams and elevating a priority associated with the media stream receiving the alert. Elevating the priority can include increasing the volume of the media stream receiving the alert, changing a spatial direction for rendering the media stream receiving the alert, rendering the media stream receiving the alert to a priority spatial direction, identifying a primary channel and rendering the alert message to the primary channel, turning a volume down on media streams not receiving the alert, or a combination thereof.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1 – 24. (Cancelled)

25. (Currently Amended) A method, comprising:

monitoring media streams associated with channels in a communication environment;

receiving an alert in one of the media streams; and

elevating a priority associated with the media stream receiving the alert, such that an adjustment is made to how the media stream is provisioned to an endpoint in the communication environment.

26. (Previously Presented) The method of Claim 25, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert.

27. (Previously Presented) The method of Claim 25, wherein elevating the priority comprises changing a spatial direction for rendering the media stream receiving the alert.

28. (Previously Presented) The method of Claim 25, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert and changing a spatial direction for rendering the media stream receiving the alert.

29. (Previously Presented) The method of Claim 25, wherein elevating the priority comprises rendering the media stream receiving the alert to a priority spatial direction.

30. (Previously Presented) The method of Claim 25, wherein elevating the priority includes identifying a primary channel and rendering the alert message to the primary channel.

31. (Previously Presented) The method of Claim 25, wherein elevating the priority includes turning a volume down on media streams not receiving the alert.

32. (Previously Presented) The method of Claim 25, wherein the alert is received in a header of a packet of the media stream.

33. (Previously Presented) The method of Claim 25, wherein the alert is received in a control packet of the media stream.

34. (Previously Presented) The method of Claim 25, wherein the alert is duplicated and rendered at a higher volume.

35. (Currently Amended) Non-transitory readable ~~Logic encoded in non-transitory~~ media that includes code for execution and when executed by a processor ~~is~~ operable to perform operations comprising:

monitoring media streams associated with channels in a communication environment;

receiving an alert in one of the media streams; and

elevating a priority associated with the media stream receiving the alert.

36. (Currently Amended) The non-transitory readable media ~~encoded logic~~ of Claim 35, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert.

37. (Currently Amended) The non-transitory readable media ~~encoded logic~~ of Claim 35, wherein elevating the priority comprises changing a spatial direction for rendering the media stream receiving the alert.

38. (Currently Amended) The non-transitory readable media ~~encoded logic~~ of Claim 35, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert and changing a spatial direction for rendering the media stream receiving the alert.

39. (Currently Amended) The non-transitory readable media ~~encoded logic~~ of Claim 35, wherein elevating the priority includes identifying a primary channel and rendering the alert message to the primary channel.

40. (Previously Presented) An apparatus, comprising:

a memory element;

a processor; and

a management element stored in the memory element and configured to interface with the processor such that the apparatus is configured for:

monitoring media streams associated with channels in a communication environment;

receiving an alert in one of the media streams; and

elevating a priority associated with the media stream receiving the alert.

41. (Previously Presented) The apparatus of Claim 40, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert.

42. (Previously Presented) The apparatus of Claim 40, wherein elevating the priority comprises changing a spatial direction for rendering the media stream receiving the alert.

43. (Previously Presented) The apparatus of Claim 40, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert and changing a spatial direction for rendering the media stream receiving the alert.

44. (Previously Presented) The apparatus of Claim 40, wherein elevating the priority includes identifying a primary channel and rendering the alert message to the primary channel.

REMARKS

Applicant has carefully reviewed the Application in light of the Office Action mailed January 17, 2014. At the time of the Office Action, Claims 25–44 were pending in the Application. In view of the foregoing amendments and the following remarks, Applicant respectfully requests reconsideration of the pending claims and favorable action in this case.

Interview Summary

Applicant thanks Examiner Mai for the telephone interview on April 15, 2014, and for thoughtful consideration of this case. Attorney Davis (Applicant's undersigned attorney) and Examine Mai discussed the § 101 rejections to Independent Claim 25 and Independent Claim 35, along with possible amendments for overcoming such rejections. Any subsequent amendments to the claims were not based on reasons related to patentability, and Applicant reserves the right for future commentary concerning the rationale behind these amendments.

Allowable Subject Matter

Applicant acknowledges and appreciates the Examiner's indication that Claims 25–44 would be allowable once all § 101 and double patenting rejections are resolved.

Double Patenting

Claims 25–27, 31–37, and 40–42 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1, 4, 6, or 8 of U.S. Patent No. 8,041,378. A Terminal Disclaimer has been filed concurrently herewith, as requested by the Examiner. However, Applicant does not admit to any characterization or limitation of the claims or to any characterization of a reference by the Examiner. Applicant respectfully reserves the right to introduce, articulate, or otherwise comment on any additional reasons relating to the Terminal Disclaimer filing.

Section 101 Rejections

Claims 25–34 stand rejected under 35 U.S.C. § 101 as failing to fall within one of the four statutory categories of an invention. Independent Claim 25 has been modestly amended in an effort to address the Examiner's concern. Any amendment in this regard should not be construed as an agreement with or acquiescence to the propriety of the Examiner's contention. Applicant reserves the right to comment on the appropriateness of the §101-based amendment at a future time, should Applicant deem it appropriate to do so.

Claims 35–39 also stand rejected under 35 U.S.C. § 101 as failing to recite "non-transitory computer readable medium." Independent Claim 35 has been modestly amended in an effort to address the Examiner's concern. Any amendment in this regard should not be construed as an agreement with or acquiescence to the propriety of the Examiner's contention. Applicant reserves the right to comment on the appropriateness of the §101-based amendment at a future time, should Applicant deem it appropriate to do so.

Comment on Office Action Characterizations

The Office Action contains characterizations of the claims and the art of record to which Applicant does not necessarily agree. Unless expressly noted otherwise, Applicant declines to subscribe to any statement or characterization in the Office Action.

CONCLUSION

Applicant has now made an earnest attempt to place this case in condition for immediate allowance. For the foregoing reasons and for all other reasons clear and apparent, Applicant respectfully requests reconsideration and allowance of the pending claims.

No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the attorney docket number referenced above.

If there are matters that can be discussed by telephone to advance prosecution of this application, Applicant invites the Examiner to contact Rachel L.I. Davis at (817) 307-0058.

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Rachel L.I. Davis/
Rachel L.I. Davis
Reg. No. 63,459

Date: April 17, 2014

Customer No. 86421 (Cisco)

Electronic Acknowledgement Receipt

EFS ID:	18789940
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Rachel L.I. Davis/Pat Bradford
Filer Authorized By:	Rachel L.I. Davis
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	17-APR-2014
Filing Date:	16-AUG-2011
Time Stamp:	12:46:14
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2014-4-17-ResponseTo1-17-14Nonfinal.pdf	113508 67477172da89575c3c24f30cef9152d104a3bc7b	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Abstract	2	2
	Claims	3	6
	Applicant Arguments/Remarks Made in an Amendment	7	9
Warnings:			
Information:			
	Total Files Size (in bytes):	113508	

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

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

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

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

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/210,967	Filing Date 08/16/2011	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ 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 $ =	
☐ 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.			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)		
	04/17/2014	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

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

* 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
/KIM WATSON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)	3197

86421 7590 01/17/2014

Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

EXAMINER	
MAI, LAM T	
ART UNIT	PAPER NUMBER
2845	

NOTIFICATION DATE	DELIVERY MODE
01/17/2014	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):

thomasframe@patcapgroup.com
patbradford@patcapgroup.com
peggsu@cisco.com

Office Action Summary	Application No. 13/210,967	Applicant(s) SHAFFER ET AL.	
	Examiner LAM T. MAI	Art Unit 2845	AIA (First Inventor to File) Status No

-- 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* MONTHS 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 *8/16/2011*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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) *25-44* 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) *25-42* is/are rejected.

8)☒ Claim(s) *43 and 44* 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 _____ 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).

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)).

** 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/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *11/11;10/11;10/13;10/12;9/11;8/11;6/12;4/12;3/12;2/131/12*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

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

DETAILED ACTION

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 101

Claims 25-34 are rejected under 35 U.S.C. 101 because claims 25-34 are not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. See In re Bilski, 88 USPQ2d 1385 (Fed. Cir. 2008).

Claims 35-39 are rejected under 35 U.S.C. 101 because claims 35-39 appear to be claimed a computer program which codes store on a media and process by a processor to perform an operation method. However, the codes claimed in claims 35-39 are not stored on "NON-TRANSISTORY COMPUTER READABLE MEDIUM".

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the claims that are directed to the same invention so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

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 double patenting rejection is appropriate where the claims at issue 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 reference 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. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 25 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 25 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches monitoring channels by management element, and reacting to a received alert.

Claims 26 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 26 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches increasing the volume of the channel receiving the alert.

Claims 27 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 27 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches changing a spatial direction for rendering the media stream receiving the alert.

Claims 31 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 4 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 31 of instant application is similar to the claim 4 of issued patent. Claim 1 of issued patent teaches turning a volume down on media streams not receiving the alert.

Claims 32 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 6 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 32 of instant application is similar to the claim 6 of issued patent. Claim 6 of issued patent teaches the alert is received in a header of a packet of the media stream.

Claims 33 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 6 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 33 of instant application is similar to the claim 6 of issued patent. Claim 6 of issued patent teaches the alert is received in a control packet of the media stream.

Claims 34 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 8 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 34 of instant application is similar to the claim 8 of issued patent. Claim 8 of issued patent teaches the alert is duplicated and rendered at a higher volume.

Claims 35 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 35 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches monitoring channels by management element, and reacting to a received alert.

Claims 36 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 36 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches increasing the volume of the channel receiving the alert.

Claims 37 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 37 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches changing a spatial direction for rendering the media stream receiving the alert.

Claims 40 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 35 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches monitoring channels by management element, and reacting to a received alert.

Claims 41 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 36 of instant application is similar to the claim 1 of issued patent. Claim 1 of issued patent teaches increasing the volume of the channel receiving the alert.

Claims 42 is rejected on the ground of nonstatutory double patenting as being unpatentable over claim 1 of U.S. Patent No. 8,041,378. Although the claims at issue are not identical, they are not patentably distinct from each other because the scope of claim 37 of instant application is similar to the claim 1 of issued patent. Claim 1 of

issued patent teaches changing a spatial direction for rendering the media stream receiving the alert.

Allowable Subject Matter

Claims 28-30 are objected to as being dependent upon a rejected base claim, but they would be allowable if they are rewritten in independent form including all of the limitations of the base claim and any intervening claims. Features of object claims are not clearly teach or suggest in the prior art of record.

Claims 38-39 are objected to as being dependent upon a rejected base claim, but they would be allowable if they are rewritten in independent form including all of the limitations of the base claim and any intervening claims. Features of object claims are not clearly teach or suggest in the prior art of record.

Claims 43-44 are objected to as being dependent upon a rejected base claim, but they would be allowable if they are rewritten in independent form including all of the limitations of the base claim and any intervening claims. Features of object claims are not clearly teach or suggest in the prior art of record.

Claims 25-44 are allowable ONLY AND ONLY IF ALL 101 AND DOUBLE PATENTING REJECTIONS indicated above are resolved.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM T. MAI whose telephone number is (571)272-1807. The examiner can normally be reached on 5:30 am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dameon E. Levi can be reached on (571) 272-2105. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/LAM T MAI/
Primary Examiner, Art Unit 2845

Notice of References Cited	Application/Control No. 13/210,967	Applicant(s)/Patent Under Reexamination SHAFFER ET AL.	
	Examiner LAM T. MAI	Art Unit 2845	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,721,284	04-2004	Mottishaw et al.	370/255
*	B	US-7,953,859	05-2011	Kiefhaber et al.	709/227
*	C	US-7,710,983	05-2010	Zheng et al.	370/396
*	D	US-8,619,586	12-2013	Hanes et al.	370/241
*	E	US-8,041,378	10-2011	Shaffer et al.	455/521
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	5,689,245	11/1997	Noreen et al.			
	2	6,094,579	7/25/2000	Olvera-Hernandez et al.			
	3	6,151,309	11/2000	Busuioc et al.			
	4	6,374,100	4/2002	Smith et al.			
	5	6,400,816	6/2002	Hjalmtysson et al.			
	6	6,421,002	7/2002	Krasner			
	7	6,873,854	3/2005	Crockett et al.			
	8	6,882,856	4/2005	Alterman et al.			
	9	6,885,874	4/2005	Grube et al.			
	10	7,091,851	8/2006	Mason et al.			
	11	7,271,742	9/2007	Sheha et al.			
	12	7,328,036	2/5/2008	Hart et al.			
	13	7,369,530	5/2008	Keagy			
	14	7,639,634	12/29/2009	Shaffer et al.			
	15	2010/0161727	6/24/2010	Shaffer			
	16	2010/0159975	6/24/2010	Shaffer			
	17	2010/0159977	6/24/2010	Shaffer			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	18	CN101461152	6/17/2009	PRC			Abstract Only	X
	19	EP0849964	6/1998	EPO			Abstract Only	X
	20	EP1889495	12/21/2006	EPO			X	
	21	EP1920568	8/2/2006	EPO			X	
	22	EP1920615	2/22/2007	EPO			X	
	23	EP2030338	12/13/2007	EPO			X	
	24	FR2674355A	9/1992	FR			Abstract Only	X

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

	25	WO2001/191485	11/2001	WIPO			X	
	26	WO2002/074051	9/2002	WIPO			X	
	27	WO2006/135533	12/21/2006	WIPO			X	
	28	WO2007/021586	2/22/2007	WIPO			X	
	29	WO2007/027356	3/8/2007	WIPO			X	
	30	WO2007/142961	12/13/2007	WIPO			X	

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	31	U.S. Patent Application Serial No. 12/722,389, entitled "System and Method for Providing Data Channel Management in a Network Environment," filed March 11, 2010; Inventors: Shmuel Shaffer, et al.; Attorney Docket No. 03919.0165
	32	PCT 2001-2-10 International Search Report from PCT/EP01/04570; 1 page
	33	PCT 2007-02-27 Notification of Transmittal of the International Search Report for PCT/US06/30447; 2 pages
	34	PCT 2007-04-09 Notification of Transmittal of the International Search Report from PCT/US06/30294; 1 page
	35	PCT 2007-09-04 International Search Report from PCT/US02/08419; 2 pages
	36	PCT 2007-09-04 International Search Report and Written Opinion from PCT/US06/19227; 7 pages
	37	PCT 2007-12-11 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (3 pages), for PCT/US06/19227
	38	PCT 2008-2-12 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (14 pages), from PCT/US06/30447
	39	PCT 2008-3-14 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority or the Declaration (4 pages) for PCT/US06/30294
	40	PCT 2008-9-17 Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority for PCT/US07/12728; 6 pages
	41	PCT 2008-12-3 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (5 pages) from PCT/US07/12728
	42	USPTO 2011-6-27 Notice of Allowance from U.S. Application No. 12/340,417 [Attorney Docket No. 03919-0117]
	43	USPTO 2011-7-11 Nonfinal Office Action from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	49	(("20060029147") or ("20060029148") or ("20070199040") or ("20070283379") or ("20100159977") or ("20110200183") or ("20110280545") or ("20110299404") or ("4246453") or ("4249514") or ("4272373") or ("4289187") or ("4298360") or ("4300748") or ("4305053") or ("4341240") or ("4358080") or ("4385359") or ("4388083") or ("4421363") or ("4477809") or ("4559624") or ("4562581") or ("4621879") or ("4623854") or ("4794376") or ("4872385") or ("4890527") or ("5243651") or ("5254081") or ("5255308") or ("5355126") or ("5413375") or ("5424727") or ("5563509") or ("5649302") or ("5689501") or ("5794144") or ("5809012") or ("5835779") or ("5910777") or ("5940071") or ("6108537") or ("6125275") or ("6154648") or ("6198407") or ("6272190") or ("8041378") or ("8041378") or ("8306204")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2014/01/13 09:57
S2	662	shaffer.in. and shmuel	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 09:58
S3	129	christenson.in. and steven	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 09:58
S4	3	S1 and S2	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 09:58
S5	3	S1 and S3	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 09:59
S6	17984	media adj stream	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 10:01
S7	171	monitor$4 adj media adj stream	US-	OR	ON	2014/01/13

Motorola Solutions, Inc., Ex1003, p. 65

			PGPUB; USPAT; JPO; IBM_TDB			10:02
S8	1	monitor$4 adj media adj stream with alert	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 10:03
S9	23025	receiv$4 near3 alert	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 10:09
S10	4	S7 and S9	US-PGPUB; USPAT; JPO; IBM_TDB	OR	ON	2014/01/13 10:09

13-Jan-14 12:04:31 PM
C:\ Users\ lmai1\ Documents\ EAST\ Workspaces\ 13210967.wsp

Motorola Solutions, Inc., Ex1003, p. 66

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						
	6						
	7						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	8							
	9							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	10	USPTO 2012-1-17 Response to October 14, 2011 Nonfinal Office Action from U.S. Application No. 12/340,468 [Attorney Docket No. 03919.0126]
	11	
	12	
	13	
	14	
	15	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
/L.M./	6	EP1622044	2/2006	EPO			X	
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	
	9	
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: June 20, 2012

Customer No. 86421

/Lam Mai/ (01/13/2014)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer, et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
/L.M./	1	2007/0104121	05/2007	Shaffer et al.			
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation	
							Yes	No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	8	USPTO 2012-9-20 Non-Final Office Action from U.S. Application No. 12/722,389 [Attorney Docket No. 03919.0165 (960821)]
	9	
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer, et al.	
	Filing Date August 16, 2011	Group Art Unit 2845 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	8	USPTO 2013-10-4 Non-Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
/L.M./	9	USPTO 2013-4-5 Notice of Allowance from U.S. Application No. 12/722,389 [Attorney Docket No. 03919.0165 (960821)]
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	5,539,811	07/1996	Nakamura et al.			
	2	6,011,841	01/2000	Isono			
	3	6,404,873	6/2002	Beyda et al.			
	4	6,408,327	6/2002	McClennon et al.			
	5	6,418,214	7/2002	Smythe et al.			
	6	6,453,022	9/2002	Weinman, Jr.			
	7	6,501,739	12/2002	Cohen			
	8	6,501,740	12/2002	Sun et al.			
	9	6,608,820	8/2003	Bradshaw, Jr.			
	10	6,708,030	03/2004	Horikawa			
	11	6,850,496	2/2005	Knappe et al.			
	12	6,792,092	9/2004	Michalewicz			
	13	6,850,496	2/2005	Knappe et al.			
	14	6,944,137	9/2005	Pan et al.			
	15	6,965,767	11/2005	Maggenti et al.			
	16	6,982,961	1/2006	Refai et al.			
	17	6,987,480	1/2006	Kotick et al.			
	18	6,987,841	1/2006	Byers et al.			
	19	6,993,120	1/2006	Brown et al.			
	20	6,996,088	02/2006	Kroon et al.			
	21	6,996,406	2/2006	Lection et al.			
	22	6,999,782	2/2006	Shaughnessy et al.			
	23	6,999,783	2/2006	Toyryla et al.			
	24	7,003,286	2/2006	Brown et al.			
	25	7,006,607	2/2006	Garcia			
	26	7,010,106	3/2006	Gritzer et al.			
	27	7,010,109	3/2006	Gritzer et al.			

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	28	7,010,275	3/2006	Davies			
	29	7,013,279	3/2006	Nelson			
	30	7,031,700	4/2006	Weaver et al.			
	31	7,034,678	4/2006	Burkley et al.			
	32	7,035,385	4/2006	Levine et al.			
	33	7,058,168	6/2006	Knappe et al.			
	34	7,062,286	6/2006	Grivas et al.			
	35	7,079,857	7/2006	Maggenti et al.			
	36	7,149,477	12/2006	Ogami			
	37	7,237,117	6/2007	Weiss			
	38	7,292,544	11/2007	Roher et al.			
	39	7,379,961	5/2008	Matsuoka			
	40	7,418,090	3/2005	Reding et al.			
	41	7,426,192	9/2008	Amano et al.			
	42	7,466,812	12/2008	Mahy et al.			
	43	7,508,840	3/2009	Delaney			
	44	7,526,306	4/2009	Brems et al.			
	45	7,558,221	7/2009	Nelson et al.			
	46	7,606,256	10/2009	Vitebsky et al.			
	47	7,633,914	12/2009	Shaffer et al.			
	48	7,636,339	12/2009	Shaffer et al.			
	49	7,706,339	4/2010	Shaffer et al.			
	50	7,821,978	10/2010	Staack			
	51	7,831,270	11/2010	Kalley et al.			
	52	7,860,070	12/2010	Shaffer et al.			
	53	7,860,958	12/2010	Yoon et al.			
	54	7,869,386	1/2011	Shaffer et al.			
	55	7,933,286	04/2011	Vitebsky et al.			

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	56	2002/0152305	10/2002	Jackson et al.			
	57	2004/0139320	7/2004	Shinohara			
	58	2004/0249949	12/2004	Gourraud et al.			
	59	2005/0015444	1/2005	Rambo			
	60	2005/0232207	10/2005	Antoniadis et al.			
	61	2006/0114847	6/2006	Dssouli et al.			
	62	2006/0118636	6/2006	Miles et al.			
	63	2006/0165060	7/2006	Dua			
	64	2007/0030144	2/2007	Titus et al.			
	65	2007/0060144	3/2007	Mills et al.			
	66	2007/0115848	5/2007	Chean et al.			
	67	2007/0202907	8/2007	Shaffer et al.			
	68	2007/0202908	8/2007	Shaffer et al.			
	69	2007/0239824	10/2007	Shaffer et al.			
	70	2007/0280203	12/2007	Shaffer et al.			
	71	2008/0037461	2/2008	Biltz et al.			
	72	2008/0159128	7/2008	Shaffer et al.			
	73	2008/0167049	7/2008	Karr et al.			
	74	2008/0280637	11/2008	Shaffer et al.			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	75							
	76							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	77	Herther, Jay, et al., "Voice-Over-interintranet Protocol for Critical Communications," Urgent Communications, The Official Publication of IWCE, August 2001, 3 pages http://urgentcomm.com/mag/radio_voiceoverintranet_protocol_critical/

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	78	Interoperability Gateway, OpenSky, NetworkFirst, P25[IP], Data Sheet, M/A-COM, Inc. ECR-7054, [Printed on June 28, 2011] http://www.pspc.harris.com/media/ECR-7054E_tcm27-10470.pdf
	79	McKay, Jim, "Intact Amid Chaos," Government Technology, March 2005, 3 pages http://www.bultronic.net/documents/articles/intact%20amid%20chaos.pdf
	80	Urgent Communications: Service, Safety, Security, "5 for '05 Technologies," December 1, 2004; 6 pages; http://urgentcomm.com/mag/publicsafety/radio_technologies/
	81	Urgent Communications: Service, Safety, Security, "M/A-Com Emphasizes Power of IP in Seven Announcents at APCO," August 18, 2002, 5 pages http://urgentcomm.com/products/new/radio_macom_emphasizes_power/index.html
	82	NetworkFirst Interoperability Solved, Data Sheet, M/A-COM, Inc., ECR-7018A, [Printed on June 28, 2011] 6 pages; http://www.ka-omminc.com/PDF/NetworkFirstRevised5_03.pdf
	83	Polk, J., et al., "Dynamic Host Configuration Protocol Option for Coordinate-based Location Configuration Information," Network Working Group, Internet RFC 3825, July 2004, 15 pages
	84	Rivero-Angeles, Mario et al., "Random-Access Control Mechanism Using Adaptive Traffic Load in ALOHA and CSMA Strategies for EDGE," IEEE Transactions on Vehicular Technology, Vol. 54, No. 3, May 2005; Abstract Only http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1433259
	85	Trimeche, M., "Digital Rights Management for Visual Content in Mobile Applications," published 9/27/2004; ISBN)-7803-8379-6; ©2004 IEEE; http://ieeexplore.ieee.org; pp. 95-98
	86	V[IP] Dispatch Console, OpenSky, NetworkFirst, P25[IP], Data Sheet, M/A-COM, Inc. ECR-7241C, ©2006 M/A-COM, Inc., 2 pages http://www.bultronic.net/documents/NetworkFirst/VIP%20Dispatch%20Console.pdf
	87	USPTO 2011-11-9 Notice of Allowance from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer, et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	8	USPTO 2012-12-18 Response to September 20, 2012 Non-Final Office Action from U.S. Application No. 12/722,389 [Attorney Docket No. 03919.0165 (960821)]
	9	
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
/L.M./	1	2003/0055711	3/2003	Doherty			
/L.M./	2	2007/0293240	12/2007	Drennan			
/L.M./	3	2011/0239252	01/2006	Kazama et al.			
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	8	USPTO 2012-3-9 Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
	9	
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: March 15, 2012

Customer No. 86421

/Lam Mai/ (01/13/2014)

Receipt date: 06/20/2012

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
/L.M./	8	USPTO 2012-5-24 RCE Response to March 9, 2012 Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
	9	
	10	

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	2005/0171954	08/2005	Hull et al.			
	2	2006/0281471 A1	12/14/2006	Shaffer et al.			
	3	2007/0203996	8/2007	Davitz et al.			
	4	2007/0266097	11/2007	Harik et al.			
	5	2007/0271336	11/2007	Ramaswamy			
	6	2007/0282621	12/2007	Altman et al.			
	7	2008/0005249	01/2008	Hart			
	8	2008/0045236	02/2008	Nahon et al.			
	9	2009/0144377	6/2009	Kim et al.			
	10	6,094,578	07/25/2000	Purcell et al.			
	11	6,178,237	1/2001	Horn			
	12	6,185,205	02/06/2001	Sharrit et al.			
	13	6,233,315	05/15/2001	Reformato et al.			
	14	6,327,567	12/2001	Willehadson et al.			
	15	6,385,461	5/2002	Raith			
	16	6,721,284	04/2004	Mottishaw et al.			
	17	6,813,250	11/02/2004	Fine et al.			
	18	6,912,389	06/28/2005	Bright et al.			
	19	7,072,952	07/04/2006	Takehiro et al.			
	20	7,339,900	03/04/2008	Perlman			
	21	7,352,707	04/01/2008	Ho et al.			
	22	7,369,513	05/06/2008	Sankaran			
	23	7,460,492	12/02/2008	Portolani et al.			
	24	7,463,597	12/09/2008	Kompella			
	25	7,710,983	05/2010	Zheng et al.			
	26	7,953,859	05/2011	Kiefhaber et al.			

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	27							
	28							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	29	USPTO 2011-10-11 Response to Nonfinal Office Action mailed July 11, 2011 from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]
	30	USPTO 2011-10-14 Nonfinal Office Action from U.S. Application No. 12/340,468 [Attorney Docket No. 03919.0126]
	31	Wikipedia, "Minimum spanning tree," http://en.wikipedia.org/wiki/Minimum_spanning_tree, 12/18/2008, 5 pages
	32	Wikipedia, "Distributed minimum spanning tree," http://en.wikipedia.org/wiki/Distributed_minimum_spanning_tree, 12/18/2008, 2 pages
	33	Bender, Ron, et al., "Multiple Choices for Critical Communications," Urgent Communications, The Official Publication of IWCE, October 2001, 4 pages; http://urgentcomm.com/mag/radio_multiple_choices_critical_2/
	34	C3 Maestro^{IP} Dispatch Console, OpenSKY, NetworkFirst, P25^{IP}, Data Sheet, M/A-COM, Inc. ECR-7160A, [Printed on June 28, 2011] 2 pages http://www.pspc.harris.com/media/ECR-7160E_tcm27-10458.pdf
	35	Cisco IPICS, Solution Overview, "Collaborative Incident Response," ©Cisco Systems, Inc. 2010, 2 pages, www.cisco.com/go/ipics,

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

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

BIB DATA SHEET

CONFIRMATION NO. 3197

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
13/210,967	08/16/2011 RULE	455	2845	03919-0117-CON (976240)

APPLICANTS

INVENTORS

Shmuel Shaffer, Palo Alto, CA;
Steven Christenson, Campbell, CA;

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

This application is a CON of 12/340,417 12/19/2008 PAT 8041378

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

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

08/25/2011

Foreign Priority claimed	☐ Yes ☑ No	☑ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☐ Yes ☑ No					
Verified and Acknowledged	/Lam T Mai/ Examiner's Signature	Im Initials	CA	5	20	3

ADDRESS

Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032
UNITED STATES

TITLE

SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

FILING FEE RECEIVED		
1090	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	Art Unit
	LAM T MAI	2845

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	521	1/13/2014	lammai
370	331,465,266,270	1/13/2014	lammai
709	204,227,239,224,239,206,223	1/13/2014	lammai

SEARCH NOTES		
Search Notes	Date	Examiner
east/plus/IEEE/Internet	1/13/2014	lammai
consulted with Raymond Dean	1/13/2014	lammai
consulted with Philip Sobutka	1/13/2014	lammai

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
455	521	1/13/2014	lammai

	/LAM T MAI/ Primary Examiner, Art Unit 2845

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	4,359,603	11/1982	Heaton			
	2	4,730,306	3/1988	Uchida			
	3	5,048,082	9/1991	Krafft et al.			
	4	5,099,510	3/1992	Blinken et al.			
	5	5,436,896	7/1995	Anderson et al.			
	6	5,539,741	7/1996	Barraclough et al.			
	7	5,625,407	4/1997	Biggs et al.			
	8	5,889,769	03/1999	Mizuno			
	9	6,006,848	12/1999	Grube et al.			
	10	6,011,851	1/2000	O'Connor et al.			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	11							
	12							
	13							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	14	Wikipedia, "Plectron," http://en.wikipedia.org/wiki/Plectron, 12/18/2008, 2 pages
	15	Thunder Eagle, Inc. – Radio Wireless Alerting Systems, "MRI-100™: Multi Radio Interface," http://www.thuneagle.com/mri100.htm, 12/18/2008, 2 pages
	16	Positron Public Safety Systems, "Product Specifications: Power RADIO," http://www.positron911.com/products/powerRADIO/powerRADIO_specs.asp, 12/18/2008, 2 pages

Examiner Signature	Date Considered
/Lam Mai/ (01/13/2014)	

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	Art Unit
	LAM T MAI	2845

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

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

CLAIM		DATE								
Final	Original	01-13-2014								
	1	-								
	2	-								
	3	-								
	4	-								
	5	-								
	6	-								
	7	-								
	8	-								
	9	-								
	10	-								
	11	-								
	12	-								
	13	-								
	14	-								
	15	-								
	16	-								
	17	-								
	18	-								
	19	-								
	20	-								
	21	-								
	22	-								
	23	-								
	24	-								
	25	✓								
	26	✓								
	27	✓								
	28	✓								
	29	✓								
	30	✓								
	31	✓								
	32	✓								
	33	✓								
	34	✓								
	35	✓								
	36	✓								

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	13210967	SHAFFER ET AL.
	Examiner	**Art Unit**
	LAM T MAI	2845

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

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

CLAIM		DATE								
Final	Original	01-13-2014								
	37	✓								
	38	✓								
	39	✓								
	40	✓								
	41	✓								
	42	✓								
	43	O								
	44	O								

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer, et al.	
	Filing Date August 16, 2011	Group Art Unit 2845 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	USPTO 2013-10-4 Non-Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
	9	USPTO 2013-4-5 Notice of Allowance from U.S. Application No. 12/722,389 [Attorney Docket No. 03919.0165 (960821)]
	10	

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	17148731
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	16-OCT-2013
Filing Date:	16-AUG-2011
Time Stamp:	22:32:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	0117-CON-IDS-Transmittal.pdf	124571 69d79f9e221c4e8e76b62b1b4bf115332d0ff0f8	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO-Form-1449.pdf	104674 ee9e36bd9d66848221e191671a1e5c9aba0b04d5	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	229245

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer, et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2845
Examiner:	Lam T. Mai
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,468 [Attorney Docket No. 03919.0126]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)]; U.S. Patent Nos. 8,041,378 [Application Serial No. 12/340,417 (Attorney Docket No. 03919.0117)]; 8,126,494 [Application Serial No. 12/340,451 (Attorney Docket No. 03919.0125)]; and 8,495,142 [Application Serial No. 12/722,389 (Attorney Docket No. 03919.0165)]. Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: October 16, 2013

Customer No. 86421

PLUS Search Results for S/N 13210967, Searched Fri Sep 27 13:35:22 EDT 2013

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

8041378 65
8041378 65
20100159977 65
20110299404 65
5689501 63
5809012 63
4477809 63
4794376 63
5243651 63
5254081 63
5255308 63
5355126 63
5424727 63
5649302 63
5794144 63
5835779 63
5910777 63
6108537 63
6125275 63
6154648 63
6198407 63
6272190 63
20060029147 63
20060029148 63
20070199040 63
20070283379 63
20110280545 63
8306204 60
20110200183 60
4385359 58
5563509 58
4559624 58
4562581 58
4621879 58
4623854 58
4872385 58
4890527 58
5413375 58
5940071 58
4246453 58
4249514 58
4272373 58
4289187 58
4298360 58
4300748 58
4305053 58
4341240 58
4358080 58
4388083 58
4421363 58

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer, et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	USPTO 2012-12-18 Response to September 20, 2012 Non-Final Office Action from U.S. Application No. 12/722,389 [Attorney Docket No. 03919.0165 (960821)]
	9	
	10	

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	14966376
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	14-FEB-2013
Filing Date:	16-AUG-2011
Time Stamp:	20:23:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	123949 7bfe951e30fc86e4772dc80ffd6b18705508afd7	no	2
Warnings:					
Information:					

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTOForm1449.pdf	104550 27704d9647092c93bd54b3444fad6ec64dd52344	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	228499

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer, et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)]; 8,041,378 [Attorney Docket No. 03919.0117]; and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: February 14, 2013

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer, et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	2007/0104121	05/2007	Shaffer et al.			
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	USPTO 2012-9-20 Non-Final Office Action from U.S. Application No. 12/722,389 [Attorney Docket No. 03919.0165 (960821)]
	9	
	10	

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	13966468
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	11-OCT-2012
Filing Date:	16-AUG-2011
Time Stamp:	18:06:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117CON-IDS-Transmittal.pdf	124489 d1a54ba8050e1ad55fe1196cb50e8e3978cb1256	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO-1449.pdf	104547 ebc5dd7c0f751f3ca01b7528245a64a2fa3d38f9	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	229036

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer, et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)]; 8,041,378 [Attorney Docket No. 03919.0117]; and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: October 11, 2012

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	USPTO 2012-5-24 RCE Response to March 9, 2012 Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
	9	
	10	

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	13067014
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	20-JUN-2012
Filing Date:	16-AUG-2011
Time Stamp:	21:53:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117CON-IDSTransmittal.pdf	124457 fe08ec2609dad7515c927ec04bffbd4fdad220cb	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO-Form-1449.pdf	104530 c32a180ae43c31d373217d6732555957240fff6d	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	228987

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: June 20, 2012

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6	EP1622044	2/2006	EPO			X	
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	
	9	
	10	

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

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

(11) EP 1 622 044 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.02.2006 Bulletin 2006/05

(51) Int Cl.:
G06F 17/30 *(2006.01)* ***G06F 3/033*** *(2006.01)*

(21) Application number: **05100425.7**

(22) Date of filing: **24.01.2005**

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

(30) Priority: **23.01.2004 US 764176**

(71) Applicant: **MICROSOFT CORPORATION**
Redmond, Washington 98052-6399 (US)

(72) Inventors:
- **Turski, Andrzej**
  Redmond, WA Washington 98052 (US)
- **Farnham, Shelly D.**
  Redmond, WA Washington 98052 (US)

(74) Representative: **Grünecker, Kinkeldey,**
Stockmair & Schwanhäusser
Anwaltssozietät
Anwaltssozietät
Maximilianstrasse 58
80538 München (DE)

(54) Selective multi level expansion of data base via pivot point data

(57) Systems and methodologies are provided for data visualization, retrieval and management of a logically ordered list by a selective multi level expansion of pivot point data. Such pivot points can represent hierarchy expansion designators to a subsequent level, which can include user created groups/clusters of data. The present invention facilitates data management by advantageously combining; the logical order of data with relevance criteria that can indicate importance of the data to a user. The logical order of the data can be a user friendly order that is easily recognizable and independent of the relevance criteria.

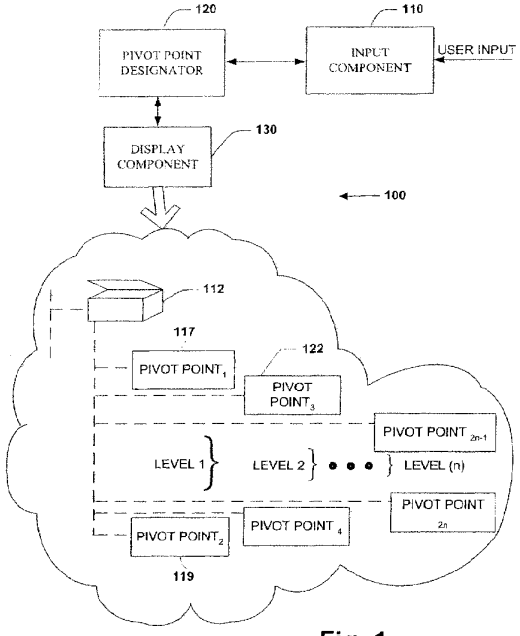


Fig. 1

Printed by Jouve, 75001 PARIS (FR)

EP 1 622 044 A1

Description

Technical Field

[0001] The present invention relates generally to data management, and more particularly to systems and methods of facilitating information search and retrieval within an ordered list by a selective multi level expansion of pivot point data.

Background of the Invention

[0002] Increasing advances in computer technology (*e.g.*, microprocessor speed, memory capacity, data transfer bandwidth, software functionality...) have generally contributed to increased computer application in various industries. Today, computer users produce and manage large amounts of data or information, as compared to their respective work load in prior years. Generally, computer users now often multitask numerous items *(e.g.,* documents, spreadsheets, statements, presentations, media...) simultaneously and in conjunction with applications that facilitate management of these items.

[0003] Typically, a continuing problem in computer systems has been handling the growing amount of information or data available. The sheer amount of information being stored on disks or other media for databases in some form has been increasing dramatically. While files and disks were measured in thousands of bytes a few decades ago - at that time being millions of bytes (megabytes), followed by billions of bytes (gigabytes) - now databases of a million megabytes (terabytes) and even billions of megabytes are being created and employed in day-to-day activities.

[0004] As such, various software-based tools have been developed to aid user(s) with multi-tasking. One very powerful tool is a file data retrieval and organization system, which allows users to quickly view and access directories and their respective content. For example, a file management system can present directories and/or contents via a tree-based hierarchy (*e.g.,* object hierarchy) - which can be a logical and user intuitive scheme for presentation of information associated with file management.

[0005] At the same time, in designing such tools a key idea of the database-based operating system should generally be an ability to find desired items quickly by executing a query that can involve a limited number of item properties. While such query approach can seem powerful, the success of the system generally depends on an ability to create a user interface that will make queries simple and intuitive for average users. For example, in its native form, database queries, (e.g. expressed in T-SQL language), can be difficult to handle even for professional programmers, much less the average end user. In addition, it is desirable for the query to speculate a relevance of a result for a given context.

[0006] At the same time, a typical rule of thumb based on the Pareto principle seems to apply to data base management, leading to much waste and inefficiency. Such rule of thumb, also referred to as the 80/20 rule, as applied to database list management seems to suggest that it is likely that only 20% of the data is accessed 80% of the time by a particular user. The remaining 80% of the data is accessed much less frequently, if at all. As the size of a database continues to grow, keeping the rarely accessed portion of the data base online in disk storage connected to a computer system can be an increasingly costly and wasteful strategy.

[0007] In general, many users employing a data base list such as a list of people now face a deluge of information from which to sort through and/or respond to (*e.g.* e-mails), such that the capability of being able to send, receive and process information through the data base list has almost become a hindrance to being productive. Accordingly, with such large numbers of people on a given list, it hence becomes difficult to manage information according to which person on the list is important, and who is not as important, without substantially expending valuable time for such determination. At the same time from a social standpoint, ordering a list of people, based merely on an importance criteria, can create negative connotations feelings of inferiority for the person who is categorized below others.

[0008] Therefore, there is a need to overcome the aforementioned deficiencies associated with conventional systems and methodologies related to data base lists.

Summary of the Invention

[0009] The following presents a simplified summary of the invention in order to provide a basic understanding of one or more aspects of the invention. This summary is not an extensive overview of the invention. It is intended to neither identify key or critical elements of the invention, nor to delineate the scope of the present invention. Rather, the sole purpose of this summary is to present some concepts of the invention in a simplified form as a prelude to the more detailed description that is presented hereinafter.

[0010] The present invention provides for systems and methods that facilitate information search and retrieval within an ordered list by a selective multi level expansion of pivot point data. Such an arrangement facilitates data management by concurrently combining: a logical order of data, with a relevance criteria that can indicate importance of the data to a user. The logical order of the data can be independent of the relevance criteria. Moreover, the present invention facilitates visual presentation of data to users of devices with limited displays, *e.g.* mobile electronic units such as PDAs, hand held appliances cellular phones, portable computers, programmable toys, watches, and the like.

[0011] According to one aspect of the present inven-

Motorola Solutions, Inc., Ex1003, p. 112

tion, a data list is initially arranged according to a logical order. Such logical order, for example, can be a user friendly order that is easily recognizable by a user; (*e.g.* simple and fixed in a user's mind; such as an alphabetical arrangement of names for data containing a list of people, or a sequential number order for data containing numbers, or important dates ordered chronologically.) A selective number of data can be designated as pivot points based on the relevance criteria, which can be based in part on the importance of the selected data to a user. When access to the data base is requested, such pivot points are initially presented to the user at a first level, and act as indices for the data list multi-level classification. The pivot points further represent hierarchy expansion designators to the second level, which can include user created groups/clusters of data.

[0012] Similarly, at a second level a selective number of data are designated as pivot points based on the relevance criteria, and can further selectively expand the list to a third level. Similar expansion can be repeated as the user continues to delve further into the base list and to up a level N, ("N" being an integer), wherein the various levels can display the data by different colors or shades thereof. Accordingly, at each expansion interval the user is presented with a limited number of data that are most relevant to the user, and managing/viewing of the data is thus facilitated.

[0013] In a related aspect of the present invention, the pivot points can be changed, and also updated dynamically, since the user's activities or state can affect the relevance criteria at any given time. The pivot points can be automatically updated *via* a priorities system, wherein the relevance criteria can be an importance, urgency, and/or any other suitable criteria as defined by a specific user. A value can be assigned to data, and the data with a value at a predetermined range selected as pivot points for each level. For example, when the data is a people list (*e.g.* people's names), the relevance criteria to user, for a particular person on the data base list, can be measured in terms of the number of e-mail messages sent from the user, (as opposed to being received by the user, which can additionally be employed as a secondary order, to that particular person. The relevance criteria can also consider the content of the messages and indicate a classification level (*e.g.,* importance of the message). By automatically updating pivot points according to a determined classification such as importance, urgency, or criticality, much time is saved over conventional data base list management systems by mitigating the amount of time users sort and process through a plurality of data lists. In addition, for a people list data base, since the logical order can be alphabetical, the negative connotation associated with positioning people's name at the various levels can be minimized; *e.g.* any implication of inferiority for a data (person's name) can be justified because the logical list is arranged alphabetically. Moreover, if the relevance criteria are not fully accurate, the mistakes in arranging the data base can still be curable as the data base already employs a user intuitive logical order.

[0014] In accordance with one particular aspect of the present invention, relevance for a data can be generated based on a classifier, such as by determining the likelihood that the data is of high or some other priority to the user, (*e.g.* content based classification of emails sent by the user to recipients on the data list.) The classifier may be a Bayesian classifier, a support vector machine, and/or other type of classifier. The classifier can consider data features such as the structural relationship between the user and the data, as well as the time of events associated with the data. Other considerations such as an expected loss of non-designation of the data as a pivot point(s) can be determined in part based on the relevance criteria, as well as an expected cost of outputting the data as a pivot point at the current time. The user can also be alerted, for example, in response to determining that the expected loss for non-designation of a data as a pivot point is greater than the expected cost, in accordance with a profile (*e.g.*, information store of user preferences). The relevance criteria in the context of a user's objective can also consider significance of other information, for example for e-mail communication purposes the relevance criteria can also consider organizational hierarchy of co-workers, closeness of family members and the like.

[0015] A current profile can be selected from a number of profiles, which can be editable by the user to reflect a different context (*e.g.,* for a people list data base, the names associated with people at home, at work, leisure time, and the like.) The profiles are schedulable on a per-day and by-time basis, and can be locked to remain active unless subsequently unlocked. The profile can have a priority threshold settable by the user thus controlling the amount and/or types of data designated as pivot points for expansion to other levels.

[0016] In accordance with an aspect of the present invention, efficiency can be increased on the user interface side when frequently accessed information is readily displayed to the user, and not obscured by irrelevant entries. Moreover, access to low priority information is still possible, albeit by taking additional steps to delve into subsequent levels of the list hierarchy. Accordingly, low priority information is not completely removed from a user's access.

[0017] In addition, a query search performed on a data base list of the present invention is greatly facilitated as the query need not be calculated nor performed on all data. Put differently, a query search is initially performed on an initial level before progression to a subsequent level, and thus system resources can be preserved and properly allocated.

[0018] To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described. The following description and the annexed drawings set forth in detail certain illustrative aspects of the invention. However, these aspects are indicative of but a few of the various ways in which the

Motorola Solutions, Inc., Ex1003, p. 113

principles of the invention may be employed. Other aspects, advantages and novel features of the invention will become apparent from the following detailed description of the invention when considered in conjunction with the drawings.

Brief Description of the Drawings

[0019]

Fig. 1 is a block diagram of an object hierarchy structure system in accordance with an aspect of the present invention.

Fig. 2 is a schematic block diagram of a priorities system that designates pivot points for various hierarchy levels in accordance with an aspect of the present invention.

Fig. 3 is a block diagram illustrating a classifier in accordance with an aspect of the present invention.

Fig. 4 is a schematic block diagram illustrating the relevance criteria for designating the pivot points and defined based on message content classification in accordance with an aspect of the present invention.

Fig. 5 is a diagram of an exemplary user interface and object hierarchy structure in accordance with an aspect of the present invention.

Fig. 6 is a diagram of a user interface of a people list in accordance with an aspect of the present invention.

Fig. 7 is another example of pivot point hierarchy structure in accordance with an aspect of the present invention

Fig. 8 illustrates a flow chart of a query search methodology in a people list data base in accordance with an aspect of the present invention.

Fig. 9 is a schematic block diagram illustrating a suitable computing environment in accordance with an aspect of the present invention.

Detailed Description of the Invention

[0020] The present invention is now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It may be evident, however, that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to facilitate describing the present invention.

[0021] As used in this application, the term "computer component" is intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a computer component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a server and the server can be a computer component. One or more computer components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers.

[0022] The present invention provides for systems and methods that facilitate information search and retrieval within an ordered list by advantageously combining benefits of ordering data *via* a simple logical order, and viewing or accessing selected data based on relevance criteria that indicates an importance of data to the user. Such simultaneous combination of the logical order for data lists and the relevance criteria facilitates the data base management and query. In addition, the relevance criteria allows for designation of data in the logical order of the list as pivot points, which can be subsequently employed for a selective multi level expansion of the data list. Accordingly, accuracy and speed can be improved over conventional data management, retrieval and visualization of large data lists.

[0023] Fig. 1 illustrates a system overview in connection with one particular data list display and management system. A data list hierarchy structure system 100 in accordance with an aspect of the present invention is illustrated. An input component 110 receives instructions from a user who is interacting with a data list 112, e.g. a people list. Such data list 112 can initially be arranged according to a logical order that is readily recognizable by a user and is simple or fixed in a user's mind; such as an alphabetical arrangement of names for a data base containing a list of people, or a sequential number order for a data base containing numbers. The input component 110 can include a computer keyboard, mouse, pointing device(s), voice activated computer component and the like. The input component 110 receives information from a user who intends to access the data base list, for example, for search and selection of a particular person's name in the people data list.

[0024] Based on a relevance criteria to the user, a selective number of data are designated as pivot points, *via* a pivot point designator 120 that can be part of the portable appliance employed by the user. Such pivot points are indices that are initially presented to the user at a first level, when access to the data base is requested. For example, as illustrated in Fig. 1, initially and at level 1, a user searching for specific data from the data list 112 is presented with a group of pivot data that are selected based on the relevance criteria to the user, and are arranged according to the logic order of the data list. Such pivot points are illustrated as objects 117 and 119, and are selected by the designator 120. Such designator 120 can for example be a classifier, which can also dynamically update and change the pivot points. The dynamic update can be in part based on the relevance criteria, which itself can be a function of; a user's state, e-mail management, e-mail content/context specific with re-

Motorola Solutions, Inc., Ex1003, p. 114

spect to the data list and the user, as discussed in detail *infra*. The pivot points can be displayed concurrently with earlier designated pivot points, via a display component 130. It is to be appreciated that the generation of the pivot point 122 can be automatic, or require user action depending upon particular preferences. Moreover, it is to be appreciated that each level can include any number of pivot points depending upon the relevance criteria, the size of the data base and the like.

[0025] The pivot points represent hierarchy expansion designators to a second level, which can also include user created groups/clusters of data. In response to an instruction by a user to further expand the data list, by for example clicking a pointer in a vicinity of a pivot point, between pivot points, or other designated locations, the user obtains access to a second level that displays a predetermined number of the data list to the user, via the display component 130.

[0026] Similarly, at the second level a selective number of data (*e.g.* 122) are designated as pivot points based on the relevance criteria, and can further selectively expand the list to a third level. Similar expansion can be repeated as the user continues to delve into a level N (where N is a positive integer), with various levels displaying the data with different colors or shades thereof. Accordingly, at respective expansion intervals the user is presented with a limited number of data that are the most relevant to the user, and managing/viewing of the data is facilitated.

[0027] Referring now to Fig. 2 a system 210 illustrates a priorities system 212 that designates pivot points based at least in part upon the relevance criteria to a user, in accordance with an aspect of the present invention. The priorities system 212 operates on a data list 214, and generates a priority or measure of importance (*e.g.,* probability value that the data is of a high or low importance) for a specific user, and provides one or more pivot points with an associated priority value at an output 216 for each level of the data list hierarchy. As will be described in more detail below, classifiers can be constructed and trained to automatically assign measures of priorities to the data list. For example, the output 216 can be formatted such that data are assigned a probability that the data or object belongs in a category of high, medium, low or other degree category of importance. When the data is a people list, the data can be automatically sorted in a recipient box of an e-mail program (not shown), for example, according to the determined category of importance for the various levels 1 to n (n being a positive integer). The sorting can also include directing files to system folders having defined labels of importance. This can include having folders labeled with the degree of importance such as low, medium and high, wherein data determined of a particular importance are sorted to the associated folder. Similarly, one or more audio sounds or visual displays (*e.g.,* icon, symbol) can be adapted to alert the user that a pivot point having a desired priority has been set or located for a particular level.

[0028] According to another aspect of the present invention, a notification platform (not shown) can be employed in conjunction with the priorities system 212 to notify a user of changed pivot points based upon a user's specific state or acts at a particular time. For example, if the user sends three e-mails to a recipient who is on the user's list of people data base within a time span of thirty minutes, the notification platform can notify the user that the recipient has been assigned a pivot point at level one. The notification platform can also make decisions regarding when, where, and how to notify the user.

[0029] In the discussion *infra,* the generation of a pivot points for a data base of people's names (such as e-mail recipients) is described via an automatic classification system and process, wherein the importance and/or relevance of the recipient to the user is determined based on the content of the e-mail sent from the user to the recipient. Based on whether the e-mail sent to the recipient has a high importance, a decision is made whether the recipient is to be designated as a pivot point for a particular level.

[0030] The description in this section is provided in conjunction with Fig. 3 and Fig. 4, the former which is a diagram illustrating explicit and implicit training of a text classifier, and the latter which is a diagram depicting how a priority for a text is generated by input to the text classifier. It is to be appreciated that the invention is not limited to defining the relevance criteria in terms of the content or context of e-mails sent by the user to recipients, and any other relevance criteria suitable for a user can be employed instead.

[0031] Referring now to Fig. 3, a text/data classifier 320 can be trained explicitly, as represented by the arrow 322, and implicitly, as represented by the arrow 324 to perform classification in terms of relevance to a user of the data base list. Explicit training represented by the arrow 322 is generally conducted at the initial phases of constructing the classifier 320, while the implicit training represented by the arrow 324 is typically conducted after the classifier 320 has been constructed - to fine tune the classifier 320, for example, *via* a background monitor 334. Specific description is made herein with reference to an SVM classifier, for exemplary purposes of illustrating a classification training and implementation approach. Other text classification approaches include Bayesian networks, decision trees, and probabilistic classification models providing different patterns of independence may be employed. Text classification as used herein also is inclusive of statistical regression that is utilized to develop models of priority.

[0032] According to one aspect of the invention Support Vector Machines (SVM) are employed as the classifier 320. It is to be appreciated that other classifier models may also be utilized such as Naive Bayes, Bayes Net, decision tree and other learning models. SVM's are configured via a learning or training phase within a classifier constructor and feature selection module 326. A classifier is a function that maps an input attribute vector, x = (x1,

Motorola Solutions, Inc., Ex1003, p. 115

x2, x3, x4, *xn*), to a confidence that the input belongs to a class - that is, f(x) = *confidence(class).* In the case of text classification, attributes are words or phrases or other domain-specific attributes derived from the words (*e.g.,* parts of speech, presence of key terms), and the classes are categories or areas of interest (*e.g.,* levels of priorities).

[0033] An aspect of SVMs and other inductive-learning approaches is to employ a training set of labeled instances to learn a classification function automatically. The training set is depicted within a data store 330 associated with the classifier constructor 326. As illustrated, the training set may include a subset of groupings G1 through GN that indicate potential and/or actual elements or element combinations (e.g., words or phrases) that are associated with a particular category or relevance criteria. The data store 330 also includes a plurality of categories 1 through M, wherein the groupings can be associated with one or more categories. During learning, a function that maps input features to a confidence of class is learned. Thus, after learning a model, categories are represented as a weighted vector of input features.

[0034] For category classification, binary feature values (*e.g.*, a word occurs or does not occur in a category), or real-valued features (*e.g.*, a word occurs in an e-mail sent to a recipient with an importance weight r) are often employed. Since category collections may contain a large number of unique terms, a feature selection is generally employed when applying machine-learning techniques to categorization. To reduce the number of features, features may be removed based on overall frequency counts, and then selected according to a smaller number of features based on a fit to the categories. The fit to the category may be determined via mutual information, information gain, chi-square and/or substantially any other statistical selection technique. These smaller descriptions then serve as an input to the SVM. It is noted that linear SVMs provide suitable generalization accuracy and provide suitably fast learning. Other classes of nonlinear SVMs include polynomial classifiers and radial basis functions and may also be utilized in accordance with the present invention.

[0035] The classifier constructor 326 employs a learning model 332 in order to analyze the groupings and associated categories in the data store 330 to "learn" a function mapping input vectors to confidence of class. For many learning models, including the SVM, the model for the categories can be represented as a vector of feature weights, w, wherein there can be a learned vector of weights for each category. When the weights **w** are learned, new texts are classified by computing the dot product of **x** and **w,** wherein **w** is the vector of learned weights, and **x** is the vector representing a new text. A sigmoid function may also be provided to transform the output of the SVM to probabilities **P**. Probabilities provide comparable scores across categories or classes from which priorities can be determined.

[0036] The SVM is a parameterized function whose functional form is defined before training. Training an SVM generally requires a labeled training set, since the SVM will fit the function from a set of examples. The training set can consist of a set of N examples. Each example consists of an input vector, xi, and a category label, yj, which describes whether the input vector is in a category. For each category there can be N free parameters in an SVM trained with N examples. To find these parameters, a quadratic programming (QP) problem is solved as is well understood. There is a plurality of well-known techniques for solving the QP problem. These techniques may include a Sequential Minimal Optimization technique as well as other techniques. As depicted in Fig. 4, a text input 436, *e.g.* an e-mail sent by a user of the data list to a recipient, has been transformed into an input vector **x** and applied to the classifier 420 for each category. The classifier 420 (or 320 of Fig. 3) utilizes the learned weight vectors **w** determined by classifier constructor 326 of Fig. 3 (*e.g.,* one weight vector for each category) and forms a dot product to provide a priority output 438 of Fig. 4, wherein probabilities **P** may be assigned to the input text 336 indicating one or more associated priorities (*e.g.,* high, medium, low).

[0037] Referring back to Fig. 3, training of the text classifier 320 as represented by the arrow 322 includes constructing the classifier in 326, including utilizing feature selection. In the explicit training phase, the classifier 320 can be presented with both time-critical and non-time-critical texts, so that the classifier may be able to discriminate between the two, for example. This training set may be provided by the user, or a standard or default training set may be utilized. Given a training corpus, the classifier 320 first applies feature-selection procedures that attempt to find the most discriminatory features. This process employs a mutual-information analysis. Feature selection can operate on one or more words or higher-level distinctions made available, such as phrases and parts of speech tagged with natural language processing. That is, the text classifier 320 can be seeded with specially tagged text to discriminate features of a text that are considered important when sent *via* an e-mail from the user to a recipient.

[0038] Feature selection for text classification typically performs a search over single words. Beyond the reliance on single words, domain-specific phrases and high-level patterns of features are also made available. Special tokens can also enhance classification. The quality of the learned classifiers for e-mail criticality, for example, can be enhanced by inputting to the feature selection procedures handcrafted features that are identified as being useful for distinguishing among e-mail of different time criticality. Thus, during feature selection, one or more words as well as phrases and symbols that are useful for discriminating among messages of different levels of time criticality are considered.

[0039] As the following examples illustrate, tokens and/or patterns of value in identifying the relevance of recipients names and their designation as pivot points,

Motorola Solutions, Inc., Ex1003, p. 116

or to the criticality of messages sent by the user to people listed on the data base, include such distinctions as, and including Boolean combinations of the following:

Information in a Message Header

For example:

To: field (Recipient information)

[0040] Addressed to how many recipients and organizational relation to user, Addressed to a people designated as pivot points in prior classifications, Cc:'d to a recipient already designated as a pivot point, Bcc:'d to a recipient already designated as a pivot point.

From: field (Sender information)

[0041] Names on pre-determined list of important people, potentially segmented into a variety of classes of individuals, (*e.g.,* Family members, Managers, Bosses, and the like)
Senders identified as internal to the user's company/organization,
Information about the structure of organizational relationships relative to the user drawn from an online organization chart such as:

Managers user reports to,
Managers of the managers of users,
People who report to the user,

External business people.

Past tense Information

[0042] These include descriptions about events that have already occurred such as:

We met,
meeting went,
happened,
got together,
took care of,
meeting yesterday.

Future tense Information

[0043] Tomorrow,
This week,
Are you going to,
When can we,
Looking forward to,
Will this,
Will be.

Meeting and coordination Information

[0044] Get together,
Can you meet,
Will get together,
Coordinate with,
Need to get together,
See you,
Arrange a meeting,
Like to invite,
Be around.

Resolved dates

[0045] Future vs. past dates and times indicated from patterns of text to state dates and times explicitly or typical abbreviations such as:

On 5/2,
At 12:00.

Questions

[0046] Words, phrases adjacent to questions marks (?)

Indications of personal requests:

[0047] Can you,
Are you,
Will you,
you please,
Can you do,
Favor to ask,
From you.

Indications of need:

[0048] I need,
I'd like,
It would be great,
I want,
Please take care of.

Time criticality

[0049] happening soon,
right away,
deadline will be,
deadline is,
as soon as possible,
needs this soon,
to be done soon,
done right away,
this soon,
by [date],
by [time].

Motorola Solutions, Inc., Ex1003, p. 117

Importance

[0050] is important,
is critical,
Word, phrase + !,
Explicit priority flag status (low, none, high).

Length and volume of message

[0051] Number of bytes in component of new message.

[0052] It is noted that the word or phrase groupings depicted above illustrate exemplary words, groupings, or phrases that may be utilized from which to conduct classifier training, and obtaining relevance for a particular recipient. It is to be appreciated that other similar words, groups, or phrases may be similarly employed and thus the present invention is not limited to the illustrated examples. Obviously, other relevance criteria besides the above described content-based analysis of e-mails, can be defined and employed in accordance with the present invention.

[0053] Furthermore, still referring to Fig. 3, implicit training of the classifier 320, as represented by the arrow 324, can be conducted by monitoring the user work or usage patterns via the background monitor 334 that can reside on the user's desktop or mobile computer, for example. For example, as users work, and lists of mails to be responded to are reviewed, it can be assumed that messages from relevant users are read and responded to first, and lower-priority messages are reviewed later, and/or deleted. That is, when presented with a new e-mail, the user is monitored to determine whether he or she immediately opens the e-mail, and in what order, deletes the email without opening, and/or replies to the e-mail relatively in a short amount of time. Thus, the classifier 320 is adapted such that a user is monitored while working or operating a system, the classifier is periodically refined by training in the background and updated for enhancing real-time decision-making. Background techniques for building classifiers can extend from those that update the classifier 320 with new training messages. In this example, based on the activity of the user of the people list in opening e-mails, a determination can be made of whether the name of people sending those e-mails can be assigned as pivot points. In addition, for each message sent to recipient and inputted into the classifier, for example, a new case for the classifier can be created. The cases can be stored as negative and positive examples of texts that are either high or low priority, for example. As an example, one or more low, medium, and high urgency classes can be recognized such that the probabilities of membership in each of these classes are utilized to build an expected criticality. Larger numbers of criticality classes can be utilized to seek higher resolution. For example, as illustrated in Fig. 4, a training set of messages 440 sent by the user to recipients (e.g., very high, high, medium, normal, low, very low, *etc.)* can be initially employed to train a classifier 442 to designate the recipient's name as a pivot point. Accordingly, real-time classification can be achieved, as indicated at 444, and new pivot points are classified according to the number of examples resolved by the training set 440. In Fig. 4, three such categories are illustrated for exemplary purposes, however, it is to be appreciated that a plurality of such categories may be trained according to varying degrees of desired importance for each hierarchy level. As illustrated, the newly sent messages 444 to recipients from the data list can be employed to labeled, tagged and/or sorted the recipient's name into one or more folders 446, for example, according to the priorities assigned by the classifier 442 to the recipients of the e-mails. Such assigned priorities and/or relevancies to the user can then be applied in designating the pivot points at each level.

[0054] Turning now to Fig. 5, an exemplary object hierarchy structure 500 in accordance with an aspect of the present invention is illustrated. The structure 500 depicts a plurality of pivot point data (*e.g.* 510) that are part of a people data base list in accordance with one aspect of the present invention. The exemplary illustrated logical order for arranging the data base list is an alphabetical order of the first names. As explained earlier, the illustrated pivot points are designated and displayed to a user based upon the relevance criteria defined for that user. The illustrated pivot points can for example be designated upon the relevance criteria to the user being content/context based of sent e-mails as discussed in detail *supra*. The user can selectively expand the illustrated structure by clicking a pointer to the area shown by the "+" sign 520. In addition, as depicted in Fig. 6, clicking on the designated pivot point can display any type of information 600 that the user has associated with the pivot points. Although not shown in this figure, in addition to displayed pivot points, various functions (e.g., cut, copy, merge, paste, save, delete, send...) can be displayed for example via a pop-up menu upon the pivot point/node being expanded. It is to be appreciated that the clicking on the pivot points can also provide for certain functionalities to be associated with that particular pivot point, upon expansion as well as when the pivot point is not expanded (e.g., when a cursor is moved over the pivot point, the contents can be displayed as well as functionalities displayed that can be effected on the node and/or contents therein without having to expand the node).

[0055] Referring now to Fig. 7, a related aspect of the present invention is illustrated that enables a user to selectively expand and delve in to various levels to obtain desired information. As illustrated and explained earlier, a selective number of people's names are designated as pivot points based on the relevance criteria, which can be based in part on the importance of the selected data to a user. It is to be appreciated, that the methodology and system of semi-collapsed lists can be applied to many different classifications, and not just people. For

Motorola Solutions, Inc., Ex1003, p. 118

example, the present invention can also be applied to a list of keywords (categories), and a list of dictionary (encyclopedia) entries. In addition the list can comprise any data type such as for example; *e*-mails, instant messages, audio files, voice calls, video files, digital movies and generally any data or document employed by the user.

[0056] Initially, when the list is displayed to the user, it can contain merely the top few (*e.g.* 10-20) most significant names in an alphabetical order, which is the logical order employed at Fig. 7. This can offer a one step access to most frequently used names e.g. a simple one-click access to the information about the most relevant people. As illustrated in Fig. 7, at any given time all contact names are presentable to the user as an, alphabetically-ordered list, albeit in a folded or expandable manner. By clicking on the "-" sign the list can be collapsed to its state before expansion. In addition, various shades or colors can be employed for the various levels.

[0057] As such, the location of any name is fully predictable since the hidden names follow the same alphabetic logical order. In addition, names that are less significant to a user can require multiple expansions to be performed on the displayed list. Nonetheless, the logical order remains the same, even though various names can acquire (or lose) pivot point status, depending on the relevance criteria, and the user's activity.

[0058] Also, a search function can be employed in conjunction with the browsing aspect. For example by pressing the letter "M" on the keyboard, the name of an important person for the user that begins with such letter at a first level is presented.

[0059] However, if at the first level no person's name begins with the letter 'M', the list is automatically expanded up to a level where such name initially appears. Effectively, the search finds the first most important name satisfying the search criteria. If there are other names at the same expansion level fulfilling the criteria, they are shown alongside the first one. At the same time, the other less important names (from higher expansion levels) are hidden, whether they fit the search criteria or not. Such a methodology enables a user to view the most important or relevant entries first. Accordingly, the system attempts to guess what a user (most likely) has in mind, even if the query does not return a unique result.

[0060] Thus, the present invention facilitates data retrieval and visualization by simultaneously combining the logical order of data, with relevance criteria that indicates importance of the data to a user, and is independent of the logical order. In addition, for such a people list data base, since the logical order can be alphabetical, the negative connotation associated with positioning people's name at the various levels can be minimized; e.g. any implication of inferiority for a data (person's name) can be justified because the logical list is arranged alphabetically.

[0061] Referring now to Fig. 8, a query search 800 for a person's name based on the relevance criteria is depicted. As illustrated at 810, a query is submitted by the user and the search is initially conducted at level 1, and upon a limited number of data presented, at 820. At 830, a determination is made as to whether desired name has been located. If so, the method stops at 840, with the query results displayed to a user. Otherwise, the methodology continues to level 2 at 850, with similar steps continued to the last level of data base expansion n, at 890, wherein n is a positive integer. Such a methodology facilitates a user's search performed on a data base list as the query need not be calculated nor performed on all data. Put differently, a query search is initially performed on an initial level before progression to a subsequent level, and thus system resources can be preserved and properly allocated to other desired tasks. While the exemplary method is illustrated and described herein as a series of blocks representative of various events and/or acts, the present invention is not limited by the illustrated ordering of such blocks. For instance, some acts or events may occur in different orders and/or concurrently with other acts or events, apart from the ordering illustrated herein, in accordance with the invention. In addition, not all illustrated blocks, events or acts, may be required to implement a methodology in accordance with the present invention. Moreover, it will be appreciated that the exemplary method and other methods according to the invention may be implemented in association with the method illustrated and described herein, as well as in association with other systems and apparatus not illustrated or described.

[0062] In order to provide a context for the various aspects of the invention, Fig. 9 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the various aspects of the present invention may be implemented. While the invention has been described above in the general context of computer-executable instructions of a computer program that runs on a computer and/or computers, those skilled in the art will recognize that the invention also may be implemented in combination with other program modules. Generally, program modules include routines, programs, components, data structures, etc. that perform particular tasks and/or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the inventive methods may be practiced with other computer system configurations, including single-processor or multiprocessor computer systems, minicomputers, mainframe computers, as well as personal computers, hand-held computing devices, microprocessor-based or programmable consumer electronics, and the like. The illustrated aspects of the invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. However, some, if not all aspects of the invention can be practiced on stand-alone computers. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

Motorola Solutions, Inc., Ex1003, p. 119

[0063] With reference to Fig. 9, an exemplary system for implementing the various aspects of the invention includes a computer 920, including a processing unit 921, a system memory 922, and a system bus 923 that couples various system components including the system memory to the processing unit 921. The processing unit 921 may be any of various commercially available processors. Dual microprocessors and other multi-processor architectures also can be used as the processing unit 921.

[0064] The system bus may be any of several types of bus structure including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of commercially available bus architectures. The system memory may include read only memory (ROM) 924 and random access memory (RAM) 925. A basic input/output system (BIOS), containing the basic routines that help to transfer information between elements within the computer 920, such as during start-up, is stored in ROM 924.

[0065] The computer 920 further includes a hard disk drive 927, a magnetic disk drive 928, *e.g.,* to read from or write to a removable disk 929, and an optical disk drive 930, *e.g.*, for reading from or writing to a CD-ROM disk 931 or to read from or write to other optical media. The hard disk drive 927, magnetic disk drive 928, and optical disk drive 930 are connected to the system bus 923 by a hard disk drive interface 932, a magnetic disk drive interface 933, and an optical drive interface 934, respectively. The drives and their associated computer-readable media provide nonvolatile storage of data, data structures, computer-executable instructions, etc. for the computer 920. Although the description of computer-readable media above refers to a hard disk, a removable magnetic disk and a CD, it should be appreciated by those skilled in the art that other types of media which are readable by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, and the like, may also be used in the exemplary operating environment, and further that any such media may contain computer-executable instructions for performing the methods of the present invention.

[0066] A number of program modules may be stored in the drives and RAM 925, including an operating system 935, one or more application programs 936, other program modules 937, and program data 938. The operating system 935 in the illustrated computer may be substantially any commercially available operating system.

[0067] A user may enter commands and information into the computer 920 through a keyboard 940 and a pointing device, such as a mouse 942. Other input devices (not shown) may include a microphone, a joystick, a game pad, a satellite dish, a scanner, or the like. These and other input devices are often connected to the processing unit 921 through a serial port interface 946 that is coupled to the system bus, but may be connected by other interfaces, such as a parallel port, a game port or a universal serial bus (USB). A monitor 947 or other type of display device is also connected to the system bus 923 *via* an interface, such as a video adapter 948. In addition to the monitor, computers typically include other peripheral output devices (not shown), such as speakers and printers.

[0068] The computer 920 may operate in a networked environment using logical connections to one or more remote computers, such as a remote computer 949. The remote computer 949 may be a workstation, a server computer, a router, a peer device or other common network node, and typically includes many or all of the elements described relative to the computer 920, although only a memory storage device 950 is illustrated in Fig. 9. The logical connections depicted in Fig. 9 may include a local area network (LAN) 951 and a wide area network (WAN) 952. Such networking environments are commonplace in offices, enterprise-wide computer networks, Intranets and the Internet.

[0069] When employed in a LAN networking environment, the computer 920 may be connected to the local network 951 through a network interface or adapter 953. When utilized in a WAN networking environment, the computer 920 generally may include a modem 954, and/or is connected to a communications server on the LAN, and/or has other means for establishing communications over the wide area network 952, such as the Internet. The modem 954, which may be internal or external, may be connected to the system bus 923 via the serial port interface 946. In a networked environment, program modules depicted relative to the computer 920, or portions thereof, may be stored in the remote memory storage device. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be employed.

[0070] In accordance with the practices of persons skilled in the art of computer programming, the present invention has been described with reference to acts and symbolic representations of operations that are performed by a computer, such as the computer 920, unless otherwise indicated. Such acts and operations are sometimes referred to as being computer-executed. It will be appreciated that the acts and symbolically represented operations include the manipulation by the processing unit 921 of electrical signals representing data bits which causes a resulting transformation or reduction of the electrical signal representation, and the maintenance of data bits at memory locations in the memory system (including the system memory 922, hard drive 927, floppy disks 929, and CD-ROM 931) to thereby reconfigure or otherwise alter the computer system's operation, as well as other processing of signals. The memory locations wherein such data bits are maintained are physical locations that have particular electrical, magnetic, or optical properties corresponding to the data bits.

[0071] Although the invention has been shown and described with respect to certain illustrated aspects, it will be appreciated that equivalent alterations and modifica-

Motorola Solutions, Inc., Ex1003, p. 120

tions will occur to others skilled in the art upon the reading and understanding of this specification and the annexed drawings. In particular regard to the various functions performed by the above described components (assemblies, devices, circuits, systems, etc.), the terms (including a reference to a "means") used to describe such components are intended to correspond, unless otherwise indicated, to any component which performs the specified function of the described component (e.g., that is functionally equivalent), even though not structurally equivalent to the disclosed structure, which performs the function in the herein illustrated exemplary aspects of the invention. In this regard, it will also be recognized that the invention includes a system as well as a computer-readable medium having computer-executable instructions for performing the acts and/or events of the various methods of the invention.

[0072] In addition, while a particular feature of the invention may have been disclosed with respect to only one of several implementations, such feature may be combined with one or more other features of the other implementations as may be desired and advantageous for any given or particular application. Furthermore, to the extent that the terms "includes", "including", "has", "having", and variants thereof are used in either the detailed description or the claims, these terms are intended to be inclusive in a manner similar to the term "comprising."

Claims

1. A data management system comprising:

   a designator that analyzes data and creates a plurality of hierarchy levels, each hierarchy level represents subsets of the data designated as pivot points, the pivot point(s) for respective levels are selected from the data based upon relevance criteria to a user; and
   a display component that can selectively display the pivot points to the user as a function of logical order and relevance to the user.

2. The system of claim 1 the data comprises a list of people.

3. The system of claim 1, the logical order is alphabetical order.

4. The system of claim 1 the logical order is at least one of a numerical order and a chronological order.

5. The system of claim 1 further comprising a priority system with a classifier that determines the relevance of data to the user.

6. The system of claim 1, each expanded hierarchy level employs a different color or shade from a collapsed state thereof.

7. The system of claim 5, the classifier is provided with at least one of an explicit and implicit training.

8. The system of claim 7, the relevance criteria are in part based on a number of electronic messages sent from a user to a recipient in a predetermined time span.

9. The system of claim 7, the relevance criteria are in part based on content of electronic messages sent from a user to a recipient.

10. The method of claim 9, the sent electronic messages assigned a priority and the relevance criteria determined therefrom.

11. The system of claim 7, the classifier is at least one of a Support Vector Machine, Bayesian, and decision tree model.

12. The system of claim 7, the explicit training comprises defining one or more training sets including one or more words respectively, the one or more training sets having a predetermined importance to the user.

13. The method of claim 1, the pivot point dynamically updated based upon a state of the user.

14. The method of claim 1, the command by the user comprising clicking a mouse on a designated area.

15. The system of claim 1, the relevance criteria are a function of content of the data.

16. The system of claim 1, the relevance criteria are a function of context of the data.

17. The system of claim 1, the relevance criteria are a function of volume of the data.

18. The system of claim 1, the data comprises e-mail.

19. The system of claim 1, the data comprises instant messages.

20. The system of claim 1, the data comprises documents.

21. The system of claim 1, the data comprises media.

22. The system of claim 21, the media comprises at least one of audio files and voice calls.

23. The system of claim 21, the media comprises video files.

Motorola Solutions, Inc., Ex1003, p. 121

24. The system of claim 23, the video files comprise digital movies.

25. The system of claim 1, the designator is part of a portable electronic unit.

26. The system of claim 25, the portable electronic unit is at least one of a PDA, cellular phone, portable computer, hand held terminal, watch and a programmable toy.

27. A method for managing a data base system comprising:

arranging a data structure according to a logical order in an expandable hierarchy multiple level format;
displaying selected data from the data structure designated as pivot points to a user, the pivot points for each level are selected from the data structure based upon relevance criteria to the user; and
selectively expanding a level to next level in response to a command by the user.

28. The method of claim 27 further comprising collapsing a level to a previous level in response to a further command by the user.

29. The method of claim 27 further comprising employing a classifier in connection with determining the relevance criteria.

30. The method of claim 27 further comprising employing a classifier in connection with applying the relevance criteria.

31. The method of claim 27 further comprising training the classifier according to one or more categories of priority or relevance to a user.

32. The method of claim 27, further comprising training the classifier based upon context or content of electronic messages sent to recipients.

33. A computer readable medium comprising computer executable instructions for carrying out the method of claim 27.

34. A computer readable medium comprising the computer executable components of

claim 1.

35. A system for managing data comprising
means for designating pivot points, based on a relevance criteria to a user, for a plurality of hierarchy expansion levels associated with a data base list arranged in a logical order; and
means for selectively expending a hierarchy level to a next level.

36. A data packet that passes between at least two computer processes, comprising at least one of the computer executable components of claim 1.

Motorola Solutions, Inc., Ex1003, p. 122

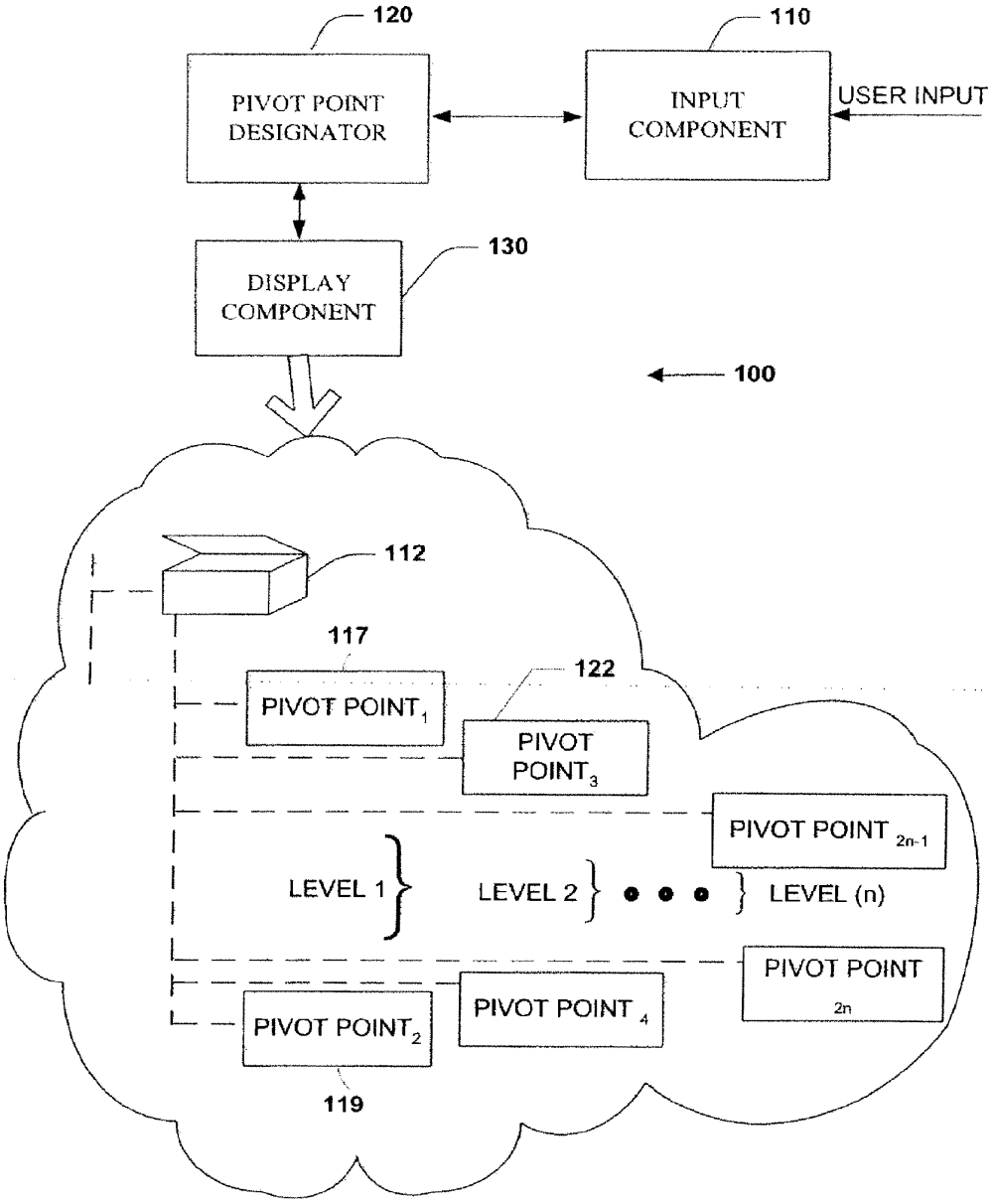


Fig. 1

Motorola Solutions, Inc., Ex1003, p. 123

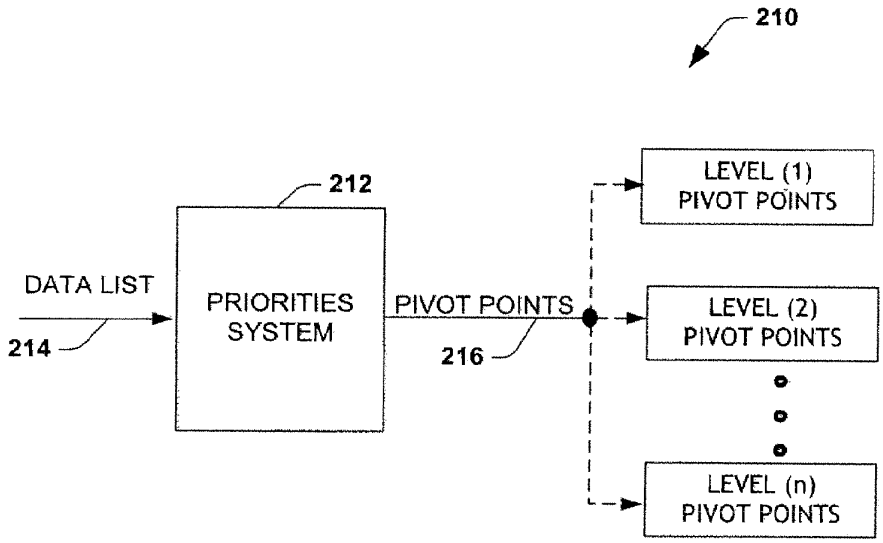


Fig. 2

Motorola Solutions, Inc., Ex1003, p. 124

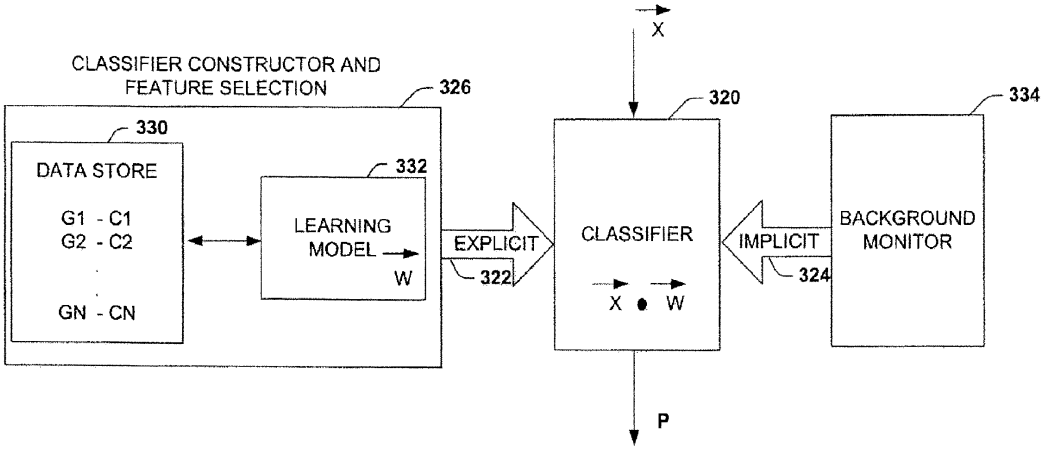


Fig. 3

Motorola Solutions, Inc., Ex1003, p. 125

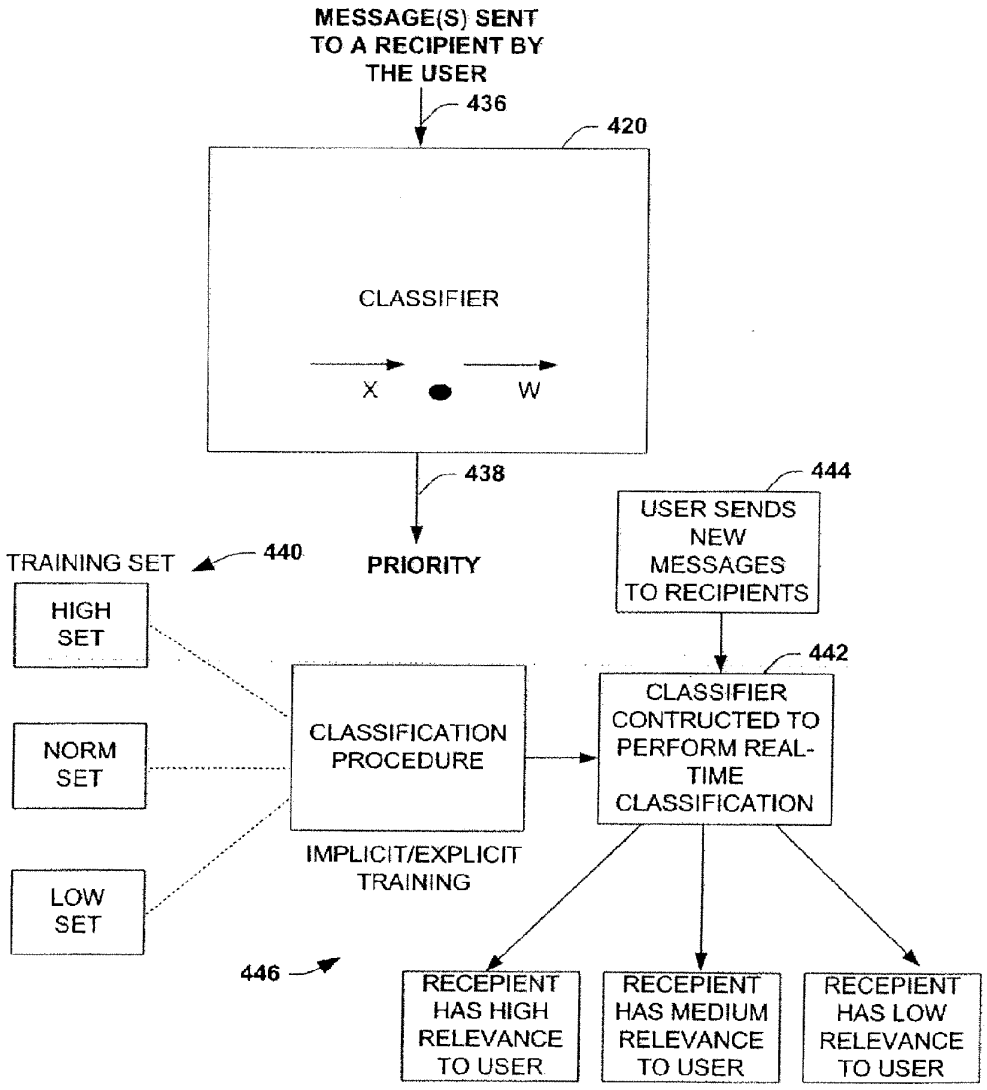


Fig. 4

Motorola Solutions, Inc., Ex1003, p. 126

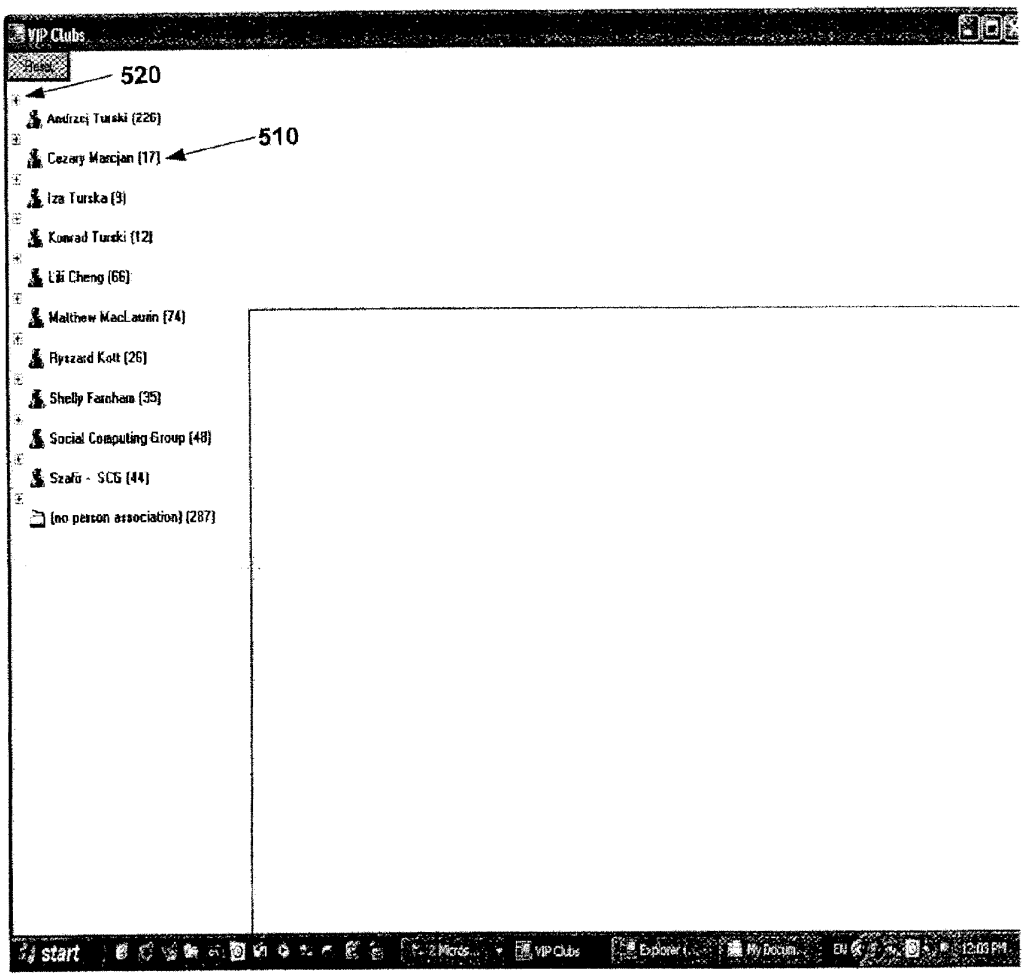


Fig. 5

Motorola Solutions, Inc., Ex1003, p. 127

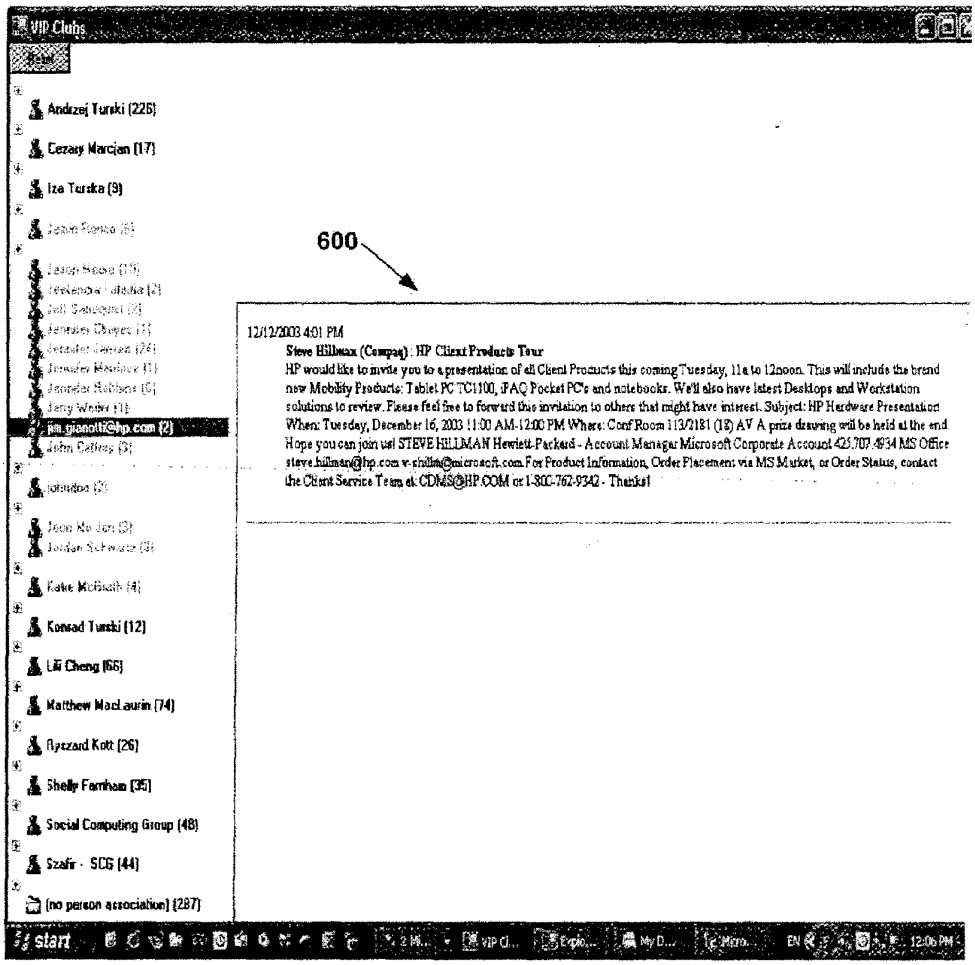


Fig. 6

Motorola Solutions, Inc., Ex1003, p. 128

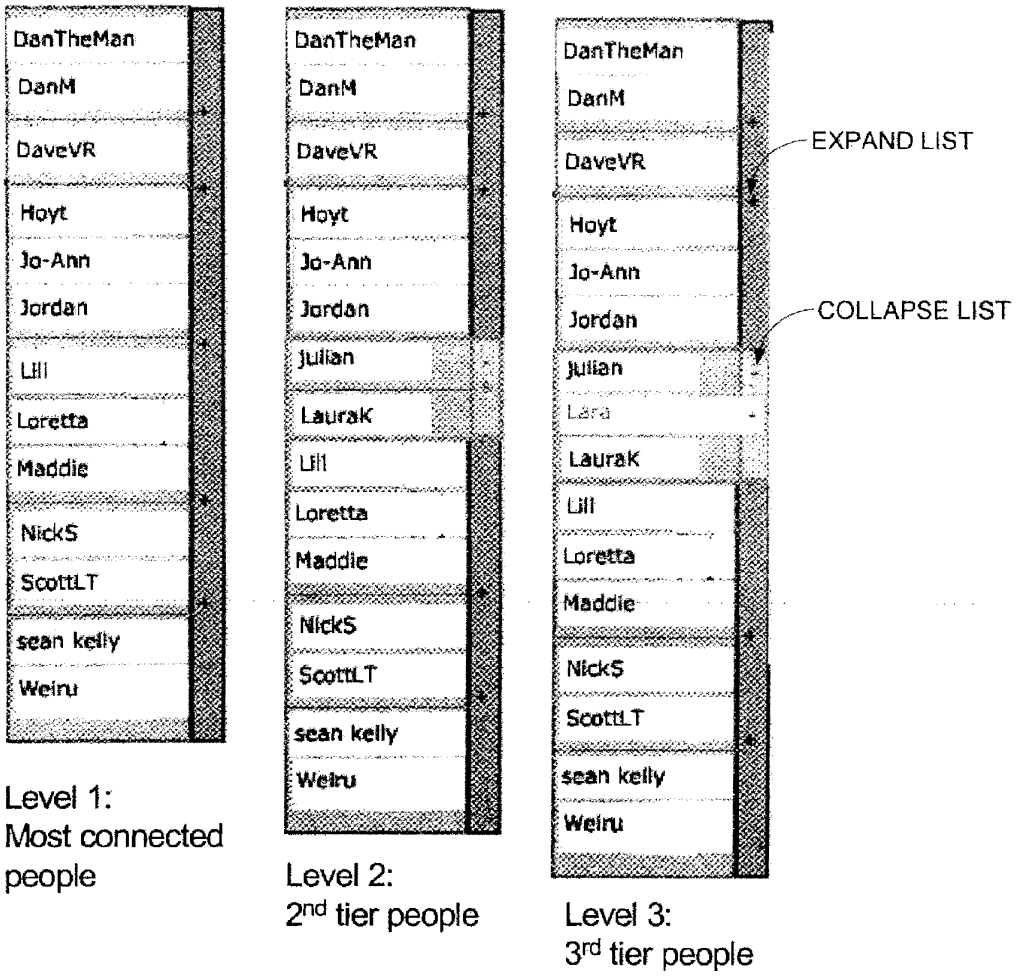


Fig. 7

Motorola Solutions, Inc., Ex1003, p. 129

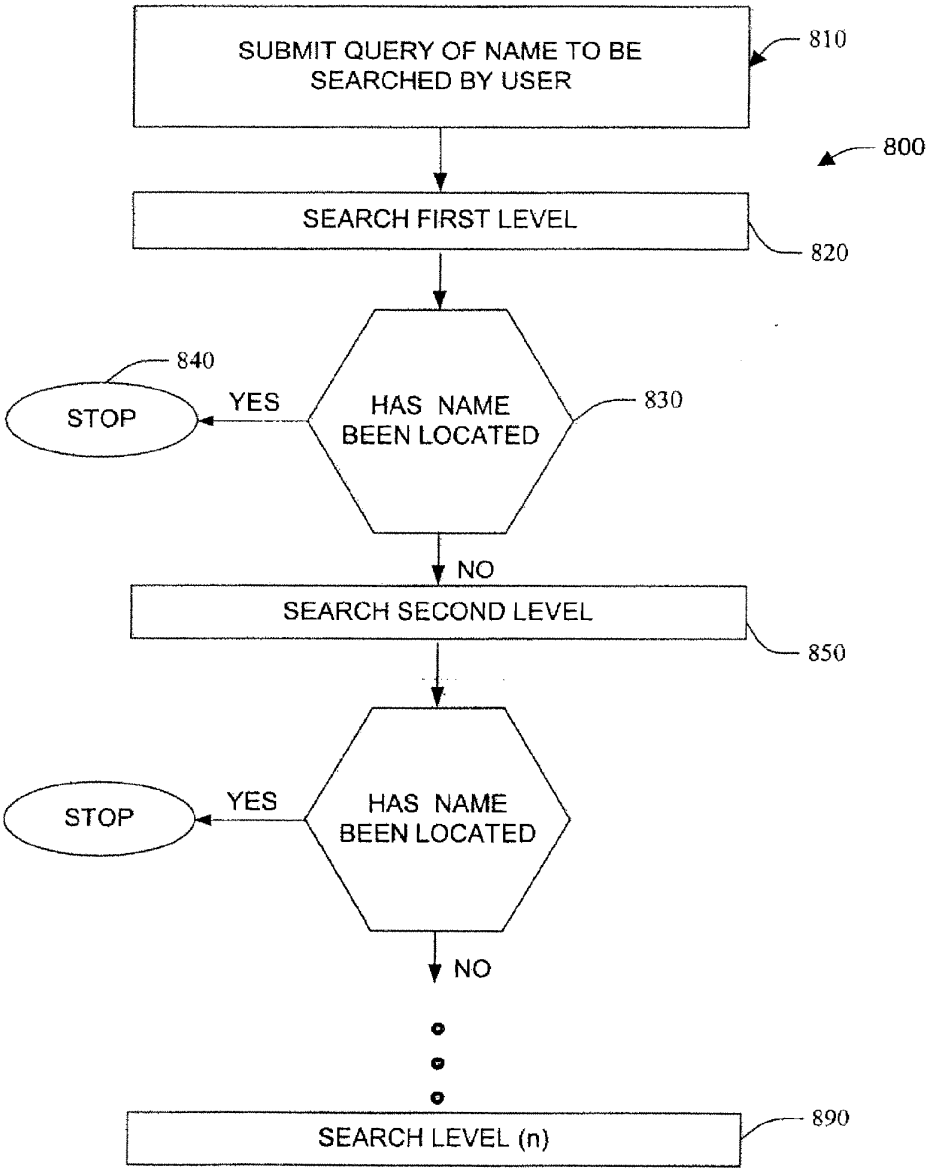


Fig. 8

Motorola Solutions, Inc., Ex1003, p. 130

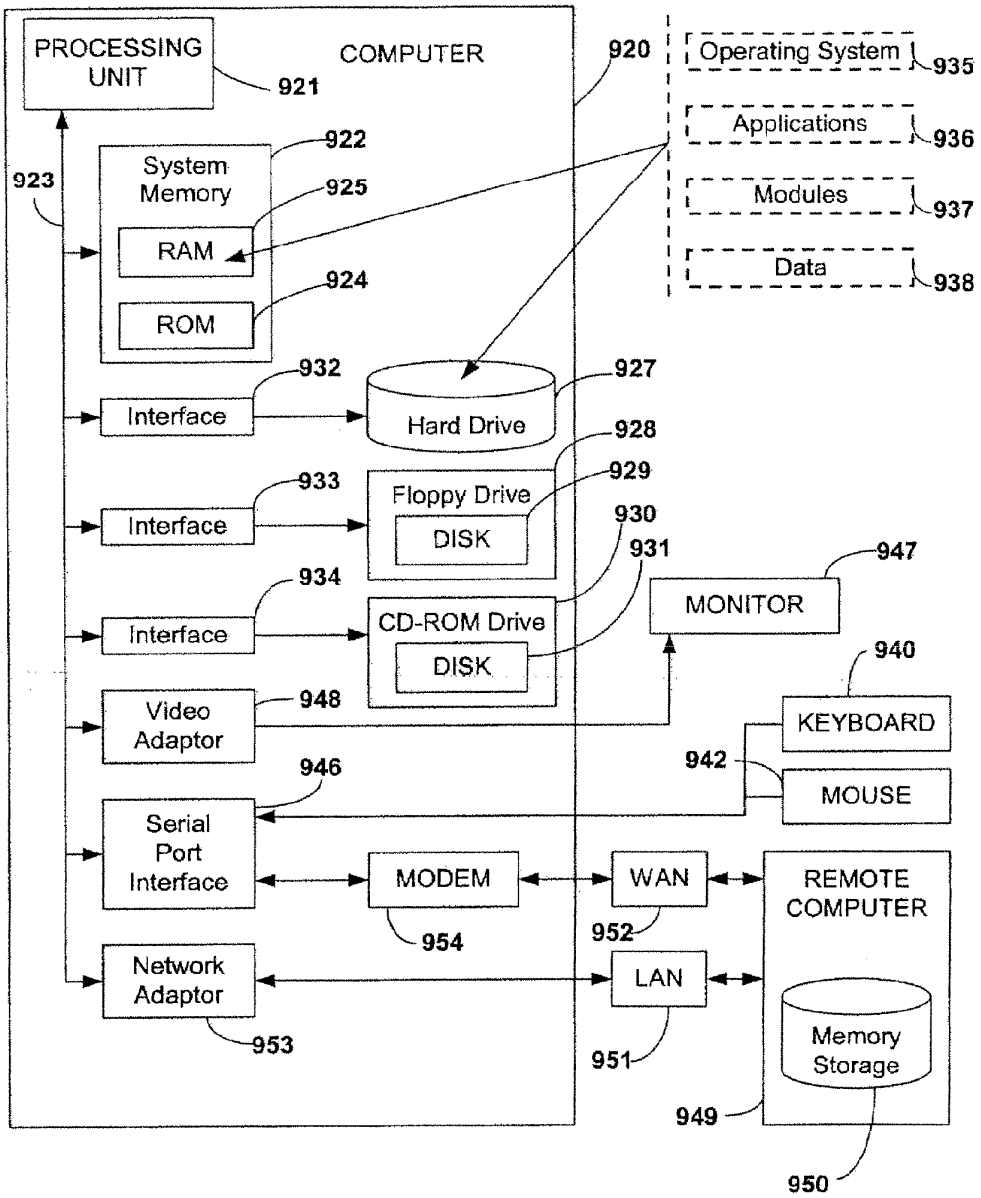


Fig. 9

Motorola Solutions, Inc., Ex1003, p. 131

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 10 0425

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	ROBERTSON G ET AL: "POLYARCHY VISUALIZATION: VISUALIZING MULTIPLE INTERSECTING HIERARCHIES" CHI 2002 CONFERENCE PROCEEDINGS. CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS. MINNEAPOLIS, MN, APRIL 20 - 25, 2002, CHI CONFERENCE PROCEEDINGS. HUMAN FACTORS IN COMPUTING SYSTEMS, NEW YORK, NY : ACM, US, 20 April 2002 (2002-04-20), pages 423-430, XP001099430 ISBN: 1-58113-453-3 * the whole document * ---	1-36	G06F17/30 G06F3/033
X	WITTENBURG K ET AL: "Visual focusing and transition techniques in a treeviewer for Web information access" VISUAL LANGUAGES, 1997. PROCEEDINGS. 1997 IEEE SYMPOSIUM ON ISLE OF CAPRI, ITALY 23-26 SEPT. 1997, LOS ALAMITOS, CA, USA,IEEE COMPUT. SOC, US, 23 September 1997 (1997-09-23), pages 20-27, XP010250564 ISBN: 0-8186-8144-6 * the whole document * ---	1-36	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G06F G09B G09G
X	KUNZ, BOTSCH, ZIEGLER, SPATH: "Contextualization Search Results in Netowrked Directories" INTERNET ARTICLE, [Online] 2003, pages 1-5, XP002331620 CRETE, GREECE Retrieved from the Internet: <URL:http://www.hci.iao.fraunhofer.de> [retrieved on 2005-06-13] * the whole document * --- -/--	1-36	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	14 June 2005	Warry, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

Motorola Solutions, Inc., Ex1003, p. 132

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 10 0425

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	CHRISTOPH KUNZ, VEIT BOTSCH: "Visual Representation and Contextualization of Search Results-List and Matrix Browser" INTERNET ARTICLE, [Online] 13 October 2002 (2002-10-13), pages 229-234, XP002331621 FIRENZE Retrieved from the Internet: <URL:www.bncf.net> [retrieved on 2005-06-13] * the whole document *	1-36	
A	GRAHAM M ET AL: "The challenge of visualising multiple overlapping classification hierarchies" USER INTERFACES TO DATA INTENSIVE SYSTEMS, 1999. PROCEEDINGS LOS ALAMITOS, CA, USA 5-6 SEPT. 1999, LOS ALAMITOS, CA, USA,IEEE COMPUT. SOC, US, 5 September 1999 (1999-09-05), pages 42-51, XP010351933 ISBN: 0-7695-0262-8 * the whole document *	1-36	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	US 2003/101086 A1 (SAN MIGUEL GREGORY) 29 May 2003 (2003-05-29) * page 1, paragraph 4 - page 2, paragraph 20 * * figure 19 *	1-36	
A	US 2003/202019 A1 (DETWEILER KEELY RANAE ET AL) 30 October 2003 (2003-10-30) * page 1, paragraph 6 - page 3, paragraph 30; figures 2-8 *	1-36	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	14 June 2005	Warry, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or prinoiple underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

Motorola Solutions, Inc., Ex1003, p. 133

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 10 0425

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-06-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003101086 A1	29-05-2003	NONE	
US 2003202019 A1	30-10-2003	NONE	

EPO FORM P0459

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

Motorola Solutions, Inc., Ex1003, p. 134

Electronic Acknowledgement Receipt

EFS ID:	12561056
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	17-APR-2012
Filing Date:	16-AUG-2011
Time Stamp:	15:31:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	124460 c109ca62d80db1823d0f8b73513bd2ffe4d6623f	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTOForm1449.pdf	104571 a0afd2441ee9e72a548bceb386b5f11497a792f8	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	EP1622044A1.pdf	1450898 8c07b41156371fd3533e5b66dc1eb82640ac3c11	no	24
Warnings:					
Information:					
		Total Files Size (in bytes):	1679929		

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: April 17, 2012

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	2003/0055711	3/2003	Doherty			
	2	2007/0293240	12/2007	Drennan			
	3	2011/0239252	01/2006	Kazama et al.			
	4						
	5						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	6							
	7							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	8	USPTO 2012-3-9 Final Rejection from U.S. Application No. 12/340,468 [Attorney Docket No 03919.0126]
	9	
	10	

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	12319113
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	15-MAR-2012
Filing Date:	16-AUG-2011
Time Stamp:	23:33:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDS-Transmittal.pdf	124469 e8f216cc34e893481e8d41510f998ea2da980b42	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO-Form1449.pdf	105090 e7d1399413254615 1d656d9a6d0581b9d0fa7a89	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	229559

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent Nos. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] and 8,126,494 [Serial No.12/340,451, Attorney Docket No. 03919.0125] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: March 15, 2012

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
Information Disclosure Statement by Applicant (Use several sheets if necessary)	Applicant Shmuel Shaffer et al.	
(37 CFR §1.98(b))	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1						
	2						
	3						
	4						
	5						
	6						
	7						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	8							
	9							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	10	USPTO 2012-1-17 Response to October 14, 2011 Nonfinal Office Action from U.S. Application No. 12/340,468 [Attorney Docket No. 03919.0126]
	11	
	12	
	13	
	14	
	15	

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	11933310
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	26-JAN-2012
Filing Date:	16-AUG-2011
Time Stamp:	19:35:57
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	124481 e4dfce769a55651e56ad7813ede979046d3d3b80	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTOForm1449.pdf	104746 f570f1753f781aef265adec6db7c8eced6d71ee4	no	1

Warnings:	
Information:	
This is not an USPTO supplied IDS fillable form	
Total Files Size (in bytes):	229227

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,451 [Attorney Docket No. 03919.0125]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent No. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: January 26, 2012

Customer No. 86421

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)

CONFIRMATION NO. 3197

86421
Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

PUBLICATION NOTICE



Title:SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

Publication No.US-2011-0299404-A1
Publication Date:12/08/2011

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

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

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

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

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	5,539,811	07/1996	Nakamura et al.			
	2	6,011,841	01/2000	Isono			
	3	6,404,873	6/2002	Beyda et al.			
	4	6,408,327	6/2002	McClennon et al.			
	5	6,418,214	7/2002	Smythe et al.			
	6	6,453,022	9/2002	Weinman, Jr.			
	7	6,501,739	12/2002	Cohen			
	8	6,501,740	12/2002	Sun et al.			
	9	6,608,820	8/2003	Bradshaw, Jr.			
	10	6,708,030	03/2004	Horikawa			
	11	6,850,496	2/2005	Knappe et al.			
	12	6,792,092	9/2004	Michalewicz			
	13	6,850,496	2/2005	Knappe et al.			
	14	6,944,137	9/2005	Pan et al.			
	15	6,965,767	11/2005	Maggenti et al.			
	16	6,982,961	1/2006	Refai et al.			
	17	6,987,480	1/2006	Kotick et al.			
	18	6,987,841	1/2006	Byers et al.			
	19	6,993,120	1/2006	Brown et al.			
	20	6,996,088	02/2006	Kroon et al.			
	21	6,996,406	2/2006	Lection et al.			
	22	6,999,782	2/2006	Shaughnessy et al.			
	23	6,999,783	2/2006	Toyryla et al.			
	24	7,003,286	2/2006	Brown et al.			
	25	7,006,607	2/2006	Garcia			
	26	7,010,106	3/2006	Gritzer et al.			
	27	7,010,109	3/2006	Gritzer et al.			

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	28	7,010,275	3/2006	Davies			
	29	7,013,279	3/2006	Nelson			
	30	7,031,700	4/2006	Weaver et al.			
	31	7,034,678	4/2006	Burkley et al.			
	32	7,035,385	4/2006	Levine et al.			
	33	7,058,168	6/2006	Knappe et al.			
	34	7,062,286	6/2006	Grivas et al.			
	35	7,079,857	7/2006	Maggenti et al.			
	36	7,149,477	12/2006	Ogami			
	37	7,237,117	6/2007	Weiss			
	38	7,292,544	11/2007	Roher et al.			
	39	7,379,961	5/2008	Matsuoka			
	40	7,418,090	3/2005	Reding et al.			
	41	7,426,192	9/2008	Amano et al.			
	42	7,466,812	12/2008	Mahy et al.			
	43	7,508,840	3/2009	Delaney			
	44	7,526,306	4/2009	Brems et al.			
	45	7,558,221	7/2009	Nelson et al.			
	46	7,606,256	10/2009	Vitebsky et al.			
	47	7,633,914	12/2009	Shaffer et al.			
	48	7,636,339	12/2009	Shaffer et al.			
	49	7,706,339	4/2010	Shaffer et al.			
	50	7,821,978	10/2010	Staack			
	51	7,831,270	11/2010	Kalley et al.			
	52	7,860,070	12/2010	Shaffer et al.			
	53	7,860,958	12/2010	Yoon et al.			
	54	7,869,386	1/2011	Shaffer et al.			
	55	7,933,286	04/2011	Vitebsky et al.			

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	56	2002/0152305	10/2002	Jackson et al.			
	57	2004/0139320	7/2004	Shinohara			
	58	2004/0249949	12/2004	Gourraud et al.			
	59	2005/0015444	1/2005	Rambo			
	60	2005/0232207	10/2005	Antoniadis et al.			
	61	2006/0114847	6/2006	Dssouli et al.			
	62	2006/0118636	6/2006	Miles et al.			
	63	2006/0165060	7/2006	Dua			
	64	2007/0030144	2/2007	Titus et al.			
	65	2007/0060144	3/2007	Mills et al.			
	66	2007/0115848	5/2007	Chean et al.			
	67	2007/0202907	8/2007	Shaffer et al.			
	68	2007/0202908	8/2007	Shaffer et al.			
	69	2007/0239824	10/2007	Shaffer et al.			
	70	2007/0280203	12/2007	Shaffer et al.			
	71	2008/0037461	2/2008	Biltz et al.			
	72	2008/0159128	7/2008	Shaffer et al.			
	73	2008/0167049	7/2008	Karr et al.			
	74	2008/0280637	11/2008	Shaffer et al.			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	75							
	76							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	77	Herther, Jay, et al., "Voice-Over-interintranet Protocol for Critical Communications," Urgent Communications, The Official Publication of IWCE, August 2001, 3 pages http://urgentcomm.com/mag/radio_voiceoverintranet_protocol_critical/

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

	78	Interoperability Gateway, OpenSky, NetworkFirst, P25[IP], Data Sheet, M/A-COM, Inc. ECR-7054, [Printed on June 28, 2011] http://www.pspc.harris.com/media/ECR-7054E_tcm27-10470.pdf
	79	McKay, Jim, "Intact Amid Chaos," Government Technology, March 2005, 3 pages http://www.bultronic.net/documents/articles/intact%20amid%20chaos.pdf
	80	Urgent Communications: Service, Safety, Security, "5 for '05 Technologies," December 1, 2004; 6 pages; http://urgentcomm.com/mag/publicsafety/radio_technologies/
	81	Urgent Communications: Service, Safety, Security, "M/A-Com Emphasizes Power of IP in Seven Announcents at APCO," August 18, 2002, 5 pages http://urgentcomm.com/products/new/radio_macom_emphasizes_power/index.html
	82	NetworkFirst Interoperability Solved, Data Sheet, M/A-COM, Inc., ECR-7018A, [Printed on June 28, 2011] 6 pages; http://www.ka-omminc.com/PDF/NetworkFirstRevised5_03.pdf
	83	Polk, J., et al., "Dynamic Host Configuration Protocol Option for Coordinate-based Location Configuration Information," Network Working Group, Internet RFC 3825, July 2004, 15 pages
	84	Rivero-Angeles, Mario et al., "Random-Access Control Mechanism Using Adaptive Traffic Load in ALOHA and CSMA Strategies for EDGE," IEEE Transactions on Vehicular Technology, Vol. 54, No. 3, May 2005; Abstract Only http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1433259
	85	Trimeche, M., "Digital Rights Management for Visual Content in Mobile Applications," published 9/27/2004; ISBN)-7803-8379-6; ©2004 IEEE; http://ieeexplore.ieee.org; pp. 95-98
	86	V[IP] Dispatch Console, OpenSky, NetworkFirst, P25[IP], Data Sheet, M/A-COM, Inc. ECR-7241C, ©2006 M/A-COM, Inc., 2 pages http://www.bultronic.net/documents/NetworkFirst/VIP%20Dispatch%20Console.pdf
	87	USPTO 2011-11-9 Notice of Allowance from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	11390604
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	11-NOV-2011
Filing Date:	16-AUG-2011
Time Stamp:	16:17:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	124461 42697468f2b0edc5fe7ff73a3fdf6f3f55d8e575	no	2

Warnings:

Information:

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO1449.pdf	128894 f14e351993f5889a9a8fa1ebcb6d0fc2500b6093	no	4
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	HertherVoiceOverIntranet-3pgs.pdf	4782609 9142f5762ceb7be2a4717340b62592d027ec8924	no	3
Warnings:					
Information:					
4	Non Patent Literature	InteroperabilityGateway-2pgs.pdf	3334853 a8c053d7988c15f8df8fe9b1197a3481a0dc0515	no	2
Warnings:					
Information:					
5	Non Patent Literature	McKayIntactAmidChaos-2pgs.pdf	2159806 01866f3cc43bf24c3e95d6440546af92cb9140df	no	2
Warnings:					
Information:					
6	Non Patent Literature	NetworkFirstInteroperabilitySolved-6pgs.pdf	603601 3fdf7d8892d42165ab4c62788c817e59f1677634	no	6
Warnings:					
Information:					
7	Non Patent Literature	PolkDynamicHostRFC3825-16pgs.pdf	21450 4e5ee0fb7e5f9011f4690cd39469ac397c2fd538	no	16
Warnings:					
Information:					
8	Non Patent Literature	Rivero-Angeles-RandomAccess-Abstract.pdf	760815 1f1258aa86d4efbae8de5665ba0ef5c14b2523fa	no	2
Warnings:					
Information:					
9	Non Patent Literature	TrimecheDigitalRights-4pgs.pdf	309653 74fbf9ee9d67d8a3180032bc3b1b2c4a608bda38	no	4
Warnings:					
Information:					
10	Non Patent Literature	VIP-Dispatch-Console-2pgs.pdf	2558264 9f89c80febd5745a6f99e84879314d6abfc1a41e	no	2

Warnings:					
Information:					
11	Non Patent Literature	Urgent-5-for-05-Technologies.pdf	10299717 653f4b43478da7471619bd70ef8c854a594474df	no	7
Warnings:					
Information:					
12	Non Patent Literature	Urgent-MA-ComEmphasizesPower-5pgs.pdf	6885914 d0a89e3b61c09794589c4a6cdac86a1ec3806222	no	5
Warnings:					
Information:					
		Total Files Size (in bytes):	31970037		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,451 [Attorney Docket No. 03919.0125]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent No. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: November 11, 2011

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	2005/0171954	08/2005	Hull et al.			
	2	2006/0281471 A1	12/14/2006	Shaffer et al.			
	3	2007/0203996	8/2007	Davitz et al.			
	4	2007/0266097	11/2007	Harik et al.			
	5	2007/0271336	11/2007	Ramaswamy			
	6	2007/0282621	12/2007	Altman et al.			
	7	2008/0005249	01/2008	Hart			
	8	2008/0045236	02/2008	Nahon et al.			
	9	2009/0144377	6/2009	Kim et al.			
	10	6,094,578	07/25/2000	Purcell et al.			
	11	6,178,237	1/2001	Horn			
	12	6,185,205	02/06/2001	Sharrit et al.			
	13	6,233,315	05/15/2001	Reformato et al.			
	14	6,327,567	12/2001	Willehadson et al.			
	15	6,385,461	5/2002	Raith			
	16	6,721,284	04/2004	Mottishaw et al.			
	17	6,813,250	11/02/2004	Fine et al.			
	18	6,912,389	06/28/2005	Bright et al.			
	19	7,072,952	07/04/2006	Takehiro et al.			
	20	7,339,900	03/04/2008	Perlman			
	21	7,352,707	04/01/2008	Ho et al.			
	22	7,369,513	05/06/2008	Sankaran			
	23	7,460,492	12/02/2008	Portolani et al.			
	24	7,463,597	12/09/2008	Kompella			
	25	7,710,983	05/2010	Zheng et al.			
	26	7,953,859	05/2011	Kiefhaber et al.			

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2819 Confirmation No. 3197

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	27							
	28							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	29	USPTO 2011-10-11 Response to Nonfinal Office Action mailed July 11, 2011 from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]
	30	USPTO 2011-10-14 Nonfinal Office Action from U.S. Application No. 12/340,468 [Attorney Docket No. 03919.0126]
	31	Wikipedia, "Minimum spanning tree," http://en.wikipedia.org/wiki/Minimum_spanning_tree, 12/18/2008, 5 pages
	32	Wikipedia, "Distributed minimum spanning tree," http://en.wikipedia.org/wiki/Distributed_minimum_spanning_tree, 12/18/2008, 2 pages
	33	Bender, Ron, et al., "Multiple Choices for Critical Communications," Urgent Communications, The Official Publication of IWCE, October 2001, 4 pages; http://urgentcomm.com/mag/radio_multiple_choices_critical_2/
	34	C3 Maestro^{IP} Dispatch Console, OpenSKY, NetworkFirst, P25^{IP}, Data Sheet, M/A-COM, Inc. ECR-7160A, [Printed on June 28, 2011] 2 pages http://www.pspc.harris.com/media/ECR-7160E_tcm27-10458.pdf
	35	Cisco IPICS, Solution Overview, "Collaborative Incident Response," ©Cisco Systems, Inc. 2010, 2 pages, www.cisco.com/go/ipics,

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	11222958
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	19-OCT-2011
Filing Date:	16-AUG-2011
Time Stamp:	17:35:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	124405 d10ea41192cc8482cc15afc2f24e25420a07e4b4	no	2

Warnings:

Information:

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO1449.pdf	113142 cf8aaf73281f9f3eb20e182f6dd1ac2193e0ce99	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	Wikipedia-MinimumSpanningTree-5pgs.pdf	301173 ee00a3347c1dd790da527b362a45598ee010d076	no	5
Warnings:					
Information:					
4	Non Patent Literature	Wikipedia-DistributedMinimumSpanningTree-2pgs.pdf	88426 bb2d4e7336d15baeb481285de0aa6adf24967520	no	2
Warnings:					
Information:					
5	Non Patent Literature	BenderMultipleChoices-4pgs.pdf	6341219 5442770ce6c1d3348676dc353f9b1dab24a33d67	no	4
Warnings:					
Information:					
6	Non Patent Literature	C3MaestroDispatchConsole-2pgs.pdf	3280540 cd9680143075fdbc9e19efcdfd06644a29ae0e9e	no	2
Warnings:					
Information:					
7	Non Patent Literature	CiscoIPICSSolutionOverview-2pgs.pdf	887032 a4c4708fe47a6dbe587492a7ef9d1140a6e6969d	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	11135937		

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2819
Examiner:	Shawki Saif Ismail
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,451 [Attorney Docket No. 03919.0125]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent No. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: October 19, 2011

Customer No. 86421

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	4,359,603	11/1982	Heaton			
	2	4,730,306	3/1988	Uchida			
	3	5,048,082	9/1991	Krafft et al.			
	4	5,099,510	3/1992	Blinken et al.			
	5	5,436,896	7/1995	Anderson et al.			
	6	5,539,741	7/1996	Barraclough et al.			
	7	5,625,407	4/1997	Biggs et al.			
	8	5,889,769	03/1999	Mizuno			
	9	6,006,848	12/1999	Grube et al.			
	10	6,011,851	1/2000	O'Connor et al.			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	11							
	12							
	13							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	14	Wikipedia, "Plectron," http://en.wikipedia.org/wiki/Plectron, 12/18/2008, 2 pages
	15	Thunder Eagle, Inc. – Radio Wireless Alerting Systems, "MRI-100™: Multi Radio Interface," http://www.thuneagle.com/mri100.htm, 12/18/2008, 2 pages
	16	Positron Public Safety Systems, "Product Specifications: Power RADIO," http://www.positron911.com/products/powerRADIO/powerRADIO_specs.asp, 12/18/2008, 2 pages

Examiner Signature	Date Considered
EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Substitute Disclosure Form (PTO-1449)

Electronic Acknowledgement Receipt

EFS ID:	10972210
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	16-SEP-2011
Filing Date:	16-AUG-2011
Time Stamp:	23:14:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	124420 ca726a4653d00b9aa11426027d47838bc463a846	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO1449.pdf	127059 e610ac8e377aa88716583409cf6750d804a4fac3	no	1
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Non Patent Literature	WIkipedia-Plectron-2pgs.pdf	69937 56bafd98db15b1832ffe35d7301407473d671737	no	2
Warnings:					
Information:					
4	Non Patent Literature	ThunderEagle-2pgs.pdf	128711 9919dd8877a2bb7874a9d757e52a68c8744f3c08	no	2
Warnings:					
Information:					
5	Non Patent Literature	PositronPowerRADIO-2pgs.pdf	90892 73b69942d637a80a785b450d08b473e16733fed4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	541019		

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2617
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,451 [Attorney Docket No. 03919.0125]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent No. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: September 16, 2011

Customer No. 86421

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/210,967

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	330
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	540
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	220
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*			OR	x 52 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*				x 220 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1090

APPLICATION AS AMENDED - PART II

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

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

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

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

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
13/210,967	08/16/2011	2617	1090	03919-0117-CON (976240)	20	3

CONFIRMATION NO. 3197

86421
Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

FILING RECEIPT

OC000000049536460

Date Mailed: 08/31/2011

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

Applicant(s)

Shmuel Shaffer, Palo Alto, CA;
Steven Christenson, Campbell, CA;

Assignment For Published Patent Application

McAfee, Inc., A Delaware corporation

Power of Attorney: The patent practitioners associated with Customer Number 86421

Domestic Priority data as claimed by applicant

This application is a CON of 12/340,417 12/19/2008

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: 08/25/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/210,967**

Projected Publication Date: 12/08/2011

Non-Publication Request: No

Early Publication Request: No

Title

SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

Preliminary Class

455

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where

the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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

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

NOT GRANTED

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/210,967	08/16/2011	Shmuel Shaffer	03919-0117-CON (976240)

CONFIRMATION NO. 3197

86421
Patent Capital Group - Cisco
2816 Lago Vista Lane
Rockwall, TX 75032

NOTICE

OC000000049536461

Date Mailed: 08/31/2011

NOTICE OF INFORMAL APPLICATION

This application is considered to be informal since it does not comply with the regulations for the reason(s) indicated below. The period within to correct the informalities noted below and avoid abandonment is set in the accompanying Office action.

Items Required To Avoid Processing Delays:

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

A new oath or declaration, identifying this application number, or, if appropriate, an application data sheet (37 CFR 1.76), is required. The oath or declaration does not comply with 37 CFR 1.63 in that it:

- does not identify the complete mailing or post office address of each inventor.

SUPPLEMENTAL
DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention, design or discovery entitled SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT, the specification of which is attached hereto;

That I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; that I do not know and do not believe that said invention, design or discovery was ever known or used in the United States of America before my invention or discovery thereof, or patented or described in any printed publication in any country before my invention or discovery thereof, or more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to this application; that said invention, design or discovery has not been patented or made the subject of an inventor's certificate issued prior to the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns; and that I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Number	Country	Date Filed	Priority Claimed (Yes) (No)
----------NONE----------			

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application(s) in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial Number	Date Filed	Status

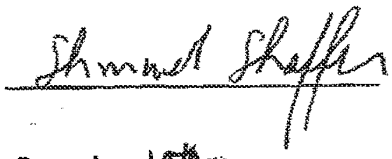
I hereby appoint:

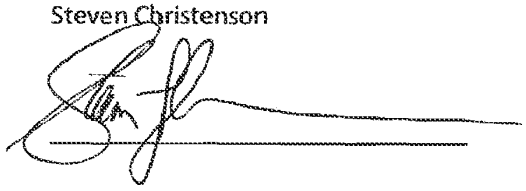
Practitioners at Customer Number 86421

all of the firm of the Patent Capital Group, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent applications filed thereon before any international authorities.

Send Correspondence To:	Direct Telephone Calls To:
Thomas J. Frame	Thomas J. Frame
The above-mentioned Customer Number	at 214.823.1241

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 issuing thereon.

Full name of inventor:	Shmuel Shaffer
Inventor's signature:	
Date:	December 12th 2008
Residence (Address):	Palo Alto, Santa Clara, California
Citizenship:	United States
Post Office Address:	1211 Cowper Street Palo Alto, CA 94301

Full name of inventor:	Steven Christenson
Inventor's signature:	
Date:	December 17, 2008
Residence (Address):	Campbell, Santa Clara, California
Citizenship:	United States
Post Office Address:	1162 Bucknam Avenue Campbell, CA 95008

Electronic Acknowledgement Receipt

EFS ID:	10849945
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Pat Bradford
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	31-AUG-2011
Filing Date:	16-AUG-2011
Time Stamp:	11:16:12
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	2011-8-31-SupplementalDeclaration.pdf	3430206 a3dd219ca76ea9db954075a3af1dd043dbdaec04	no	5

Warnings:	
Information:	

Total Files Size (in bytes):	3430206

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.

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	1	5,689,245	11/1997	Noreen et al.			
	2	6,094,579	7/25/2000	Olvera-Hernandez et al.			
	3	6,151,309	11/2000	Busuioc et al.			
	4	6,374,100	4/2002	Smith et al.			
	5	6,400,816	6/2002	Hjalmtysson et al.			
	6	6,421,002	7/2002	Krasner			
	7	6,873,854	3/2005	Crockett et al.			
	8	6,882,856	4/2005	Alterman et al.			
	9	6,885,874	4/2005	Grube et al.			
	10	7,091,851	8/2006	Mason et al.			
	11	7,271,742	9/2007	Sheha et al.			
	12	7,328,036	2/5/2008	Hart et al.			
	13	7,369,530	5/2008	Keagy			
	14	7,639,634	12/29/2009	Shaffer et al.			
	15	2010/0161727	6/24/2010	Shaffer			
	16	2010/0159975	6/24/2010	Shaffer			
	17	2010/0159977	6/24/2010	Shaffer			

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation Yes	Translation No
	18	CN101461152	6/17/2009	PRC			Abstract Only	X
	19	EP0849964	6/1998	EPO			Abstract Only	X
	20	EP1889495	12/21/2006	EPO			X	
	21	EP1920568	8/2/2006	EPO			X	
	22	EP1920615	2/22/2007	EPO			X	
	23	EP2030338	12/13/2007	EPO			X	
	24	FR2674355A	9/1992	FR			Abstract Only	X

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Motorola Solutions, Inc., Ex1003, p. 183

Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 03919.0117-CON (976240)	Application No. 13/210,967
Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	Applicant Shmuel Shaffer et al.	
	Filing Date August 16, 2011	Group Art Unit 2617 Confirmation No. 3197

	25	WO2001/191485	11/2001	WIPO			X	
	26	WO2002/074051	9/2002	WIPO			X	
	27	WO2006/135533	12/21/2006	WIPO			X	
	28	WO2007/021586	2/22/2007	WIPO			X	
	29	WO2007/027356	3/8/2007	WIPO			X	
	30	WO2007/142961	12/13/2007	WIPO			X	

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	31	U.S. Patent Application Serial No. 12/722,389, entitled "System and Method for Providing Data Channel Management in a Network Environment," filed March 11, 2010; Inventors: Shmuel Shaffer, et al.; Attorney Docket No. 03919.0165
	32	PCT 2001-2-10 International Search Report from PCT/EP01/04570; 1 page
	33	PCT 2007-02-27 Notification of Transmittal of the International Search Report for PCT/US06/30447; 2 pages
	34	PCT 2007-04-09 Notification of Transmittal of the International Search Report from PCT/US06/30294; 1 page
	35	PCT 2007-09-04 International Search Report from PCT/US02/08419; 2 pages
	36	PCT 2007-09-04 International Search Report and Written Opinion from PCT/US06/19227; 7 pages
	37	PCT 2007-12-11 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (3 pages), for PCT/US06/19227
	38	PCT 2008-2-12 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (14 pages), from PCT/US06/30447
	39	PCT 2008-3-14 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority or the Declaration (4 pages) for PCT/US06/30294
	40	PCT 2008-9-17 Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority for PCT/US07/12728; 6 pages
	41	PCT 2008-12-3 International Preliminary Report on Patentability (1 page) and the Written Opinion of the International Searching Authority (5 pages) from PCT/US07/12728
	42	USPTO 2011-6-27 Notice of Allowance from U.S. Application No. 12/340,417 [Attorney Docket No. 03919-0117]
	43	USPTO 2011-7-11 Nonfinal Office Action from U.S. Application No. 12/340,451 [Attorney Docket No. 03919.0125]

Examiner Signature	Date Considered

EXAMINER: Initials citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Espacenet

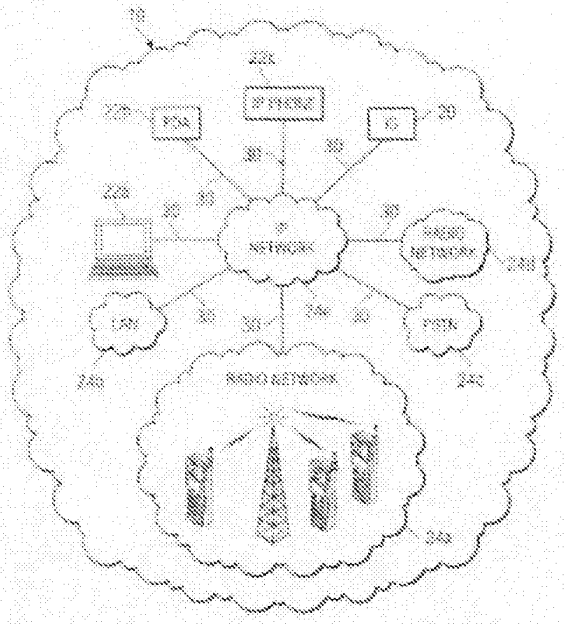
Bibliographic data: CN 101461152 (A)

Facilitating communications in a virtual talk group

Publication date:	2009-06-17
Inventor(s):	SHMUEL SHAFFER [US]; SHAH TALUKDER [US] +
Applicant(s):	CISCO TECH INC [US] +
Classification:	- **international:** ***H04B7/00***
	- **European:** H04L12/56
Application number:	CN20078020466 20070529
Priority number(s):	US20060421904 20060602
Also published as:	• US 2007280185 (A1) • US 7639634 (B2) • WO 2007142961 (A2) • WO 2007142961 (A3) • EP 2030338 (A2)

Abstract of *CN 101461152 (A)*

A method for joining a virtual talk group includes facilitating communications of a virtual talk group. The virtual talk group includes a plurality of endpoints of different communication networks. The method also includes recording the communications of the plurality of endpoints of the virtual talk group. The method also includes adding a first endpoint to the virtual talk group and presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.



Last updated: 28.04.2011 Worldwide Database 8.7.22.92p

Motorola Solutions, Inc., Ex1003, p. 185

[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
H04B 7/00 (2006.01)

[12] 发明专利申请公布说明书

[21] 申请号 200780020466.6

[43] 公开日 2009 年 6 月 17 日

[11] 公开号 CN 101461152A

[22] 申请日 2007.5.29
[21] 申请号 200780020466.6
[30] 优先权
[32] 2006.6.2 [33] US [31] 11/421,994
[86] 国际申请 PCT/US2007/012728 2007.5.29
[87] 国际公布 WO2007/142961 英 2007.12.13
[85] 进入国家阶段日期 2008.12.2
[71] 申请人 思科技术公司
地址 美国加利福尼亚州
[72] 发明人 什穆埃尔·谢弗 沙赫·塔卢卡德
济图尔·V·纳盖思
道格拉斯·J·海尔
[74] 专利代理机构 北京东方亿思知识产权代理有限责任公司
代理人 宋鹤南 鲍
权利要求书 5 页 说明书 21 页 附图 2 页

[54] 发明名称

辅助虚拟对话组中的通信

[57] 摘要

一种用于加入虚拟对话组的方法，包括辅助虚拟对话组的通信。该虚拟对话组包括不同通信网络的多个端点。该方法还包括记录所述虚拟对话组的多个端点的通信。该方法还包括向所述虚拟对话组增加第一端点并向第一端点呈现所记录的所述虚拟对话组的多个端点的通信。

1. 一种用于加入虚拟对话组的方法，包括：

辅助虚拟对话组的通信，所述虚拟对话组包括不同通信网络的多个端点；

记录所述虚拟对话组的所述多个端点的通信；

向所述虚拟对话组增加第一端点；以及

向所述第一端点呈现所记录的所述虚拟对话组的所述多个端点的通信。

2. 如权利要求 1 所述的方法，还包括在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信。

3. 如权利要求 2 所述的方法，其中，在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信包括：在所述虚拟对话组的所述多个端点的通信中有暂停时，向所述第一端点呈现所述所记录的通信。

4. 如权利要求 2 所述的方法，其中，在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信包括：在检测到端点通信时暂停向所述第一端点呈现所述所记录的通信。

5. 如权利要求 4 所述的方法，其中，在检测到端点通信时暂停向所述第一端点呈现所述所记录的通信包括：在检测到具有比所述所记录的通信更高的优先级的端点通信时，暂停向所述第一端点呈现所述所记录的通信。

6. 如权利要求 1 所述的方法，还包括向所述第一端点提供指示，所述指示指示出正向所述第一端点呈现所述虚拟对话组的所述所记录的通信，以使得所述第一端点可以区分所述所记录的通信和所述虚拟对话组的所述多个端点的通信。

7. 如权利要求 1 所述的方法，还包括从所述第一端点接收请求以改

Motorola Solutions, Inc., Ex1003, p. 187

变呈现所述所记录的通信的方式。

8. 如权利要求 1 所述的方法，还包括从所述第一端点接收请求以控制呈现所述所记录的通信的方式。

9. 如权利要求 1 所述的方法，其中，向所述第一端点呈现所述所记录的通信包括增大呈现所述所记录的通信的速率。

10. 如权利要求 1 所述的方法，还包括：

确定预定策略的条件已经得到满足；以及

基于所述预定策略的条件的满足，记录所述虚拟对话组的所述多个端点的通信。

11. 如权利要求通信系统 10 所述的方法，其中，确定预定策略的条件已经得到满足包括检测到所述第一端点不在所述虚拟对话组中。

12. 一种用于加入虚拟对话组的系统，包括：

处理器，该处理器可操作用于：

辅助虚拟对话组的通信，所述虚拟对话组包括不同通信网络的多个端点；

记录所述虚拟对话组的所述多个端点的通信；和

向所述虚拟对话组增加第一端点；以及

与所述处理器耦合的接口，所述接口可操作用于向所述第一端点呈现所记录的所述虚拟对话组的所述多个端点的通信。

13. 如权利要求 12 所述的系统，其中，所述处理器还可操作用于在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信。

14. 如权利要求 13 所述的系统，其中，可操作用于在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信的所述处理器包括：可操作用于在所述虚拟对话组的所述多个端点的通信中有暂停时，向所述第一端点呈现所述所记录的通信的处理器。

15. 如权利要求 13 所述的系统，其中，可操作用于在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所

Motorola Solutions, Inc., Ex1003, p. 188

增加的第一端点之间的通信的所述处理器包括：可操作用于在检测到端点通信时暂停向所述第一端点呈现所述所记录的通信的处理器。

16. 如权利要求 15 所述的系统，其中，可操作用于在检测到端点通信时暂停向所述第一端点呈现所述所记录的通信的所述处理器包括：可操作用于在检测到具有比所述所记录的通信更高的优先级的端点通信时，暂停向所述第一端点呈现所述所记录的通信的处理器。

17. 如权利要求 12 所述的系统，其中，所述处理器还可操作用于向所述第一端点提供指示，所述指示指示出正向所述第一端点呈现所述虚拟对话组的所述所记录的通信，以使得所述第一端点可以区分所述所记录的通信和所述虚拟对话组的所述多个端点的通信。

18. 如权利要求 12 所述的系统，其中，所述处理器还可操作用于从所述第一端点接收请求以改变呈现所述所记录的通信的方式。

19. 如权利要求 12 所述的系统，其中，所述处理器还可操作用于从所述第一端点接收请求以控制呈现所述所记录的通信的方式。

20. 如权利要求 12 所述的系统，其中，可操作用于向所述第一端点呈现所述所记录的通信的接口包括可操作用于增大呈现所述所记录的通信的速率的接口。

21. 如权利要求 12 所述的系统，其中，所述处理器还可操作用于：

确定预定策略的条件已经得到满足；以及

基于所述预定策略的条件的满足，记录所述虚拟对话组的所述多个端点的通信。

22. 如权利要求 21 所述的系统，其中，可操作用于确定预定策略的条件已经得到满足的处理器包括可操作用于检测到所述第一端点不在所述虚拟对话组中的处理器。

23. 在计算机可读介质中实现的逻辑，所述计算机可读介质包括代码，所述代码可操作用于：

辅助虚拟对话组的通信，所述虚拟对话组包括不同通信网络的多个端点；

记录所述虚拟对话组的所述多个端点的通信；

Motorola Solutions, Inc., Ex1003, p. 189

向所述虚拟对话组增加第一端点；以及

向所述第一端点呈现所记录的所述虚拟对话组的所述多个端点的通信。

24. 如权利要求 23 所述的介质，其中，所述代码还可操作用于在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信。

25. 如权利要求 24 所述的介质，其中，可操作用于在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信的所述代码包括：可操作用于在所述虚拟对话组的所述多个端点的通信中有暂停时，向所述第一端点呈现所述所记录的通信的代码。

26. 如权利要求 24 所述的介质，其中，可操作用于在向所述第一端点呈现所述所记录的通信的同时辅助所述虚拟对话组的所述多个端点和所增加的第一端点之间的通信的所述代码包括：可操作用于在检测到端点通信时暂停向所述第一端点呈现所述所记录的通信的代码。

27. 如权利要求 26 所述的介质，其中，可操作用于在检测到端点通信时暂停向所述第一端点呈现所述所记录的通信的所述代码包括：可操作用于在检测到具有比所述所记录的通信更高的优先级的端点通信时，暂停向所述第一端点呈现所述所记录的通信的代码。

28. 如权利要求 23 所述的介质，其中，所述代码还可操作用于向所述第一端点提供指示，所述指示指示出正向所述第一端点呈现所述虚拟对话组的所述所记录的通信，以使得所述第一端点可以区分所述所记录的通信和所述虚拟对话组的所述多个端点的通信。

29. 如权利要求 23 所述的介质，其中，所述代码还可操作用于从所述第一端点接收请求以改变呈现所述所记录的通信的方式。

30. 如权利要求 23 所述的介质，其中，所述代码还可操作用于从所述第一端点接收请求以控制呈现所述所记录的通信的方式。

31. 如权利要求 23 所述的介质，其中，可操作用于向所述第一端点呈现所述所记录的通信的所述代码包括可操作用于增大呈现所述所记录的

Motorola Solutions, Inc., Ex1003, p. 190

通信的速率的代码。

32. 如权利要求 23 所述的介质，其中，所述代码还可操作用于：

确定预定策略的条件已经得到满足；以及

基于所述预定策略的条件的满足，记录所述虚拟对话组的所述多个端点的通信。

33. 如权利要求 32 所述的介质，其中，可操作用于确定预定策略的条件已经得到满足的所述代码包括可操作用于检测到所述第一端点不在所述虚拟对话组中的代码。

34. 一种用于加入虚拟对话组的系统，包括：

用于辅助虚拟对话组的通信的装置，所述虚拟对话组包括不同通信网络的多个端点；

用于记录所述虚拟对话组的所述多个端点的通信的装置；

用于向所述虚拟对话组增加第一端点的装置；以及

用于向所述第一端点呈现所记录的所述虚拟对话组的所述多个端点的通信的装置。

Motorola Solutions, Inc., Ex1003, p. 191

辅助虚拟对话组中的通信

技术领域

本发明一般地涉及通信系统，特别地涉及用于加入虚拟对话组的方法和系统。

背景技术

诸如安全和保安人员（例如，警察、消防员和救护车司机）之类的许多公众和私人群组使用在各种不同的通信网络上操作的各种不同的通信设备。例如，诸如公安部门、消防部门和 EMT 之类的许多公众服务组织利用通过即按即说（push-to-talk）技术来通信的陆地移动无线电。但是，不同网络的不同端点（例如，不同公安部门、消防部门或其它安全网络的端点）之间的通信可能会呈现挑战。不同机构和网络之间的协作往往是 ad hoc 和低效率的。当得以实现时，通常涉及费力的人工干预。向互操作性解决方案努力的组织包括 Raytheon JPS Communications、IP Blue、Twisted Pair、M/A-COM、Motorola、EADS 和 Cisco Systems。

发明内容

本方面发提供了用于加入虚拟对话组的方法和系统，其基本消除或减少了与先前的方法和系统相关联的缺点和问题中的至少一些。

根据特定实施例，一种用于加入虚拟对话组的方法，包括辅助虚拟对话组的通信。该虚拟对话组包括不同通信网络的多个端点。该方法还包括记录所述虚拟对话组的多个端点的通信。该方法还包括向所述虚拟对话组增加第一端点并向第一端点呈现所记录的所述虚拟对话组的多个端点的通信。

在本发明的特定实施例中，该方法还可以包括在向第一端点呈现所记录的通信的同时辅助所述虚拟对话组的多个端点和所增加的第一端点之间

Motorola Solutions, Inc., Ex1003, p. 192

的通信。在一些实施例中，这可以包括：在所述虚拟对话组的多个端点的通信中有暂停时，向第一端点呈现所记录的通信。

在特定实施例中，在向第一端点呈现所记录的通信的同时辅助所述虚拟对话组的多个端点的与所增加的第一端点之间的通信可以包括：在检测到端点通信时暂停向第一端点呈现所记录的通信。在一些实施例中，这可以包括：在检测到具有比所记录的通信更高的优先级的端点通信时，暂停向第一端点呈现所记录的通信。

在本发明的特定实施例中，该方法还可以包括向第一端点提供指示。该指示可以指示出正向第一端点呈现所述虚拟对话组的所记录的通信，以使得第一端点可以区分所记录的通信和所述虚拟对话组的多个端点的通信。在本发明特定实施例中，该方法还可以包括从第一端点接收请求以改变呈现所记录的通信的方式，或者从第一端点接收请求以控制呈现所记录的通信的方式。

在该方法包括向第一端点呈现所记录的通信的情况下，该方法可以包括增大呈现所记录的通信的速率。

在一些实施例中，该方法可以包括确定预定策略的条件已经得到满足，并基于该预定策略的条件的满足，记录所述虚拟对话组的多个端点的通信。在特定实施例中，确定预定策略的条件已经得到满足可以包括检测到第一端点不在所述虚拟对话组中。

在本发明的特定实施例中，该方法还可以包括确定第一端点不在所述虚拟对话组中，该方法还可以包括基于第一端点不在该虚拟对话组中而记录所述虚拟对话组的多个端点的通信。

根据另一个实施例，一种用于加入虚拟对话组的系统包括可操作用于辅助虚拟对话组的通信的处理器。所述虚拟对话组包括不同通信网络的多个端点。该处理器还可操作用于记录所述虚拟对话组的多个端点的通信。该处理器还可操作用于向所述虚拟对话组增加第一端点。所述系统还包括与所述处理器耦合的接口，该接口可操作用于向第一端点呈现所记录的所述虚拟对话组的多个端点的通信。

特定实施例的技术优点包括用于提供将虚拟对话组内的当前情形通知

Motorola Solutions, Inc., Ex1003, p. 193

加入该虚拟对话组的端点的用户的自动化方式的系统和方法。因此，虚拟对话组内的其它端点的用户可以保持关注他们的任务，而不是将他们的注意力转移到更新最近增加的端点。特定实施例可以允许最近增加的端点的用户控制对先前记录的通信的呈现。因此，该用户可以接收他想要的信息，无论他想要何时及以何种方式得到它均可。特定实施例允许在虚拟对话组内没有其它通信时呈现信息。因此，所增加端点的用户可以接收所记录的通信而不会错过当前通信。在一些实施例中，所记录的通信可以被呈现给端点以使得它们可以与虚拟对话组的通信相区分。因此，接收所记录的通信和虚拟对话组通信两者的端点的用户能够区分它们。

本领域技术人员将从以下附图、描述和权利要求中足够清楚地了解其它技术优点。此外，虽然以上已经列举了具体优点，但是各个实施例可以包括所列举的优点中的全部、一些或者不包括。

附图说明

为了更完整地理解本发明及其优点，现在结合附图来参考以下描述，在附图中：

图 1 图示了根据特定实施例的具有互操作系统和各种通信网络的通信系统；

图 2 图示了根据特定实施例的一个示例互操作系统；

图 3 图示了根据特定实施例的一个示例端点；以及

图 4 图示了根据特定实施例的一种用于加入虚拟对话组的方法。

具体实施方式

图 1 图示了根据特定实施例的通信系统 10。通信系统 10 包括通信网络 24a-24c、互操作系统（IS）20 和端点 22a-22c。IS 20 能够辅助各种通信设备（例如，通信网络 24 的端点和端点 22）之间的互操作通信会话。IS 20 使用系统方法来提供基于 IP 协议和服务的架构，以实现利用不同技术的通信端点和网络之间的安全语音、视频和其它数据可操作性。

在特定实施例中，可以形成虚拟对话组（VTG）以使得来自不同通信

Motorola Solutions, Inc., Ex1003, p. 194

网络的端点可以相互通信，就好像它们是同一通信网络的一部分一样。通常，可以响应于特定情形而形成 VTG。该情形可以是动态的，例如，响应于一个事件而形成 VTG；或者可以是静态的，例如，基于特定位置而形成 VTG。无论 VTG 是如何形成的，在 VTG 的生命期间，组成该 VTG 的各个端点都可以改变。当端点加入 VTG 时，该端点可能并不完全理解或知晓该 VTG 内的情形。为了更新新的端点，特定实施例可以回放先前记录的来自 VTG 内的各个端点的通信。这些通信可以已被记录并在随后由 IS 20 回放。

在所图示的实施例中，通信网络 24a 和 24d 包括无线电网络（RN），通信网络 24b 包括局域网（LAN），通信网络 24c 包括 PSTN，而通信网络 24e 包括 IP 网络。但是，应当了解，通信系统 10 可以包括具有任意无线或有线形式的能够传递音频和/或视频电信信号、数据和/或消息（包括信号、数据或消息）的任意数目的 IP 或非 IP 通信网络。通信网络 24a-24e 可以包括任意数目的片段（segment）、节点和端点和它们的任意组合，以使能网络设备和组件之间的通信。通信网络 24a-24e 可以分布在本地或者跨多个城市和地理区域。节点可以包括以下各项的任意组合：网络组件、关守（gatekeeper）、呼叫管理器、会议桥、路由器、集线器、交换机、网关、基站、端点或者实现任意数目的允许在通信系统 10 中交换数据的通信协议的其它硬件、软件或嵌入式逻辑。可以包括任何适当的无线或有线通信链路的片段 30（适当地包括一个或多个通信网络（例如，WAN））将各种网络相互耦合并与端点 22 和 IS 20 相耦合。在特定实施例中，片段可以包括用于辅助各种网络之间的通信的网关，例如，无线电网络 24a 和 IP 网络 24e 之间的 LMR 网关。

在一些情况下，通信网络 24a-24e 中的一个的端点的用户可以通过 IS 20 与通信网络 24a-24e 中的另一个的端点通信。IS 20 可以通过其自身将一个网络的通信重播到另一个网络来辅助不同网络的端点之间的通信，或者 IS 20 可以致使其可以控制的其它组件重播该通信。诸如无线电网络 24a 或 24d 之类的无线电网络可以使用任何适当的通信方法或特征（例如，蜂窝和即按即说（PTT））来支持诸如 LMR 之类的便携式移动台端点之间的通

Motorola Solutions, Inc., Ex1003, p. 195

信。通信网络 24a-24e 可以包括特定群组或机构的网络（例如，市政当局的公安部门网络），其针对特定区域或以其它方式来操作。

IS 20 使能、辅助和/或提供了通信端点和设备之间的可互操作通信，所述通信端点和设备例如是使用因特网协议的一个或多个通信网络（例如，通信网络 24a-24e）的 LMR、蜂窝电话、IP 电话、PC、PDA、PSTN 电话、视频监视器、相机和传感器。这样的端点可以包括 IP 或非 IP 使能端点。在特定实施例中，IS 20 可以控制（例如，片段 30 的）网关，以将特定移动无线电端点的射频映射到用于传递到其它类型的无线电端点或 IP 设备的 IP 地址。例如，特定网关可能能够接收来自（例如，在各种类型的通信网络上的）各种类型的端点的通信，并且可以对这样的通信进行转换以发送到其它类型的端点。取决于以下将进一步论述的系统功能性和配置，IS 20 对网关的控制可以控制接收特定通信的各种端点和/或网络。这种控制可以包括将通信和端点映射到用于可互操作通信的 IP 地址。在一些实施例中，IS 20 可以主持下述音频会议，所述音频会议桥接从端点接收的通信。如上所述，通信系统 10（包括 IS 20）可以包括任何数目或类型的网关（例如，LMR 和 PSTN 网关）、服务器（例如，多点会议服务器）、交换机、路由器、防火墙、接入点、处理器、存储器或者用于提供这里所描述的功能性的其它硬件、软件或编码逻辑。IS 20 通过 IP 网络 24e 与通信网络 24a-24d 以及端点 22 相耦合，其中，IP 网络 24e 可以包括任何合适的 IP 网络。

如上所述，IS 20 使用 IP 来使能各种网络的端点之间的通信。这些各种网络的端点（在没有 IS 20 的辅助的情况下）可能无法正常地相互通信。IS 20 辅助这些端点之间的通信的方式可以根据位置和系统或者操作需要而变化。例如，IS 20 可以使用指派给通信网络的一个端点、通信网络的一组端点或者多个通信网络的一个或多个端点的多播 IP 地址，或者可替代地使用对等拨号连接或者钉拨号连接（nailed dialed connection）来与端点通信。一组端点可以组合成使用特定 IP 地址的用于通信的 VTG。作为一个示例，该 VTG 可以被指派一个多播 IP 地址，各种端点的用户可以通过该多播 IP 地址在 VTG 上通信。多播 IP 地址的使用使得 IS 20 可以辅助各

Motorola Solutions, Inc., Ex1003, p. 196

种通信网络的通信设备和端点之间的通信以提供音频、数据、视频和控制网络互操作性。作为另一个示例，在一些情况下，可以使用（例如，利用多播 IP 地址的）多播流。在一些情况下，钉拨号连接（例如使用 SIP 协议的那些）可以用于端点之间以及与 IS 20 的通信。各种实施例可以组合通信方法以辅助端点之间的通信。例如，在一些情况下，一个虚拟对话组的某些端点可以通过多播 IP 地址来参与该对话组，而其它端点可以利用钉 SIP 连接。除非另有指出，参与 VTG 可以包括既能够发射又能够接收通信。IS 20 可以例如通过控制网关、多点会议和通信向 IP 地址的映射来控制参与。

IS 20 可以用在和被实现在任何数目的市场片断中，例如，企业保安和安全（例如，预防损失）、交通、零售、公共安全和联邦机构，以提供这样的市场片段内和之间的无线电和非无线电网络互操作性。如上所述，这种网络互操作性包括各种网络内的即按即说语音技术的互操作性以及在即按即说和全双工拨号连接之间的互操作性。

本领域普通技术人员将会了解，端点 22 和 IS 20 可以是向用户提供通信服务的硬件、软件和/或编码逻辑的任意组合。在所图示的实施例中，端点 22 包括 PC（端点 22a）、个人数据助理（PDA）（端点 22b）和 IP 电话（端点 22c）。但是，在其它实施例中，端点 22 可以包括电话、视频监视器、相机、手机、陆地移动无线电（LMR）、控制中心，或者通过通信系统 10、使用媒体分组（或帧）或以其它方式支持音频、视频或其它数据的通信的任何其它通信硬件、软件和/或编码逻辑。端点 22 以及通信网络 24 的端点和组件能够使用诸如蜂窝、IP、PSTN、CDMA、GSM、TDMA 和卫星之类的任何特定类型的技术来通信。端点 22 和 IS 20 还可以包括能够建立媒体会话的无人或自动化系统、网关、其它中间组件或其它设备。

虽然说图示的实施例包括五个通信网络 24a-24e，但是术语“通信网络”应当被理解为一般性地定义能够发送音频和/或视频电信信号、数据和/或消息（包括信号、数据或消息）的任何网络。网络 24a-24e 中的任意一个可以被实现为局域网（LAN）、广域网（WAN）、蜂窝网络、诸如因特网之类的全球分布网络、企业内联网、企业外联网、PSTN、LMR 网

Motorola Solutions, Inc., Ex1003, p. 197

络、无线电网络（RN）、CDMA 网络、GSM 网络、TDMA 网络、卫星网络或者任何其它形式的无线或有线通信网络。

经由通信网络 24a-24e 的通信可以使用任何卫星通信协议。在特定实施例中，一些通信网络可以采用下述语音通信协议，这些语音通信协议允许寻址或标识与通信网络耦合的端点、节点和/或其它组件。例如，通过使用因特网协议（IP），可以用使用 IP 地址来定向的信息来标识通信系统 10 中例如通过通信网络 24b 而耦合在一起的各个组件。以这种方式，网络 24b 可以支持用于在通信系统 10 的各个组件之间交换媒体分组的任何形式的点对点、多播、单播、或者其它技术和/或它们的任意组合。能够交换音频、视频或其它数据的任何网络组件都包括在本发明的范围内。

因为 IP 网络共享发送数据的常用方法，所以可以在位于不同的但是互联的 IP 网络上的电话设备之间发送电信信号。除了与其它 IP 网络耦合之外，通信网络 24b 还可以例如通过使用包括网关在内的接口或组件与非 IP 电信网络耦合。在所图示的实施例中，通信网络 24b 可以通过网关与 PSTN 24c 耦合。在一些实施例中，该网关可以是 IS 20 或者网络 24e 的一部分。PSTN 24c 包括位于世界各地的交换台、中央局、移动电话交换局、传呼交换局、远程终端、和其它相关电信设备。IP 网络通过将数据置于分组中并沿一条或多条通信路径将各个分组单独发送到所选目的地来发送数据（包括语音和视频数据）。与电路交换网络（例如，PSTN 24c）不同，经由 IP 网络的呼叫或传真发送期间不需要专用电路。

允许经由 IP 网络传送电信的技术可以包括 IP 上的语音（VoIP）或者简单的分组语音（VoP）。在所图示的实施例中，一个或多个端点 22 以及通信网络 24 的端点和组件可以是能够参与 IM、视频和其它多媒体通信会话的 IP 电话设备。IP 电话设备具有将用户语音（或者其它输入）封包成 IP 分组以使得可以经由通信网络发送该语音的能力。IP 电话设备可以包括电话、传真机、运行电话软件的计算机、节点、网关、有线或无线设备、手持式 PDA、或者能够经由 IP 网络执行电话功能的任何其它设备。

在特定实施例中，通信系统 10 可以在会话发起协议（SIP）环境中接收和发射数据。SIP 是一种应用层控制协议，其包括用于建立、修改和终

Motorola Solutions, Inc., Ex1003, p. 198

止通信会话的基元（primitive）。SIP 与基础传送协议相独立且与正在被建立会话的类型不相关地工作。SIP 还透明地支持名字映射和重定向服务，这些服务支持个人移动性。

虽然图 1 图示了特定数目和配置的端点、IS 和通信网络，但是通信系统 10 设想了任何数目或配置的用于传递媒体的这些组件。

图 2 图示了根据特定实施例的互操作系统（IS）50。IS 50 可以类似于图 1 的 IS 20 并提供与 IS 20 相似的功能性。在所图示的实施例中，IS 50 包括接口（IF）51、网关 52、操作管理应用（OMA）54、多点会议系统（MCS）56、策略引擎 58、认证和安全系统 60、呼叫管理器 62、处理器 64 和存储器模块 66。IS 50 经由通信网络 90 与 PC 端点 70 以及 LMR 端点 75、80 和 85 相耦合。通信网络 90 可以包括图 1 所示的一个或多个通信网络 24。PC 端点 70 可以用于访问、配置和控制由 IS 50 提供的各种功能性。PC 端点 70 可以运行用于该访问、配置和控制的客户端应用。该客户端应用可以使端点 70 的用户能够接收和监视来自各种端点和虚拟对话组的通信。在特定实施例中，其它类型的端点可以用于访问、配置和控制 IS 50，例如，IP 电话、基于 web 的瘦型客户端（thin client）、PDA 和移动设备。IS 50 可以通过一个或多个通信网络来耦合到这些端点（包括 PC 端点 70）。

接口 51 被用在 IS 50 和其它网络组件之间的音频、视频、信令和其它数据的通信中。例如，接口 51 可以从诸如通信网络 90 的端点、端点 75、80 和 85 之类的端点接收通信。该通信可以全部或部分经由 IP 网络发生，从而无需端点和 IS 之间的专用线路。

网关 52 可以包括用于提供网络互操作性和后端遗留应用集成（back-end legacy application integration）的任何合适的网关，例如，LMR 网关、PSTN 网关和应用网关。网关 52 提供 IP 服务和可互操作网络（例如，图 1 的 LMR 网络 24a）之间的映射。在一些情况下，网关 52 可以不位于 IS 之内，而可以分布在通信系统的各处，以使能各种通信网络之间的通信。

操作管理应用（OMA）54 包括用于 IS 50 的配置、管理和控制的功能性（包括会议和协作管理），并且可以由用户例如经由 PC 端点 70 来访

Motorola Solutions, Inc., Ex1003, p. 199

问。在特定实施例中，OMA 54 可以使诸如派遣人员或管理员或者移动用户（例如，第一应答器移动用户）之类的用户能够经由移动端点来访问 IS 50，以同时配置、管理和参与一个或多个虚拟对话组和 ad hoc 会议。在特定实施例中，可以通过下述 web 接口来访问 OMA 54，该 web 接口例如用作用于无线电的软电话 。可以使用鼠标、键盘、触摸屏、语音命令或者任何其它合适的接口来控制屏幕显示。OMA 54 屏幕显示可以包括任何数目的用于提供互操作通信的功能控件。OMA 54 可以在用户访问 OMA 时对用户进行认证并获得用户配置信息。OMA 54 一次可以监视和提供针对任何数目的信道和模态（modality）的通信能力，以向 OMA 用户提供该能力以一次性在多个虚拟对话组上通信并控制该多个虚拟对话组。在特定实施例中，OMA 54 可以管理和控制记录，并监督所记录的通信在特定 VTG 中的回放。

多点会议系统（MCS）56 为一个或多个网络的多个端点提供协作和会议服务。例如，多个端点（例如，不同网络（例如，不同机构或群组的网络）的 LMR 和不同网络的不同类型的端点）的用户可以通过 MCS 56 而被桥接在一起以提供虚拟对话组通信。MCS 56 可以包括任何合适数目或类型的会议网桥、端口、数字信号处理器或者用于辅助这里所论述的通信的其它组件。

策略引擎 58 包括在发生各种事件时用于采取各种操作和功能性的策略以提供动态事件管理。这些策略可以包括预定的和 ad hoc 的策略两者。例如，在检测到 VTG 内的新端点时，可以执行预定策略以利用 VTG 的状态来无缝地更新该端点。在更新处理期间，端点可以基于 ad hoc 来调整呈现更新的方式。调整例如可以针对以下任意一项：所记录的通信被回放的速度（例如，加速或放慢回放）、被回放的通信的类型（例如，来自特定端点或者来自特定通信网络）、何时呈现通信（例如，在端点能够参与 VTG 之前或之后，或者仅在 VTG 通信无声时）、如何呈现通信（例如，音调或音色、可听或文本、背景或前景）、或者可能需要改变的任何其它方面（例如，往回多少处开始回放）。类似地，策略引擎 58 可以包括用于确定应当何时记录 VTG 的通信的策略，例如以下将论述的策略中的任

Motorola Solutions, Inc., Ex1003, p. 200

意一个。策略引擎 58 可以确定将要更新那些特定端点以及它们可以具有用于接收更新的什么能力（例如，仅音频、音频和视频、仅视频）。

认证和安全系统 60 管理用于 IS 50 的用户和参与可互操作通信的那些用户的访问、配置和控制特权。例如，不同用户可以具有指派给可互操作通信的不同特权。一些用户可以仅具有针对一个或多个特定对话组的发送或收听特权，而其它用户可以具有在所有对话组中通信或者设置和配置各种对话组的能力。用户特权可以在发生特定事件时动态地改变。

呼叫管理器 62 维护关于各种用户的信息，所述用户例如是由 IS 50 提供可互操作通信的 IP 网络的用户。这辅助了 PTT 到 IP 网络的扩展，并辅助了经无线电和非无线电网络来提供语音和数据互操作性。在特定实施例中，呼叫管理器 62 可以维护关于用户的信息的列表、表格或其它结构。该信息可以包括名字或其它标识符和联系信息，例如用户的电话号码和电子邮件地址。在一些实施例中，关于用户的信息被维护在例如通过网络 90 与呼叫管理器 62 耦合的其它组件内，以使得呼叫管理器 62 可以使用该网络来访问关于用户的信息。在特定实施例中，呼叫管理器 62 可以表示分布在与 IS 耦合的通信网络的各处的硬件、软件和/或编码逻辑的任何适当组合。

处理器 64 可以是微处理器、控制器、或者任何其它合适的计算设备、资源、或者可操作以提供单独的 IS 50 功能性或者与诸如 OMA 54 之类的其它 IS 组件结合的 IS 50 功能性的硬件、软件和/或编码逻辑的组合。该功能性可以包括向用户（例如通过 OMA 54 来访问 IS 50 的端点的用户）提供这里所论述的各种特征。这些特征可以包括：控制如何及何时记录特定 VTG 的通信以及何时回放通信以更新添加到该 VTG 的端点。

存储器模块 66 可以是任何形式的易失性或非易失性存储器，包括但不限于磁性介质、光学介质、随机访问存储器（RAM）、只读存储器（ROM）、可移动介质、或者任何其它合适的本地或远程存储组件。存储器模块 66 可以存储由 IS 50 利用的任何合适的数据或信息，包括软件和编码逻辑。在一些实施例中，存储器模块 66 可以存储（例如，用于个人、群组或 VTG 的）所记录的通信和/或回放选项或设置。在特定实施例中，

Motorola Solutions, Inc., Ex1003, p. 201

存储器模块 66 可以包括用于用户管理、对话组管理、资源库管理、特权、备份配置和信息和/或时间戳和活动跟踪。

IS 50 还可以包括任何数目的交换机、路由器、防火墙、移动访问路由器、接入点、无线网桥和其它组件，以适应特定的操作要求和需要。

在特定实施例中，例如在 LMR 网络互操作性的情况下，IS 50 可以通过上述一个或多个组件或者通过其它组件，利用诸如 G.711 或 G.729 之类的标准音频编解码器来编码所接收的音频。那些音频样本可以被分组成适合在 IP 网络上传送的基于标准的实时传送协议（RTP）或者实时传送控制协议（RTCP）分组。在这一点上，可以从各个无线电系统的不同特性中抽取（abstract）通信元件。这些音频分组可以单独（单播）或者作为群组（多播）经网络而发送到其它无线电系统。这些音频分组的接收者可以是能够接收和解码 RTP 或 RTCP 流的设备，例如，IP 电话或者具有适当软件的 PC。IP 网络和 IP 使能设备可被用于允许端点在特定无线电信道上从桌面监视或发射，而无需发出另一个无线电。

如上所述，IS 50 可以辅助通过虚拟信道或对话组在各种网络的端点之间的通信。例如，信道可以包括单向或双向路径，用于发送和/或接收电或电磁信号。这可以包括例如传统无线电物理 RF 信道。在这种情况下的对话组可以是共享公共职责的用户的子组，并且通常协调它们自己之间的动作，而不与其它子组进行通信交互。例如，楼宇的安全力量网络可以包括通常不需要与其它功能组无线电连接，但是通过无线电、电话或者其它形式的电子通信来不断地在它们自己之间通信的各种端点。

虚拟对话组（VTG）表示一组信道的互操作性，例如，作为音频会议或会晤。虚拟对话组可以包括关联虚拟信道和 ID。虚拟信道可以包括与虚拟对话组相关联的诸如 IP 地址之类的地址，用户可以通过该地址来访问虚拟对话组和/或来自 VTG 成员端点的通信可以通过该地址来桥接。在特定实施例中可以利用各种类型的虚拟对话组，例如， VTG 的所有端点、包括多个对话组（例如，来自通信被混合的不同频率的多个无线电源）的 VTG、单播组以及单播和多播组的组合可以使用多播地址。

作为一个示例，特定虚拟对话组可以包括以下各项的任何一个或多

Motorola Solutions, Inc., Ex1003, p. 202

个：（1）公安部门无线电网络的某些用户所使用的信道或其它多播路径，（2）消防部门无线电网络的某些用户所使用的信道或其它多播路径，（3）公司的安全无线电网络的某些用户所使用的信道或其它多播路径，以及（4）诸如 IP 电话、IP 使能 PDA 或 PC 之类的 IP 使能端点的多个用户。IS 50 的操作员可以使用任何合适的接口，例如通过将所包括的信道和 IP 端点拖放到表示虚拟对话组的单个区域来配置该虚拟对话组。还可以由 IS 50 例如通过使用 OMA 54、策略引擎 58 和处理器 64 根据组织定义的策略来配置 VTG。在这个 VTG 的生命期间，该 VTG 内的各个端点的通信可以被记录。随后可以为加入该 VTG 的端点的用户回放所记录的通信。回放可以用于更新或者向这些端点的用户通知该 VTG 的情形。

MCS 56 可以提供用于虚拟对话组成员的会话的功能性。在特定实施例中，可以按需动态地将多个对话组临时连接（patch）在一起。在一些情况下，虚拟对话组可以不必包括通过 IS 的通信，但是取而代之可以包括其通信在受 IS 控制的网关（例如 LMR 网关）处被映射到 IP 地址的成员端点。

以下情境被呈现以帮助理解特定实施例的功能性。应当注意，这个情境仅仅用于例示的目的，并且仅示出了一个特定实施例的一些特征和工作方式。其不打算示出所有实施例的所有特征。

为了这个情境的目的，假设 LMR 75、80 和 85 都是不同通信网络的一部分。例如，假设 LMR 75 是公安部门通信网络（PDCN）的一部分，LMR 80 是楼宇安全通信网络（SCN）的一部分，而 LMR 85 是 FBI 通信网络（FBICN）的一部分。LMR 75、80 和 85 可以不是正常地相互直接通信。为了简便起见，PO 75 可以用于指警员或者其 LMR 75，SO 80 可以用于指安全员或者其 LMR 80，FBI 85 可以用于指 FBI 密探或者其 LMR 85。

假设在 SO 80 当前正在上班的楼宇中有炸弹威胁。在接收到炸弹威胁的通知之后，来自本地公安部门的调度员可以创建虚拟对话组以辅助正在处理该炸弹威胁的那些端点之间的通信。为了这个情境的目的，在该楼宇附近且可以参与炸弹威胁 VTG 的仅有的另一个端点（除了 SO 80 之外）是 PO 75。因此，当调度员创建炸弹威胁 VTG 时，她可以将 PO 75、SO

Motorola Solutions, Inc., Ex1003, p. 203

80 和她自身包括在该炸弹威胁 VTG 中，从而允许 PO 75 和 SO 80 相互通信，就好像他们是同一通信网络的一部分一样，虽然他们仍然使用他们原来的通信网络（即，分别为 PDCN 和 SCN）。本发明的特定实施例还可以在该炸弹威胁 VTG（或者可以创建的任何其它 VTG）内包括其它类型的端点。例如，炸弹威胁 VTG 可以包括位于楼宇内部的 PSTN 电话、属于对该炸弹威胁感兴趣的人（例如，楼宇所有人、警察局长）的手机、其它 LMR 或者以某种形式支持通信的任何其它端点。

在调度员创建炸弹威胁 VTG 时，IS 50 可以开始记录正在 VTG 内的端点 PO 75 和 SO 80 之间传送的通信。这些通信可以通过 IF 51 而被接收并被存储在存储器模块 66 内。取决于 IS 50 所使用的策略，可以由若干不同的事件或因素中的任意一个来触发对 VTG 通信的记录。例如，在一些实施例中，仅仅 VTG 的创建可以致使记录其中的通信。特定实施例在特定类型的 VTG（例如，火灾或者炸弹威胁，特定大小、持续时间或位置的 VTG）被创建的情况下可以开始记录。在一些实施例中，可以由一个或多个特定端点离开 VTG 来触发记录。如上所述，特定实施例在确定何时记录 VTG 的通信时可以组合不同标准。例如，一些实施例在消防队长不在响应于居民区中的火灾而形成的 VTG 中的情况下可以开始记录。在特定实施例中，调度员可能需要使能记录。

例如存储在存储器模块 66 内的记录的长度可以取决于 IS 50 的配置。在一些实施例中，IS 50 可以存储在 VTG 的生命期间（即，从 VTG 的形成到终止）传送的通信。在特定实施例中，IS 50 可以存储在特定量的时间（例如，最后一小时）内发送或接收的那些通信。在特定实施例中，IS 50 可以对每一个 VTG 使用相同的存储方案（例如，存储 VTG 的生命内或者特定量的时间内的通信），而在其它实施例中，IS 可以对不同 VTG 使用不同的记录长度。在可以对不同 VTG 使用不同记录长度的那些实施例中，一些实施例可以允许调度员设置记录长度，而一些实施例可以将该长度与 VTG 的类型相关联。此外，一些实施例可以利用简化记录，在简化记录中，IS 50 可以连续地记录 VTG 内的所有东西（包括通信、无声和/或噪声），而特定实施例可以使用智能记录的形式，例如仅有通信时才记

Motorola Solutions, Inc., Ex1003, p. 204

录。在 IS 50 仅在有通信时才记录的情况下，存储器模块 66 可以将各个通信存储为分立的不连续通信，或者可以将它们存储为单个大通信。此外，在 IS 50 仅在有通信时才记录的一些实施例中，存储器模块 66 可以存储与通信的定时相关的信息（例如，通信之间的无声的时间或位置和持续时间）。这种信息可以被用于重新创建 VTG 的通信的定时，以使得其可以更精确地反映原始 VTG 通信。这可以允许端点回放具有或不具有无声的通信。

在炸弹威胁 VTG 被形成并且 IS 50 开始记录其中的通信之后的某个时间，FBI 85 可以被加入到该炸弹威胁 VTG。可以由他自身、调度员、某个其它端点、或者 IS 50（包括与其耦合的任何组件）来将他加入。IS 50 可以由于各种原因，例如基于他的位置或他的职能（例如，他是 FBI 炸弹威胁专家）而将他加入。在被加入到炸弹威胁 VTG 之后，FBI 85 可能需要被通知以情形，因为他先前不是该炸弹威胁 VTG 的一部分并且可能并不知晓该 VTG 内的情形。此外，由可能知晓该情形的、该炸弹威胁 VTG 的其它端点之一向 FBI 85 提供更新可能并不合意。例如，所述其它端点可能没有更新 FBI 85 的时间、能力或精力；他们可能不想停顿（tie-up）若干端点的通信信道来更新一个端点；或者 VTG 可能正在以相对较高的速率来增加/移除端点，以使得使用已知端点来更新新端点可能是低效率和/或不切实际的。但是，虽然使 VTG 内的已知端点之一更新 FBI 85 可能不合意，仍然希望更新 FBI 85。

为了更新 FBI 85，IS 50 可以通过 OMA 54、策略引擎 58、处理器 64、存储器 66 和接口 51 的某种组合来回放存储在存储器模块 66 内的通信。如何回放通信可以取决于若干因素，例如，IS 50 和/或策略引擎 58 是如何配置的和/或来自 FBI 85 的输入和/或调度员。

在特定实施例中，FBI 85 在其可以参与 VTG 之前可以接收所记录的通信。在大多数情形下，这可能是不合意的，因为其可能会延迟 FBI 85 参与 VTG。但是，在 IS 50 回放特定数目的不连续通信和/或增加回放速度（这两者都将在以下得到更详细论述）的情况下，FBI 85 等待更新结束时由其浪费的时间量可能不是很巨大。

Motorola Solutions, Inc., Ex1003, p. 205

在一些情况下，FBI 85 可以在其参与 VTG 时被更新。这在一些实施例中可以通过在回放所记录的通信时使用悄悄话特征来辅助。悄悄话回放可以允许 FBI 85 在他正在被更新时参与炸弹威胁 VTG。悄悄话特征以低于实况通信的音量来播放所记录的通信，以使得 FBI 85 可以经由所记录的通信来收听那些实况通信。

在一些实施例中，IS 50 可以允许 FBI 85 控制所记录的通信的回放。因此，FBI 85 能够倒回到（例如，在实况通信淹没正使用悄悄话特征来呈现的所记录的通信的情况下）他错过的通信或者特别重要并且他想要确保收听到全部的通信。类似地，FBI 85 可以快进通过不是特别相关或感兴趣的或者传达他可能已经知道的信息的部分。回放控制还可以例如在他需要给特定任务专心的注意力时或者在他想要能够收听 VTG 通信而不受所记录的通信打扰时，允许他暂停回放。无论是否使用悄悄话特征都可以使用对所记录的通信的回放的控制。

在特定实施例中，当实况通信被检测到时，IS 50 可以暂时停止或暂停回放。这具有以下效果：当可能没有任何 VTG 通信时，仅回放所记录的通信。取决于特定实施例和 VTG 的当前配置，可以是：当在作为所记录的通信的源的特定 VTG 内存在无声时，或者当该端点是其成员的所有 VTG 内都存在无声时（例如，调度员可以是若干 VTG 的一部分，因此可能希望仅在所有这些 VTG 都具有无声时才发生回放），IS 50 停止回放所记录的通信。在暂时停止或暂停对所记录的通信的回放的那些实施例中，一些可以从其停止的点开始恢复回放，而一些可以从在上次停止或暂停回放的点之前特定时间量的在前点开始恢复回放。在特定实施例中，IS 50 可以将优先级与各个通信相关联。优先级可以基于创建通信或 VTG 的端点，所述通信从该端点发起。当为 FBI 85 回放所记录的通信时，IS 50 在其检测到来自具有比所记录的通信更高优先级的任何端点的通信的情况下可以暂停回放。该更高优先级通信可以来自 FBI 85 正与其联系的任何端点（例如，来自炸弹威胁 VTG 的端点、FBI 85 是其成员的任何其它 VTG、或者使用 FBICN 的端点）。因此，仅仅更高优先级的端点可以中断更新处理。

Motorola Solutions, Inc., Ex1003, p. 206

向 FBI 85 呈递所记录的通信和炸弹威胁 VTG 的通信两者可能会导致他混淆哪些是 VTG 通信而哪些是所记录的通信。不同实施例可以使用不同技术来区分 VTG 和所记录的通信。例如，一些实施例可以通过变更诸如所记录的通信的音调或音色之类的方面来改变所记录的通信听起来的方式。IS 50 的一些实施例可以包括帮助 FBI 85 区分实况通信和所记录的通信的唯一标识符。例如，一些实施例可以使用虚拟标识符，例如，位于端点上的光或者用于具有图形显示器的端点的背景的特定颜色或图像。特定实施例可以使用可听信号，例如背景中的音声或者在呈现所记录的通信之前和/或之后的信号音，以表明哪些通信是记录的而哪些是实况的。

存在至少两个不同时间点，在所述时间点处可以使得策略引擎 58 用所记录的通信来更新 FBI 85。第一个可能的停止时间点可以是 FBI 85 加入 VTG 的时间点。这在 FBI 85 能够收听实况通信和所记录的通信两者的情况下会是很有用的。因此，一旦他加入到 VTG，就将无需呈现他可能已经接收到的所记录的通信。另一个可能的停止时间点可以是 FBI 85 已经收听到到现在为止的所有所记录的通信的时间点。这在 FBI 85 在他完成被更新之前无法收听 VTG 通信的情况下会是很有用的。

除了供回放以更新增加到特定 VTG 的特定端点之外，还可以由于其它原因而记录 VTG 通信。例如，可以记录 VTG 通信以维护关于在特定事件期间在 VTG 内发生了什么的记录。在特定实施例中，FBI 85 可能想要从不是炸弹威胁 VTG 的成员的另一个端点获得引导。为了实现这个目的，FBI 85 可以向 IS 50 传递请求以使 IS 50 为该另一个端点播放来自炸弹威胁 VTG 的所记录的通信。在一些实施例中，IS 50 例如通过策略引擎 58 可以跟踪收听特定所记录的通信所需的特权。于是，在播放所记录的通信之前，IS 50 可以经由策略引擎 58 和存储器模块 66 来检查为该端点存储的特权，并且如果该端点的所存储特权与策略的特权要求相匹配，则允许回放所记录的通信。如果它们匹配，则 IS 50 随后可以允许该端点收听来自炸弹威胁 VTG 的所记录的通信，就好像它是 VTG 的成员一样。

目前为止已经呈现了若干不同实施例和特征。取决于操作需要和/或组件限制，特定实施例可以组合这些特征中的一个或多个。这考虑了 IS 50

Motorola Solutions, Inc., Ex1003, p. 207

针对各种组织和用户的需要的极大适应性。例如，特定实施例可以使用仅在 VTG 通信正在被传送时才记录的智能记录来记录 VTG 的通信。该记录可以由针对当前无法联系到警察局长的银行抢劫而创建的 VTG 来触发。然后，一旦警察局长变为可联系到，就可以在警察局长为其成员的所有 VTG 中存在无声时使用悄悄话特征向他呈现通信。

可以配置任何数目的虚拟对话组以提供任何合适的音频、数据、视频和控制网络互操作性。可以基于位置、组织需求、事件需求或任何其它合适的特性，使用任何合适的用户/端点群组或信道来创建虚拟对话组。管理员或操作员可以例如通过 OMA 54 来配置诸如名字、描述、参与者、多播 IP 地址、编解码器和闭锁（latch）选项之类的信道细节。

图 3 图示了根据特定实施例的端点 90，该端点 90 可以包括移动端点。端点 90 可以类似于这里所论述的其它端点（例如，LMR、蜂窝电话、IP 电话、PC、PDA、PSTN 电话、视频监视器、相机或传感器）并可以提供与所述其它端点相似的功能性。

在所图示的实施例中，端点 90 包括发射器/接收器 92、用户接口 94、处理器 96 和存储器模块 98。发射器/接收器 92 从和向其它网络组件接收和发射诸如音频和视频以及其它数据之类的通信，并且还可以接收和发射位置信息。用户接口 94 提供了一种机制，端点 90 的用户可以通过该机制来操作端点并与其它网络设备通信。接口 94 可以包括键盘、显示器、触摸屏、音频输入或任何其它合适的接口。可以通过语音识别、键击集合、软按键或者以其它方式来提交指令。这样的指令可以包括例如从端点 90 发送的用以防止其被指派给特定 VTG 的优势（override）命令、或者用以控制对所记录的通信的回放的指令/请求。

处理器 96 可以是微处理器、控制器、或者任何其它合适的计算设备、资源、或者可操作以执行端点功能性的硬件、软件和/或编码逻辑的组合。单独地或者与其它端点组件相结合地，处理器 96 提供这里说论述的端点功能性。存储器模块 98 可以是任何形式的易失性或非易失性存储器，包括但不限于磁性介质、光学介质、随机访问存储器（RAM）、只读存储器（ROM）、可移动介质、或者任何其它合适的本地或远程存储组

Motorola Solutions, Inc., Ex1003, p. 208

件。

在特定实施例中，端点 90 可以被指挥官或其它用户使用，并且可以运行 IS 50 的客户端应用。在一些实施例中，端点 90 可以从多个端点接收通信，并且处理器 96 可以基于发射端点的 VTG 或者该指挥官可以选择的任何其它标准来滤除某些通信以便呈现给端点 90 的用户。

本领域普通技术人员将会了解，这里所公开的端点和互操作系统仅仅是根据特定实施例的示例配置。这些系统可以包括任何数目的接口、处理器、存储器模块、或者其它组件，以实现这里所描述的功能性和特征。另外，这些组件和执行上述功能性所需的其它组件可以相互集中地布置（在本地），或者可以分布在通信系统和网络的各处。另外，这些系统和设备中的一个或多个在执行这里所描述的各种功能性时可以一起工作。

图 4 图示了加入虚拟对话组的方法。该方法从步骤 400 开始，在步骤 400 中辅助虚拟对话组的端点的通信。该 VTG 的各个端点的具体构成可以不同，可以是它们用来通信的设备类型。例如，一个 VTG 可以包括来自不同执法机构（例如，高速公路巡逻队、县治安官、FBI、CIA 等）的使用 LMR 的端点，而另一个 VTG 可以包括使用 LMR 的一些端点和使用手机的一些端点。无论正在使用的设备或通信信道为何，VTG 内的端点都能够通过 IS 来相互通信。特定 VTG 可以响应于事件（例如，火灾或抢劫）而被创建，或者作为组织的正常操作过程的一部分（例如，楼宇可以具有包括楼宇中的电话和安全员的 LMR 的 VTG）。

当特定 VTG 被创建时，有利的是记录在其中的端点的通信。这在下述情况下会是有用的：在稍后将重放/分析这些通信的情况下，在端点可能正在加入 VTG 并且针对已经被传递的通信想要被更新的情况下，或者在端点想要来自另一个端点的建议并且想要向该另一个端点提供关于在该 VTG 内已经进行的通信的情况下。因此，在步骤 410，记录了 VTG 的通信。在特定实施例中，取决于 IS 正在使用的策略，可以在不同时间开始记录。例如，一旦已经创建 VTG 就可以自动开始记录，如果创建了某种类型的 VTG（例如，响应于诸如高速追逐之类的具体事件而创建的 VTG）则可以开始记录，如果创建 VTG 的端点指示应当记录通信则可以开始记

Motorola Solutions, Inc., Ex1003, p. 209

录，或者如果特定端点不在特定 VTG 内则可以开始记录。一些实施例可以组合多个标准以确定何时开始记录通信。此外，在特定实施例内，每次都可以在不同时间开始记录。因此，一些实施例可以允许在特定时间期间内创建了特定 VTG 的情况下开始记录，而在不同时间创建了同一 VTG 的情况下不可以开始记录。例如，如果特定端点不是特定类型的 VTG 的一部分，但是该端点正在上班，则 IS 可以开始记录通信。如果该端点不在上班，则 IS 可以不记录通信，因为该不在上班的端点即使将能够加入 VTG 以被更新，这种机会也小很多。

类似地，不同实施例可以存储不同长度的所记录的通信。例如，一些实施例可以存储在 VTG 的生命期间发射或接收的那些通信。特定实施例可以存储在特定时间量内发射或接收的那些通信（例如，在最后一小时发射的那些通信）。此外，一些实施例可以利用普通记录，其中无论通信是否正在被发射 IS 都记录。特定实施例可以使用智能记录，其中当在 VTG 内正在发射通信时，IS 记录。在一些实施例中，当在 VTG 内存在无声时 IS 可以不记录，但是其可以记录无声的定时和持续时段。这种信息可在稍后时间被用于获得分析操作所需的实时法庭信息。

如上所述，在特定 VTG 的生命期间可以增加端点。这些端点可能不完全知晓在 VTG 内正在进行什么，因而可能需要被更新。在步骤 420 向 VTG 增加第一端点之后，可以在步骤 440 向该第一端点呈现 VTG 内的端点的所记录的通信。在一些实施例种，在向第一端点呈现所记录的通信时或之前，他被警告他正在接收的通信是所记录的通信。这在步骤 430 中被示出。一旦已经向 VTG 增加第一端点（并且在特定实施例中，该第一端点已经被更新），他就能够与 VTG 内的其它端点通信，就好像他们都在使用同一通信网络一样。

取决于实施例、配置和用户选择，对所记录消息的指示和呈现两者都可以极大地不同。例如，在步骤 430 接收的指示可以是以下任意一项：照亮端点上的灯（持续的或者闪烁的），改变端点上的灯的颜色，改变图形显示器的背景，在图形显示器上显示消息或图标，提供背景音，生成一个或多个信号音，改变所记录的通信的声音，或者警告第一端点当前正被呈

Motorola Solutions, Inc., Ex1003, p. 210

现的通信是所记录的通信的任何其它方式。类似地，在一些实施例中，第一端点可以在 VTG 的通信正在被呈现时显示指示。因此，第一端点的用户能够区分 VTG 通信和所记录的通信。

如上所述，对所记录的通信的呈现可以非常不同。例如，在步骤 440 呈现的所记录的通信可以以下面任一方式来被呈现：在第一端点能够发射或接收通信之前部分或全部地呈现所记录的通信；以加速速率呈现所记录的通信以使得例如可以在二十分钟内呈现半小时的所记录的通信；仅当在 VTG 的通信中有中断时才呈现所记录的通信；如果不存在在 VTG 内通信的更高优先级的端点则呈现所记录的通信；允许用户控制对所记录的通信的呈现（例如，暂停、倒退或者快进所记录的通信）；允许第一用户增大或减小呈现所记录的通信的速率；使用悄悄话特征，其中，所记录的通信在背景中被播放，而 VTG 通信在前景中被呈现；和/或可能是合意的任何其它方法。

在步骤 450，在正向第一端点呈现所记录的通信时或者在已经向第一端点呈现所记录的通信之后，辅助 VTG 内的第一端点和多个端点的通信。这使得第一端点可以与 VTG 内的其它端点通信，就好像他们正在使用同一通信信道一样。

在适当的情况下，可以组合、修改或者删除图 4 所图示的一些步骤，并且还可以向该流程图增加额外步骤。另外，可以以任何合适的顺序来执行各步骤，而不会脱离本发明的范围。

虽然已经参考特定实施例详细描述了本发明，但是应当了解，在不脱离本发明的精神和范围的情况下可以对其进行各种其它改变、替代和变更。例如，虽然已经参考通信系统 10 内包括的许多元件以及所图示的端点和互操作系统来描述了本发明，但是可以组合、重新排列或者定位这些元件以适应特定的路由体系结构或需要。另外，在适当的情况下，可以作为分立的外部组件向通信系统 10 以及所图示的端点和互操作系统或者相互提供这些元件中的任意一个。本发明在这些元件以及它们的内部组件的布局方面设想了极大的灵活性。

本领域技术人员可以确定许多其它改变、替代、变化、变更和修改，

Motorola Solutions, Inc., Ex1003, p. 211

并且本发明打算包含落在所附权利要求的精神和范围内的所有这些改变、替代、变化、变更和修改。

Motorola Solutions, Inc., Ex1003, p. 212

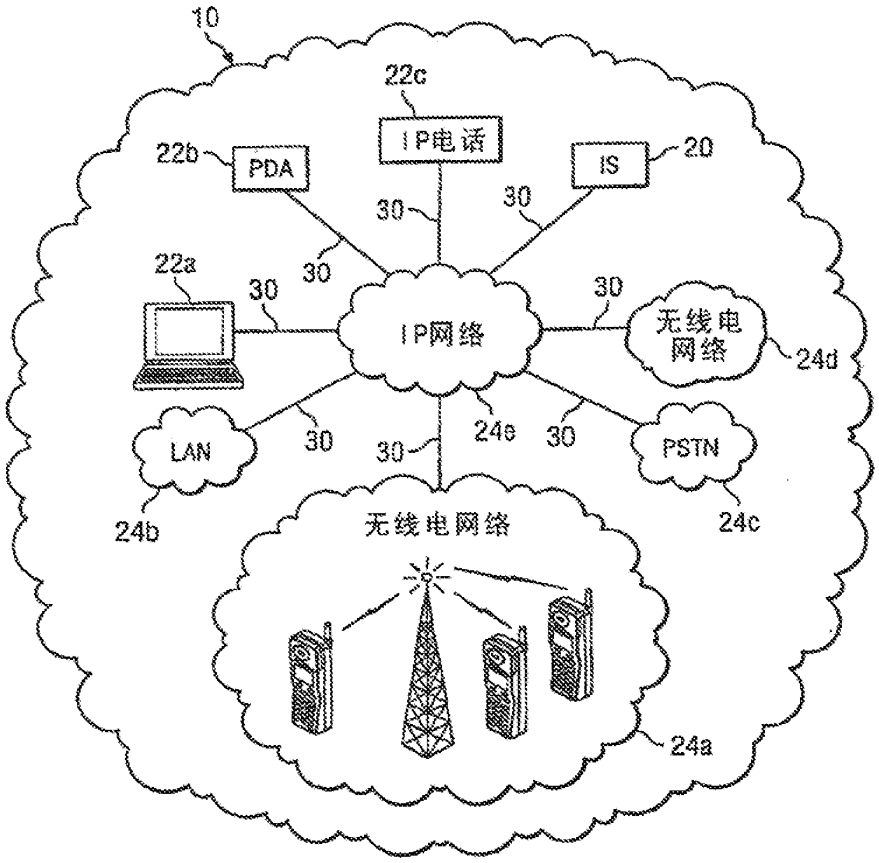


图1

Motorola Solutions, Inc., Ex1003, p. 213

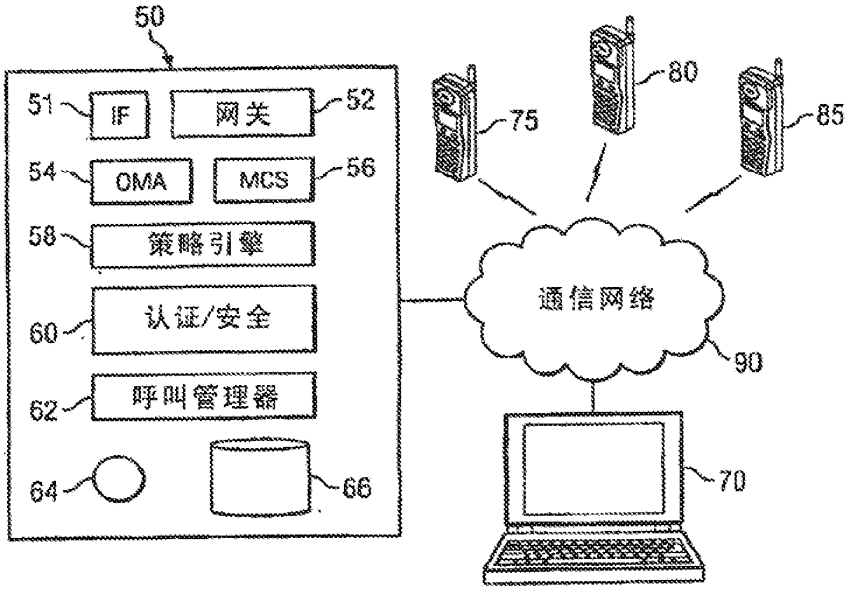


图2

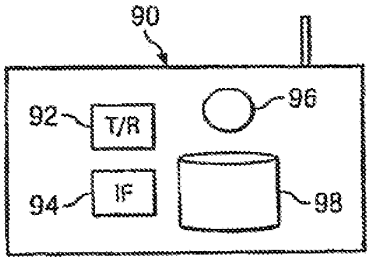


图3

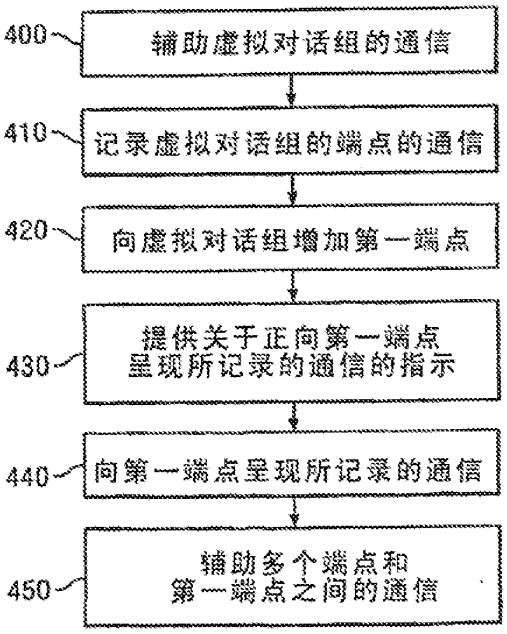


图4

Motorola Solutions, Inc., Ex1003, p. 214

EP0849964A1

Publication Title:

Method and system for centralized calling to access a service, especially centralized calling for taxis

Abstract:

The method operates over an extended geographical area which is covered by a cellular network of radio telephones (Z1-Zn). A call is received from a dedicated call station which has a unique number in that area. The zone location of the user is determined and provided to an operator, who puts out a general call over the cellular network starting with the service provider nearest the caller. When a service provider responds, the general transmission is stopped. The caller is then put in direct communication with the service provider. The service provider can accept or reject the caller and in the latter case the general transmission is resumed.

Courtesy of http://worldwide.espacenet.com

This Patent PDF Generated by Patent Fetcher(R), a service of Stroke of Color, Inc.

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

(11) EP 0 849 964 A1

(12) DEMANDE DE BREVET EUROPEEN

(43) Date de publication:
24.06.1998 Bulletin 1998/26

(51) Int Cl.[6]: **H04Q 7/22**, G07B 13/00, G08G 1/127

(21) Numéro de dépôt: **97403119.7**

(22) Date de dépôt: **22.12.1997**

(84) Etats contractants désignés:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Etats d'extension désignés:
AL LT LV MK RO SI

(30) Priorité: **20.12.1996 FR 9615699**

(71) Demandeurs:
- **Bannery, Jacques**
  75013 Paris (FR)
- **Delfabbro, Marc**
  75006 Paris (FR)
- **Jamin, Bernard**
  92310 Sèvres (FR)

(72) Inventeurs:
- **Bannery, Jacques**
  75013 Paris (FR)
- **Delfabbro, Marc**
  75006 Paris (FR)
- **Jamin, Bernard**
  92310 Sèvres (FR)

(74) Mandataire: **Thibon-Littaye, Annick**
Cabinet A. THIBON-LITTAYE
11 rue de l'Etang,
BP 19
78160 Marly-le-Roi (FR)

(54) Procédé et système d'appel centralisé pour accéder à un service, notamment pour l'appel centralisé de taxis

(57) Le procédé comprend les phases suivantes : appel d'un service par un usager (U_a à U_e) en composant un numéro unique pour tout un territoire, localisation de l'appel par un opérateur (OP) gestionnaire du service, appel général de professionnels (T_a-T_b), disponibles et abonnés au service, dans une zone géographique (Z_1) la plus proche de l'appel et mise en communication directe usager-professionnel. Les professionnels (T_a-T_b) sont munis d'un appareil téléphonique portable en communication avec un réseau de radiotéléphonie cellulaire (E/R_1), pouvant être activé sélectivement pour accéder au service. Les usagers (U_a à U_e) peuvent appeler, soit avec le même type d'appareil (U_c), soit à l'aide d'un appareil fixe (U_d, U_e), soit à l'aide d'une borne d'appel publique (U_a, U_b).

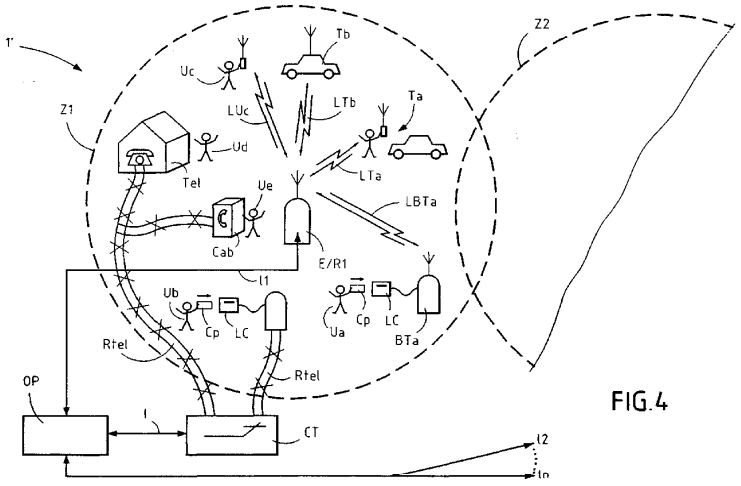


FIG.4

EP 0 849 964 A1

Printed by Jouve, 75001 PARIS (FR)

Motorola Solutions, Inc., Ex1003, p. 216

Description

La présente invention concerne un procédé d'appels centralisés pour accéder à un service.

L'invention concerne également un système pour la mise en oeuvre de ce procédé.

Elle s'applique notamment, bien que non exclusivement, à la gestion centralisée d'appels de taxis.

Dans ce qui suit, sans en limiter en quoi que ce soit la portée, on se placera dans le cadre de cette application préférée de l'invention, sauf mention contraire.

Dans l'art connu, un client qui désire emprunter un taxi a le choix entre plusieurs solutions et de façon pratique, entre les six solutions suivantes :

a/ se rendre à une station de taxis ;

b/ héler un véhicule sur la voie publique ;

c/ appeler une borne téléphonique spécifique située en tête de station ;

d/ appeler un standard téléphonique spécialisé ;

e/ appeler un chauffeur particulier à son domicile ou sur son téléphone mobile ;

f/ effectuer une réservation auprès d'un standard spécialisé, notamment en cas de parcours programmé à l'avance.

Ces divers modes opératoires comportent de nombreux inconvénients, tant pour le client que pour le professionnel.

On va tout d'abord répertorier brièvement les principales limitations imposées au client.

Le client qui désire se rendre à une station doit d'abord en connaître l'emplacement, ce qui n'est pas forcément le cas dans une grande agglomération ou dans un lieu inconnu. Il faut qu'il y ait un véhicule disponible, ce qui n'est pas toujours le cas (heure de pointe, heure tardive, etc.). Dans le cas contraire, il n'est pas possible d'appeler par l'intermédiaire de la borne téléphonique de la station (fonctionnement en réception uniquement). Enfin, en fonction des particularités de la course (distance à parcourir, etc.), le client n'est pas assuré que le chauffeur l'accepte.

Sur la voie publique, le client peut héler un taxi, mais il est souvent difficile de le repérer lorsque la circulation est dense. En outre, il est nécessaire que ce véhicule soit libre et non en route pour effectuer une course.

Pour appeler une borne téléphonique en tête de station (lorsqu'elle existe), il est nécessaire de connaître le numéro de téléphone. Il est donc nécessaire (sauf pour une station connue) de consulter un annuaire ou de disposer d'un moyen similaire (Minitel, etc.). On retrouve les mêmes problèmes que précédemment : disponibilité d'un taxi, etc.

L'appel à un standard spécialisé semble plus sur. Cette méthode n'est pourtant pas exempte d'inconvénients. Il existe plusieurs standards de ce type dans les grandes agglomérations. Les taxis travaillent souvent aussi en dehors de la tutelle de ces standards (clientèle privée, etc.). Le client, toujours astreint à la recherche d'un numéro et doit attendre au téléphone que la standardiste trouve un taxi libre (le problème se pose de nouveau pour les heures de pointe) et doit attendre le taxi, ce qui peut demander plusieurs dizaines de minutes (embouteillage, accident, etc.). Le prix de la course est majoré en fonction du temps d'approche et de la prise en charge. L'intervention d'un tiers (standardiste) augmente les risques de malentendus (mauvaise adresse, etc.).

La gestion de ces standards étant assurée par des sociétés concurrentes, ils ne sont évidemment pas interconnectés. En cas d'indisponibilité de véhicule, le client doit recommencer toutes les opérations avec un autre standard.

Il est aussi possible de souscrire un abonnement auprès de certaines sociétés qui garantissent un service plus rapide. Cependant, ce service est naturellement très onéreux, sans compter les éventuels droits d'entrée et cotisations annuelles.

Enfin, faire appel à un chauffeur particulier présuppose de connaître son numéro de téléphone et ne garantit pas sa disponibilité. En général, il s'agit d'un chauffeur habituel et le prix du service est le plus souvent majoré.

Pour les professionnels, comme il a été indiqué, les modes opératoires rappelés ne sont pas exempts non plus d'inconvénients.

Le temps passé en station est du temps perdu, d'autant plus que la législation de certains pays (c'est le cas de la France) impose un temps de travail maximum qui englobe le temps en station. Toutes les stations ne sont pas équipées de bornes téléphoniques ce qui diminue le nombre de clients potentiels. Enfin, le professionnel, compte tenu de ce qui précède, aura tendance à refuser des courses à faible distance, jugées non rentables.

Sauf à être relié à un standard radio (ce qui n'est pas le cas de tous les taxis), le professionnel en phase finale d'une course ne peut savoir qu'un client potentiel situé à proximité cherche vainement un véhicule.

En cas d'appel radio, la communication peut être interceptée par un collègue indélicat. Le taxi peut également être victime de clients abusifs qui trouvent un autre taxi sans décommander le premier.

Si par contre, le professionnel est abonné à un standard radio, il est assujetti à de nombreuses contraintes et subit de nombreux inconvénients : prix élevé de l'abonnement, obligation de signaler régulièrement la position du véhicule, répartition des courses entre les différents taxis en cas de pénurie, obligation de rester à l'intérieur du véhicule pour intercepter les communications, contraintes d'ordres réglementaire et contrac-

Motorola Solutions, Inc., Ex1003, p. 217

tuel, non-interconnexion des différents standards (perte de clientèle potentielle), zones de réception défectueuse, etc.

Les inconvénients qui viennent d'être énoncés se retrouvent, sinon de façon identique, mais au moins de façon très similaire dans de nombreuses autres activités : dépannage automobile sur route ou voie urbaine, dépannage d'appareils ménagers à domicile, restauration rapide à domicile, etc.

L'invention vise à obvier les inconvénients qui viennent d'être rappelés et, notamment, à proposer un procédé d'appel centralisé d'accès à un service, simple et efficace, qui n'entraîne pas un surcoût, ni pour le professionnel qui le remplit, ni pour l'usager.

Pour ce faire, l'invention tire partie de certaines particularités techniques liées aux communications téléphoniques et radiotéléphoniques à l'aide de téléphones portatifs ou mobiles. Les téléphones de ce dernier type sont désormais très répandus et accessibles pécuniairement à un grand nombre de personnes, soit à l'achat, soit via une formule d'abonnement proposée par différents opérateurs. Enfin la couverture nationale, voire internationale, des réseaux de radiotéléphonie cellulaire est devenue très complète. Ces réseaux existent dans de nombreux pays.

Dans les centraux téléphoniques modernes, notamment de type électronique, et dans les réseaux de radiotéléphonie cellulaire, il est possible de localiser rapidement, à la fois les postes appelant et les postes appelés. Dans le cas des téléphones mobiles, la commutation à l'état de veille déclenche une procédure automatique d'échange mutuel de signaux radioélectriques entre le poste portatif de l'usager et la balise d'émission-réception de la cellule dans lequel il se trouve. Cet échange est nécessaire pour qu'il y ait "accrochage" sur le réseau d'un opérateur donné auquel l'usager est abonné. En outre, il signale sa position chaque fois qu'il change de zone (cellule). Il est donc possible de localiser même un poste mobile qui n'appelle pas mais qui est activé en attente de réception.

Le procédé selon l'invention consiste à mettre en contact automatiquement, rapidement et directement un usager désireux de bénéficier d'un service et un des professionnels abonnés à ce service.

L'usager appelle un numéro unique national, voire international, propre à ce service, soit à l'aide d'un poste téléphonique fixe, soit à l'aide d'un poste mobile. L'usager est localisé par son appel téléphonique. Cet appel est transmis, par l'opérateur gestionnaire du service, à tous les professionnels précités se trouvant dans la zone géographique la plus proche de l'appelant. Il n'y a pas d'intervention humaine dans le processus, seul l'opérateur du réseau intervient par le biais d'installations automatiques : centraux, systèmes informatiques et réseaux d'émission-réception d'ondes électromagnétiques.

La seule contrainte pour le professionnel est de posséder un poste téléphonique mobile monté à bord de son véhicule et/ou, avantageusement, un poste téléphonique portatif qui l'autorise à sortir de son véhicule tout en restant à l'écoute. Pour des raisons commerciales, il est naturellement nécessaire que seuls les professionnels abonnés au service puissent être appelés. Ceci peut être résolu en équipant les postes d'une carte à puce spécifique.

Lorsqu'un professionnel présent dans la zone géographique précitée et, de surcroît disponible, reçoit un appel, il répond à cet appel. Le premier professionnel qui répond déclenche en outre l'arrêt de la transmission générale de la requête. Cette réponse le met en relation directe avec son client potentiel. S'il accepte la course, il valide la transaction auprès du gestionnaire du service.

L'invention a donc pour objet un procédé d'appel centralisé pour accéder à un service particulier sur l'étendu d'un territoire déterminé, ledit territoire étant couvert par un réseau de radiotéléphonie comportant une pluralité de cellules associées à des balises émettrices-réceptrices d'ondes radioélectriques, caractérisé en ce qu'il comprend au moins les phases suivantes :

a/ une phase d'appel par un usager désirant accéder audit service d'un numéro téléphonique déterminé, associé audit service et unique pour toute l'étendue dudit territoire déterminé ;

b/ une phase de localisation de la zone géographique d'appel dudit usager sur ledit territoire et transmission de données associées à cette localisation à un opérateur gestionnaire dudit service particulier ;

c/ une phase d'émission par ledit opérateur d'un appel général, via ledit réseau de radiotéléphonie cellulaire, destiné à des prestataires dudit service particulier situés dans une zone la plus proche de ladite zone géographique d'appel et se trouvant dans un état dit de disponibilité ;

d/ une phase d'acceptation dudit appel général par un desdits prestataires du service particulier, dans ledit état de disponibilité, ladite acceptation provoquant l'arrêt de l'émission de l'appel général sur détection de celle-ci par l'opérateur ;

e/ une phase de mise en communication téléphonique directe, par ledit opérateur, entre ledit usager appelant et ledit prestataire du service particulier ayant accepté ledit appel général ;

f/ une phase final d'arrêt, sur détection par ledit opérateur de ladite validation, par ledit prestataire, de la transaction entamée avec l'usager appelant ;

g/ et une phase optionnelle de réitération des phases d/ à f/ en cas de non-validation de ladite tran-

Motorola Solutions, Inc., Ex1003, p. 218

saction, jusqu'à validation effective de celle-ci ou abandon de l'appel initié par ledit usager.

L'invention a encore pour objet un système pour la mise en oeuvre d'un tel procédé.

L'invention a encore pour objet l'application du procédé à l'appel centralisé de taxis.

L'invention sera mieux comprise et d'autres caractéristiques et avantages apparaîtront à la lecture de la description qui suit en référence aux figures annexées, et parmi lesquelles :

- La figure 1 illustre schématiquement un exemple d'architecture simplifiée d'un système de mise en oeuvre d'un procédé d'appel centralisé d'un service selon l'invention, dans l'application "appel de taxis" ;

- La figure 2 est un diagramme temporel illustrant les principales phases d'une transaction entre un usager et un professionnel abonné au service ;

- Les figures 3a et 3b sont des diagrammes explicitant les principales étapes du procédé du côté professionnel et du côté opérateur, gestionnaire du système, respectivement ;

- La figure 4 illustre schématiquement les différentes possibilités offertes par le procédé de l'invention, dans le cadre d'une architecture de système plus complète que celle de la figure 1 ;

- La figure 5 illustre un exemple de borne d'appel de taxis, utilisable dans les systèmes selon l'invention.

On va maintenant illustrer le procédé de l'invention, dans l'application préférée "appel de taxis", en se référant à un exemple d'architecture simplifiée de système de mise en oeuvre de ce procédé. La figure 1 illustre un tel système.

On suppose que l'opérateur OP du réseau de radiotéléphonie est également l'opérateur gestionnaire du service d'appel centralisé de taxis. On suppose aussi, dans l'exemple illustré, que tous les intervenants communiquent à l'aide de téléphones mobiles ou portables. Il s'agit des professionnels abonnés au service : les taxis T_1 à T_x, et des clients potentiels, les usagers U_1 à U_x.

Le réseau de radiotéléphonie est un réseau cellulaire : cellules ou zones Z_1 à Z_n, par exemple à la norme GSM. Chaque zone comprend une balise émettrice /réceptrice, E/R_1 à E/R_n, communiquant, de façon classique, avec le central de l'opérateur OP du réseau, par des liaisons bidirectionnelles, l_1 à l_n. La nature de ces liaisons peut être quelconque : faisceaux hertziens, etc.

Lorsqu'un des téléphones portatifs ou mobiles de la zone géographique Z_1 est activé (mise en veille), même s'il n'y a pas appel (émission) ou réception, une procédure de reconnaissance mutuelle et d'accrochage au réseau de radiotéléphonie est initiée par échange de signaux codés (liaison radio bidirectionnelle). Dans l'exemple illustré, on suppose que les taxis T_1 et T_x sont disponibles et ont activé leurs téléphones mobiles : liaisons LT_1 et LT_x. L'opérateur OP, par le biais des signaux reçus de la balise E/R_1 est donc en mesure de les localiser, du moins de déterminer que ces taxis sont dans la zone géographique Z_1.

Si l'usager U1 compose le numéro unique d'appel du service, son poste portatif va établir également une liaison bidirectionnelle entre la balise E/R_1 et l'appel va être retransmis au central de l'opérateur OP par la liaison l_1, c'est-à-dire dans la pratique à un système électronique de traitement de données qui va localiser la zone géographique de l'appel, en l'occurrence la zone Z_1.

L'opérateur initialise un appel général de tous les professionnels de la zone géographique Z_1. Seuls vont être atteints par l'appel les professionnels qui répondent à la double condition suivante : abonnés au service particulier et disponibles. L'état de disponibilité est déterminé simplement par l'activation de l'appareil téléphonique. Pour que seuls les abonnés reçoivent l'appel d'un opérateur particulier OP, il suffit que les appareils soient dotés d'une carte à puce spécifique reconnaissant un code particulier propre au service. Pour mémoire, les postes portatifs ou mobiles fonctionnent en coopération avec un module ou une carte à puce d'identification personnelle, dite "SIM", qui détermine les conditions de fonctionnement de l'appareil, le ou les réseaux auxquels l'utilisateur à accès, le ou les types de services auxquels il a droit et leurs modalités. On comprend aisément que l'ajout d'un service spécifique ne nécessite pas de modifications importantes. Il suffit, par exemple, de modifier le programme enregistré dans la mémoire de la puce électronique intégrée dans la carte. L'accès au service spécifique par le professionnel peut être activé simplement en actionnant une touche ou une combinaison de touches particulières sur le clavier de l'appareil. Le code correspondant est reconnu par les circuits de traitement de l'information de la puce et l'appareil téléphonique est autorisé à accéder au service, en émission et en réception.

La carte à puce spécifique permet aussi l'utilisation de l'appareil téléphonique pour un usage courant (appels téléphoniques personnels, etc.), c'est-à-dire hors service spécifique. L'appareil téléphonique n'est donc opérationnel pour ce dernier, que s'il est activé (état de veille) et que si l'actionnement de touches précité a été effectué. Une opération similaire permet au professionnel de se déconnecter du service spécifique, tout en laissant son appareil téléphonique à l'état de veille, c'est-à-dire apte à recevoir des communications hors service spécifique.

Pour l'usager, une carte à puce spécifique particulière n'est pas obligatoire, sauf si le service est soumis

Motorola Solutions, Inc., Ex1003, p. 219

à abonnement.

Le premier professionnel qui répond à l'appel général, par exemple le taxi T_1, occasionne l'interruption de cet appel général. Son appel est reçu par le système électronique de traitement de données de l'opérateur OP via la balise E/R_1 et la liaison l_1 qui effectue cette opération et le met en liaison directe avec l'appelant localisé, l'usager U_1.

Si à l'issue de la transaction amorcée entre le taxi T1 et l'usager U_1, il se dégage un accord sur la course à effectuer, le taxi T_1 valide cette transaction. Cela peut s'effectuer simplement, par exemple par l'actionnement d'une touche ou d'une combinaison de touches particulières sur le clavier de l'appareil. Cette validation met fin au processus de communication.

Suite à la validation précitée, le système informatique de l'opérateur OP peut enregistrer des données particulières sur la transaction : date, heure, professionnel concerné, etc. Ces données pourront servir à la facturation du professionnel abonné ou de l'entreprise dont il dépend. Elles peuvent servir également en cas de contestations du client : accord non honoré, etc.

Si le professionnel et le client ne peuvent se mettre d'accord, le professionnel raccroche. Sur cette détection, l'appel de l'usager U_1 est rebasculé dans le réseau et l'appel général dans la zone Z_1 est réactivé jusqu'à ce qu'un professionnel décroche. Le cycle précédemment décrit recommence.

Avantageusement, si la localisation exige du temps, par exemple plusieurs secondes, l'usager appelant peut être basculé temporairement sur une messagerie vocale d'attente.

Naturellement, le processus qui vient d'être décrit pour la zone Z_1, se déroule de façon identique, quelle que soit la zone considérée, Z_1 à Z_n.

Les principales phases de la transaction qui vient d'être décrite sont résumées ci-après, par référence au diagramme temporel de la figure 2.

Sur la partie haute du diagramme, on a représenté les entités intervenant dans la transaction : les taxis T_1 à T_x (dans chaque zone), les balises E/R_1 à E/R_n, l'opérateur OP et les usagers U_1 à U_x (dans chaque zone).

Pendant la phase 1, à l'instant $t = t_0$ (PH_1, sur la figure 2), un certain nombre de professionnels abonnés au service et disponibles activent leur appareil téléphonique pour avoir accès au service. Il y a reconnaissance et accrochage sur le réseau, par exemple sur la balise E/R_1 pour le taxi T_1.

Pendant la phase (PH_2), un usager, par exemple U_1 dans la zone Z_1, appelle le service (c'est-à-dire l'opérateur gestionnaire OP) via la balise E/R_1 dont il dépend. Le système de traitement de l'information de l'opérateur OP localise l'appelant U_1.

Pendant la phase 3 (PH_3), l'opérateur OP initialise un appel général dans la zone géographique de l'appelant, en l'occurrence Z_1, via la balise E/R_1.

Pendant la phase 4 (PH_4), un taxi disponible, par exemple T_1, décroche. La communication est transmise à l'opérateur OP via la balise E/R_1. L'opérateur interrompt l'appel général.

Pendant la phase 5 (PH_5), l'opérateur OP met en communication directe l'usager appelant, U_1 et le premier taxi qui a décroché, T_1.

A la suite de la communication téléphonique, deux cas peuvent se rencontrer :

a/ Le taxi T_1 et son client potentiel, l'usager U_1, se sont mis d'accord sur la course à effectuer et le taxi valide la transaction (transaction OK) : phase 5 (PH_5), par activation de touches prédéterminées, ce qui occasionne l'envoi d'un code particulier. A l'issue de cette phase, la transaction est considérée comme terminée et le système informatique de l'opérateur OP peut enregistrer dans ses mémoires des données caractérisant celle-ci. Si la validation précitée n'est pas effectuée par le taxi T_1, le fait que l'usager U_1 raccroche met fin de toute façon à la transaction.

b/ Le taxi T_1 n'accepte pas la course et raccroche : phase 6 bis (PH_6). Si l'usager U_1 ne raccroche pas, cet état est détecté par le système informatique de l'opérateur OP. La communication de l'appelant U_1 est rebasculée sur le réseau et l'appel général réinitialisé. Le cycle reprend à la phase 3.

Les figures 3a et 3b sont des organigrammes illustrant les principales étapes du procédé, côté professionnels et côté opérateur, respectivement.

Sur la figure 3a, on a représenté le début des opérations sous la référence 100, la première étape, 110, consistant à l'activation des appareils téléphoniques d'un ou plusieurs taxis, T_1 à T_x, sur le service spécifique.

À la deuxième étape, 120, les appareils téléphoniques activés ont en boucle d'attente d'un appel général (sonnerie) sur le service (pas d'appel : branche NON ; appel reçu : banche OUI).

Sur réception d'un appel de service, l'étape suivante, 130, est la mise en communication directe avec un client potentiel, l'usager appelant (par exemple U_1 : figure 1).

L'étape suivante, 140, est la validation (branche OUI : "transaction OK") ou non (branche NON) de la transaction entamée. Si oui, la transaction est terminée : étape FIN, 150. A priori, le taxi concerné désactive son appareil téléphonique, du moins en ce qui concerne le service spécifique. Dans le cas contraire, le processus recommence à l'étape 110.

Sur la figure 3b, on a représenté le début des opérations sous la référence 200. La première étape, 210, consiste en une boucle d'attente (branche NON) d'un appel d'usager. Si un appel est détecté (branche OUI), l'étape suivante, 220, est une étape de localisation de l'usager appelant (par exemple U_1), dans l'une des zones géographiques Z_1 à Z_n.

Lorsque l'appelant est localisé, par exemple dans

Motorola Solutions, Inc., Ex1003, p. 220

la zone Z_m, un appel général est effectué dans cette zone : étape 230.

L'étape suivante, 240, consiste en une boucle d'attente (branche NON) jusqu'à ce qu'un taxi disponible décroche (branche OUI) et en la détection de cet état.

Sur cette première disponibilité, l'étape suivante, 250, est réalisée : arrêt de l'appel général.

L'étape suivante, 260, consiste en la mise en communication directe de l'appelant et du taxi qui a décroché.

L'étape suivante, 270, consiste en la validation de la transaction taxi-client.

Sur détection de cette validation (branche OUI), le processus passe à une étape, 280, d'enregistrement de données caractérisant la transaction écoulée. Dans le cas contraire (branche NON), le processus recommence à l'étape 230 : l'appel général dans la zone Z_m est réinitialisé.

On va maintenant décrire un exemple plus complet d'architecture d'un système 1', pour la mise en oeuvre du procédé selon l'invention en regard de la figure 4. Sur cette figure, on a représenté des possibilités supplémentaires de communications entre taxis, ou de façon plus générale de professionnels abonnés à un service, et usagers de ce service. Sur cette figure 4, pour ne pas surcharger le dessin, on n'a détaillé qu'une seule zone géographique, Z_1, étant entendu que l'équipement des autres zones, Z_2 à Z_n, est a priori identique à celui de la zone Z_1.

Comme précédemment, un utilisateur, référencé U_c, muni d'un poste téléphonique portatif peut émettre un appel via un lien de radiotransmission bidirectionnel LU_c. Cet appel est intercepté par la borne émettrice/réceptrice E/R_1 de la zone géographique, Z_1, dont il dépend. Cet appel est traité de la façon qui vient d'être décrite. De même, le taxi T_b, muni d'un poste téléphonique mobile, monté à bord de son véhicule est en relation, via un lien de radiotransmission bidirectionnel, LT_b, avec la même borne émettrice/réceptrice, E/R_1.

Comme il a été indiqué, le poste téléphonique peut être d'un type portatif, tenant dans la poche, ce qui permet au chauffeur du taxi T_a de s'éloigner de son véhicule. Il est relié à la même borne émettrice/réceptrice, E/R_1, via un lien de radiotransmission bidirectionnel, LT_a.

Selon une variante supplémentaire de l'invention, on prévoit des bornes d'appel de taxis munies d'un lecteur de carte à puce.

La figure 5 illustre schématiquement un exemple de réalisation d'une telle borne BT. Elle comprend un châssis de forme appropriée 30, pouvant avantageusement servir de mobilier urbain et supportant éventuellement des logos, signes divers, plans urbains, ou des inscriptions publicitaires ou autres.

On peut d'ailleurs avantageusement utiliser l'infrastructure générale d'une borne d'appel classique, telle qu'elle existe en tête de certaines stations de taxis, en y apportant les modifications ci-après.

Selon une caractéristique spécifique à l'invention, la borne BT comprend un lecteur de carte LC, dont on a représenté la fente d'introduction 33. La carte à puce ne nécessite pas d'être spécifique. On peut utiliser, par exemple, une carte téléphonique ou bancaire classique, munie ou non d'une puce. Une piste magnétique est suffisante, comme dans le cas des distributeurs automatiques de billets des guichets automatiques de banque ("DAB" ou "GAB").

Pour des raisons de sécurisation de la transaction, il est utile de prévoir, comme dans le cas des distributeurs ou guichets automatiques précités, un clavier 32, pour entrer un code personnel identifiant le porteur de carte et un organe de visualisation 31, à l'aide de moyens électroniques classiques (non représentés). En outre, le clavier 32 et l'écran 31 peuvent être utilisés en coopération pour informer et guider un utilisateur potentiel, par exemple en lui indiquant la marche à suivre pour appeler un taxi ou, de façon plus générale, pour accéder à un service particulier.

En effet, cette borne d'appel peut être utilisée non seulement pour l'appel de taxis, mais pour d'autres services éventuels : dépannages, etc. De plus, elle peut être disposée en tous endroits stratégiques (gares, marchés, lieux touristiques, centres commerciaux, etc.), et non plus seulement en tête de stations de taxis, puisque le numéro d'appel est unique, pour un service spécifique donné. Le choix entre divers services, si la borne le permet, peut s'effectuer simplement par l'actionnement d'une touche ou d'une combinaison de touches particulière, éventuellement avec l'aide d'informations affichées sur l'écran 31 et/ou d'informations de guidage sonores, diffusées par un haut-parleur auxiliaire 35. Cette dernière modalité permettrait l'utilisation de la borne d'appel BT par des non voyants.

En outre, si le service est soumis à abonnement, on peut exiger, soit que l'usager possède une carte à puce spécifique donnant accès à cet abonnement, soit qu'il frappe un code d'identification transmis à l'opérateur OP, en faisant usage du clavier 32, sous la conduite éventuelle d'instructions affichées sur l'écran 31.

Une fois la carte introduite dans le lecteur et la procédure d'identification éventuelle du porteur effectuée, la phase de localisation de la borne BT est initialisée, d'une manière similaire à ce qui a été précédemment décrit. Il n'est pas nécessaire de composer un numéro d'appel à l'aide du clavier 31, puisque l'introduction validée de la carte (figure 4 : CP) est sans équivoque sur l'intention de l'usager d'avoir accès à un service particulier, service qu'il a sélectionné (s'il y a choix) ou au service unique associé à la borne BT (par exemple l'appel de taxis). Lorsqu'un taxi disponible dans la même zone géographique, c'est-à-dire Z_1 dans l'exemple, a répondu à l'appel, il est mis en communication téléphonique directe avec l'usager appelant.

Celui-ci se sert d'un combiné téléphonique 34, éventuellement relayé, en écoute, par le haut-parleur auxiliaire 35, s'il existe. Dans un autre mode de réalisa-

Motorola Solutions, Inc., Ex1003, p. 221

tion, l'organe 35 peut être remplacé par un dispositif électroacoustique jouant le rôle de haut-parleur et de microphone. Étant, *a priori,* intégré dans le châssis de la borne BT, il sera moins sensible à des dégradations éventuelles : vandalisme, intempéries, etc., qu'un combiné séparé, 34.

Lorsque la transaction entre le chauffeur de taxi (ou le prestataire d'un autre service) et l'usager s'est terminée sur un accord, l'usager raccroche, ce qui met fin au processus d'appel. Dans le cas contraire, l'usager ne raccroche pas et la recherche d'un autre taxi est initiée, comme il a été indiqué.

On peut avantageusement prévoir l'impression d'un ticket à l'aide d'un dispositif d'impression, 36, similaire à ceux utilisés dans les distributeurs de billets. Le ticket pourra comprendre des données d'horodatage et des données indiquant le lieu d'appel. En outre, puisque le professionnel ayant répondu à l'appel utilise une carte à puce spécifique, il est possible d'en dériver, lors de la communication, des données ou un code permettant son identification. Ces données, ainsi que les autres informations imprimées sur le ticket, pourront être utilisées en cas de contestation, par exemple si le taxi n'a pas tenu son engagement et ne s'est pas présenté pour effectuer la course.

De façon similaire, des données dérivées de l'identification du porteur de carte pourront être transmises à l'opérateur OP. Naturellement, des précautions devront être prises pour garantir la confidentialité des informations transmises, notamment pour certains types de services. Pour ce faire, il peut être nécessaire de chiffrer les données avant transmission.

On a représenté sur la figure 4 un exemple d'une borne d'appel BT_a, reliée à la borne d'émission-réception, E/R_1, par une liaison de radiotransmission bidirectionnelle, LBT_a. La localisation de la borne d'appel BT_a s'effectue de façon strictement identique à ce qui a été précédemment décrit.

Si on considère que la borne BT_a est une borne de tête de station, le procédé de l'invention permet une fonction supplémentaire. Celle-ci étant munie d'un émetteur, celui-ci peut également être utilisé pour émettre un message particulier, à destination des taxis situés dans une zone proche de la borne BT_a. L'émission est initialisée par l'appel d'un usager désirant un taxi, comme décrit ci-dessus. En effet, si l'usager est obligé d'utiliser la borne, cela signifie qu'il n'y a pas, *a priori,* de taxis présents. Un taxi libre, se trouvant à proximité de la borne BT_a émettant le message précité, a donc une bonne probabilité de trouver rapidement un client.

Jusqu'à présent, on a considéré que les liaisons des usagers avec les bornes émettrices-réceptrices et l'opérateur étaient effectuées par radiotransmission.

Cependant, l'invention autorise d'autres modes de transmission, et notamment la téléphonie terrestre classique, ce qui peut s'avérer intéressant, en particulier en milieu urbain. L'usager n'est plus tenu de disposer d'un téléphone portatif. L'avantage principal offert par le procédé de l'invention, c'est-à-dire l'appel par un numéro unique, est cependant conservé, comme décrit ci-après.

La borne d'appel BT_b illustre une variante dans laquelle la liaison avec l'opérateur est effectuée par une ligne téléphonique classique d'un réseau terrestre Rtel, jusqu'à un central téléphonique CT. À l'exception de cette disposition, la borne d'appel BT_b peut être réalisée de façon identique à la borne d'appel BT_a. Ces deux bornes comportent tout ou partie des organes décrits en regard de la figure 5 (borne d'appel BT), notamment un lecteur de carte LC et des moyens de communication acoustique (figure 5 : 34 et/ou 35).

On a supposé sur la figure 4 que les installations de l'opérateur OP du réseau de radiotransmission cellulaire étaient distinctes de celles du central téléphonique CT. Dans ce cas, on prévoit une liaison bidirectionnelle appropriée *l* entre ces deux installations : liaison téléphonique, RNIS, faisceau hertzien, etc.

Enfin, selon un autre aspect avantageux du procédé de l'invention, un usager n'est obligé, ni d'avoir recours à une borne d'appel, ni de posséder un appareil téléphonique transportable. Seul le professionnel abonné au service doit posséder un tel appareil téléphonique, ce qui ne constitue pas une contrainte importante.

Il est en effet possible, comme le montre la figure 4, d'utiliser un téléphone classique fixe ou du type sans fil, Tel. L'appel peut être effectué, par exemple, depuis le domicile (usager U_d), ou encore depuis une cabine téléphonique, Cab (usager U_e).

Comme précédemment, si le service est soumis à abonnement, l'usager, U_d ou U_e, devra entrer sur le clavier de l'appareil téléphonique, Tel ou Cab, un code particulier d'identification transmis à l'opérateur OP, via le central CT.

Dans tous les cas, la localisation peut être effectuée par le central téléphonique CT ou l'opérateur OP, de façon encore plus précise que la localisation d'un appareil téléphonique portatif, puisque, *a priori,* à un abonnement téléphonique donné est associé un ou plusieurs numéros de téléphone et, de ce fait, un ou plusieurs lieux précis. La technologie actuelle permettant d'identifier un numéro d'appel, il est possible d'effectuer une corrélation entre ce numéro et la cellule du réseau de radiotéléphonie la plus proche du lieu d'appel. Les appels des usagers pour un service spécifique et les données de localisation sont transmis à l'opérateur OP de ce service, via la liaison *l*.

À l'exception du type de liaison usager-opérateur et du mode opératoire de localisation sur un réseau de téléphonie terrestre particulier, toutes les autres opérations sont identiques à ce qui a été décrit et il est inutile de les rappeler en détail. Notamment une fois l'appel d'un usager localisé, par exemple l'usager U_a situé dans la zone Z_1, un appel général est initié dans cette zone Z1. Une fois qu'un taxi disponible aura décroché, par exemple le taxi T_b, il est mis en communication téléphonique directe avec l'appelant, U_e, via la liaison LT_b, la

Motorola Solutions, Inc., Ex1003, p. 222

borne émettrice-réceptrice E/R_1, la liaison l_1, l'installation de l'opérateur OP, la liaison l et le réseau téléphonique terrestre, Rtel.

A la lecture de ce qui précède, on constate aisément que l'invention atteint bien les buts qu'elle s'est fixés.

Le procédé présente de nombreux avantages parmi lesquels :

- Il est simple d'utilisation.
- L'usager ne doit notamment connaître qu'un seul numéro de téléphone national, voire international. Ce numéro peut être un numéro abrégé ou, pour le moins, un numéro simple à mémoriser, ce quel que soit l'endroit où il se trouve.
- L'appel atteint les professionnels les plus proches du lieu d'appel et l'usager converse directement avec le premier professionnel ayant répondu, qui *a priori* est disponible puisqu'il a activé son appareil portatif.
- Les temps d'attente sont réduits, même en période de pointe, et le coût de la course est, en moyenne, réduit, puisque c'est un taxi proche du lieu d'appel qui va effectuer la course.
- Même pour une course très courte, un chauffeur de taxi sera moins enclin à la refuser, car non rentable dans un mode opératoire classique.
- Il n'est plus nécessaire de souscrire à un abonnement onéreux.

Pour le professionnel, les contraintes sont réduites au minimum : possession d'un appareil mobile ou portable, muni d'une carte à puce spécifique. Par contre, les avantages sont nombreux.

Si l'appareil n'est pas monté de façon fixe à bord du véhicule, le chauffeur n'est plus lié à ce dernier. Il peut l'utiliser pour un usage courant ou pour sa clientèle privée. Un code peut être affiché sur l'écran pour indiquer si c'est un appel privé ou en provenance de l'opérateur du service. Le professionnel n'est alors pas obligé de se déconnecter du service, même s'il n'est pas libre. En effet, il suffit de ne pas décrocher lors d'un appel général du service. Il n'est pas non plus obligé d'attendre son tour à une station de taxi, et il peut ainsi circuler dans des zones où les clients potentiels sont nombreux. Il recevra tous les appels en provenance de cette zone. Dans la phase terminale d'une course, il peut accepter une course pour un nouveau client avant même d'avoir déposé le client précédent, quand notamment le nouveau client se trouve dans une zone proche. Les temps morts sont donc réduits au minimum.

Le risque qu'un autre taxi peu scrupuleux effectue la course commandée à sa place est très réduit car, selon l'une des caractéristiques du procédé, seul le premier taxi qui décroche est mis en communication avec l'usager appelant, les autres taxis n'entendant pas la conversation.

Outre une rentabilité améliorée (moins de courses à vide, possibilité d'accepter les petits trajets, moins de temps perdu en attente aux stations, etc.), le professionnel encourt moins de frais : plus d'abonnement très onéreux à un standard spécialisé, moins de pertes dues à la non-interconnexion entre les différents standards, etc.

De façon plus générale, l'adéquation entre les demandes et besoins des usagers et l'offre, c'est-à-dire essentiellement la disponibilité rapide d'un taxi, est améliorée. Enfin, les problèmes de pollution et les difficultés liées à la circulation, notamment en milieu urbain, incitent de plus en plus d'usagers à utiliser le taxi comme moyen de locomotion, l'invention permet, à la fois, d'augmenter la disponibilité et, corrélativement, de diminuer coût.

Il doit être clair cependant que l'invention n'est pas limitée aux seuls exemples de réalisations précisément décrits, notamment en relation avec les figures 1 à 5.

Notamment, à l'exception des liaisons entre les professionnels et l'opérateur, qui nécessitent que les professionnels utilisent un appareil téléphonique portatif ou mobile, les communications entre les usagers potentiels du service et l'opérateur peuvent mettre en oeuvre des liaisons de radiotéléphonie (avec usage d'un appareil téléphonique portatif également), des liaisons téléphoniques classiques ou tout autre type de liaison. Par exemple, les bornes d'appel peuvent être reliées entre elles et/ou avec l'opérateur par liaison optique à fibre optique, par liaison à coaxial, etc. Les liaisons peuvent s'effectuer enfin par l'intermédiaire de satellites et mettre en oeuvre la technologie "GPS".

Il doit être clair enfin que, bien que particulièrement adaptée à l'appel centralisé de taxis par un numéro unique, on ne saurait cantonner l'invention à ce seul type d'application. Elle s'applique tout aussi bien à de nombreux autres services : dépannage d'appareils ménager, dépannage de véhicules, services de médecins de garde ou vétérinaires, services de transport routier nationaux et, éventuellement, internationaux, etc. Si plusieurs services sont accessibles, il suffit de disposer d'un numéro associé à chaque service. L'avantage principal du procédé selon l'invention est conservé, car ce numéro, pour un service donné, reste unique sur un territoire donné, national ou international, selon la couverture du service précité.

Revendications

1. Procédé d'appel centralisé pour accéder à un service particulier sur l'étendue d'un territoire déterminé, ledit territoire étant couvert par un réseau de radiotéléphonie comportant une pluralité de cellules (Z_1 à z_n) associées à des balises émettrices-réceptrices (E/R_1 à E/R_n) d'ondes radioélectriques, caractérisé en ce qu'il comprend au moins les phases suivantes :

Motorola Solutions, Inc., Ex1003, p. 223

a/ une phase d'appel par un usager (U_1) désirant accéder audit service d'un numéro téléphonique déterminé, associé audit service et unique pour toute l'étendue dudit territoire déterminé ;

b/ une phase de localisation de la zone géographique d'appel dudit usager (U_1) sur ledit territoire et transmission de données associées à cette localisation à un opérateur (OP) gestionnaire dudit service particulier ;

c/ une phase d'émission par ledit opérateur d'un appel général, via ledit réseau de radiotéléphonie cellulaire, destiné à des prestataires (T_1 à T_x) dudit service particulier situés dans une zone (Z_1) la plus proche de ladite zone géographique d'appel et se trouvant dans un état dit de disponibilité ;

d/ une phase d'acceptation dudit appel général par un desdits prestataires (T_1) du service particulier, dans ledit état de disponibilité, ladite acceptation provoquant l'arrêt de l'émission de l'appel général sur détection de celle-ci par l'opérateur (OP) ;

e/ une phase de mise en communication téléphonique directe, par ledit opérateur (OP), entre ledit usager appelant (U_1) et ledit prestataire (T_1) du service particulier ayant accepté ledit appel général ;

f/ une phase finale d'arrêt, sur détection par ledit opérateur (OP) de ladite validation, par ledit prestataire (T_1), de la transaction entamée avec l'usager appelant;

g/ et une phase optionnelle de réitération des phases d/ à f/ en cas de non-validation de ladite transaction, jusqu'à validation effective de celle-ci ou abandon de l'appel initié par ledit usager (U_1).

2. Procédé selon la revendication 1, caractérisé en ce que lesdits prestataires du service particulier (T_1 à T_x) étant munis d'un appareil téléphonique portatif ou mobile, il comprend une phase préliminaire d'accrochage sur une desdites balises émettrices-réceptrices (E/R_1) d'une desdites cellules du réseau de radiotéléphonie et d'émission d'un code déterminé, de manière à positionner ledit appareil téléphonique portatif ou mobile audit état de disponibilité, et en ce que ladite phase de validation est obtenue par l'émission, à partir dudit appareil téléphonique d'un code particulier et sa transmission audit opérateur (OP).

3. Procédé selon l'une des revendications 1 ou 2, caractérisé en ce qu'il comprend, après ladite phase de validation de la transaction entre ledit usager appelant (U_1) et ledit prestataire (T_1) du service particulier, une phase supplémentaire d'enregistrement, par ledit opérateur (OP), de données associées à ladite transaction validée.

4. Procédé selon l'une quelconque des revendications 1 à 3, caractérisé en ce que ledit appel par un usager (U_c, U_1) dudit numéro téléphonique unique s'effectue par la composition dudit numéro sur un appareil téléphonique portable, de manière à appeler ledit opérateur (OP) via une balise émettrice-réceptrice (E/R_1) d'une desdites cellules (Z_1) du réseau de radiotéléphonie, et en ce que ladite phase de localisation s'effectue par détermination de la zone couverte par cette balise émettrice-réceptice (E/R_1).

5. Procédé selon l'une quelconque des revendications 1 à 3, caractérisé en ce que ledit appel par un usager (U_d, U_e) dudit numéro téléphonique unique s'effectue par la composition dudit numéro par un appareil téléphonique (Tel, Cab) relié à un réseau téléphonique terrestre (Rtel) et à un central téléphonique (CT) en communication avec ledit opérateur, en ce que ladite phase de localisation s'effectue par la détermination, par ledit central téléphonique (CT), du numéro appelant et de l'emplacement géographique dudit appareil téléphonique (Tel, Cab) qui lui est associé, et en ce que ladite phase d'appel générale consiste à émettre ledit appel général dans la cellule (Z_1) dudit réseau de radiotéléphonie la plus proche dudit emplacement géographique.

6. Procédé selon l'une quelconque des revendications 1 à 3, caractérisé en ce que ledit appel par un usager (U_a, U_b) dudit numéro téléphonique unique s'effectue en introduisant une carte à puce (CP) dans un lecteur de carte (LC) associé à une borne d'appel téléphonique (Bt_a, BT_b) reliée audit opérateur (OP), ledit appel d'usager (U_a, U_b) étant déclenché par la reconnaissance d'informations déterminées enregistrées dans ladite carte à puce (CP), en ce que ladite phase de localisation s'effectue par détermination de l'emplacement géographique de ladite borne d'appel (Bt_a, BT_b), et en ce que ladite phase d'appel générale consiste à émettre ledit appel général dans la cellule (Z_1) dudit réseau de radiotéléphonie la plus proche dudit emplacement géographique.

7. Système (1, 1') pour la mise en oeuvre du procédé selon l'une quelconque des revendications précédentes, caractérisé en ce qu'il comprend un réseau de radiotéléphonie cellulaire couvrant ledit territoire déterminé et le divisant en une pluralité de cellules,

Motorola Solutions, Inc., Ex1003, p. 224

des moyens électroniques de traitement de l'information (OP) pour la gestion dudit réseau de radiotéléphonie cellulaire adressables par ledit numéro unique d'appel, des moyens d'appel et de communication téléphoniques (BT_a, BTb, Cab, Tel) permettant à au moins un desdits usagers (U_a à U_e) de composer ledit numéro unique d'appel et des moyens d'appel et de communication téléphoniques à la disposition desdits prestataires (T_a, T_b) dudit service particulier, en ce que ces derniers moyens (T_a, T_b) comprennent des appareils téléphoniques portables ou mobiles, communiquant avec ledit réseau de téléphonie cellulaire, chaque appareil comportant des moyens pour activer sélectivement ledit service particulier et une carte à puce spécifique autorisant le fonctionnement pour ledit service particulier, en ce que lesdits moyens électroniques de traitement de l'information (OP) comprennent des dispositifs pour localiser l'origine géographique d'un appel d'usager (U_a à U_e), des dispositifs coopérant avec ledit réseau de téléphonie cellulaire pour initialiser un appel général desdits prestataires (T_a, T_b) du service particulier dans la cellule (Z_1) la plus proche de ladite origine géographique, pour détecter l'acceptation de l'appel général par un desdits prestataires (T_a, T_b) du service particulier, arrêter sur cette détection l'appel général et mettre en communication téléphonique directe les moyens d'appel et de communication téléphoniques dudit usager (U_a à U_e) et ceux dudit prestataire (T_a, T_b) du service particulier ayant accepté l'appel général, via ledit réseau de téléphonie cellulaire, de manière à initialiser une transaction, des dispositifs pour mettre fin à ladite transaction sur détection de la validation de celle-ci par ledit prestataire (T_a, T_b) du service particulier ou pour initialiser un nouvel appel général sur détection de sa non-validation, et des dispositifs pour enregistrer des données associées à ladite transaction.

8. Système selon la revendication 7, caractérisé en ce que les moyens d'appel et de communication téléphoniques permettant à au moins un desdits usagers (U_c) de composer ledit numéro unique d'appel sont constitués par des appareils téléphoniques portatifs ou mobiles communiquant avec ledit réseau de téléphonie cellulaire.

9. Système selon la revendication 7, caractérisé en ce que les moyens d'appel et de communication téléphoniques permettant à au moins un desdits usagers de composer ledit numéro unique d'appel sont constitués par des appareils téléphoniques (Tel, Cab) reliés à un réseau de téléphonie terrestre (Rtel) et à un central téléphonique (CT) et en ce que ce central téléphonique (CT) est lui-même relié auxdits moyens électronique de traitement d'information (OP).

10. Système selon la revendication 7, caractérisé en ce que les moyens d'appel et de communication téléphoniques permettant à au moins un desdits usagers de composer ledit numéro unique d'appel sont constitués par une borne d'appel (BT, BT_a, BT_b) comprenant des moyens d'appel et de communication permettant de composer ledit numéro unique et d'établir des communications bidirectionnelles avec lesdits moyens électroniques de traitement de l'information (OP), un lecteur (LC, 33) d'une carte à puce (CP) détenue par un desdits usagers (U_a, U_b), déclenchant la composition, sur reconnaissance d'informations déterminées contenues sur ladite carte à puce (CP), dudit numéro unique par lesdits moyens d'appel et de communication, et des moyens transducteurs électroacoustiques (34, 35) pour ladite mise en communication téléphonique directe dudit usager (U_a, U_b) avec un desdits prestataires (T_a, T_b) du service particulier pour conclure une transaction.

11. Système selon la revendication 10, caractérisé en ce que ladite borne d'appel comprend en outre un clavier (32) pour saisir au moins un code d'identification de l'usager (U_a, U_b), des moyens de vérification et de comparaison de ce code avec des données d'identification enregistrées dans ladite carte à puce (CP), de manière à autoriser la composition dudit numéro unique et l'accès audit service particulier par l'usager (U_a, U_b) possesseur de ladite carte à puce (CP), un écran de visualisation (31) affichant des données de guidage de l'usager (U_a, U_b) et d'information sur ladite transaction en cours, et des moyens (36) pour l'impression de données d'information et d'horodatage associée à ladite transaction, une fois celle-ci conclue.

12. Application du procédé selon l'une quelconque des revendications 1 à 7 à l'appel centralisé de taxis (T_a, T_b) par composition d'un numéro unique.

Motorola Solutions, Inc., Ex1003, p. 225

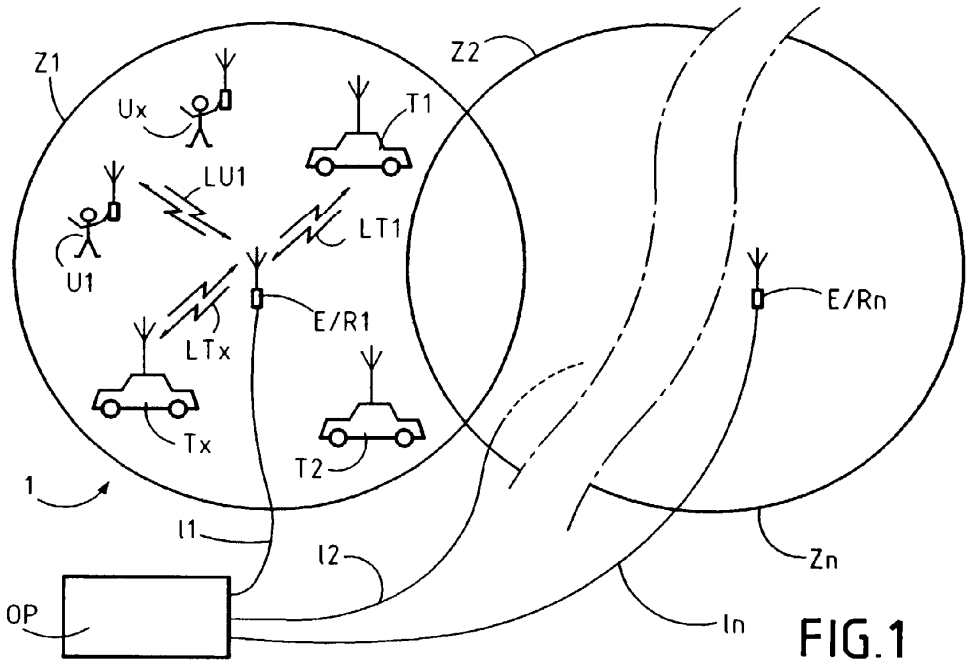


FIG.1

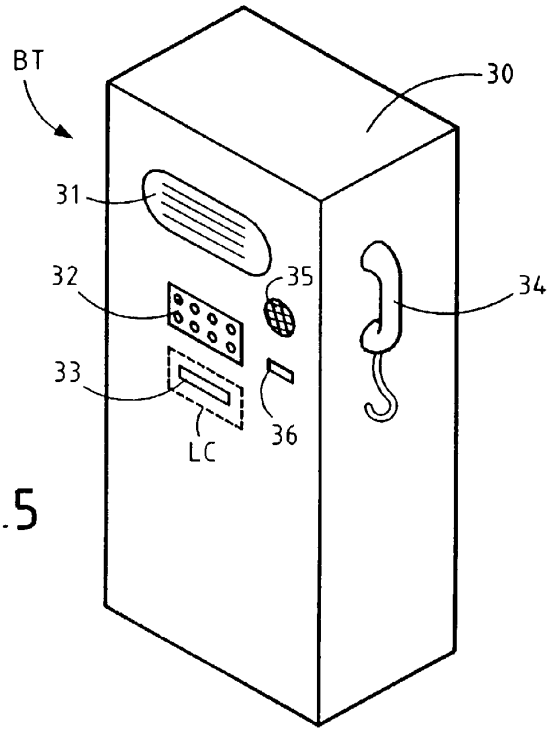


FIG.5

Motorola Solutions, Inc., Ex1003, p. 226

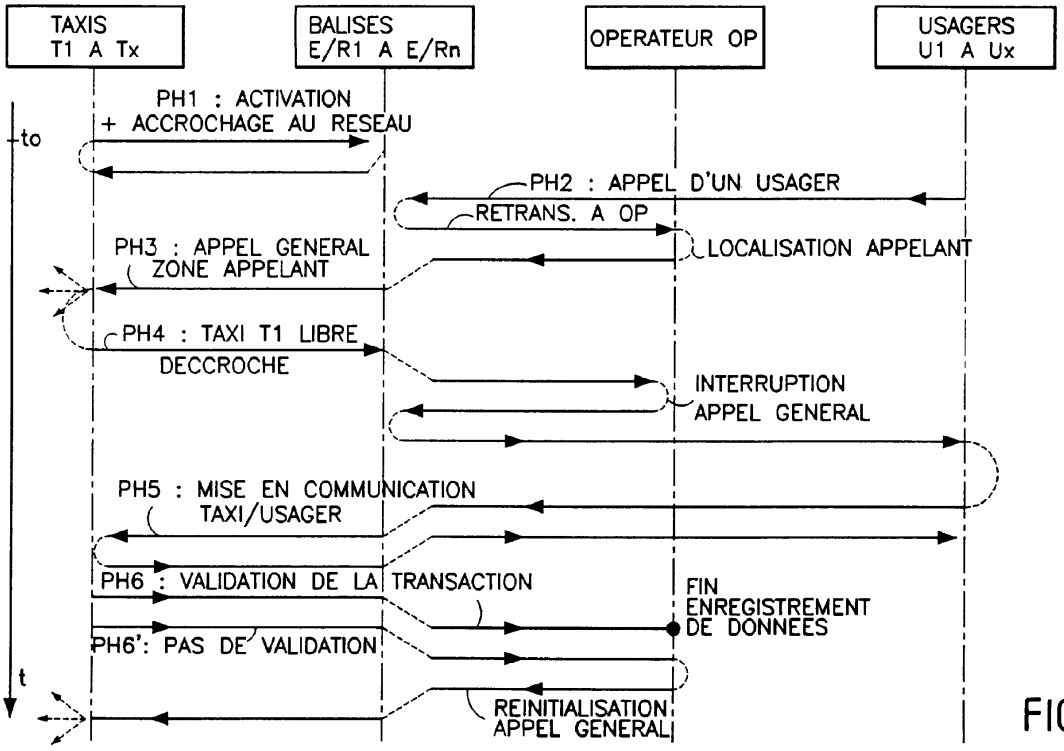


FIG.2

EP 0 849 964 A1

Motorola Solutions, Inc., Ex1003, p. 227

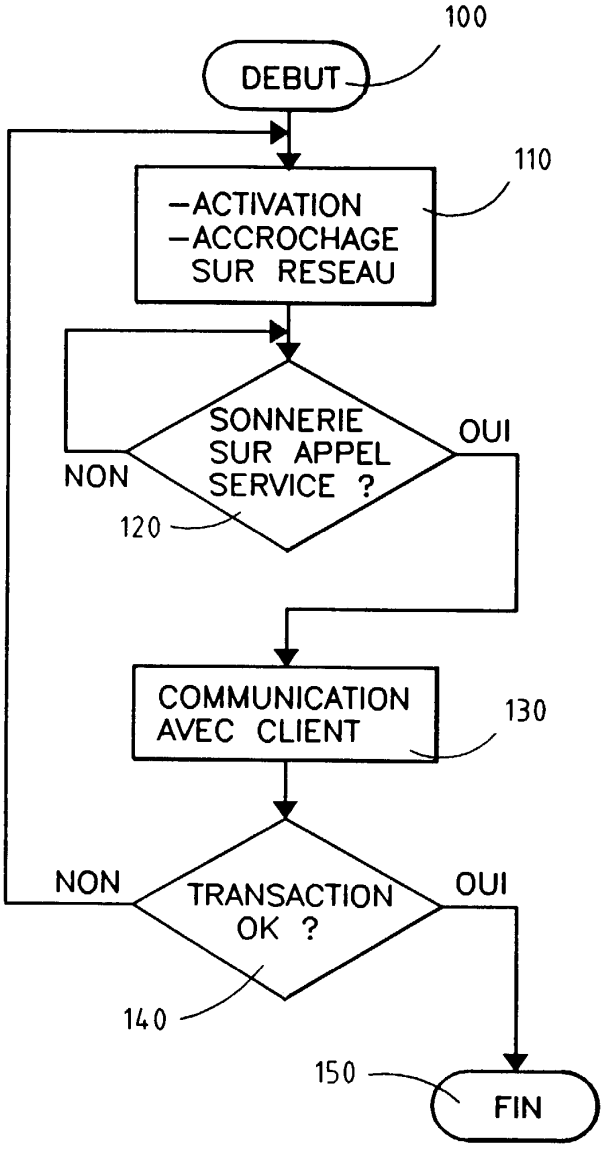


FIG.3a

Motorola Solutions, Inc., Ex1003, p. 228

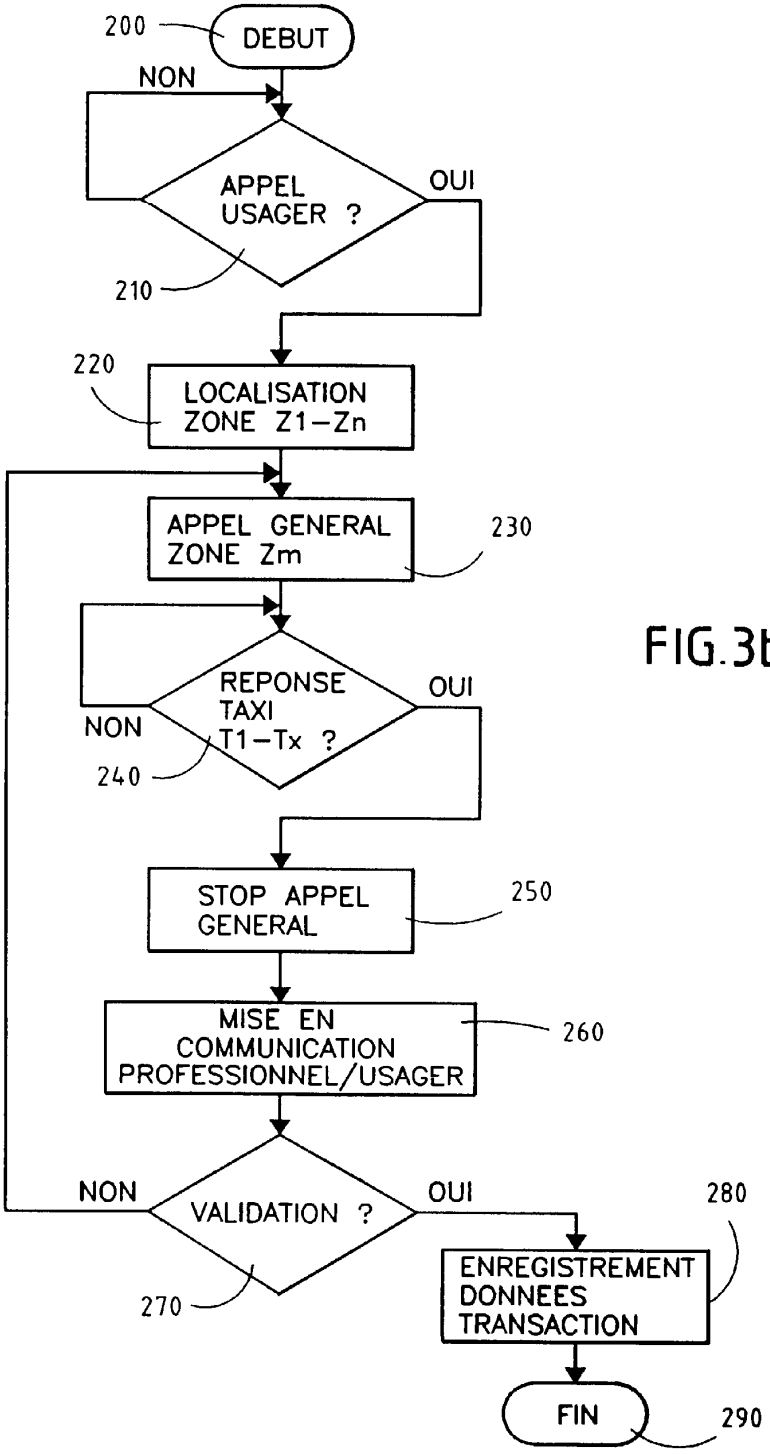


FIG.3b

Motorola Solutions, Inc., Ex1003, p. 229

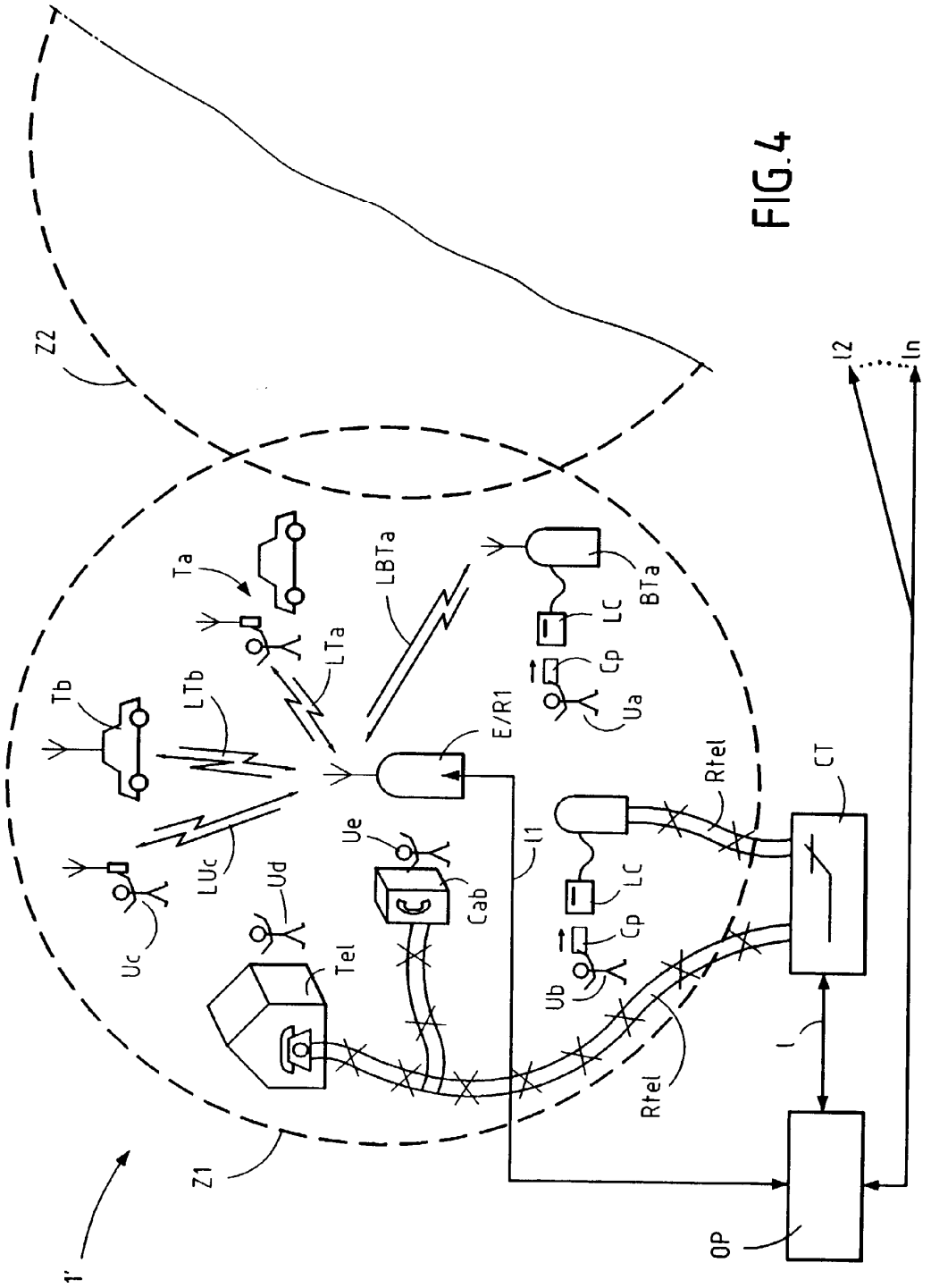


FIG.4

Motorola Solutions, Inc., Ex1003, p. 230

Office européen des brevets

RAPPORT DE RECHERCHE EUROPEENNE

Numéro de la demande
EP 97 40 3119

DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendication concernée	CLASSEMENT DE LA DEMANDE (Int.Cl.6)
A	WO 95 35001 A (SIEMENS AG ;NEUBAUER KURT FERDINAND (AT); STRAKA PETER (AT)) 21 décembre 1995 * page 2, ligne 26 - ligne 33 * * page 3, ligne 1 - ligne 10 * * page 3, ligne 34 - page 4, ligne 12 * * page 5, ligne 7 - ligne 23 * * page 12, ligne 10 - page 13, ligne 11 * * page 15, ligne 10 - ligne 20 *	1,2,4,7, 8,12	H04Q7/22 G07B13/00 G08G1/127
A	WO 92 10069 A (RYDEN LEIF CHRISTER) 11 juin 1992 * page 4, ligne 21 - ligne 31 * * page 9, ligne 35 - page 11, ligne 11 * * page 12, ligne 5 - ligne 18 * * page 14, ligne 22 - ligne 30 * * page 16, ligne 3 - page 17, ligne 18 * * page 19, ligne 31 - page 21, ligne 2 *	1,3,4,7, 9,12	
A	FR 2 674 355 A (GRP TAXI STE NOUVELLE) 25 septembre 1992 * page 2, ligne 6 - ligne 14 * * page 3, ligne 7 - page 4, ligne 11 * * page 4, ligne 24 - ligne 35 * * page 8, ligne 7 - ligne 15 * * page 8, ligne 35 - page 9, ligne 3 * * page 9, ligne 17 - page 10, ligne 28 *	1,6,7, 10-12	DOMAINES TECHNIQUES RECHERCHES (Int.Cl.6) H04Q G08G G07B

Le présent rapport a été établi pour toutes les revendications

Lieu de la recherche	Date d'achèvement de la recherche	Examinateur
LA HAYE	26 mars 1998	Gerling, J.C.J.

CATEGORIE DES DOCUMENTS CITES

X : particulièrement pertinent à lui seul
Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie
A : arrière-plan technologique
O : divulgation non-écrite
P : document intercalaire

T : théorie ou principe à la base de l'invention
E : document de brevet antérieur, mais publié à la date de dépôt ou après cette date
D : cité dans la demande
L : cité pour d'autres raisons

& : membre de la même famille, document correspondant

EPO FORM 1503 03.82 (P04C02)

Motorola Solutions, Inc., Ex1003, p. 231

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

(11) Veröffentlichungsnummer:
(11) Publication number: **EP 1 889 495 A0**
(11) Numéro de publication:

Internationale Anmeldung veröffentlicht durch die Weltorganisation für geistiges Eigentum unter der Nummer:

WO 2006/135533 (art. 158 des EPÜ).

International application published by the World Intellectual Property Organisation under number:

WO 2006/135533 (art. 158 of the EPC).

Demande internationale publiée par l'Organisation Mondiale de la Propriété sous le numéro:

WO 2006/135533 (art. 158 de la CBE).

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

(11) Veröffentlichungsnummer:
(11) Publication number: **EP 1 920 568 A0**
(11) Numéro de publication:

Internationale Anmeldung veröffentlicht durch die Weltorganisation für geistiges Eigentum unter der Nummer:

WO 2007/027356 (art. 158 des EPÜ).

International application published by the World Intellectual Property Organisation under number:

WO 2007/027356 (art. 158 of the EPC).

Demande internationale publiée par l'Organisation Mondiale de la Propriété sous le numéro:

WO 2007/027356 (art. 158 de la CBE).

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

(11) Veröffentlichungsnummer:
(11) Publication number: **EP 1 920 615 A0**
(11) Numéro de publication:

Internationale Anmeldung veröffentlicht durch die Weltorganisation für geistiges Eigentum unter der Nummer:

WO 2007/021586 (art. 158 des EPÜ).

International application published by the World Intellectual Property Organisation under number:

WO 2007/021586 (art. 158 of the EPC).

Demande internationale publiée par l'Organisation Mondiale de la Propriété sous le numéro:

WO 2007/021586 (art. 158 de la CBE).

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

(11) Veröffentlichungsnummer:
(11) Publication number: **EP 2 030 338 A0**
(11) Numéro de publication:

Internationale Anmeldung veröffentlicht durch die Weltorganisation für geistiges Eigentum unter der Nummer:

WO 2007/142961 (Art. 153(3) EPÜ).

International application published by the World Intellectual Property Organization under number:

WO 2007/142961 (Art. 153(3) EPC).

Demande internationale publiée par l'Organisation Mondiale de la Propriété Intellectuelle sous le numéro:

WO 2007/142961 (art. 153(3) CBE).

FR2674355

Publication Title:

Individual or semi-collective transport system with automatic call terminals

Abstract:

Abstract of FR2674355

This system comprising: vehicles (10) provided with a transmitter-receiver terminal (11) receiving journey proposal messages (B) and sending journey acceptance messages (C); call points (20), sending journey request messages (A) and receiving information in return (D), especially information on the availability and/or the waiting time for a vehicle; and a coordinator centre (30), comprising means (31) for receiving and centralising the journey request messages and for sending back to the call points the information in return corresponding to the journey request messages received, means (33) for broadcasting the journey proposal messages to the vehicles and for receiving the journey acceptance messages sent by these vehicles as a result of the broadcast journey proposal messages, and means (31) for deriving the journey proposal messages on the basis of the journey request messages received, and the information in return on the basis of the journey acceptance messages received. According to the invention, the call points (20) are collective call terminals, situated at predetermined fixed pickup points, and each of these terminals comprises: a transmitter-receiver for digital data (22), sending the said journey request messages in digital form, in the form of a parameter for identification of the terminal, and receiving information in return in digital form; and means (24) for displaying this return information.

Data supplied from the esp@cenet database - Worldwide

Courtesy of http://v3.espacenet.com

This Patent PDF Generated by Patent Fetcher(TM), a service of Stroke of Color, Inc.

(19) RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL
DE LA PROPRIÉTÉ INDUSTRIELLE

PARIS

(11) N° de publication : **2 674 355**
(à n'utiliser que pour les commandes de reproduction)

(21) N° d'enregistrement national : **91 03436**

(51) Int Cl[5] : G 08 G 1/123

(12) DEMANDE DE BREVET D'INVENTION A1

(22) **Date de dépôt** : 21.03.91.

(30) **Priorité** :

(43) **Date de la mise à disposition du public de la demande :** 25.09.92 Bulletin 92/39.

(56) **Liste des documents cités dans le rapport de recherche :** *Se reporter à la fin du présent fascicule.*

(60) **Références à d'autres documents nationaux apparentés :**

(71) **Demandeur(s) :** *SOCIETE NOUVELLE GROUPEMENT TAXI société anonyme* — FR.

(72) **Inventeur(s) :** Metz Serge et Lescaillier Patrick.

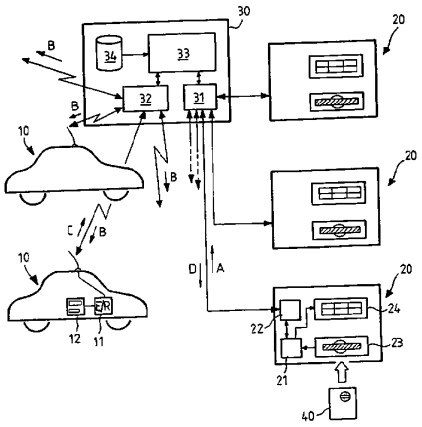
(73) **Titulaire(s) :**

(74) **Mandataire :** Cabinet Claude Rodhain.

(54) Système de transport individuel ou semi-collectif à bornes d'appel automatiques.

(57) Ce système comprenant: des véhicules (10) pourvus d'un terminal émetteur-récepteur (11) recevant des messages de proposition de course (B) et émettant des messages d'acceptation de course (C); des points d'appel (20), émettant des messages de demande de course (A) et recevant des informations en retour (D), notamment des informations de disponibilité et/ou de temps d'attente de véhicule; et un centre coordinateur (30), comprenant des moyens (31) pour recevoir et centraliser les messages de demande de course et pour renvoyer aux points d'appel les informations en retour correspondant aux messages de demande de course reçus, des moyens (33) pour diffuser aux véhicules les messages de proposition de course et pour recevoir les messages d'acceptation de course émis par ces véhicules suite aux messages de proposition de course diffusés, et des moyens (31) pour élaborer les messages de proposition de course en fonction des messages de demande de course reçus, et les informations en retour en fonction des messages d'acceptation de course reçus.

Selon l'invention, les points d'appel (20) sont des bornes collectives d'appel, situées en des points de chargement fixes prédéterminés, et chacune de ces bornes comprend: un terminal émetteur-récepteur de données numériques (22), émettant sous forme numérique lesdits messages de demande de course sous forme d'un paramètre d'identification de la borne et recevant sous forme numérique les informations en retour; et des moyens (24) pour afficher ces informations en retour.



FR 2 674 355 - A1

Système de transport individuel ou semi-collectif à bornes d'appel automatiques

La présente invention a pour objet un nouveau concept de transport de voyageurs à la demande.

Il s'agit d'un mode de transport essentiellement individuel, mais qui peut être éventuellement aménagé en « semi-collectif » c'est-à-dire groupant dans un même véhicule un nombre (réduit) de voyageurs empruntant un itinéraire commun ou une partie d'itinéraire commune.

Comme on le verra, ce nouveau concept de transport permet de bénéficier des principaux avantages des transports purement individuels classiques (taxis) aussi bien que de ceux des transports collectifs (bus, navettes, etc.).

En outre, ce concept permet une gestion très aisée du transport des voyageurs, grâce à un contrôle d'accès permettant de réserver le bénéfice des moyens de transport à une clientèle déterminée, par exemple des clients abonnés.

Le concept de transport selon l'invention permet également une automatisation totale de la gestion des appels et de la répartition des courses ainsi que, éventuellement, une intégration du système de paiement.

Parmi les caractères avantageux empruntés aux transports individuels, le transport selon l'invention permet d'effectuer une course à la demande de l'usager, à la fois :

— dans le temps, c'est-à-dire que l'usager appelle un véhicule pour qu'il vienne le chercher ; ceci évite, notamment aux heures creuses, de prévoir des passages réguliers de véhicules peu ou pas chargés pour garantir un délai maximal d'attente, comme dans le cas des moyens de transports collectifs, et

— dans l'espace, c'est-à-dire que la destination est celle demandée par l'usager, qui sera déposé à l'endroit qu'il choisit et non à un arrêt imposé d'une ligne de bus, par exemple.

Parmi les avantages empruntés par l'invention aux transports collectifs, le plus important est, pour l'usager qui se présente à une

point de chargement, la certitude d'obtenir un véhicule, avec un délai certes variable mais limité dans le temps, à la différence notamment des stations de taxi, où un usager n'est jamais certain (contrairement à une station de bus) d'obtenir un véhicule, en particulier aux heures de pointe.

Essentiellement, l'invention propose :

— d'une part, de mettre en œuvre des bornes d'appel fixes, collectives (c'est-à-dire des bornes à la disposition de tous les usagers clients) qui constitueront autant de points de chargement prédéterminés (le point de dépose étant, en revanche, libre), et

— d'autre part de contrôler, à cette borne, l'accès à la prestation d'appel par l'usager, par exemple au moyen d'une carte d'habilitation (cette carte pouvant également servir de carte de paiement de la prestation d'appel, le cas échéant).

Selon le premier aspect de l'invention, l'emplacement de la borne d'appel correspond au point de chargement, de sorte que, pour l'usager, le geste d'appel consiste simplement en une activation de la borne, par exemple par appui sur un bouton ou par insertion d'une carte appropriée.

En réponse à cette action, la borne, que l'on peut dès lors qualifier d'« active », émet automatiquement vers un centre coordinateur un message indiquant qu'un chargement est demandé à l'endroit de cette borne.

Ainsi, et de façon caractéristique de l'invention, puisque la borne constitue à la fois le point d'appel et le point de chargement, il n'est plus nécessaire — à la différence des appels téléphoniques classiques de taxis — que l'usager demandeur indique au centre coordinateur une adresse de chargement ; on évite donc les risques d'erreurs antérieurs (numéros ou noms de rues à consonances voisines ou difficilement intelligibles) et la nécessité de liaisons audio et donc la présence permanente d'opérateurs pour réceptionner et gérer les appels.

En outre, la borne est non seulement une borne « active », mais également une borne « interactive », en ce sens que, suite à son activation et après traitement du message par le centre coordinateur,

une réponse pourra être fournie en retour à l'usager, par exemple par affichage sur un écran. Ces messages pourront ainsi, successivement, accuser réception de la demande de l'usager, l'informer de la recherche en cours, et enfin lui confirmer la prise en charge de sa demande et lui indiquer le numéro du véhicule qui viendra le chercher et le délai d'approche estimé.

Plus précisément, le système de transport selon l'invention est un système de transport du type générique comprenant : une pluralité de véhicules, pourvus chacun d'un terminal émetteur-récepteur comprenant des moyens pour recevoir des messages de proposition de course et des moyens pour émettre des messages d'acceptation de course ; une pluralité de points d'appel, émettant des messages de demande de course et recevant des informations en retour, notamment des informations de disponibilité et/ou de temps d'attente de véhicule ; et un centre coordinateur, comprenant des moyens pour recevoir et centraliser les messages de demande de course émis par les points d'appel, et pour envoyer à ces points d'appel les informations en retour correspondant aux messages de demande de course reçus, des moyens pour diffuser aux véhicules les messages de proposition de course, et pour recevoir les messages d'acceptation de course émis par ces véhicules suite aux messages de proposition de course diffusés, et des moyens pour élaborer les messages de proposition de course en fonction des messages de demande de course reçus, et pour élaborer les informations en retour en fonction des messages d'acceptation de course reçus.

Selon l'invention, dans un tel système, lesdits points d'appel sont des bornes collectives d'appel, situées en des points de chargement fixes prédéterminés, et chacune de ces bornes comprend un terminal émetteur-récepteur de données numériques, émettant sous forme numérique lesdits messages de demande de course sous forme d'un paramètre d'identification de la borne et recevant sous forme numérique lesdites informations en retour, et des moyens pour afficher ces informations en retour reçues.

Avantageusement, chacune des bornes comprend un lecteur de carte, le message de demande de course étant émis par insertion

d'une carte dans le lecteur de la borne.

Dans ce cas, la carte peut notamment porter une information d'identification de l'appelant, cette information étant lue par le lecteur de la borne et transmise avec le message de demande de course, le centre coordinateur comportant en outre des moyens pour effectuer une vérification de l'identification de l'appelant parmi un ensemble d'appelants autorisés.

La carte peut également porter une information de comptabilisation des appels, en valeur unitaire ou monétaire, cette information étant lue par le lecteur de la borne et débitée en retour à chaque prestation d'appel.

Selon un certain nombre de caractéristiques avantageuses, qui peuvent être prévues indépendamment ou en combinaison :

— au moins certaines des bornes du système sont affectées à des destinations ou directions générales respectives prédéterminées ;

— le terminal émetteur-récepteur des véhicules est un terminal émetteur-récepteur de données numériques comprenant des moyens d'acquittement de la proposition de course, actionnés par le conducteur du véhicule, émettant un message d'acceptation de course sous forme d'un paramètre d'identification du véhicule, ainsi qu'éventuellement une information de délai d'approche et/ou de position du véhicule ;

— les véhicules comprennent des moyens pour transmettre au centre coordinateur une information de secteur, fonction de la localisation géographique effective du véhicule, et une information de disponibilité du véhicule, et lesdits moyens pour élaborer les messages de proposition de course opèrent également en fonction de la localisation géographique du point d'appel et des informations de secteur et de disponibilité transmises par les véhicules, de manière à ne transmettre le message de proposition de course correspondant à l'appel considéré qu'à un seul des véhicules disponibles situés dans le secteur du point d'appel ou un secteur voisin, ou qu'à un nombre restreint de ces véhicules ;

Motorola Solutions, Inc., Ex1003, p. 241

— le centre coordinateur comprend des moyens pour calculer, à réception d'un message d'acceptation de course et en fonction d'une information de position du véhicule correspondante, le temps moyen de parcours depuis l'endroit où se trouve le véhicule ayant émis ce message jusqu'à la borne correspondante, et pour envoyer en retour à cette borne, pour affichage, une information de temps d'attente correspondante.

◊

On va maintenant décrire, en référence aux dessins annexés, un exemple de mise en œuvre de l'invention.

La figure 1 montre, schématiquement, l'organisation du système de transport selon l'invention.

La figure 2 montre la structure des différents messages échangés au sein du système de la figure 1.

◊

Sur la figure 1, on a représenté schématiquement le système de l'invention. Ce système comprend essentiellement, d'une part, une pluralité de véhicules (taxis) 10 et, d'autre part une pluralité de bornes d'appel 20 constituant les divers points de chargement auxquels devront se rendre les véhicules 10. Les bornes sont situées en des lieux appropriés, publics (gares, carrefours importants, centres commerciaux, etc.) ou privés (hôtels, halls d'immeubles de bureaux, etc.), choisis à la fois en fonction de la proximité des clients potentiels et des facilités de circulation afin d'y permettre un chargement aisé.

Les véhicules et les bornes sont tous reliés à un centre coordinateur 30, constitué d'un calculateur central et d'un serveur télématique. Les liaisons télématiques entre véhicules 10 et centre coordinateur 30 sont, typiquement, réalisées par radio, chaque véhicule comprenant un émetteur-récepteur 11 relié à un terminal numérique 12 lui permettant, outre une éventuelle liaison audio (radiotéléphone),

d'échanger des informations numériques avec le centre coordinateur 30. Les liaisons entre les bornes 20 peuvent être réalisées par des lignes téléphoniques (lignes spécialisées ou lignes du réseau commuté) ou par d'autres moyens (radio notamment), tous en eux-mêmes connus.

Dans le mode de réalisation illustré, chacune des bornes 20 comporte une unité centrale 21 reliée à une unité d'interfaçage 22 (modem ou émetteur/récepteur radio), à un lecteur de carte 23 et à un afficheur 24.

Le centre coordinateur 30, quant à lui, comporte des unités d'interfaçage 31 et 32 assurant la communication avec, respectivement, les diverses bornes 20 et les divers véhicules 10 afin de collecter les messages émis sur le réseau et diffuser les informations élaborées par une unité centrale 33.

On va maintenant expliquer la manière dont opère le système de la figure 1.

Lorsqu'un usager, client du réseau, souhaite obtenir un véhicule, il se présente à une borne et introduit dans le lecteur de carte 23 de celle-ci, une carte 40 qui lui a préalablement été délivrée par l'organisme gestionnaire du réseau.

La carte 40 peut être aussi bien une carte magnétique qu'une carte à puce, la technologie choisie étant sans incidence sur l'architecture du système et sur son *modus operandi*. Elle porte des informations de personnalisation (identification du client, numéro de carte ou de compte d'abonnement) permettant de contrôler l'accès au système par le détenteur de la carte.

Cette carte peut également porter des informations destinées à comptabiliser et débiter au fur et à mesure les prestations d'appel ; ces informations de comptabilisation peuvent être établies soit en valeur monétaire soit en nombre d'appels, une carte étant par exemple préchargée pour un nombre d'appels déterminés et ce nombre étant décrémenté à chaque appel émis ou, de préférence, à chaque appel ayant effectivement abouti.

On voit ainsi que l'on peut facturer au client la prestation d'appel en tant que telle (soit par prépaiement à la délivrance de la carte

soit par imputation sur un compte d'abonné), distinctement de la prestation de transport.

De même, la carte peut être aussi bien une carte anonyme que nominative, une carte prépayée et non rechargeable (à la manière d'une télécarte), prépayée et rechargeable, postpayée, à téléprélèvement bancaire, comporter un date de péremption, etc., conformément à tous les schémas classiques d'organisation des systèmes mettant en œuvre des cartes accréditives et de paiement.

Le simple fait d'engager la carte dans le lecteur active la borne ; on notera qu'aucune autre manœuvre n'est nécessaire, ni liaison audio avec le centre coordinateur, ni transmission à celui-ci d'une adresse ou d'un code indiquant le lieu de chargement.

Puisqu'aucun bouton d'appel ou clavier n'est nécessaire, la borne peut se présenter sous une configuration extérieure très simple, avec seulement la fente d'introduction de la carte et l'afficheur.

La borne émet automatiquement en direction du centre coordinateur 30 un message A, ci-après appelé « message de demande de course », comprenant (figure 2) un identifiant de borne (numéro attribué à cette borne, par exemple), propre à la borne venant d'être activée, et un identifiant de carte ou de client, propre à la carte venant d'activer cette borne.

Ce mode d'élaboration et de transmission des appels présente l'avantage, on le verra plus loin, de pouvoir automatiser totalement le traitement des appels, à la différence des appels téléphoniques classiques qui requièrent toujours la présence permanente d'un opérateur pour réceptionner et gérer les appels.

Le centre coordinateur, à réception du message de demande de course A, vérifie l'habilitation de l'usager par comparaison avec un fichier 34 (par exemple un fichier des abonnés et de leur situation de compte, ou des numéros de cartes autorisés), et élabore un « message de proposition de course » B à partir du message de demande de course A ainsi reçu et vérifié.

Ce message de proposition de course B comprend essentiellement, comme illustré figure 2, un identifiant de borne permettant au véhicule qui recevra ce message de reconnaître la borne et donc le

point de chargement de la course proposée.

On notera que, du fait que les points de chargement correspondent aux bornes d'appel et donc à un nombre limité de lieux, il est possible de coder cette information et d'automatiser entièrement le processus de diffusion des propositions de courses, sans intervention d'un opérateur et de manière très simple.

Très avantageusement, au lieu de diffuser ce message à tous les véhicules, le centre coordinateur opère une diffusion sélective en fonction, d'une part, de l'emplacement de la borne appelante et, d'autre part, de la situation géographique effective des véhicules et de leur disponibilité, afin de ne transmettre la proposition de course correspondant à un appel donné qu'à un seul véhicule, disponible et situé dans le secteur géographique du point d'appel (ou un secteur voisin), ou qu'à un nombre restreint de tels véhicules.

Le centre coordinateur connaît en effet en temps réel, et pour chaque secteur, la situation de l'offre de véhicules disponibles. À cet effet, lorsqu'un véhicule devient disponible, il « déclare » sa disponibilité au centre coordinateur en lui envoyant un message codé indiquant son identité et le secteur où il se trouve. Ce message peut être codé par le chauffeur, par appui sur un bouton de son terminal numérique 12 et introduction d'un code de secteur sur un clavier, ou de façon automatique par un capteur d'état du compteur ou de l'indicateur lumineux de toit (pour l'information de disponibilité) et un système de radiolocalisation automatique (pour l'information géographique).

Le centre coordinateur dispose ainsi, secteur par secteur, d'une liste de véhicules disponibles organisée en file d'attente ; il connaît par ailleurs le plan de répartition des fréquences à un instant donné et sait donc sur quel canal émettre pour n'envoyer un message qu'à un véhicule donné.

Le centre coordinateur transmet alors le message de demande de course au premier véhicule (c'est-à-dire celui qui est en attente de course depuis le plus longtemps) de la file d'attente du secteur où se trouve la borne ou, s'il ne s'en trouve aucun, au véhicule correspondant du secteur voisin le plus proche. Si le véhicule sélectionné

n'accepte pas la course dans un délai fixé, le message de demande de course est alors passé au second véhicule de la file d'attente, et ainsi de suite.

Bien entendu diverses variantes opératoires peuvent être envisagées, en fonction du mode particulier de gestion des courses et des priorités que l'on souhaite mettre en œuvre. On ne décrira pas plus en détail ce processus de « sectorisation », déjà connu et appliqué en tant que tel par ailleurs. On pourrait également envisager d'autres formes de mise en œuvre de la sectorisation, par exemple en procédant à une diffusion générale, indifférenciée, du message de proposition de course (qui comprendrait alors une information précisant le secteur du point d'appel), et en intégrant au terminal émetteur-récepteur des véhicules un discriminateur de messages filtrant les propositions de course en fonction de la localisation effective du véhicule et de sa disponibilité, informations introduites par le chauffeur ou déterminées automatiquement, comme indiqué ci-dessus.

Lorsqu'un véhicule reçoit un message de proposition de course qui lui est destiné (quel que soit le mode de diffusion choisi), son terminal numérique 12 décode l'identifiant de borne pour restituer en clair au chauffeur l'emplacement précis de la borne appelante. La proposition de course est, par exemple, présentée au chauffeur par affichage sur un écran du terminal 12 ou, mieux, restituée par synthèse vocale, ce qui évite de détourner son attention de la conduite.

On voit en particulier que l'on peut présenter ces informations et propositions de courses aux chauffeurs sans qu'il soit nécessaire de prévoir une liaison audio avec le centre coordinateur, de sorte que l'on évite tous les inconvénients liés à ce mode de diffusion des informations : mauvaise intelligibilité des messages, risques d'erreurs ou d'omissions par l'opérateur, répétitions, etc.

En réponse à la proposition de course, le chauffeur qui décide d'accepter la course fait part au centre coordinateur de son acceptation en émettant un « message d'acceptation de course » C, ce message pouvant être émis, ici encore, de façon entièrement automatique, numérisée et sans liaison audio, par exemple par simple appui sur un bouton d'acquittement prévu sur le terminal 12.

Motorola Solutions, Inc., Ex1003, p. 246

Ce message d'acceptation de course C comporte l'identification de la borne vers laquelle va se diriger le véhicule, un code d'identification propre au véhicule (qui permettra d'indiquer au client ayant demandé la course le numéro du véhicule qui viendra le chercher), et éventuellement une information complémentaire de position géographique actuelle du véhicule et/ou de délai d'approche estimé ; ces informations peuvent également, en variante, être établies par le centre coordinateur, ce qui évite au chauffeur d'avoir à estimer et, surtout, de coder des informations supplémentaires telles que le délai d'approche prévisible. Dans ce dernier cas, le délai d'approche est par exemple évalué en fonction du nombre de véhicules dans les différentes zones ; l'information peut d'ailleurs être communiquée en retour à la borne, si nécessaire, avant même que la proposition de course ne soit diffusée et acceptée, dès lors que la présence dans un même secteur d'un nombre suffisant de véhicules permet de garantir un délai à l'appelant de façon quasi-certaine et avec une faible marge d'erreur.

L'acceptation de course est répercutée par le centre coordinateur, sous la forme d'un « message d'informations en retour », vers la borne ayant émis l'appel, de façon à présenter sur l'afficheur 24 un message de confirmation informant le client que la recherche du véhicule a bien abouti, et lui donnant le numéro du véhicule et le délai d'attente prévisible.

Avantageusement, entre le moment où l'appel du client est émis par la borne et celui où l'on confirme à celui-ci l'acceptation de sa course, le centre coordinateur envoie des messages d'attente lui permettant d'être informé du bon déroulement des opérations et de patienter en conséquence.

Plus précisément, la structure de ce message d'informations en retour D est celle illustrée figure 2, avec : un identifiant de borne (dans le cas où les liaisons des différentes bornes sont multiplexées, afin que la borne concernée puisse reconnaître les informations qui lui sont destinées), un code de message à afficher (« recherche en cours », « pas de véhicule disponible », « course acceptée », etc.), un délai d'approche et/ou un identifiant de véhicule dans le cas où le

Motorola Solutions, Inc., Ex1003, p. 247

message à afficher correspond à une course acceptée.

Lorsque, comme expliqué plus haut, la carte comporte une zone de comptabilisation des prestations d'appel, la borne 20 peut également procéder au débit de la carte en même temps que l'on confirme l'acceptation de la course.

Diverses variantes ou perfectionnements de ce système peuvent, bien entendu, être envisagés.

Par exemple, certaines des bornes du système peuvent être affectées à des destinations ou directions générales prédéterminées, c'est-à-dire que l'on peut « spécialiser » une borne dans une direction ou une zone de destination donné. Ceci permet en particulier d'effectuer aisément du transport semi-collectif : le véhicule ayant accepté la course fait alors son circuit dans la direction ou vers la zone de destination en question pour y déposer les divers clients regroupés dans le véhicule.

De même, le système de transport étant réservé à une clientèle déterminée dont on a contrôlé l'accès au réseau grâce à la carte d'habilitation, le système de paiement peut être intégré et automatisé, puisque les informations de point de chargement, d'identité du client et d'identité du véhicule sont déjà numérisées et prises en compte par le centre coordinateur. Il suffit alors au chauffeur du véhicule de transmettre simplement le prix final de la course et, éventuellement, le point de dépose pour que le centre coordinateur dispose de la totalité des informations nécessaires à l'inscription en compte de la course pour paiement ultérieur ou imputation sur un avoir.

Parmi d'autres perfectionnements possibles, tous dérivés de techniques en elles-mêmes connues dans des domaines voisins, on peut citer notamment :

- la possibilité de gestion par le centre coordinateur des cartes déclarées volées ou perdues ;
- l'enregistrement sur la carte d'un mot de passe, de préférence sous forme cryptée et/ou avec codage redondant permettant la détection et la correction des erreurs, la borne recalculant alors ce mot de passe et demandant à l'usager d'introduire son

code sur un clavier ;

— le sondage régulier des bornes par le centre coordinateur, afin de détecter le bon fonctionnement de celles-ci et signaler immédiatement toute anomalie éventuelle ;

— l'utilisation de la borne par l'usager pour consulter le montant résiduel ou le nombre de droits d'utilisation subsistants, ou pour demander au gestionnaire du réseau de lui envoyer une nouvelle carte.

Par ailleurs, les bornes 20 (ou certaines d'entre elles) peuvent être reliées par radio au centre coordinateur 30 par des moyens émetteurs/récepteurs semblables à ceux des véhicules 10, chaque borne émettant et recevant alors directement sur la fréquence de recherche des véhicules ; en d'autre termes, la borne se comporte à la manière d'un véhicule qui, au lieu de prendre des courses, les demanderait.

REVENDICATIONS

1. Système de transport individuel ou semi-collectif comprenant :

— une pluralité de véhicules (10), pourvus chacun d'un terminal émetteur-récepteur (11) comprenant des moyens pour recevoir des messages de proposition de course (B) et des moyens pour émettre des messages d'acceptation de course (C),

— une pluralité de points d'appel (20), émettant des messages de demande de course (A) et recevant des informations en retour (D), notamment des informations de disponibilité et/ou de temps d'attente de véhicule, et

— un centre coordinateur (30), comprenant :

- des moyens (31) pour recevoir et centraliser les messages de demande de course émis par les points d'appel, et pour envoyer à ces points d'appel les informations en retour correspondant aux messages de demande de course reçus,
- des moyens (33) pour diffuser aux véhicules les messages de proposition de course, et pour recevoir les messages d'acceptation de course émis par ces véhicules suite aux messages de proposition de course diffusés, et
- des moyens (31) pour élaborer les messages de proposition de course en fonction des messages de demande de course reçus, et pour élaborer les informations en retour en fonction des messages d'acceptation de course reçus,

système caractérisé en ce que :

— lesdits points d'appel (20) sont des bornes collectives d'appel, situées en des points de chargement fixes prédéterminés, et

— chacune de ces bornes comprend :

- un terminal émetteur-récepteur de données numériques (22), émettant sous forme numérique lesdits messages de demande de course sous forme d'un paramètre d'identification de la borne (ID. BORNE) et recevant sous forme numérique lesdites informations en retour (MESSAGE, DÉLAI), et
- des moyens (24) pour afficher ces informations en retour reçues.

2. Système de transport selon la revendication 1, dans lequel chacune des bornes comprend un lecteur de carte (23), le message de demande de course étant émis par insertion d'une carte (40) dans le lecteur de la borne.

3. Système de transport selon la revendication 2, dans lequel ladite carte (40) porte une information d'identification de l'appelant, cette information étant lue par le lecteur de la borne et transmise (ID. CARTE/CLIENT) avec le message de demande de course, le centre coordinateur comportant en outre des moyens (34) pour effectuer une vérification de l'identité de l'appelant parmi un ensemble d'appelants autorisés.

4. Système de transport selon la revendication 2, dans lequel ladite carte (40) porte une information de comptabilisation des appels, en valeur unitaire ou monétaire, cette information étant lue par le lecteur de la borne et ladite valeur étant débitée en retour à chaque prestation d'appel.

5. Système de transport selon la revendication 1, dans lequel au moins certaines des bornes du système sont affectées à des destinations ou directions générales respectives prédéterminées.

6. Système de transport selon la revendication 1, dans lequel le terminal émetteur-récepteur des véhicules est un terminal émetteur-récepteur de données numériques comprenant des moyens (12) d'acquittement de la proposition de course, actionnés par le conducteur du véhicule, émettant un message d'acceptation de course sous forme d'un paramètre d'identification du véhicule (ID. VÉHICULE).

7. Système de transport selon la revendication 6, dans lequel ledit message d'acceptation de course comporte en outre une information de délai d'approche et/ou de position du véhicule (DÉLAI/POSITION).

8. Système de transport selon la revendication 1, dans lequel :

— les véhicules comprennent des moyens pour transmettre au centre coordinateur une information de secteur, fonction de la localisation géographique effective du véhicule, et une information de disponibilité du véhicule, et

— lesdits moyens (31) pour élaborer les messages de proposition de course opèrent également en fonction de la localisation géographique du point d'appel et des informations de secteur et de disponibilité transmises par les véhicules, de manière à ne transmettre le message de proposition de course correspondant à l'appel considéré qu'à un seul des véhicules disponibles situés dans le secteur du point d'appel ou un secteur voisin, ou qu'à un nombre restreint de ces véhicules.

9. Système de transport selon la revendication 1, dans lequel le centre coordinateur comprend des moyens pour calculer, à réception d'un message d'acceptation de course et en fonction d'une information de position du véhicule correspondante, le temps moyen de parcours depuis l'endroit où se trouve le véhicule ayant émis ce message jusqu'à la borne correspondante, et pour envoyer en retour à cette borne, pour affichage, une information de temps d'attente correspondante (DÉLAI).

FIG_1

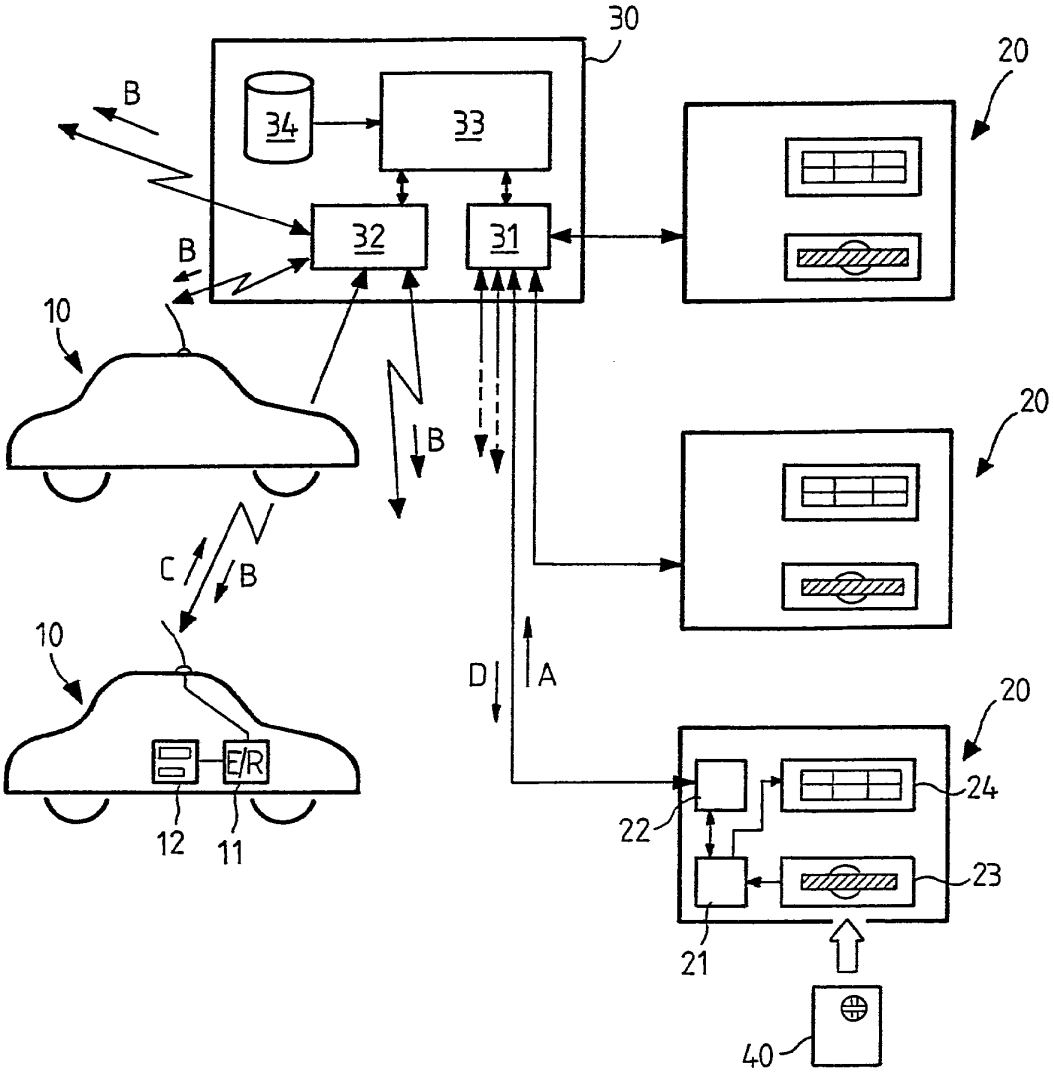


FIG_2

A	ID. BORNE	ID. CARTE/CLIENT		
B	ID. BORNE			
C	ID. BORNE	ID. VEHICULE	DELAI/POSITION	
D	ID. BORNE	MESSAGE	DELAI	ID. VEHICULE

REPUBLIQUE FRANÇAISE

2674355

N° d'enregistrement national

INSTITUT NATIONAL de la PROPRIETE INDUSTRIELLE

RAPPORT DE RECHERCHE

établi sur la base des dernières revendications déposées avant le commencement de la recherche

FR 9103436
FA 456037

DOCUMENTS CONSIDERES COMME PERTINENTS

Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendications concernées de la demande examinée
X	PHILIPS TECHNICAL REVIEW. vol. 40, no. 8/9, 1982, EINDHOVEN NL pages 231 - 236; J.H.A. MELIS: 'O-BUS:a system for flexible public transport by means of on-call buses' * page 231, colonne de droite, ligne 31 - page 232, colonne de gauche, ligne 19 * * page 233, colonne de droite, ligne 13 - ligne 52 *	1,2
A	---	3-9
A	PATENT ABSTRACTS OF JAPAN vol. 014, no. 309 (P-107)4 Juillet 1990 & JP-A-2 098 800 (TOSHIBA CORP) 11 Avril 1990 * abrégé * -----	1-9

DOMAINES TECHNIQUES RECHERCHES (Int. Cl.5)

G08G

Date d'achèvement de la recherche	Examinateur
19 DECEMBRE 1991	CRECHET P.G.

CATEGORIE DES DOCUMENTS CITES

X : particulièrement pertinent à lui seul
Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie
A : pertinent à l'encontre d'au moins une revendication ou arrière-plan technologique général
O : divulgation non-écrite
P : document intercalaire

T : théorie ou principe à la base de l'invention
E : document de brevet bénéficiant d'une date antérieure à la date de dépôt et qui n'a été publié qu'à cette date de dépôt ou qu'à une date postérieure.
D : cité dans la demande
L : cité pour d'autres raisons

& : membre de la même famille, document correspondant

EPO FORM 1503 03.82 (P0413)

1

Motorola Solutions, Inc., Ex1003, p. 254

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 November 2001 (29.11.2001)

PCT

(10) International Publication Number
WO 01/91485 A1

(51) International Patent Classification[7]: H04Q 7/22, G08G 1/123

(21) International Application Number: PCT/EP01/04570

(22) International Filing Date: 23 April 2001 (23.04.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0012195.4 19 May 2000 (19.05.2000) GB

(71) Applicant *(for all designated States except US)*: **NOKIA NETWORKS OY** [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **NAGHIAN, Siamäk** [FI/FI]; Maininkitie 2 A 3, FIN-02320 Espoo (FI). **LEHTINEN, Otto-Aleksanteri** [FI/FI]; Hakapellonkatu 3 as 8, FIN-1200 Raisio (FI).

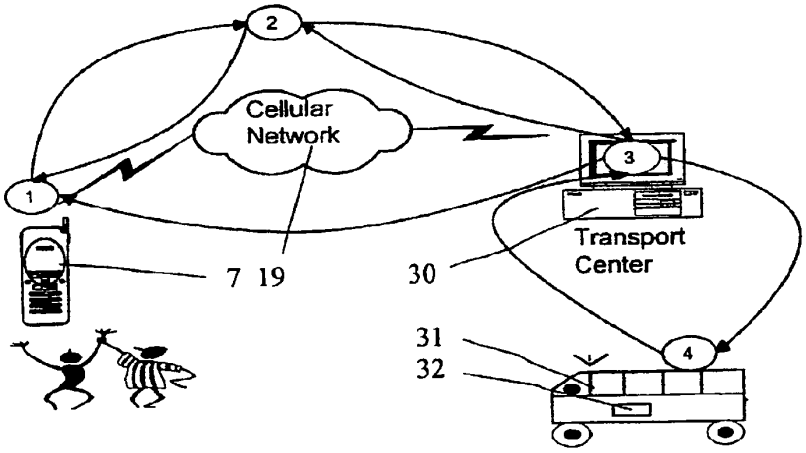
(74) Agents: **RUUSKANEN, Juha-Pekka** et al.; Page White & Farrer, 54 Doughty Street, London WC1N 2LS (GB).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: LOCATION INFORMATION SERVICES



(57) Abstract: The present invention relates to a system and method for providing services for mobile users based on location information. A plurality of devices is defined to form a group of devices. A first location information is determined, said first information associating with the location of at least one of the devices in the group. Second location information is also determined, said second information associating with the location of a station of the mobile user. The first and second information is processed to generate third information, said third information being based on the location of the station relative to the location of at least one device of the group. The third information is transported in a communication system after the transportation is triggered by a predefined condition.

WO 01/91485 A1

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Location information services

Field of the Invention

The present invention relates to services that are based on location information associated with of a mobile user equipment.

Background of the Invention

A mobile user equipment and thus the user thereof can be positioned by various different techniques. For example, substantially accurate geographical location information that associates with a user equipment can be obtained based on the known satellite based GPS (Global Positioning System). More accurate location information can be obtained through a differential GPS. Another possibility is to use a location service that associates with a cellular telecommunications system for the provision of the location information.

In the latter the cells or similar geographically limited radio access entities and associated controllers of the communication system can be utilised to produce at least a rough location information estimate concerning the current location of the mobile user equipment or station, as the cellular telecommunications system is aware of the cell or service area with which the user equipment currently associates. The cellular system may be provided with location measurement units that provide more accurate data concerning the location of a mobile user equipment within the service area of the cellular system. It is also possible to conclude geographical location when the mobile user equipment is located within the coverage area of a visited or "foreign"

Motorola Solutions, Inc., Ex1003, p. 257

network. The visited network may be made capable of transmitting the location of the mobile user equipment back to the home network, e.g. to support location services or for the purposes of routing and charging.

The location data that is provided by means of the elements of the cellular system may be processed in a specific location service node that is implemented either within the cellular system or connected thereto. The location data may also be processed in the user equipment that is provided with appropriate processing capacity. The location service facility provided by the communication system may serve different clients via an appropriate interface. The location information may be used for various purposes, such as for location of a mobile telephone that has made an emergency call, for locating vehicles or given mobile subscribers and so on.

However, the inventors have found that while the clients may receive information concerning the location of a mobile user, the mobile user himself may wish to receive services that utilise information provided by the location services and thus there is a need for new type of services that are based on location information.

Summary of the Invention

It is an aim of the embodiments of the present invention to provide services that are based on information that associates with the location of the mobile user.

According to one aspect of the present invention, there is provided a method comprising: grouping a plurality of devices into a group; determining first location information that

associates with the location of at least one of the devices of the group; determining second location information that associates with the location of a station; processing the first and second location information to generate third information, said third information being based on the location of the station relative to the location of at least one device of the group; and transporting the third information, the transportation being triggered by a predefined condition.

According to another aspect of the present invention there is provided a method for providing information that associates with means of transportation that are available for a user of a station, comprising the steps of: determining first information that relates to the location of at least one means of transportation; determining second information that relates to the location of the station; processing the first information and the second information to obtain third information, said third information that associates with at least one means of transportation that is possible for the user; and presenting the third information to the user by the station.

According to another aspect of the present invention there is provided a system comprising: a station of a communication system; a plurality of devices, the devices being adapted to provide at least one service for a user of the station; means for grouping the plurality of devices into at least one group; means for determining first location information, the first information associating with the location of at least one of the devices; means for determining second location information, the second information associating with the location of the station; processor means for processing the

first location information and second location information for generating third information, said third information being based on relative locations of the station and the at least one device; and an interface via which the third information is transported after the transportation is triggered by a predefined event.

Brief Description of Drawings

For better understanding of the present invention, reference will now be made by way of example to the accompanying drawings in which:

Figure 1 shows a cellular system in which the embodiments of the present invention may be implemented;

Figure 2 shows an embodiment of the present invention;

Figure 3 is a flowchart illustrating the operation of one embodiment of the present invention;

Figure 4 illustrates an embodiment of the invention;

Figure 5 is a flowchart illustrating the operation of an embodiment of the present invention;

Figure 6 shows a user equipment in accordance with a further embodiment; and

Figure 7 illustrates a possible ciphering hierarchy for the Figure 6 embodiment.

Description of Preferred Embodiments of the Invention

Before explaining the preferred embodiment of the invention in more detail, a reference is made to Figure 1 which is a simplified presentation of a cellular system providing location services. It should be appreciated that even though the exemplifying telecommunications network shown and described in more detail uses the terminology of the WCDMA

(Wideband Code Division Multiple Access) UMTS (Universal Mobile Telecommunications System) public land mobile network (PLMN), the proposed solution can be used in any system providing communications between a mobile station and a base station and some kind of location information service. Examples of other telecommunications systems include, without limiting to these, standards such as the GSM (Global System for Mobile communications) or various GSM based systems (such as GPRS: General Packet Radio Service), AMPS (American Mobile Phone System) or DAMPS (Digital AMPS), IMT 2000 (International Mobile Telecommunications system 2000) and so on.

More particularly, Figure 1 shows an arrangement in which three base stations of the cellular system provide omnidirectional radio coverage areas 1, 2 and 3 of a cellular telecommunications network. It should be appreciated that one cell may include more than one base station site. A base station apparatus or site may also provide more than one cell. The shape of the cells depends on the implementation and may be different from the illustrated omnidirectional shape. The shape and size of the cells may also vary from cell to cell.

In Figure 1 each radio coverage area 1, 2 and 3 is served by the respective base station 4, 5 and 6. It should be appreciated that in some systems, such as in the systems providing 3rd generation telecommunication services, the base station may be referred to as Node B. For clarity reasons this specification will use the term base stations for all kinds of stations that are capable of transmitting signals towards and/or receiving signals from a user equipment. More particularly, each base station 4 to 6 is arranged to transmit signals to and receive signals from the mobile user equipment (UE) 7 via wireless communication. Likewise, the user

Motorola Solutions, Inc., Ex1003, p. 261

equipment 7 is able to transmit signals to and receive signals from the respective base station. The user equipment is also often referred to as mobile station (MS). Typically a number of mobile stations will be in communication with each base station although only one mobile station 7 is shown in Figure 1 for clarity.

Each of the base stations 4 to 6 is connected to a network controller 10, which in the exemplifying PLMN system is a radio network controller (RNC) of a UMTS terrestrial radio access network (UTRAN). It is noted that typically more than one controller is provided in a cellular network. The radio network controller 10 may be connected to appropriate core network entities of the cellular system, such as a MSC (mobile switching centre) and/or SGSN (serving general packet radio service support node) 11, via a suitable interface arrangement.

The mobile station 7 is able to move from one cell coverage area to another cell coverage area. The location of the mobile station 7 may thus vary in time as the mobile station is free to move from one location (base station coverage area or cell coverage area) to another location (to another coverage area) and also within one coverage area.

Figure 1 also shows a location services (LCS) node 12 providing location services for different applications or clients 8 (only one client shown for clarity). In general terms, the LCS node can be defined as an entity capable of providing information concerning the geographical location of a mobile station. The geographical location may be defined on the basis of the position of the mobile station relative to the base station(s) of the mobile telecommunications network.

The geographical location of the base station and/or the mobile stations may be defined, for example, in X and Y co-ordinates or in latitudes and longitudes. A possibility is to use the relation between defined radiuses and angles, e.g. based on the spherical coordinate system or alike. It is also possible to define the location of the base stations and/or mobile stations in vertical directions. For example, Z co-ordinate may be used when providing the location information in the vertical direction. The vertical location may be needed e.g. in mountainous environments or in cities with tall buildings.

In Figure 1 the node 12 is shown to comprise a gateway mobile location center (GMLC) that is provided in the core network side of the telecommunications system. The location service node 12 is arranged to receive via appropriate interface means predefined information concerning the location of the mobile station 7 from the cellular system. The location service node is adapted to process the information in order to determine the geographical location of the mobile station. The information received by the node 12 may include the identity (such as an international mobile subscriber identifier: IMSI) or a temporary identifier (such as a temporary international mobile subscriber identifier: TIMSI) of the mobile station 7. Information that associates with the identity of the cell, or the identity of the service area (containing one cell or several cells) that is serving the mobile station and/or mode precise location measurement data measured by means of one or several location measurement units (not shown) may also be provided. Node 12 processes this information and/or some other predefined parameters and/or computes by processor means 13 appropriate calculations for determining and outputting the geographical location of the given mobile station 7.

Motorola Solutions, Inc., Ex1003, p. 263

The location service node 12 may be implemented in the core network and is arranged to receive location information from the radio access network via MSC and/or SGSN 11 connected by the appropriate interface means to the access network. The positioning information is obtained using one or more of the appropriate techniques some of which will be briefly discussed below or any other suitable technique. This information may be processed in a predefined manner and is then provided to the LCS Client 8.

It should be appreciated that the elements of the location service functionality may be implemented anywhere in the telecommunications system. The location service implementation may also be distributed between several elements of the system. The LCS node may also be an external node to the cellular system. According to an embodiment the mobile station or user equipment provides the location service node. The mobile station is provided with the location service processing function and is capable of generating and transporting location information thereof to the clients. The mobile station may be provided with terminal equipment apparatus (either integrated in the mobile station device or connected thereto). The location information may be based on use of information provided by system that is separate from the communication system, such as by means of the Global Positioning System (GPS) or similar.

The LCS server node 12 may consists of a number of location service components and bearers needed to serve the LCS clients 8. The LCS server node 12 may provide a platform which will enable the support of location based services in parallel with other telecommunication services such as speech, data,

Motorola Solutions, Inc., Ex1003, p. 264

messaging, other teleservices, user applications and supplementary services. The LCS server node 12 may respond to a location request from a properly authorised LCS client 8 with location information for the target mobile stations specified by the LCS client 8 if considerations of target mobile station privacy are satisfied. The LCS Server 12 may thus provide the client 8, on request or periodically, the current or most recent geographic location (if available) of the target mobile station or, if the location fails, an error indication and optionally the reason for the failure. A more detailed description of a LCS node that may be employed in the embodiments of can be found e.g. from ETSI (European telecommunications Standards Institute) technical specification "Location Services" (3GPP TS23.171 and GSM 03.71).

The LCS client 8 is a logical functional entity that may make a request to the entity providing the location service function, such as the LCS server node 12 or the mobile station equipment, for the location information of one or more target mobile stations. The LCS client 8 may be an entity that is external to the PLMN. The client 8 may also be an internal client (ILCS) i.e. reside in any entity or node (including the mobile station) within the PLMN. The LCS clients are entitled to receive at least some degree of information concerning the location (or location history) of the mobile station 7. The particular requirements and characteristics of a LCS Client 8 are typically known to the LCS server by its LCS client subscription profile. The particular LCS-related restrictions associated with each target mobile station may also be detailed in the target mobile station subscription profile. The location service feature may permit the location of a

target mobile station to be determined at any time, as will be discussed later in this description.

The client 8 may comprise a service that provides information concerning a plurality of mobile entities, such as mobile stations or otherwise requires location information of one or more mobile stations for its operation. The location information that associates with a station may be classified and/or filtered based on the location of the station. According to an embodiment the subscribers are grouped into one or more "location service groups". The group may consist of subscribers that are of a predefined type, such as salesman, serviceman, delivery cars, means of transportation (such as taxis, busses, trains, aeroplanes) or any other group of mobile user equipment that may need to be located and may be grouped together based on an appropriate criteria.

The grouping may also be dynamic. For example, a list defining a group may be dynamically changed based on information of the movements of the mobile stations. The lists defining the groups may be hierarchically arranged. The linking between the lists may vary depending on predefined rules, e.g. based on movements of the listed mobile stations and/or time.

A more specific example of the grouping will be discussed later with reference to Figures 4 and 5, where the group is formed by means of transportation, such as busses and/or trains.

Figure 2 illustrates schematically a possible grouping where a mobile station 7 subscribing to a cellular system may use services provided by service provision entities A that will be referred to in the following as devices. The mobile station 7

is within a service provision area, that in Figure 2 has a form of a circle 17 with a predefined diameter, such as, for example, 1 kilometre. The devices A are provided with radio modules 23 for communication via a wireless communication system. The communication system may be the same as for the mobile station 7 or different. The devices a may also communicate via a fixed line connection. Information concerning the location of the mobile station and/or devices A is provided into a location service node 12.

The LCS client or a processing entity 8 is provided with a Group A table 14 that lists devices A that belong to a group. The processing entity may contain more that one table, such as the other table 15 for Group B devices. Each of the groups may be divided into subgroups. Location information is transmitted from the LCS 12 to the processing entity 8 either on request or periodically within predefined intervals or in response to a predefined event (e.g. a location update).

In some embodiments it may also be advantageous to be able to adjust the frequency of the transportation of location information. For example, if a subscribing device wishes to approach another device (target device), the enquiry to the location service may be made more frequent. After a mobile station has been located, it may also be possible to request for a more accurate information concerning the location of the mobile station. The density of the enquiries may be increased/decreased dynamically based on the location(s) of the subscribing device and/or the target device(s).

The processing entity may comprise an IN service that is provided with predefined information of the listed devices A that subscribe to the IN service. The Intelligent Network (IN)

Motorola Solutions, Inc., Ex1003, p. 267

service may keep track of the locations of the subscribers of the Group A list 14. When a predefined mobile station (or stations) is (are) close enough to at least one member of the list, the services may notify the mobile station 7 and/or one or several of the subscribers A. In Figure 2 the condition is met by group A device 20 that is within the service area 17 of the mobile station 7.

Before discussing the operation of the embodiment employing an IN arrangement in more detail, a brief explanation of the term "intelligent network" will be given. The IN concept was developed in order to increase the flexibility and competitiveness of the telecommunication network architecture. The current IN solutions provide the telecommunication network operators with a possibility to implement new, powerful services in their networks in a fast and cost-effective manner. The basic principles and operation of the IN applications are well known, and therefore they are not described herein in more detail. It is sufficient to note that in general the IN architecture comprises a (service) switching point (SSP) for triggering a call to the IN services and a (service) control point (SCP) for providing the service. A more detailed description of the general IN concept can be found e.g. from the recommendations by the International Telecommunications Union (ITU-T), such as IN Capability Set CS-1 published in 1993. The IN concept can be implement in the fixed land line networks, such as the public switched telephone network (PSTN), or the wireless radio communication networks, such as the public land mobile network (PLMN).

The IN based embodiment may be implemented e.g. so that CAMEL SCP (CSE: CAMEL service environment) periodically asks the location of the subscribers belonging to the list from the

GMLC. CAMEL is an abbreviation from 'customised applications for mobile network enhanced logic'. The CAMEL service environment (CSE) provides the execution environment within a CAMEL SCP executing a service logic. the SCP stands for 'service control point' of an Intelligent Network (IN).

The operation may be arranged such that whenever a subscriber of the service (i.e. the mobile station 7 in Figure 2) is detected to be in a predefined location or distance relative to one or more of the members of the group (i.e. devices A of Figure 2), appropriate information may be transmitted by means of the cellular system. The data may be sent in any suitable format. The transmission may contain voice, text or video data or any other data or any combination of these. The data may be sent transparently to the cellular system, e.g. by means of another protocol that is implemented on top of the cellular communication system. For example, the transmission between the service entity 8 and the mobile station and/or the devices A is based on wireless application protocol (WAP), or Transport Control Protocol (TCP), and/or Internet Protocol (IP) or IPV6 implemented on top of the cellular system. The packet switched cellular systems, such as the UMTS or the GRPS, also enable transportation of packet data to and from the wireless stations. The communication media for the location information service transportation between the mobile station and the service may also be based on other communication means than the communication system the mobile station subscribes to. For example, the mobile station may be provided with auxiliary data transportation means. The data may be transported, e.g. based on a short range radio links, such as a Bluetooth™ link, or infrared link or similar.

Motorola Solutions, Inc., Ex1003, p. 269

The subscription to the list in the service provider entity 8 may be based on a mutual agreement between the mobile user and the target device.

The service may be based on use of a predefined distance as condition that triggers the notification procedures. As shown by Figure 2, it is also possible to define e.g. more than one distance radius the crossing of which causes a notification to be transmitted. The other distance is illustrated by the dashed line 18. The operation may then be e.g. such that a notification is transmitted on e.g. 2 km and 1 km distances or that different groups use different distances as the triggering event. The update frequency may be different within the inner circle 17 than what it is within the outer circle 18. In Figure 2 device 20 is within the first radius, whereas device 21 is within the second distance and devices 23 are outside the larger service notification area defined by the circle 18.

A group of devices may be divided into a number of subgroups according to different subscriber categories. The division may be based on the role of the subscribing device A (e.g. salesman, manager, delivery car, serviceman, supervisor, inspector and so on). The subscribing devices A may also register dynamically the subscriber profiles or roles that they are interested in.

According to an embodiment the location information may be divided into several different accuracy classes. The service may request information in a predefined accuracy, depending the purpose it is going to use the information. For example, the service may initiate the information provision procedure by asking for only a rough location of the mobile station

Motorola Solutions, Inc., Ex1003, p. 270

first. At this stage the accuracy of the location information may be in a network level or in a location area level. The rough location information may be requested e.g. from the home location register (HLR) of the particular mobile station or similar entity of the telecommunications system, i.e. without sending a request to the LCS 12. If the rough location is determined to be within a predefined area, then the service may request for a more accurate information from the LCS 12. A possible hierarchical order of the accuracy classes may be: 1) network level, 2) location area level, 3) cell level, and 4) geographical location from the location server.

The following will describe with reference to Figure 4 and 5 an embodiment wherein the location service features is utilised for proving information that relates to means of transportation that are available to mobile users. The embodiment may also be extended to reservation of seats in a selected means of transportation and/or issuance of transport tickets. The embodiments described below utilise the features of public land mobile network cellular systems for providing the information that associates with different public transportation systems and/or transport ticketing.

Figure 4 illustrates an example of a cellular system based transport ticketing service. For the purpose of simplicity, the example will concentrate on the ticketing for busses, although the embodiment may be implemented in connection with any other means of transportation as well, such as trains, metros, taxis, mini-busses, flights, or any transport on demand services.

In the embodiment described below the condition to be met in order to trigger transmission of information to the user

Motorola Solutions, Inc., Ex1003, p. 271

comprises a request by the user of the mobile station. In other words, the mobile user may ask first e.g. for the nearest buss coming to a buss stop by using his mobile handset. The mobile user may already have entered the buss stop or he/she may be in close vicinity thereof (e.g. within the service are 17 of Figure 2). The request is transmitted via the PLMN network 19 to the transport center 30 for further processing.

The position of the mobile user and the buss 31 can be obtained either from the LoCation Services (LCS) 12 of the cellular system or any standalone positioning system, e.g. the GPS 16, as will be explained later. By accessing to the LCS, the transport center 30 or any other corresponding service provider center may receive updated information concerning the position of the buss 31 or several busses, depending the application. In other words, information of the location of the mobile user and the location of the buss is determined at this stage, and this information is processed at the transport center.

It may also be possible that location information and other predefined data may be sent automatically to the mobile user whenever a buss is localised and determined to be within a predefined distance from the mobile user. It is also possible to transport data of the mobile user requesting for the transport to the nearest buss or other possible transport means. The data may be transported by using, for example, short range radio link technology (e.g. the Bluetooth™) or any other inter-node communication means and a reference based positioning approach.

An appropriate message is generated to be transmitted to the mobile station. The message is based on processing the location information of the mobile user and at least one buss or any other means of transportation. The message may include information about the nearest buss, such as the bus number, the arrival time, destination, route, and the nearest bus stop and so on. The message may be sent to the user's mobile station from the transport center through the cellular network or any other communication system providing wireless media for the mobile users thereof. This may be provided e.g. by using IP interface based applications like the WAP (wireless application protocol) or by a circuit switched or packet switched communication media such as any IP network or a local short range radio link. The message may alternatively be generated in the means of transportation and sent therefrom to the user's mobile station via an appropriate communication media.

The mobile user may utilise the received information in various manners. The user may use the response as a base for a travel plan (e.g. to answer questions such as 'which means of transportation should I use?', 'at which time should I leave to the buss stop?', 'which bus stop should I use?' and so on).

According to a further embodiment described below, the transport ticketing procedure is supported by the PLMN communication system 19 in its entirety. In other words, the buss can be selected, the tickets can be reserved, paid and delivered to the user by means of the communication system. In accordance with the embodiment, if the information in the message to the mobile station meets the requirements set forth by the mobile user, the user may wish to use the mobile station for e.g. reserving a seat in the buss 31 or for paying

Motorola Solutions, Inc., Ex1003, p. 273

the fare for the journey. The user may, for example, send a request for a buss ticket to the transport center by the mobile handset. The mobile user may be charged for the ticket e.g. in his/hers next telephone bill or he/she may pay e.g. by means of a WAP banking services, Internet banking services, SMS (short message service) banking services or any other means of electronic payment. The transport center 30 may then accept the ticket reservation and/or payment and send information for the mobile user so that the ticket is confirmed and/or that the mobile station is provided with necessary information so that the user may board the buss. This information may include, for example, time of reservation, validity of the ticket, departure stop, destination, date, buss number, and so on. It may also be possible to cancel the ticket if the mobile user wishes to do so.

The service provider may also provide a 'follow me' type service for the mobile user for guiding the user to the nearest (or otherwise appropriate) buss stop or other location where he may board a transportation means. For example, a regional map may be shown in the display of the mobile device. Relevant guidance data (such as street names and possible landmarks) may be marked on the map to be followed by the user. The follow me services can also be employed e.g. by a taxi or other transport on demand type means of transportation to find the mobile user who requested for the transportation service.

At the same time as transmitting the information to the wireless mobile station 7, the transport center 30 may send the same information or a predefined set of information to a ticketing machine 32 of the buss 31. In case the user may a

Motorola Solutions, Inc., Ex1003, p. 274

buss of a plurality of possible busses, the information may be sent to the ticketing machines of all possible busses. The transmission to the ticketing machine 32 may be accomplished by means of the same cellular network as to the mobile station, or via another network. The ticketing machine associates with an appropriate radio receiver apparatus for enabling the receipt of the information and/or transmission towards the transport centre 30.

An appropriate communication media may be provided for local communication between the mobile station 7 and the ticketing device 32. The communication media may be based, for example, on an infrared link or a short range radio link, such as the Bluetooth™. When passenger boards the mobile station may communicate with the ticketing machine, whereby an integrity check of the reserved ticket information is provided. The ticketing-machine 32 may send the results of the checking process to the transport center 30. This may include all the relevant ticket information. The ticket's information may be saved to the memory of the mobile handset until the ticket is valid so that it can be checked e.g. by an inspector terminal or human inspector if necessary.

The ticketing machine may send a report to the transport center concerning the boarding and/or getting of the mobile user. If the mobile user has not been charged when he/she purchased the ticket, the invoicing may be based on the report. The invoicing may occur directly or by telephone invoicing using the billing services provided by the operator of the telecommunications system or by a service provider who provides the location services.

Motorola Solutions, Inc., Ex1003, p. 275

The arrangement may be adapted to renew the ticket, e.g. after passenger has arrived to the final destination or the ticket validity time has been expired.

It is also possible to provide a ticket for the desired means of transportation for the user without a requirement for the user to access the telecommunications network 19. That is, a journey specific communication with the transport centre or a ticket machine in the means of transportation or e.g. in a buss stop or train platform. In this embodiment the ticket information may be downloaded to the mobile station in advance by communicating with the transport center. The ticket may be reserved/paid for a specific period (e.g. series of tickets, a monthly travel pass). The reservation/payment request may include information that is required for any form the purchasing of a periodical travel pass. The pass may comprise e.g. a proximity card or a similar card. As the passenger is boarding the transportation means, the passenger communicates with the ticketing machine to download the needed ticket information thereto. The information of the used ticket may be saved until the end of the validity period thereof. Every time the passenger uses one ticket the number of downloaded tickets in the mobile station will be decreased by one. This can also be done by the transport center if desired.

According to an embodiment the ticket machine is provided with location information processing facility, i.e. is capable of providing a location service function and providing the location information required by the service.

A still further embodiment will be described with reference to Figure 6. The payment for the ticket may be accomplished by utilising a Personal Identification Module (PIM) that is

integrated into the mobile device 7. The reliability and security are important features of a personal identification card/data solutions. The embodiment described with reference to Figures 6 and 7 enables the user to use the identification card/data whenever he/she needs it and may ensure that the signalling over the PLMN network is secure enough for transferring identification data.

The first pre-condition principle is behind the proposal architecture. Figure 6 illustrates an architecture including a personal identification card that is integrated within a mobile handset i.e. the User Equipment (UE). As is shown in Figure 6, in addition to Subscriber Identity Module (SIM), the user equipment comprises an independent Personal Identity Model (PIM), which is specified exclusively for the personal usage by the mobile user when the user intents to request services from municipalities or any other authorities. The proposed PIM may also be logically separated, but physically integrated into a SIM card and vice versa.

The PIM may include several different capabilities. For example, the PIM may have variable Personal Identity Code (PIC). That is, whenever the user is going to access to the municipality services he/she has to log on by using the user specific PIC. The PIM may also have a higher priority than the SIM. That is, the PIC of the PIM may be adapted to have priority over the PIN of the SIM, meaning that if mobile user logs on by using the PIC he/she is already authorised to use both the SIM and PIM access. If he/she logs on by using the PIN code then he/she may only be authorised to have access for the SIM, that is, for only communication purposes and not for any municipality or other services.

The PIM may also be defined to contain so called 'least storage data', i.e. the PIM may include a minimum amount of personal data like the name of holder, his/hers birthday, identity number, nationality, and so on. The least storage data may originally be fixed to the PIM. In addition to the least storage data, the PIM may include 'variable storage data' feature. In other words, it may be possible to download the needed data from the network/service provider to the PIM. Such applications may include, for instance, downloading money, transport tickets, a permission like visa or work permission, prescriptions, user specific health services, and so on. It should also be possible to remove this sort of data on-line by an authority who is entitled to do so.

The PIM may also comprise a capability of keeping record od the operations performed by the user. The PIM may be capable of saving a specific amount of previous operations or operation of predefined type. The data history may also include the position of the UE where the PIM has been accessed, e.g. the position where a transport ticket has been paid. This functionality will be some kind of X-file for PIM. The X-file can be defined as a component of the PIM that is used for storing the history data. For example, when the mobile user pays for the journey or makes any other payments by means of the mobile station, the position,, date and time, amount and purpose of payments and so on may be stored on said X-file.

The PIM may also be removable from the user equipment. It shall be possible to physically remove the PIM easily without disturbing the SIM. This may be used to ensure that even when no connection is provided for the mobile station (MS) or when the MS is switched off the user may still have an

Motorola Solutions, Inc., Ex1003, p. 278

identification card/data which can be read by the appropriate authority by using a reading device. Therefore, when there is no connection via the PLMN network to the authority the user may access the server directly by using his/her PIC. If he/she has an access to the communication network she/he is still allowed to access the municipality network by using PIC on fly. This means that it is possible to use the PIM-module in a stand-alone manner. For example, when a user arrives an airport, he/she may have an electronic passport in the PIM. However, the user may not have a connection the PLMN network at the time of arrival. The user may take the PIM out from the mobile station and use the information stored therein.

If there is no network connection but an infrared link or a short range radio link is available, then the user may use the link and log on using his/her PIC.

Figure 7 illustrates a possible ciphering hierarchy of the PIM embodiment. The PIM solution may be supported by various level of ciphering that is already available within the cellular network systems. These include signalling ciphering, that is, integrity checking, user data ciphering, and the PIM specific ciphering.

The principles of the above mobile Personal Identification Module (PIM) may be implemented in the context of any location based services. The applications may include, for example, downloading money, transport tickets, a permission like visa or work permission, any other municipality services, mobile lottery in which the mobile user requests a specific series of lottery either manually or randomly by using an advanced algorithm, and so on. The user may chose the specific numbers

either manually or by using a feature supported by mobile device.

As it was mentioned earlier, the mobile transport ticketing may be applied for any form of transporting i.e. buss, taxi, train, etc. taking into account the specific characteristics of the different means of transportation.

As was also briefly mentioned above, it shall be possible for the location determining process to make use of other sources of information in determining the location of the mobile station and the other entity than the information provided by the LCS node 8. The geographical location may be obtained from an external source, e.g. from the well known satellite based GPS (Global Positioning System). More accurate location information can be obtained through a differential GPS. In addition to the GPS, any other similar system capable of providing reliable location information can be used for these purposes. Some mobile stations may also have additional (independent) sources of position information of the type discussed earlier. The accuracy of the location determination may be improved by utilising results of different location measurement and/or determination techniques.

It should be appreciated that although the above refers to wireless interfaces between the various devices and the communication system, the devices of the group and/or the stations may transmit and/or receive information signals via a fixed connection. For example, one or more of the stations may be temporarily connected to a communication system via a cable for data transmission purposes.

Motorola Solutions, Inc., Ex1003, p. 280

The embodiments of the present invention, when applied to the means of transportation, enable the mobile user to receive information of the possible means of transportation into his/hers mobile terminal. The user may not need to input any specific information concerning his positions. The embodiments may also enable a ticketless operation of the transport system. In addition, the embodiments may be used in transport on demand type services, since the transport centre may provide accurate information for service provider for use in route planning. The user may be billed in the their telephone bill, or the users may use any form of electronic payment. The electronic payment may be activated by the mobile station. The embodiments may utilise mobile value-added services such as the LCS and the IN services. The embodiments may increase the usability of the mobile station. The embodiments may also facilitate fleet management in an efficient way by utilising the features of a cellular positioning system.

It should be appreciated that whilst embodiments of the present invention have been described in relation to mobile stations, embodiments of the present invention are applicable to any other suitable type of user equipment.

It is also noted herein that while the above describes exemplifying embodiments of the invention, there are several variations and modifications which may be made to the disclosed solution without departing from the scope of the present invention as defined in the appended claims.

Claims

1. A method comprising:

grouping a plurality of devices into a group;

determining first location information that associates with the location of at least one of the devices of the group;

determining second location information that associates with the location of a station;

processing the first and second location information to generate third information, said third information being based on the location of the station relative to the location of at least one device of the group; and

transporting the third information, the transportation being triggered by a predefined condition.

2. A method as claimed in claim 1, wherein the transportation is triggered when the station and the at least one device are located in a predefined manner relative to each other.

3. A method as claimed in claim 1 or 2, wherein the transportation is triggered when the station and the at least one device are determined to be within a predefined distance from each other.

4. A method as claimed in any preceding claim, wherein the grouping of the devices is dynamic.

5. A method as claimed in any preceding claim, wherein the first and the second location information is processed in a processor entity, the processor entity keeping track of the locations of the devices of the group.

Motorola Solutions, Inc., Ex1003, p. 282

6. A method as claimed in claim 5, wherein the first location information and/or second location information is transported from a location information node to the processor entity.

7. A method as claimed in claim 6, wherein the location information is transported periodically from the location information node to the processor entity.

8. A method as claimed in claim 7, wherein the length of the fetching period is changed.

9. A method as claimed in any of claims 6 to 8, wherein a request is signalled to the location information node for fetching the location information to the processor entity.

10. A method as claimed in any preceding claim, wherein the station transmits and/or receives information signals via a wireless interface.

11. A method as claimed in any preceding claim, wherein the third information is transported to the station via a cellular communication network.

12. A method as claimed in any preceding claim, wherein the devices of the group transmit and/or receive information signals via a wireless interface.

13. A method as claimed in any preceding claim, wherein the devices of the group and/or the station transmit and/or receive information signals via a fixed connection.

Motorola Solutions, Inc., Ex1003, p. 283

14. A method as claimed in any preceding claim, wherein more than one condition is monitored for.

15. A method as claimed in claim 14, wherein a first condition comprises a first distance between the station and the at least one device and the second condition comprises a second distance between the station and the at least one device.

16. A method as claimed in any preceding claim, wherein the group is divided further into two or more subgroups.

17. A method as claimed in any preceding claim, wherein information is transported to at least one other device of the group after the condition has triggered the transportation of the third information.

18. A method as claimed in any preceding claim, wherein the devices are grouped in one or more lists.

19. A method as claimed in any preceding claim, wherein the devices are grouped in a table.

20. A method as claimed in any preceding claim, wherein the first location information and/or the second location information is determined based on information produced by at least one location determination element of the communication system.

21. A method as claimed in any preceding claim, comprising transmission of information based on a protocol that is transparent for the communication system the station subscribes to.

22. A method as claimed in claim 21, wherein the protocol is one of: the wireless application protocol (WAP); Transport Control Protocol (TCP); Internet Protocol (IP); or IPV6.

23. A method as claimed in any preceding claim, wherein the first location information and/or the second location information is determined based on data produced by a location determination system that associates with the communication system the station subscribes to.

24. A method as claimed in any preceding claim, wherein the first location information and/or the second location information is determined based on data produced by a location determination system that is external to the communication system the station subscribes to.

25. A method as claimed in any preceding claim, wherein the devices are grouped into more than one group.

26. A method as claimed in claim 16 or 25, wherein the user of the station may register to one or more groups of devices based on the personal interests of the user of the station.

27. A method as claimed in any preceding claim, comprising use of a personal identification module that associates with the mobile station for authorising the user of the station to access a service provided by means of at least one of the devices.

28. A method as claimed in any preceding claim, wherein an intelligent network service manages the information of the grouping of the devices, the first location information and

the second location information, and wherein the intelligent network service keeps track of the locations of the devices of the group and monitors for the predefined condition.

29. A method for providing information that associates with means of transportation that are available for a user of a station, comprising the steps of:

determining first information that relates to the location of at least one means of transportation;

determining second information that relates to the location of the station;

processing the first information and the second information to obtain third information, said third information that associates with at least one means of transportation that is possible for the user; and

presenting the third information to the user by the station.

30. A method as claimed in claim 29, wherein the user initiates the information provision process by inputting a request for the third information to the station.

31. A method as claimed in claim 29 or 30, wherein the user may select a means of transportation based on the third information.

32. A method as claimed in claim 31, wherein a plurality of possible means of transportation is presented to the user by the station and wherein the user is enabled to select among the presented possibilities.

33. A method as claimed in claim 31 or 32, wherein a request for reservation is signalled from the station to a transport centre.

34. A method as claimed in claim 33, wherein the reservation is confirmed by a message that is transported from the transport centre to the station.

35. A method as claimed in any of claims 29 to 34, wherein the third information presented to the user comprises at least one of the following: information of the possible means of transportation at the location of the station; information of the timetables for the possible means of transportation; information of the expected waiting times; information of the fares of the possible means of transportation; information of the availability of seats in the possible means of transportation; information of the possible means of payment.

36. A method as claimed in any of claims 29 to 35, wherein, after the user has selected a means of transportation, the fare for a journey by said means of transportation is paid by means of payment instructions signalled from the station.

37. A method as claimed in claim 36, wherein the payment is accomplished based on an electronic payment procedure.

38. A method as claimed in any of claims 29 to 37, wherein the reservation status of the available means of transportation is verified during the processing of the first and second information to obtain the third information.

Motorola Solutions, Inc., Ex1003, p. 287

39. A method as claimed in claim 38, wherein the means of transportation with no seats available are omitted from the third information.

40. A method as claimed in any of claims 29 to 39, wherein information of a payment for a journey is signalled to the station and the user is allowed to board the means of transportation based on the information received at the station.

41. A method as claimed in claim 40, wherein the station communicates with a ticketing device during the boarding via a temporary interface between the station and the ticketing device.

42. A method as claimed in claim 41, wherein the temporary interface is based on an infrared link or a short range radio link.

43. A method as claimed in claim 41 or 42, wherein information of a reservation made by the station is transmitted to the ticketing device of the selected means of transportation.

44. A method as claimed in any of claims 41 to 43, wherein the ticketing device verifies the integrity of the reservation.

45. A method as claimed in any of claims 41 to 44, wherein the ticketing device sends information concerning the boarding of the user to the transport centre claim.

46. A method as claimed in any of claims 29 to 45, wherein information of the selected means of transportation is stored in the station for later use.

47. A method as claimed in any of claims 31 to 46, wherein the route of the selected means of transportation is based on the selection by the user.

48. A method as claimed in any of claims 36 to 47, wherein the payment is accomplished by means of a personal identification module that associates with the station.

49. A system comprising:

a station of a communication system;

a plurality of devices, the devices being adapted to provide at least one service for a user of the station;

means for grouping the plurality of devices into at least one group;

means for determining first location information, the first information associating with the location of at least one of the devices;

means for determining second location information, the second information associating with the location of the station;

processor means for processing the first location information and second location information for generating third information, said third information being based on relative locations of the station and the at least one device; and

an interface via which the third information is transported after the transportation is triggered by a predefined event.

50. A system as claimed in claim 49, wherein the transportation is triggered when the station and the at least one device are located in a predefined manner relative to each other.

51. A system as claimed in claim 49 or 50, wherein the processor means keep track of the locations of the devices of the group.

52. A system as claimed in any of claims 49 to 51, wherein the station transmits and/or receives information signals via a wireless interface.

53. A system as claimed in any of claims 49 to 52, wherein the first location information and/or the second location information is determined based on data produced by a location determination system that associates with the communication system the station subscribes to.

54. A system as claimed in any of claims 49 to 53, wherein the first location information and/or the second location information is determined based on data produced by a location determination system that is external to the communication system the station subscribes to.

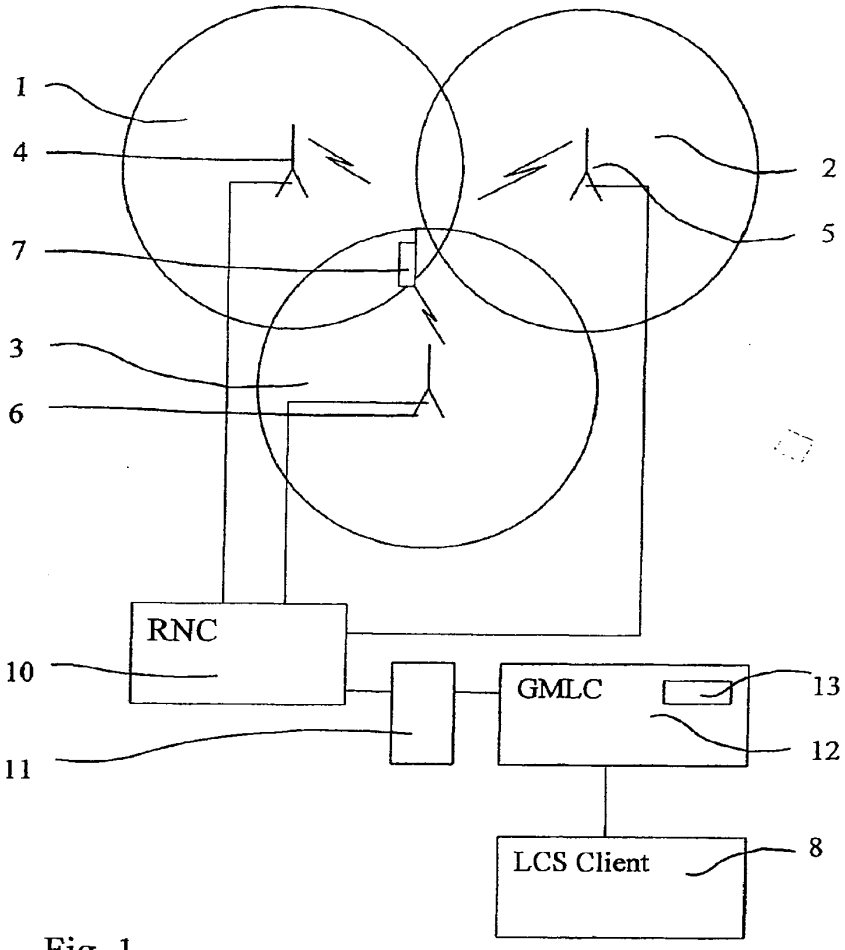


Fig. 1

Motorola Solutions, Inc., Ex1003, p. 291

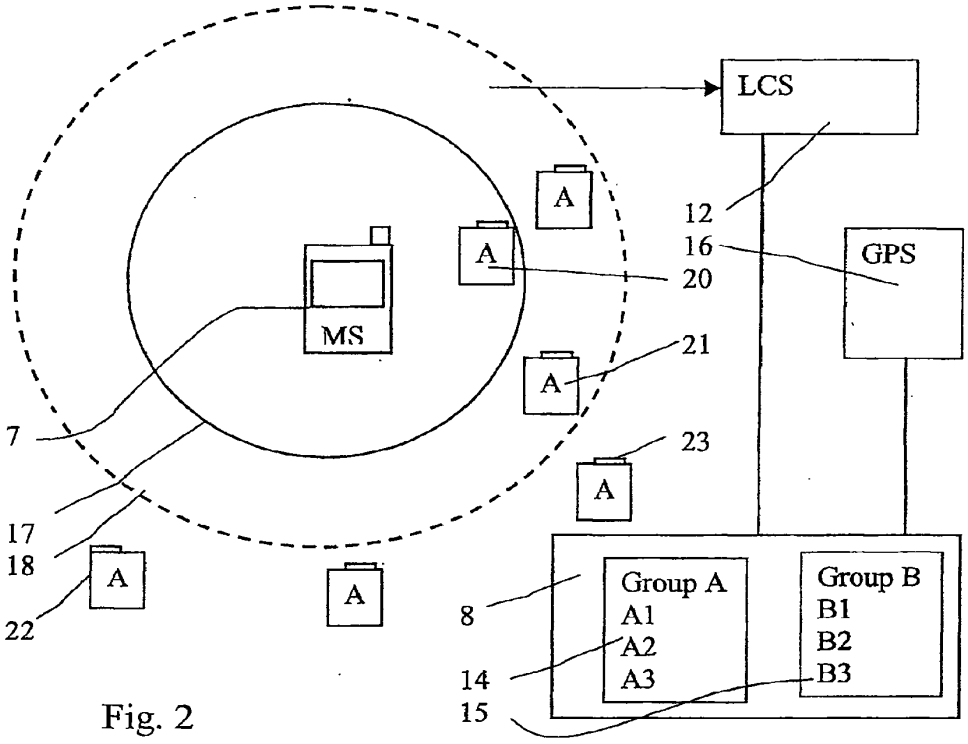

LCS
GPS
MS
A
12
16
20
21
23
7
17
18
22
8
14
15
Group A
A1
A2
A3
Group B
B1
B2
B3

Fig. 2

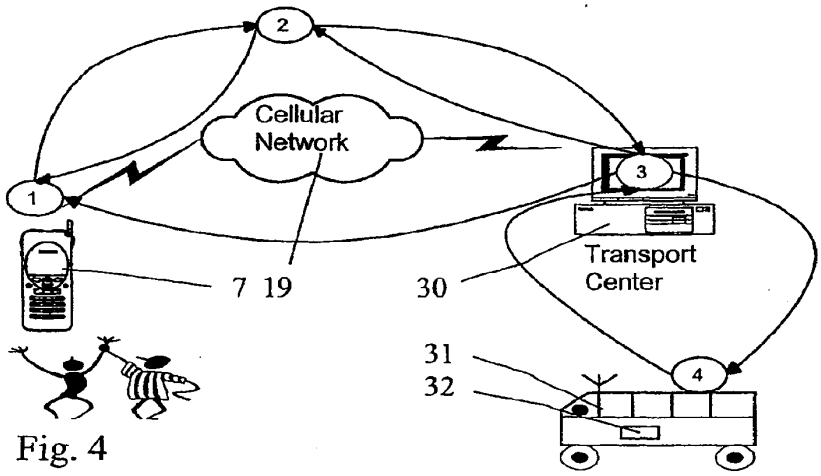

2
Cellular
Network
1
3
Transport
Center
7 19
30
31
32
4

Fig. 4

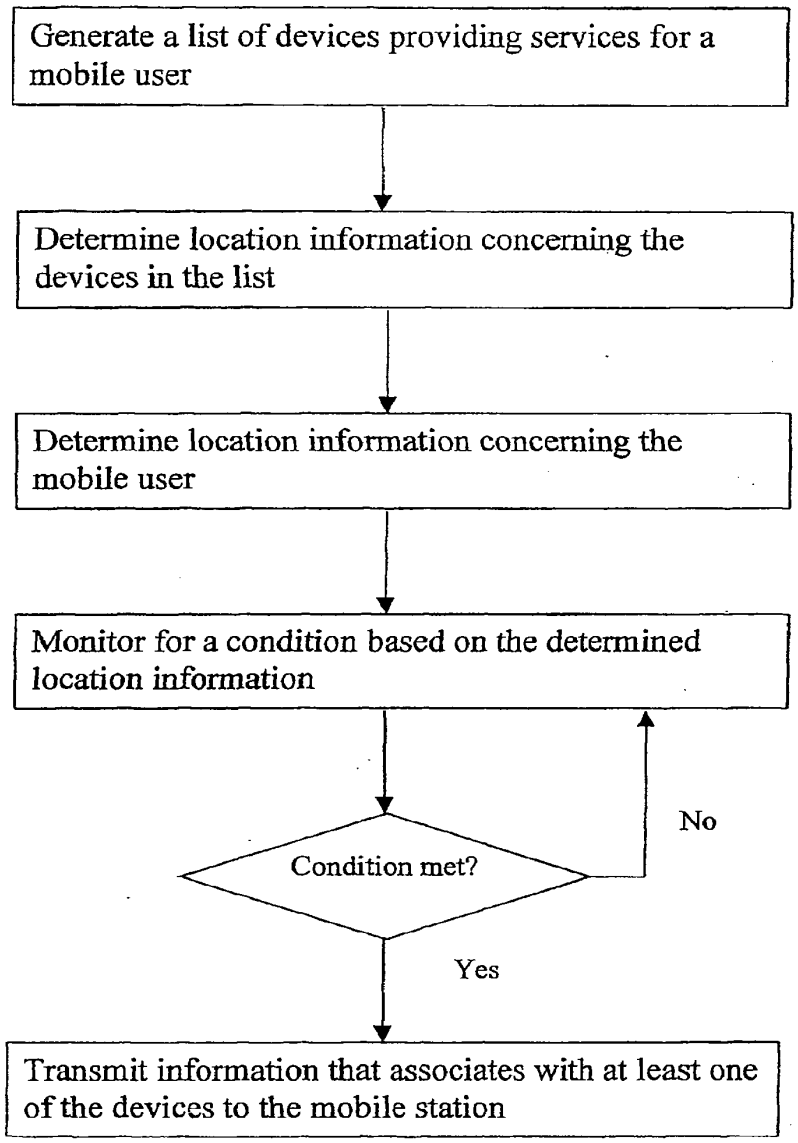

Generate a list of devices providing services for a mobile user
Determine location information concerning the devices in the list
Determine location information concerning the mobile user
Monitor for a condition based on the determined location information
Condition met?
No
Yes
Transmit information that associates with at least one of the devices to the mobile station

Fig. 3

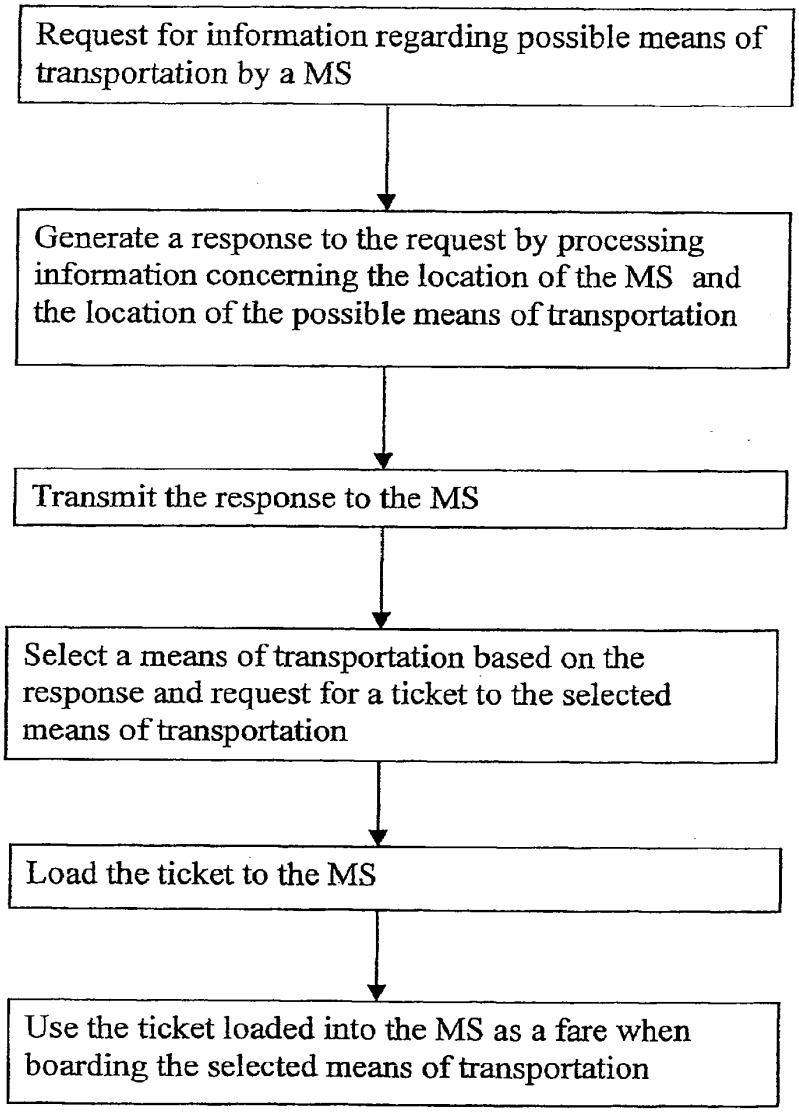

Request for information regarding possible means of transportation by a MS
Generate a response to the request by processing information concerning the location of the MS and the location of the possible means of transportation
Transmit the response to the MS
Select a means of transportation based on the response and request for a ticket to the selected means of transportation
Load the ticket to the MS
Use the ticket loaded into the MS as a fare when boarding the selected means of transportation

Fig. 5

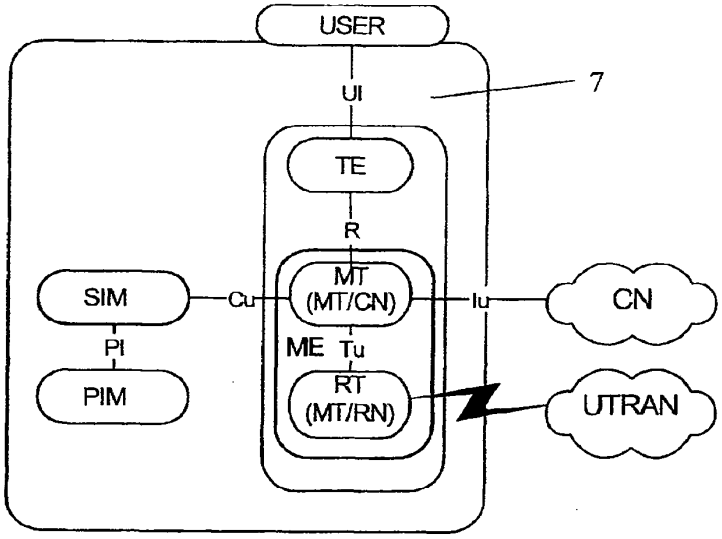


Fig. 6

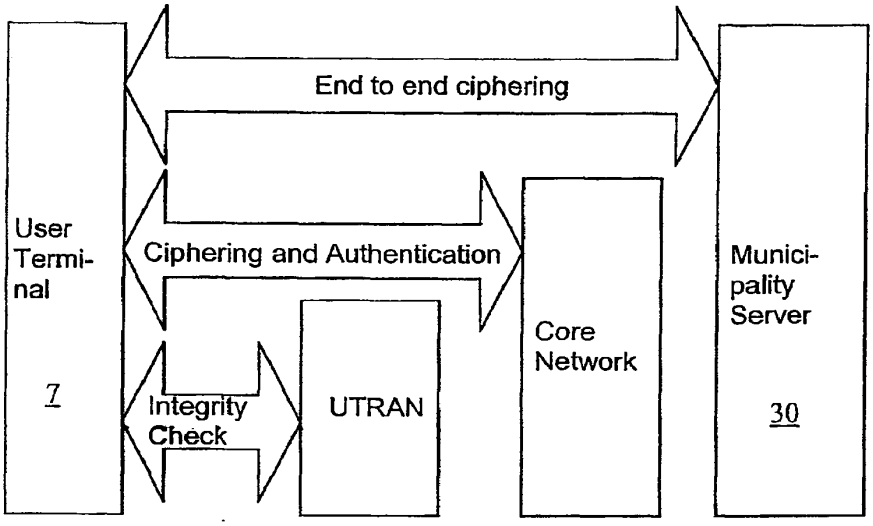


Fig. 7

Motorola Solutions, Inc., Ex1003, p. 295

INTERNATIONAL SEARCH REPORT

Int. nal Application No
PCT/EP 01/04570

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/22 G08G1/123

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q G08G

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 674 355 A (GRP TAXI STE NOUVELLE) 25 September 1992 (1992-09-25) page 6, line 17 -page 8, line 30 page 9, line 17 -page 10, line 17	1,2,4,5, 13,14, 16,17, 20, 28-31, 33,35, 49-51
A	EP 0 849 964 A (JAMIN BERNARD ;BANNERY JACQUES (FR); DELFABBRO MARC (FR)) 24 June 1998 (1998-06-24) column 3, line 15 -column 4, line 52 column 6, line 11 -column 7, line 22	1-54

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier 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	Date of mailing of the international search report
25 September 2001	02/10/2001

Name and mailing address of the ISA	Authorized officer
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	Dionisi, M

Form PCT/ISA/210 (second sheet) (July 1992)

Motorola Solutions, Inc., Ex1003, p. 296

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 889 455 A (DECAUX JEAN CLAUDE) 7 January 1999 (1999-01-07) column 1, line 2 - line 36 column 2, line 22 - line 35 column 4, line 25 -column 5, line 9 column 5, line 50 - line 7	1-54
A	US 5 570 100 A (GRUBE GARY W ET AL) 29 October 1996 (1996-10-29) column 2, line 13 - line 57 column 3, line 1 - line 40 column 3, line 63 - line 5	1-54

Motorola Solutions, Inc., Ex1003, p. 297

INTERNATIONAL SEARCH REPORT

information on patent family members

Intl onal Application No
PCT/EP 01/04570

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2674355	A	25-09-1992	FR	2674355 A1	25-09-1992
EP 0849964	A	24-06-1998	FR	2757726 A1	26-06-1998
			EP	0849964 A1	24-06-1998
EP 0889455	A	07-01-1999	FR	2765710 A1	08-01-1999
			CA	2242020 A1	04-01-1999
			EP	0889455 A1	07-01-1999
			US	6253148 B1	26-06-2001
US 5570100	A	29-10-1996	NONE		

Form PCT/ISA/210 (patent family annex) (July 1992)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 September 2002 (26.09.2002)

PCT

(10) International Publication Number
WO 02/074051 A2

(51) International Patent Classification: Not classified

(21) International Application Number: PCT/US02/08419

(22) International Filing Date: 19 March 2002 (19.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/277,347	19 March 2001 (19.03.2001)	US
60/281,038	2 April 2001 (02.04.2001)	US
10/101,240	19 March 2002 (19.03.2002)	US

(71) Applicant: ACCENTURE LLP [US/US]; 1661 Page Mill Road, Palo Alto, CA 94304 (US).

(72) Inventors: FANO, Andrew, E.; 6 Plymouth Court, Lincolnshire, IL 60069 (US). KURTH, Scott, W.; 500 Bridle Trail, Wheeling, IL 60090 (US).

(74) Agent: RICHARDS, Marc, V.; Brinks Hofer Gilson & Lione, P.O. Box 10087, Chicago, IL 60610 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/074051 A2

(54) Title: MOBILE VALET

(57) Abstract: Enhanced delivery of services are provided through a wireless mobile device and one or more location service channels, preferably at the direction of the user of the mobile device requesting the desired service through common context-based user interfaces. The mobile device communicates with local and remote service providers. The context is determined by accessing information in the user profile, by sensors on the mobile device identifying items of interest, or by identifying the location of the mobile device. An aggregator server maintains a registry of location service channels and manages the access to the channels by the mobile device users and the service providers.

MOBILE VALET

This application claims benefit of U.S. provisional application No. 60/277,347 filed March 19, 2001, and U.S. provisional application No. 60/281,038 filed April 2, 2001, both of which are herein incorporated by reference.

BACKGROUND

The present invention relates generally to applications for wireless devices. More particularly, the present invention relates to methods and systems for enriching services provided in cooperation with wireless mobile devices

Increases in information processing capability and decreases in the cost of computing have led to the proliferation of mobile devices in all aspects of society. Mobile devices, such as personal digital assistants, cellular phones, and laptops, are utilized in schools, homes and in business. Furthermore, with the decreased costs of mobile devices, it has become more feasible from a cost perspective to use mobile devices for tasks, and to carry out functions, which were previously done without the use of mobile devices.

Already, there are almost 400 million mobile phone users, with the number projected to reach over one billion by 2005. Globally, 240 million people are predicted to use their phones for wireless data exchange by the end of 2004 - up from 26 million in 1999.

Even with these astounding numbers, however, there is one inescapable fact: by far, the worst display screen in the room is likely to be the one on a mobile phone or personal digital assistant. Mobile devices have small display screens,

limited sound amplification, and, presently, limited connectivity or bandwidth. Delivering more information, in higher fidelity, using these tiny displays, will be difficult at best.

This is not to say that industry has not attempted to improve consumers' usage of these mobile devices. For example, there are new ways in which technologies such as PDAs, wireless communications, GPS, and onboard computers can be used to provide new services centered around the automobile in support of the tasks that drivers typically engage in. Mobile technology may also be used in support of physical shopping to augment the physical shopping experience of a shopper in a mall. For example, using a PDA equipped with a global positioning system (GPS) receiver, one application maintains a profile of the shopper along with a current shopping list, and after establishing the current location of the shopper, presents relevant offers from retailers proximate to the shopper, which is described by A. Fano in U.S. Patent No. 6,317,718, filed February 26, 1999, which is incorporated herein by reference. It has also been suggested that barcode scanner equipped PDAs could be used to perform live price comparisons within a bookstore.

Nevertheless, these uses of PDA's still are limited to providing services to the user through the PDA display. What is needed is a method and system that can deliver context-based enhanced services to a user that go beyond the limitations of the display on the mobile device.

SUMMARY OF THE INVENTION

To address the aforementioned needs, the present invention leverages wireless capabilities and the technology infrastructure of a location to utilize a newly empowered mobile tool, a "Mobile Valet" device, capable of working with the delivery of the most appropriate services for any given location, on the best available channel, to deliver context-based enhanced services to a user that go beyond the limitations of the display on the mobile device. According to exemplary methods and systems of the present invention, a mobile device is

utilized not only to provide services commonly provided to the user through the mobile device itself, but is also utilized in at least two additional unique ways.

First, a preferred embodiment of the mobile device may be used to coordinate the delivery of services available at a given context or location in a manner that enhances the overall experience and effectiveness of the mobile user to accomplish tasks within that context or location. As used herein, context includes information relating to the user's location, task or function that may be based-in-part on environmental cues. The context may also be determined by objects they are currently looking at, what they have recently looked at, alternatives available locally, etc. - that is, information about where the users are and what they're doing at that moment. Metaphorically, the mobile device utilized in accordance with one or more aspects of the invention may be thought of as an orchestra conductor's baton, which "coordinates" the delivery of "services" provided by each instrument section to create a symphony.

In similar fashion, one or more aspects of the present invention preferably utilize the mobile device to coordinate the delivery of whatever services may be available at a given location to create a symphonic experience for the mobile user, thereby enhancing the richness of the user's experience to accomplish tasks within that given location.

A second unique way that one or more aspects of the invention preferably utilize the mobile device is for conveying information about the user to a service provider for enhancing the delivery of services based on the user information. The user's context may also be transmitted to the service provider. The context may include aspects of the user profile, such as specific preferences, or it may include the user's location, objects the user has recently viewed, information the user has received, etc. For example, the user may prefer a certain brand of computer equipment, or may have indicated in a "To Do" list on their mobile device that they are in need of certain computer supplies. When the user, in search of, for example, a particular printer, visits a computer store having a system embodying the present invention, in addition to accomplishing the tasks of comparing the features and prices of various printers, the system of the invention may deliver

other services, for example, displaying the noted computer supplies on a kiosk, or prompting a sales person to approach the mobile user and remind him or her of the additional computer supplies listed on their "To Do" list. This additional service delivery is based on the information conveyed from the mobile device to the context or location.

A third unique way that one or more aspects of the invention preferably utilize the mobile device to provide enhanced delivery of services available at a location is to have an aggregator server maintain a database registry of location service channels and manage access to the service channels. The aggregator server may store the identification of a plurality of locations on a registry database, and store on the same or different database the identification of the location service channels associated with the plurality of locations, In response to a request for services to be delivered to a user of a mobile device at a location, the aggregator server determines the availability of at least one of the location service channels proximate the user, and then route the delivery services from the remote service provider through at least one available location service channel. Different business models and algorithms may be used to determine the availability of the location service channels, such as the amount of money the user or the remote service provider is willing to pay, or the user profile indicating a higher standing for being accorded privileged access to the service channels.

These and other aspects and advantages of the invention will be apparent to one of ordinary skill in the art based on the following drawings and detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a system utilizing the present invention, according to one preferred embodiment;

FIG. 2 is an illustration of a mobile valet device having a display screen, according to one preferred embodiment;

FIG. 3 is a block diagram of a system utilizing the present invention in a given geographical location, according to one preferred embodiment;

FIG. 4 is a flow chart of a mobile valet operation of the present invention;

FIGS. 5-11 is an illustration of user interfaces on a local display screen and the various content displayed within the local display screen, according to one preferred embodiment;

FIG. 12 is an illustration of a remote display screen, according to one preferred embodiment; and

FIG. 13 is an illustration of a network system having a multitude of nodes corresponding to service providers, an aggregation server, databases, mobile device users and service channels, according to a preferred embodiment.

For simplicity and clarity of illustration, elements shown in the Figures have not necessarily been drawn to scale. For example, dimensions of some elements are exaggerated relative to each other. Further, when considered appropriate, reference numerals have been repeated among the Figures to indicate corresponding elements.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

A first aspect of the present invention is directed to delivering services to a user of a mobile device through a plurality of service channels. These channels include the personal service channel on the mobile device and one or more channels situated in the location of the user. Preferably, services may be shifted between available service channels in proximity to the user.

A second aspect of the invention is directed to context-based user interface templates on the mobile device that provides a common array of services available to the user depending on the context, such as location, task or function that may be based-in-part on environmental cues. For example, when in a store, services related to the task of shopping at that location are presented on the user interface.

A third aspect of the invention is directed to enabling the cooperation between remote service providers and location service providers to provide through a plurality of service channels those services desirable to a user based on the services requested through the user's mobile device or based on the user's profile.

A fourth aspect of the invention is directed to managing the flow of information from a plurality of remote service providers through a plurality of location service channels by aggregating the service channels for bulk transactions with the remote service providers.

A fifth aspect of the invention is directed to tracking the services provided to a mobile device user at a first location and compensating the first location service provider for providing those services if the user later completes a transaction at a second location when the transaction was connected with the services provided at the first location.

A sixth aspect of the invention is directed to a mobile device having wireless connectivity, remote sensors, location pinpointing system, and computer-executable instructions for requesting services through a plurality of service channels.

These alternative aspects of the invention, and others, are described in more detail below.

The present invention leverages wireless capabilities and the technology infrastructure of a location to create, among other things, a newly empowered mobile tool, a "Mobile Valet" device, capable of delivering the most appropriate services for any given location, on the best available channel. In the context of a shopping experience, this invention can catapult what has been termed "Mobile Commerce" to new levels.

The true potential of Mobile Commerce is realized when one goes beyond what can be done just on a phone or Personal Digital Assistant--delivering services by enabling and exploiting interaction between mobile devices and the world around us. Kiosks, displays, cars, appliances and other devices are rapidly acquiring wireless capabilities. Mobile devices may incorporate a variety of

sensing capabilities, including location, barcodes, sound, video and radio frequency identification. One can point a Mobile Valet device to a myriad of objects with ID tags and receive supporting services.

In effect, the mobile device becomes a new user interface. Mobile capabilities operating in concert with the resources of a location may deliver far richer services, than the stripped down web pages delivered to phones and PDAs today.

The present invention takes advantage of the cooperation of a mobile device to support location-specific tasks by exploiting three primary capabilities:

First, the mobile device is a *persistent, rich channel to an individual.* That is, the device serves as a way to deliver services or information to the individual. Customer services can deliver the right information at the right time rather than broadcast random ads at uninterested masses.

Second, mobile devices serve as *user context detectors.* Mobile devices not only contain information about the owner such as personal information, schedule, task-specific data, but also sensors capable of detecting aspects of the user's environment. The system includes real-time architecture that derives contextual cues from sensor data. Such sensors might detect features including position, sound, video, temperature, and location contents, among others. These "bottom-up" contextual cues combined with the "top-down" constraints offered by the location's task and the user's input can be used to determine the information to be presented to users and the modality or service channel through which it should be presented. Mobile devices may be equipped with a variety of powerful sensors, such as geo-positioning systems to identify location, biometrics to identify users, and tagging and tracking technologies to identify nearby objects, to name but a few.

Third, as mobile devices gain the ability to sense and interact with the objects around them, they become interfaces for these devices. The mobile devices serve as a *remote control* to other devices in the environment. The "remote control" mobile device interface may be structured primarily around the location and its task, rather than on specific devices in the location.

By integrating these three capabilities, a new environment of high fidelity enriched services may be provided to users of mobile devices any time, anywhere. The possibilities for enhancing the value of dialy social and business interactions are endless. Likewise, the enhanced value provided by increased efficiencies, lower cost transactions and added value to the users in their transactions may be extracted by the suppliers of the services at the command of mobile device users.

As used herein, a location service provider is the provider of services at that location, such as a store, a bank, etc. The location service provider may have a computer server in communication with a network to send and receive data in cooperation with the mobile device. The server may be at the location or remotely located. A remote service provider is the provider of services from a location external to that location, and not considered to be associated with that location. For example, at the location of a bank, the services provided by the bank would not be remote even if the bank's servers were not at that location. A service not associated with the location service provider that provides interest rates comparisons or product comparisons through the network to the mobile device user through the service channels would be a remote service provider. A service channel, as used herein, is anything that delivers information, aid or assistance to the mobile device user and includes the personal mobile service channel associated with the mobile device or location service channels situated at the location, such as displays, kiosks, printers, speakers, electronic signs and staff members of the location service provider.

As noted above, a first alternative aspect of the invention is directed to delivering context-based services to a user of a mobile device through a plurality of service channels. According to this aspect, a method is provided that includes identifying the location of the user or establishing the user's task, presenting a task template to the user, identifying channels proximate to the user, and then modulating the services provided to the user according to the available channels. Preferably, the services may be shifted between the mobile device and a local service channel without any interruption in the stage of the service being provided,

that is at the same point in the service transaction without having to restart the service transaction.

For example, one powerful real world application of the Mobile Valet occurs in the purchasing process—particularly at the point of purchase. Here is an example of how it would work. Shopping for an inkjet printer, as a user enters a store, the Mobile Valet immediately identifies where the user is and the task at hand--purchasing a printer. The task may have been determined based on the user's profile, which may include information from past use of the mobile device from which the user's interest in completing a certain task is determined from the context of the location. Alternatively, the task may be requested by the user from a general services template on the device that was appropriate to the location. The device directs the user to the printer section, where the user simply points the Mobile Valet toward an interesting model to collect a unique product identifier, such as from a bar code tag on a printer. This is then used to request online services such as independent product reviews, third-party financing options or video installation instructions.

Instead of reviewing the personalized information only through the "mobile service channel," i.e., tiny device screen, the user uses the Mobile Valet to redirect the information to a more suitable service channel or display, such as a nearby video kiosk. Used in this way, the Mobile Valet acts as a type of remote control, allowing the user to scroll through the various screens or fast forward to relevant sections of video. After a thorough product review, the user purchases the printer that suits her needs and continues on her way. In effect, they are likely to become "remote controls to the world."

Combining these capabilities creates a newly empowered mobile device—one capable of capitalizing on the both the vast resources available online and the technology infrastructure of a location, leveraging the best features of each. As the resources are vast, the mobile device may take advantage of using a dynamic discovery protocol for seeking out those services that are presently available for the services requested. The user profile of the mobile device user and the present context of the device may be used to seek out in real time those remote service

providers who may provide the requested services when requested. The location service channels to present those services may also influence the selection of the service provider, as only the mobile device user may have a preference for only those providers with high fidelity content that can deliver the enriched services available through close-by location service channel.

As noted above, a second alternative aspect of the invention is directed to context-based user interface templates on the mobile device that provides a common array of services available to the user depending on the context, such as location, task or function that may be based-in-part on environmental cues. The context may also be determined by objects they are currently looking at, what they have recently looked at, alternatives available locally, etc. - that is, information about where the users are and what they're doing at that moment. In other words, the present invention also relates to mobile device interfaces that enable location-specific tasks.

According to this aspect, a method is provided for coordinating the enhanced delivery of services through a plurality of service channels that includes presenting to a user of a mobile device a plurality of context-based user interface templates, wherein each context-based user interface includes a selection of available services from a local service provider at the location of the device, the services being available at said location through the mobile device channel and one or more location service channels.

This method includes associating general service templates and/or general task templates with specific locations. The templates may even be specific to services associated with certain types of products, in the case of tasks for shopping. In particular, general mobile devices can be used in a situated context to provide access to the services and resources of a particular location, and, optionally, associated with certain types of products at that location. By dynamically interacting with the environment and the templates, the user and/or service provider can shift services between the mobile device and available local or location service channels. The local channels can be part of the technical

infrastructure at the location (e.g., kiosks, monitors, speakers, etc.) and can also include the staff at the location.

Designing mobile applications to support such location-specific tasks requires an interface that reflects the natural structure of tasks typically performed in various locations. While location-specific tasks will have some functionality that does not generalize, there are, nevertheless, aspects of tasks that do apply across domains that can be used as a starting point to design and structure interfaces. This is much like the "file" and "edit" menus we find on most general computer software applications.

While the particular functions a user can invoke necessarily vary from application to application, there are certain general functions that make sense in virtually all applications. For example, in a PC computing context, such functions include many of the key features in the File and Edit menus, such as "new," "open," "close," "save," "print," "cut," "paste," "delete," etc. The analog of these "file" and "edit" menus for locations is a common, intuitive interface to task functions likely to be found across many locations. Common steps often include the need to find the place, park, register, say what we want, buy admission, contact the "host," find any people with whom we will be collaborating on the task at hand, check the readiness of the specific site where we will pursue our task, find that site, find and check the status of any tools we will need, identify who can help us, find a place to buy coffee, do work, and go to the bathroom while waiting for the task to begin, perform the task, cleanup, and get to the next task.

The mobile device is used in the roles described earlier – as a *remote control* to invoke many of these environmental functions and services, as a rich *channel to the user* for delivering information about these services, and as a set of *context sensors* capable of detecting task relevant information necessary to support these services. The device collaborates with the physical location by doing things as simple as providing a room name or phone number, to functioning as a remote control for a net appliance.

The following are examples of the common interface needs: A visitor attending a meeting at an office, and a customer visiting a store intending to select

and purchase a camera. Briefly, in the meeting scenario, an out-of-town employee arrives in the office and deals with issues including registering, coordinating with colleagues, arranging and finding a temporary desk, dealing with meeting services requests, finding and using office equipment (e.g., projectors, VCRs, printers), and arranging transportation to leave. Briefly, the store scenario involves a customer interested in a digital camera arriving at the store, finding the appropriate part of the store, finding the right salesman, getting directions on how to try and use particular models on display, getting third party customer service advice on camera selections, being presented with alternative vendors, third party financing, and third party insurance options, determining compatibility with other equipment. While the two scenarios are clearly different, they share the need to find locations, use local equipment, invoke supporting services, find people, and get help with local resources.

In both of these scenarios, the mobile device preferably interacts with a local server at the location running a "task host" application that is aware of the task to be performed, the resources of the location, and the user. The offices and stores are equipped with active badge sensors and various tagging and locating devices to detect the presence of people in any office or conference room and monitor the whereabouts of people and objects throughout the workplace or store. The task host application exploits the information from these tools and, in part, may make use of earlier awareness systems built on this infrastructure, such as described by McCarthy & Meidel, *ActiveMap: A Visualization Tool for Location Awareness to Support Informal Interactions*, First International Symposium on Handheld and Ubiquitous Computing (HUC '99), Karlsruhe, Germany.

Alternatively, the task host application may be running on a remote server in communication with the mobile device, or the application may be running on the mobile device. Thus, the user interfaces may preferably be resident on the server and downloaded to the mobile device as needed, or be resident on the mobile device.

The interface for the mobile application is designed around the stages of generic location-based tasks. Within each stage, the core objects, locations, and

people, we work with, and the actions we need to perform are identified and enabled. At each task stage, there is typically a focus object (e.g., the presentation we intend to give at a meeting or the person we are going to see/the camera under consideration), and a small number of supporting objects, (e.g., overhead projectors, printers, VCRs, executive assistants, AV specialist/other cameras under consideration, accessories, salesmen, customer service reps). These supporting objects play predictable supporting roles (i.e., they provide an alternative or an enabling service).

The actions a user wants to perform tend to be functions of the focus object and its type. Thus, a core set of actions is included as a function of the focus object type. For example, if the focus object is a person, a user will frequently want to *contact them, invoke their role, send them something, pay them, or query them.* If the focus object is a location the user will want to *go there, see the current status and contents, reserve it, prepare it, release it.* For physical objects, the user may want to *buy, configure, send, examine, return, invoke, or release* them. For a service or event, the user may want to *register, reschedule, cancel, upgrade/downgrade, repeat, undo, start, stop,* and *continue.*

More generally, the user may wish to access context sensitive *help*, the *most recent task* pursued by the user at this location (so that, for example, the user can request the same arrangements as last time), and any *changes and exceptions* to the routine since the user's last visit to this location. For example, is someone the user normally deals with no longer working here? Are there any new facilities or offerings? And what exceptions to the norm are in effect. Is the store or office closing early? Is someone absent? Is a certain dish not on the menu?

Preferably, due to limited bandwidth and display size, not all "menu options" are shown at once. The selection is made on the basis of the particular task stage and the services available to support a given focus object. Moreover, not all information is intended to be received by the user through the device. Instead, other service channels or displays available in the environment are used, but controlled through the mobile device. Once again, the intent is not for the mobile device to become the predominant tool to perform all functions

everywhere but rather to use such devices, with the appropriate interfaces, to complement the facilities and services at a location and ease the way the user pursues tasks.

As noted above, a third alternative aspect of the invention is directed to enabling the cooperation between remote service providers and location service providers to provide through a plurality of service channels those services desirable to a user based on the services requested through the user's mobile device or based on the user's profile.

According to this aspect, a method is provided that includes identifying services requested by a mobile device user, determining the local service channels available to present said service, accessing the user's profile available to a remote service provider, and then based on the profile, determining additional services useful to the user, and sending a request to the local service provider to provide the additional services.

This method may enable the collaboration between remote service providers and the personnel at a location--both in terms of facilitating the delivery of a coherent service as well as the business models around it, such as remote service providers paying to use one of the channels. At an appropriate time during a user's interaction with the system, the staff personnel could be alerted to show the user information or instructions or accessories associated with the product or task at hand. Likewise, the remote service provider may alert the staff to a user's interest in a product, and suggest the staff person bring to the attention of the user a particular brand or product that would satisfy or compliment the user's present interest.

For example, a user may have a preferred vendor of content that maintains its own profile of the user. The remote service provider may prompt the location service provider to provide ancillary services to the user without the user having to make a specific request. The user may pre-select printers of interest with the remote service provider. Upon entering a store, the user's mobile device identifies the location, presents a general service template, and notifies the remote service

provider of the user's location. In response, the remote service provider presents information of predetermined interest to the user and automatically prompts the store to provide a salesperson with information or products of interest to the user, such as a product demonstration.

In the collaboration between remote service providers and local service providers, the following scenario is also possible. A person arrives in the printer department of an electronic store. His mobile device senses his location and displays a small list of service categories appropriate for the printer department. The categories are not unlike the speed dial buttons on a telephone in a hotel, where each button is for a service most likely to be used in the hotel. In an electronic store, these services may include customer service, information, financing, warranties, and directions. The mobile device dynamically discovers the services available for each of these categories. Some will be services provided locally by the store, and others are from remote service providers with whom the customer may optionally have a pre-existing relationship.

In this scenario, the customer chooses a product comparison service and selects the printers to be compared using his mobile device. The mobile device is pointed at the printer and through an infrared port and keystrokes by the user, the identification of the printers are provided to the mobile device. The remote service provider presents a comparison of the printers on the display of the mobile device. While this comparison is about as much information as can fit on the display of the mobile device, it is not sufficient for the user. The user moves near a kiosk display in the store. With a push of a button on the mobile device, the product comparison service is redirected from the mobile device to the kiosk display, where the same service can be delivered in far greater fidelity and detail.

The user continues using his mobile device as an input device to provide input to the remote service provider. The user may use the mobile device to select additional services. The user may point the mobile device to printers for which he wants more information or to add to the product comparison. These services are delivered to the kiosk display. After honing in on a printer of greatest interest to the user, the remote service provider sends a signal to the local service provider,

noting that the user is interested in purchasing that particular printer and would require ancillary service. The local service provider transmits instructions to another mobile device carried by a staff member of the local service provider. The staff member reads the instructions, selects the correct ink cartridges and cables needed for the printer and delivers them to the user. The staff member may access pieces of information from the user's profile with the local service provider that may include things such as past purchases of the user and credit card information of the user. The staff member confirms the user's interest in the printer and the accessories and then inputs information into the second mobile device to automatically complete the transaction and debit the user's credit card. Also, the local service provider automatically sends instructions for a printer to be delivered to the merchandise pick-up desk.

Another example that builds upon the last, illustrates the versatility of the Mobile Valet. While in the store shopping for the printer, the mobile device may alert the user to an upcoming tennis game stored in the user's calendar application, the alert coming according to a reminder set by the user. Depending on the user's preferences stored in the user's profile, a user interface may appear with specific features for a task of making a reservation of a tennis court on-line. The user may approach a location service channel, and for a fee, take precedence over another user to make the service channel available for making the tennis reservation.

Another example taking advantage of some of the features of the invention as noted above includes the use of the mobile device by a maintenance technician while repairing on a piece of equipment on a factory floor. The mobile device may provide access to the remote server of the manufacturer of the equipment and provide relevant services and information to the technician. Likewise, the mobile device may sense RF tags on the equipment that identify the equipments configuration, or the mobile device may scan bar codes on the equipment that identify the equipment configuration. That information is transmitted to a server that determines the technician's context and location, and by accessing information in the technician's user profile, the mobile device displays a user interface appropriate for the likely tasks the technician is involved in based on his

technical specialty and the equipment details. Further interaction with the user interface may connect the technician with a different remote service provider. The technician may be able to request services from one of several specialty service providers, and using available service channels in the vicinity of the equipment, have access to "face-to-face" consultations with experts of his choice, or the lowest price expert available.

As noted above, a fourth alternative aspect of the invention is directed to managing the flow of information from a plurality of remote service providers to a plurality of location service channels by aggregating the service channels for bulk transactions with the remote service providers. According to this aspect, a method is provided for identifying a number of locations and one or more location service channels at each location capable of providing services to mobile device users, aggregating a plurality of the location service channels, making available at least one of the aggregated location service channels to a remote service provider; and presenting services from the remote service provider to the at least one location service channel. Preferably, the method includes registering the location service channels and accessing a preference profile for the use of the service channels established by the location service provider of the channels.

In another embodiment of this aspect of the invention involving the aggregation of location service channels, a communication network is provided that includes a mobile user node in communication with said network and capable of sending requests for services on said network, a plurality of location server channel nodes in communication with the network, the channel nodes capable of displaying services requested by the mobile user node, an aggregator server node in communication with the network, the aggregator server node managing the availability of the location server nodes to display service requested by the mobile user nodes. Preferably, the network includes a location server node coupled with the location service channel nodes and establishing preference rules for the availability of the location service channel nodes. Preferably, the network further comprises remote service providers in communication with the aggregator node

for delivering service to service channel nodes under the control of the aggregator server node.

In the context of enhancing the value to remote service providers, another aspect of the invention includes the aggregation of location service channels for bulk availability to remote service providers. Advertising customized to the particular interest of a user at a location may be on the one hand delivered to that specific user, while on the other hand being taken under the control of a channel aggregator for bulk resale to advertisers.

Likewise, an aggregator may have a separate server and manage the flow of information from a variety of alternative remote service providers to requests for generic services requested by a mobile device user. One of the advantages of using an aggregator in this environment is to reduce the cost of transactions between remote service providers and local service providers over access to the location service channels. A remote service provider may negotiate with a single aggregator for access to numerous service channels at numerous location service providers. An aggregator can then negotiate with individual location service providers for access to its service channel on behalf of a number of remote service providers, or with service brokers acting as agents for the remote service providers.

Under this scenario, when a request for remote services is sent by a mobile device user at a specific location, the request is sent to an aggregator's server. The aggregator matches up the request for services with an appropriate remote service provider based on a number of factors such as the mobile device user's profile, the types of location based service channels that are available at the time and at that location, the remote service provider's preferences for types of users it wants access to, the types of service channels it wants access to and how much the remote service providers are willing to pay for that access. On the other hand, it may be the mobile device users who are paying for access to the information or services of the remote service providers. In this case, the aggregator can match up the remote service provider who is willing to provide services requested for the amount the mobile device user is willing to pay. Also, the location service

provider may require a portion of those access fees for maintaining and supporting the technology infrastructure for the location service channels. This aggregator is well positioned to coordinate the requests and delivery of services between all of the actors in this system.

As noted above, a fifth alternative aspect of the invention is directed to tracking the services provided to a mobile device user at a first location and compensating the first location service provider for providing those services if the user later completes a transaction at a second location when the transaction was connected with the services provided at the first location.

According to this aspect, a method is provided that tracking requests for services from mobile device users at a location, tracking services provided at said location by said location service provider to said user, tracking transactions later made by said mobile user at said location and at other locations; and when said transactions are associated with at least one of said services requested and services provided, compensating the location service provider.

Local service providers may see enhanced value from a system in which they are compensated for providing services that later influence users transactions, and thereby be encouraged to provide the infrastructure of the location service channels. The system can track the objects viewed by a mobile device user and to the extent that mobile device user obtains significant information from one local service provider yet winds up buying that same product from a different local service provider, the system can transfer a commission to the first local service provider based on tracking of the participation of the first service provider in the developing interest and ultimate sale of the product to the mobile device user. The commission can be based on things such as physical page views on the task template associated with the product that was purchased, or may be based on the identification of the product through the mobile device's sensors.

With the value added to users' transactions, there may naturally be competition among remote service providers for access to the users through the multiple local channels. Also, the local service providers may also derive value by

managing the use of the service channels at its location, which are a limited resource. For example, the local service providers may be able to decide which customers have access to the service channels and for how long. Loyal, long-term high-volume customers may be allowed greater access to the location service channels. Armed with the demographic customer base, the local service providers can decide which remote service providers have access to the local service channels and for how long. For example, preferred vendors or remote service providers with strategic alliances may have preferential access to presenting content or services through the location service channels. The local service providers may decide what information is displayed there, on what basis the service delivery has commenced and terminated. With the efficiencies achieved by this enhanced and enriched customized information or service delivery to the mobile device users, the local service providers can tailor the optimization of the use of these systems to enhance its value and ultimately the revenue stream seen by the local service providers.

The presently preferred embodiments will now be described more fully hereinafter with reference to the accompanying drawings, in which the presently preferred embodiments are shown. This invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure is thorough and complete, and illustrates the invention to those skilled in the art. Like numbers refer to like elements throughout.

As will be appreciated by one of ordinary skill in the art, the present invention includes several aspects that may be embodied as a method, data processing systems, computer programs, or physical products. Accordingly, the present invention may take the form of an entirely hardware embodiment, an entirely software embodiment or an embodiment combining software and hardware aspects. Furthermore, the aspects of the present invention may take the form of a computer program product on a computer-readable storage medium 30 having computer-readable program code means embodied in the storage medium

30. Storage medium 30 includes any suitable storage medium that may be utilized including memory such as read-only memory (ROM), random-access memory (RAM), dynamic random-access memory (DRAM), SDRAM, and EEPROM; magnetic media such as hard disk drives, and floppy disk drives; optical media such as CD-ROM, CD-R, CD-RW, DVD-ROM, DVD-RAM, and DVD-RW; magneto-optical media; and any other type of media which may be used to store digital information, such as a computer program.

As noted above, a sixth alternative aspect of the invention is directed to a mobile device having wireless connectivity, remote sensors, location pinpointing system, and computer-executable instructions for requesting services through a plurality of service channels. In one embodiment, the mobile device includes a service channel, sensors and a computer-readable medium for storing computer executable instructions thereon, wherein the instructions provide for the method of identifying one or more location service channels associated with the location through which services can be provided to the user; the sensors provide for remote identification of physical objects proximate to the mobile device; and the mobile device service channel includes a user interface for permitting the user to select a physical object detected by the sensors, to select tasks that may be accomplished at the location by utilizing one or more of the location service channels and the mobile device service channel, or to coordinate the delivery of services through one or more of the location service channels and the mobile device service channel.

FIG. 1 illustrates a data processing system on which a mobile valet device 20 may be utilized, according to one preferred embodiment. The present invention is not limited to any particular hardware or technology described herein, or that can be configured to be a wireless mobile device of the type known today, such as PDA's, cellular phones, text pagers, etc. The following description of a Mobile Valet device is illustrative of some of the optional functionality that may be

desirable for use in accordance with the various embodiments and aspects ot the present invention.

As seen in FIG. 1, Mobile Valet device 20 includes a processor 24, a storage medium 30, a user input device 34, an output device 46, a locating device 64, and a communications device 74. Processor 24 is any programmable electronic device known to those skilled in the art that can store, retrieve, and process data, such as a standard CMOS computer processor. Preferably, processor 24 includes an operating system 26 resident in processor 24. Operating system 26 may be resident in processor 24 or in storage medium 30. Processor 24 is communicatively connected with storage medium 30 and can send and receive signals to and from storage medium 30. Processor 24 is also communicatively connected with output device 46 and user input device 34, wherein processor 24 sends signals to output device 46 and processor 24 receives signals from user input device 34.

Storage medium 30 stores a mobile valet application 28 that promotes the delivery of location-based services to a user within a given geographical location 22. The geographical location 22 includes any location or a portion of any location which encompasses both the user and the mobile valet device 20, and can include locations such as a store, a warehouse, a building complex, an office complex, a bank, a stadium, a golf course, a train station, a bus station, an airport, a beach, a park, a city, a state, or any other geographical location in which a user may wish to travel to. The mobile valet application 28 generates a location-based menu 120 based on the geographical location of a user, as illustrated in FIG. 7. Preferably, mobile valet application 28 resides on storage medium 30, as described above. Mobile valet application 28 may be running on operating system 26. Mobile valet application 28 is communicatively connected with locating device 64 and communications device 74 and can send and receive signals to and from locating device 64 and communications device 74, as illustrated in FIG. 1.

Processor 24 communicates and conveys information to the user on output device 46. The contents of output device 46 may be controlled or altered by mobile valet application 28 or operating system 26 either individually or in

combination. Output device 46 may be any device that can communicate and convey information to a user known by those skilled in the art, such as a video display screen 48, a speaker 54, and a printer 60. Display screen 48 can include a local display screen 50 and a remote display screen 52, as illustrated in FIGS. 2-3. As used herein, local display screen 50 is a display screen that is mobile and therefore is carried with the user, while a remote display screen 52 is stationary and is not taken carried with the user.

Display screen 48 has a plurality of picture elements (collectively referred to as a screen) that may define the appearance of mobile valet application 28, location-based menu 120, location based-service 122, general service menu 146, and any other object or text displayed on display screen 48, as illustrated in FIGS. 5-8. Display screen 48 may be a cathode ray tube, a LCD screen, or any other means for allowing a user to see mobile valet application 28. Preferably, display screen 48 comprises an LCD screen, since an LCD screen is lightweight, thin and typically compact enough that a user can easily carry mobile valet device 20. Display screen 48 displays mobile valet application 28, as illustrated in FIGS. 11 and 12.

Referring again to FIG. 1, for obtaining input from a user, processor 24, operating system 26, mobile valet application 28, communications device 74, and locating device 64 utilize at least one user input device 34. User input device 34 may be used to designate areas of the display screen 48 by performing a pointing or selection operation on those areas. User input devices 34 may also be used to input characters which may in turn instruct at least one of processor 24, operating system 26, mobile valet application 28, communications device 74, and locating device 64 to perform a task. User input device 34 includes any device which can be used by a user to instruct at least one of processor 24, operating system 26, mobile valet application 28, communications device 74, and locating device 64 to perform a task known by those skilled in the art. User input device 34 includes such devices as a keyboard 36, a button 38, a pointing device 40, a microphone 42, and a stylus 44. Pointing device 40 may include a mouse, a trackball, a touch pad, a graphics tablet, or other pointing devices known to those skilled in the art.

Pointing device 40 allows a user to move a mouse pointer located in display screen 48 over an object located in display screen 40, to select that object. Stylus 44 can be used to input text and other information and select objects on display screen 40. User input devices 34 may be used to input information, such as the name of an item or service that needs to be selected, into mobile valet application 28. In one embodiment, user input devices 34 are used to select item a location-based service 122, such as a general service 124 or a specific service 126, as illustrated in FIGS. 7 and 8.

As depicted in FIG. 1, communications device 74 is communicatively connected with a server 80 and the mobile valet application 28. Communications device 74 is any mobile device capable of sending and receiving digital or analog message known by those skilled in the art, such as a mobile telephone, a radio wave transmitter and receiver, a cellular transmitter and receiver, a BLUETOOTH™ equipped device, an infrared transmitter and receiver, and a laser beam transmitter and receiver. Server 80 is a computer that is designed to store information and distribute information to a user upon receiving a request for information. Server 80 may be a remote server 76 or a local server 80, as shown. As used herein, a remote server 76 is a server that is outside a given geographical location 22, while a local server is a server that is within a certain geographical location 22, as illustrated in FIG. 3. Communications device 74 transmits a request signal 75 for information by either a user or by the mobile valet application 28 to a server, such as a remote server 76 or a local server 80, whereupon the server sends back an information signal 94, which is then received by the communications device 74 and forwarded to the mobile valet application 28. Preferably, communications device 74 uses an antenna 86 to transmit the request signal 75 and receive the information signal 94, as illustrated in FIG. 2. Preferably, communications device 74 is portable and small enough such that the mobile valet device 20 can be held by a user 32. In one preferred embodiment, communications device 74 is physically connected with a display screen 48 and a processor 24, in order to make mobile valet device 20 portable. Signals sent and received by the devices described herein, such as transmitter signal 68, GPS signal

72, request signal 75, information signal 94, sensing signal 95, and location signal 96, may include analog or digital signals.

Remote server 76 or local server 80 processes the information encoded within request signal 75 and generates information signal 94. Information signal 94 comprises information that can be used to generate location-based menu 120, general service menu, and location based-services 122. Server 80 transmits information signal 94 and communications device 74 receives information signal 94. Information signal 94 is then transmitted to mobile valet application 28, wherein mobile valet application 28 uses information signal 94 to generate location-based menu 120, general service menu, and location based-services 122.

In one preferred embodiment, mobile valet device 20 uses a web browser to access information stored within server 76. The web browser is located within storage medium 30. A web browser is any application or program that can access information stored on the Internet, including the World Wide Web, the Usenet, Telnet, FTP sites, and other locations on the Internet. In one preferred embodiment, communications device 74 communicates with remote server 76 through a web browser, and accesses the information stored within server 76 using the web browser. In one preferred embodiment, communications device 74 sends a request signal 75 to server 76 using a web browser, and server 76 generates information signal 94 as a result.

A web-services architecture product such as eSpeak from Hewlett-Packard Corp., was used as the support platform for the Mobile Valet prototype. Alternatively, .NET, the Microsoft XML Web services platform, may be used, as well as other web services platforms. XML Web services allow applications to communicate and share data over the Internet, regardless of operating system, device, or programming language. The benefit of such platforms are seamless, compelling experiences while using the Mobile Valet.

While the above embodiments use communications device 74 and server 76 and/or server 80 to retrieve information within an information signal 94 that can be used to generate location-based menu 120, general service menu, and location based-services 122, in one preferred embodiment this information is

stored locally within mobile valet device 20 on storage medium 30. The information can then be retrieved directly by mobile valet application 28 and be used to generate location-based menu 120, general service menu, and location based-services 122.

As illustrated in FIGS. 1 and 3, locating device 64 is communicatively connected with the mobile valet application 28. Locating device 64 is any device that can be used to determine the location of a user known by those skilled in the art, such as but not limited to automatic location identifying devices (ALI's), GPS receivers, radio wave receivers, cellular receivers, laser beam receivers, and compasses. Upon determining the location a user, transmitter generates a location signal 96 and transmits the location signal 96 to the mobile valet application 28. In one embodiment, locating device 64 determines the location of the user by receiving transmitter signals 68 from a transmitter 66 and uses the transmitter signals 68 received from the transmitter 66 to generate a location signal 96. Preferably, locating device 64 uses transmitter signals 68 to resolve the location of a user. In one embodiment, locating device 64 receives a global positioning satellite (GPS) signal 72 from a global positioning satellite 70 and uses the GPS signal 72 to resolve a user's location and generate a location signal 96.

In one preferred embodiment, transmitter signals 68 are directionally phase encoded enabling locating device 64 to resolve the relative location of a user using triangulation techniques. In one preferred embodiment, transmitter 66 is a local transmitter 67 located within geographical location 22, as illustrated in FIG. 3. In one preferred embodiment, locating device 68 comprises a radio receiver that resolves the specific location of a user with respect to a set of local transmitters 67. In yet another preferred embodiment, locating device 68 comprises both a GPS receiver and a radio receiver that receive transmitter signals 98 and GPS signals 72 to resolve the specific location and the general location of a user.

As used herein, the specific location of user 32 is the location of user 32 accurate to within less than ten meters, and the general location of a user is the location of a user accurate to within at least about ten to 500 meters. Once locating device 64 resolves at least one of the general location and the specific

location of a user, locating device 64 generates a location signal 96 and transmits the location signal 96 detailing at least one of the general location and the specific location to the mobile valet application 28, wherein the mobile valet application 28 uses the information within the location signal 96 to generate a location based-menu 120 with at least one location-based services 122. In one preferred embodiment, the location based-menu and the location-based services are continuously updated to correspond with the current location of the user, as the user moves from one geographical location 22 to another geographical location 22. Internet based geographic location referencing systems are known in the art, such as described in U.S. Patent No. 6,202,023 B1, issued to Hancock et al. on March 13, 2001.

In one embodiment, as shown in FIG. 1, mobile valet device 20 includes a sensing device 82 that is communicatively connected with mobile valet application 28. Sensing device 82 is any device capable of sensing a signal or element in the surroundings, such as a bar code, a radio transmission, an infrared transmission, a BLUETOOTH™ signal, a laser beam, or even an image, and generate a sensing signal 95 in response. Sensing device 82 is any device known by those skilled in the art that is capable of sensing a signal or element, such as a bar code scanner 90, a microphone 42, an infrared (IR) receiver 88, a video camera, and a radio frequency receiver. In one preferred embodiment, sensing device 82 is a bar code scanner that senses and scans in a bar code 84 and generates a sensing signal 95 as a result.

FIGS. 2 and 3 illustrate a mobile valet device 20 for delivering location-based services to a user 32 within a specific geographical location 22, according to one preferred embodiment. Preferably, mobile valet device 20 is a hand-held device that can be carried around by a user 32. However, mobile valet device 20 can be connected with a larger piece of equipment or vehicle that can move around a geographical location with a user, such as a personal printer, a spectacle heads-up display, a shopping cart, an automobile, a bicycle, a caddy, or any other movable vehicle or device known to one of ordinary skill in the art.

FIG. 4 is a flowchart illustration of methods, apparatus (systems) and computer program products according to the invention. It will be understood that each block of the flowchart illustration, and combinations of blocks in the flowchart illustrations, can be implemented by computer program instructions. These computer program instructions may be loaded onto a computer or other programmable data processing apparatus to produce a machine, such that the instructions which execute on the computer or other programmable data processing apparatus create means for implementing the functions specified in the flowchart block or blocks. These computer program instructions may also be stored in a computer-readable storage medium 30 that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable storage medium 30 produce an article of manufacture including instruction means which implement the function specified in the flowchart block or blocks. The computer program instructions may also be loaded onto a computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide steps for implementing the functions specified in the flowchart block or blocks.

Accordingly, blocks of the flowchart illustrations support combinations of means for performing the specified functions, combinations of steps for performing the specified functions and program instruction means for performing the specified functions. It will also be understood that each block of the flowchart illustrations, and combinations of blocks in the flowchart illustrations, can be implemented by special purpose hardware-based computer systems which perform the specified functions or steps, or combinations of special purpose hardware and computer instructions.

As seen in FIG. 4, a mobile valet application 28 is initiated in block 99. The mobile valet application 28 generates a location-based menu 120 or initiates a

location-based service 122 based upon the location of a user. The mobile valet operation first determines the location of a user, as illustrated in block 100. The location of the user is determined by either using the location information within the location signal 96 generated by the locating device 64 or by using location information that is located on a server 80. If the mobile valet device 20 does not have a locating device 64 or if the locating device 64 is unable to generate a location signal 96, then the mobile valet application 28 will request location information from the server 80. Upon receiving the request for location information from the mobile valet device 20, the server 80 will then retrieve the location information from a database, or a look-up table, and transmit the location information to the communications device 74, whereupon the communications device 74 transmits the location information through an information signal 94 to the mobile valet application 28.

Upon receipt of the location information, the mobile valet application 28 then generates a location-based menu 120 based on the location of the user, as illustrated in block 102. In one embodiment, the mobile valet application 28 generates a request signal 75 for information and retrieves the information from within storage medium 30 to generate location-based menu 120. Request signal 75 includes location information. In another embodiment, the mobile valet application 28 generates a request signal 75 for information to the communications device 74, which in turn transmits the request signal 75 to the server 80. Upon receipt of the request signal, the server 80 then generates an information signal 94 that is then received by communications device 74 and transmitted to mobile valet application 28. Upon receipt of the information signal 94, the mobile valet application 28 generates a location-based menu 120. In one preferred embodiment, the mobile valet application 28 generates a request signal 75 without receiving the location information from either the locating device 64 or the server 80.

Location-based menu 120 is a menu of services based upon the location of the user. The location-based menu 120 provides at least one location-based service 122, depending on the location of the user, that can aid the user while in a

particular geographical location 22. For example, if the user is in a retail outlet, such as a computer store, the mobile valet application 28 will generate a location-based menu 120 with at least one location-based service 122, such as an information service 128 that is designed to aid the user while in the retail store. If the user is in a bank, the location-based menu 120 can generate a location-based service 122, such as a withdrawal service (not shown) that may help the user withdraw funds from the bank. Location-based services 122 are designed to aid a user while in a certain location.

Location-based services 122 can include such services as an information service 128 for providing information such as information about a certain item with a store, the name of the store, or directions to a department within the store; a customer service 130 for providing assistance to the user for purchasing, returning or exchanging an item, for conducting a transaction, or for general customer service; a directions service 132 for providing directions to a place, to an item within a store, to a store, for how to purchase an item, or how to conduct a transaction; a finance service 134 for providing financial assistance to a user who whishes to purchase an item; a warranty service 136 for a user who wishes to obtain a warranty for an item within a store; a sales service 138 for a user who wishes to receives sales assistance for purchasing an item; a product comparison service 140 for comparing a series of items or products within a store; a web-based information service 142 for retrieving web based information for an item within a store; and a help service 144 for helping a user conduct a transaction or purchase an item, as illustrated in FIGS. 7 and 8.

Upon generating the location-based menu 120, a user then selects a location-based service 122, as illustrated in block 104. Location-based services 122 include general services 124 and specific services 126. The selection of a general service 124 generates a general service menu 146, while the selection of a specific service 126 begins that service. For example, the selection of general service 124 such as an information service 128, generates a general service menu 146 that includes specific services such as a sales service 138, a product comparison service 140, and a web-based information service 142, as illustrated in

FIG. 8. Selection of the specific service 126, such as product comparison service 140, begins the product comparison service 140, as illustrated in FIGS. 9-12.

Upon generating a location-based menu 120, having location-based services 122, the user selects a location-based service 122 using user input device 34 and the mobile valet device performs the location-based service 122 that was selected, as illustrated in block 106. If the user selects a general service 124, then the mobile valet application 28 will generate a request signal 75 requesting additional information from either the server 80 or the storage medium 30, whereupon the server 80 or the storage medium 30 generates an information signal 94 which contains general service information in response. Upon receiving the information signal 94 that contains general service information, the mobile valet application 28 then generates a general service menu 146 that contains location-based services 122, as illustrated in FIG. 8. If the user selects a specific service 126, then the then the mobile valet application 28 will generate a request signal 75 requesting additional information from either the server 80 or the storage medium 30, whereupon the server 80 or the storage medium 30 generates an information signal 94 which contains specific service information in response. Upon receiving the information signal 94 that contains specific service information, the mobile valet application 28 then begins executing the specific service 126 that was selected, as illustrated in FIGS. 9-12. Upon performing the location-based service 106, the mobile valet application 28 moves back to block 99, as illustrated in FIG. 4.

Mobile valet application 28 communicates information to the user through an output device 46, such as a display screen 48, a speaker 54, or a printer 60, as illustrated in FIGS 1-3. Information can be any information received from the server 80 or the storage medium 30. Information can be communicated to the user not only on output devices 46 that are localized devices, such as local display screen 50 and local speaker 56, but also on output device 46 that are remote devices, such as remote display screen 52 and remote speaker 58. As used herein, localized devices, i.e., personal service channels, are devices that are on the user or travel with the user, and that do not require the use of a communications device 74

in order to communicate information with. Such personal service channels are preferably packaged with the Mobile Valet device. As used herein, remote devices, i.e., location service channels or location channels, include devices that are located within geographical location 22, but that do not move with the user, such as a kiosk, or a localized display that is tied into the locations technology infrastructure. The location service channels may also include staff personnel at the location. Remote devices may require the use of a communications device 74 in order to communicate with.

If certain information cannot properly or adequately be displayed or communicated to a user on a localized device, such as a local display screen 50 or a local speaker 56, mobile valet device 20 may transmit a request through communications device 74 to display the information on a location service channel, such as a remote display screen 52, as illustrated in FIG. 3, and in FIG. 12. Since the remote display screen 52 may be larger than the local display screen 50, because the user does not have to move around with the remote display screen 52, the remote display screen 52 may display more information than the local display screen 50, as illustrated in FIGS. 11 and 12. Alternatively, mobile valet device 20 can transmit the information through communications device 74 to a remote device, such as a remote speaker, which can be much larger than a local speaker, and therefore which can communicate a louder sound to the user. Likewise, the mobile valet device may transmit the information directly to a remote printer 98 to print out information obtained from a server. By utilizing remote devices, mobile valet device 20 can communicate information more efficiently, more effectively and more richly to the user.

Upon selecting a specific service 126, mobile valet device 120 can present the user the option to scan in a location item 98 located in a geographical location 22, as illustrated in FIG. 3. Location item 98 can be any item with a geographical location 22, such as a product, or a display, a piece of furniture, and a work of art. Mobile valet device 120 uses a sensing device 82 to sense a signal or scan an element. For example, a radio transmitter may be embedded in location item 98

that transmits a signal received by sensing device 82, or a bar code 84 may be placed on location item 98, whereupon sensing device 82 scans the bar code 84.

Upon scanning in a location item 98, sensing device then generates a sensing signal 95 and transmits the sensing signal 95 to the mobile valet application 28. Mobile valet application 28 may request sensing device 82 to generate a sensing signal 95 or sensing device 82 may generate a sensing signal 95 without receiving a request from mobile valet application 28. Sensing signal 95 send information to mobile valet application 28 such as the name of a product, the price of a product, and the location of a product.

Upon receiving sensing signal 95, mobile valet application 28 may generate a location-based menu 120, or a location-based service 122, based upon the information in the sensing signal 95. In one embodiment, mobile valet application 28 generates a request signal 75 in response to the sensing signal 95, and transmits the request signal 75 to the server 80 through the communications device 74.

In one preferred embodiment, mobile valet application 28 generates a page view signal that is transmitted to the server 80 through the communications device 74. A page view signal can be generated in response to a number of actions. For example, a page view signal can be generated by the mobile valet application 28 in response to receiving the location signal 96 when a user enters a given geographical location. A page view signal can be generated in response to the receipt of a sensing signal from the sensing device 82 by the mobile valet application 28. A page view signal can also be generated in response to the generation of the request signal 75 by the mobile valet application 28, wherein the request signal 75 request certain information from the remote server 76. In one embodiment, the page view signal is generated by the server 76 in response to any signal received from the mobile valet applications, such as the request signal 75.

The page view signal may be useful for tracking services requested by or services received by the user. This information may be useful for updating the user's profile, or the local service provider's demographic database, or for compensating the local service provider. For example, the local service provider's support for assisting the user in deciding upon and completing a transaction, say

for a purchase of a printer, may be documented with this feature. Thus, even if the user completes the transaction elsewhere, the local service provider is compensated for its contribution to the decision-making process to led to a completed transaction. In one embodiment, this information may be used by printer manufacturers to provide incentive to local service providers to provide enhanced service even thought they do not complete the transaction with the user.

In another example for making use of multiple location service channels, server 80 identifies a an available location service channel for a mobile valet device 20 based upon the request signal 75 received by the server 80 from the mobile valet device 20. Upon identifying a channel, the server then transmits information related to that channel to the mobile valet device 20. For example, if the mobile valet device sends a request signal 75 with information that indicates the mobile valet device 20 is in a grocery store, the server 80 may locate a display in the produce department close to that particular mobile valet device 20, and transmit information of interest to the user, either identified by the user or based on the user's profile, to that display.

Referring now to FIG. 13, a system is illustrated for using a mobile device to provide enhanced delivery of services available at a location. The system includes a distributed publicly accessible network 200, such as the internet, providing a communications means for a plurality of hard-wired and wireless devices. A mobile device 202 contains a mobile node in communication with the network 200. The mobile device 202 is in communication with a user database 204 that stores the mobile device user's profile. The user database 204 may also store a number of other information and user applications such as calendars, e-mail, news lists, etc. Such information may alternatively be stored in a memory storage device in the mobile device, as illustrated in FIG. 1.

Different categories of information in the user profile may have different levels of privacy safeguards. For example, some information may be publicly accessible to all remote service providers, some information may be accessible only to the user's preferred remote service providers, other information may only be available to the aggregator server that manages access to the location service

channels, other information may only be accessible to some or all of the local service providers, and yet other information may be accessible only to the user.

Location No. 1 (206), is a bank, and includes a local server 208 in communication with the network, and four service channels 210 in communication with the network. The service channels may be, for example, ATMS, computer kiosks, printers, Bank tellers, wall-mounted public multi-media station, etc. Location No. 2 (212), is a computer store, as described above, and includes a local server 214 in communication with internet 200. The store 212 also includes four service channels 216 in communication with the internet 200. The service channels may be wirelessly connected directly to the internet, or may be connected to the internet through the location-based server. The service channels may includes kiosks, printers, publicly available multimedia displays, mobile devices for store personnel, etc. The location servers 208 and 214 may also be local service providers. As such they need not be physically located within each location, and may be considered as a local service provider for all of the store locations operated by the local service provider.

Preferably, a number of remote service provider servers 220, 222 and 224 are in communication with the internet 200, and accessible by the mobile device. The remote service providers may be the manufacturers or sellers of equipment in the store 212. The remote service provider may be an interest rate quoting service that can provide competitive interest rate quotes, say for loans, while the mobile device user is in the bank 206. The remote service providers servers may access information in the user's profile database along with real-time or historical contextual information about the user to determine appropriate services to provide to the user either though the user interface on the mobile device service channel, or through a location service channel proximate to the user.

Each location and the service channels therein are in communication with an aggregation server 226. The aggregation server 226 maintains a registry of the locations 206 and 212, and the location service channels 210 and 216 located therein on a registry database 228. The aggregation server and associated database may be a system of distributed servers and databases.

The aggregation server may act as a central node managing the access to the location service channels. For example, each location service channel may have a unique IP address, and the aggregation server 220 routes the services provided from the remote service provider and redirects it to the selected location service channel appropriate to the type of service being provided and optimizations of matches between users and service providers.

The database 228 may also maintain a registry of remote service providers and mobile device users. The local service providers may provide preferences, rules and restrictions on how the location service channels contained in its stores are used for delivery of services to the mobile device users on its premises. For example, frequent customers, customers with strong interests in purchases, may have priority access to the location service channels compared with other customers. The local service providers may also maintain databases (not shown) such as CRM (customer relationship management) systems that includes profiles about users and remotes service providers that the aggregation server 226 may access, or have information transmitted from.

Likewise, the mobile device users may also have preferences, rules and restrictions stored on its profile data base 204 that is transmitted to the aggregation server 226. These may includes lists of preferred remote service providers, excluded service providers, providers for whom the user has pre-paid subscription with, and terms for one-time use payments the user is willing to make for other remote service providers.

Likewise, the remote service providers may have preferences, rules and restrictions as to how the services it presents to users is to be delivered on the location service channels. The remote service provider my also include terms for payment bids that it would make for priority access to the location service channels.

The aggregation server 226 balances the competing demands for services to be delivered on the location service channels, with the different rules, preferences and restrictions of the different parties having an interest in the service transaction. The database 228 is used to store this information. Because, the number of

location service channels in a location is a scarce commodity, at times of high demand, the aggregation server 228 may use optimization algorithms, such as are known in the art, programmed on computer-readable medium to make the location service channel available to the highest bidder consistent with the preferences and restrictions imposed by the parties. The aggregation server may then communicate the payment terms and deposit account information, which are obtained from the parties' respective profile databases, to other payment servers that manage the monetary transactions associated with the particular match between the user and service provider and any commission or cut received by the local service provider.

The aggregation server 226 may maintain a cache in a memory storage device with a cue of mobile device users seeking services, and a cue of remote service providers willing to provide such services. The aggregations server may match up the remote service provider with the user based on mutual interests stored in the user profiles and the remote server profiles. The mutual interest may include the amount of money the user is willing to pay and the remote service provider is willing to receive for providing services of interest to the user. The mutual interest may be an exchange of money in the other direction if the service provided will encourage the user to make a purchase of products made by the remotes service provider and for sale at the location, or vice versa. Still, the proprieter of the aggregation server may obtain the monetary benefit from the remote service provider as the agent of the remote service provider to "find" an appropriate user to receive its services. The cache may also hold cues of matched service providers and users waiting for service channels to become available.

The aggregation server 226 may also maintain a database of page views and interactions of users with service providers at specific locations. In conjunction with the location service providers reporting the user's transactions with the local service providers' locations, the aggregation server may track a user's purchase on an item at one location with a prior service received at another location. The aggregation server may then request a commission from the later local service provider where the item was purchased to be paid to the prior local

service provider allowed access to its location service channels. The desire for this arrangement is to encourage locations to invest in the infrastructure for the location service channels if they can see a revenue stream generated even though the user decides to purchase the products else where after receiving services at the prior location.

From the foregoing description, one skilled in the art may appreciate that the invention make take a variety of forms and may be performed in a variety of sequence by a variety of providers. For example, in another more generic sequence, one embodiment of the invention may occur as follows: determine location of mobile device, present location-specific menu of services on mobile device, user selects service, present service on mobile device, access user profile, identify available location service channels, select one or more available service channel, shift service to selected location service channel, request additional services through mobile device, present additional services on location service channel, access user profile, determine appropriate ancillary services, prompt location service provider to provide ancillary services, location-based staff present ancillary service to user, staff input information into second mobile device, access user profile, complete transaction, location-based server terminates location service channel session to make available to second user.

Thus, there has been disclosed in accordance with the invention, methods, systems and apparatus for delivering location-based services to a user within a given geographical location that fully provides the advantages set forth above. Although the invention has been described and illustrated with reference to specific illustrative embodiments thereof, it is not intended that the invention be limited to those illustrative embodiments. Those skilled in the art will recognize that variations and modifications can be made without departing from the spirit of the invention. It is therefore intended to include within the invention all such variations and modifications that fall within the scope of the appended claims and equivalents thereof.

Motorola Solutions, Inc., Ex1003, p. 337

CLAIMS

What is claimed is:

1. A method of using a mobile device to provide enhanced delivery of services available at a location, the method comprising:

presenting a user interface on a mobile device service channel;

identifying a plurality of location service channels associated with the location for delivery of services to a mobile device user;

determining the availability of at least one of the plurality of location service channels for delivering services to the user; and

delivering service to the user through at least one of the available location service channels or the mobile device service channel.

2. The method according to claim 1 further comprising displaying on the user interface services associated with the location.

3. The method according to claim 2 further comprising receiving a user selection of one or more of the services displayed on the user interface.

4. The method according to claim 3 wherein the location service channels are identified in response to the user selection of one of the services displayed on the user interface.

5. The method according to claim 1 further comprising establishing the task of the user based on the user's current location and a user profile; and providing a list of available services on the user interface relevant to the established task.

6. The method according to claim 1 further comprising presenting on the mobile device service channel a query for selection of a location service channel desired by the user, and in response to user selection of a location service channel, delivering the service on the selected location service channel.

7. The method according to claim 1 further comprising delivering service to the user through the location service channel and through the mobile device service channel.

8. The method according to claim 1 further comprising shifting the delivery of the service between the location service channel and the mobile device service channel.

9. The method according to claim 1 further comprising querying the user of the mobile device to input a selection of an alternate service channel, receiving the user's selection of the alternate service channel, and delivering the service through the selected alternate service channel.

10. The method according to claim 1 further comprising:

determining the location of the mobile device service channel;

establishing a context for the services based on the determined location; and

determining the service channels available for the services associated with the context; and

delivering at least one of the services through at least one of the available channels.

11. The method according to claim 10 further comprising:

establishing a request for second services;

determining the channels available for the second services; and

delivering the second services through the a second available service channel.

12. The method according to claim 11 wherein the second services are delivered concurrently with the first services.

13. The method according to claim 10 wherein establishing a context for the services comprises identifying an item or a task of interest to a user of the

mobile device, and identifying the services associated with said item or task desired by a user of the mobile device.

14. The method according to claim 13 wherein identifying an item of interest includes receiving a transmission from the mobile device containing an identification of an object proximate to the mobile device that was remotely sensed by the mobile device.

15. The method according to claim 13 wherein identifying a task of interest includes receiving a signal from the mobile device initiated by a user's input to the mobile device.

16. The method according to claim 1 further comprising accessing the profile of the user of the mobile device.

17. The method according to claim 16 further comprising presenting a context-based user interface template on the mobile device service channel, said user interface template based on said location and said personal profile.

18. The method according to claim 17 further comprising obtaining an identification of one or more tasks of interest to the user based on the user's selection from the template;

providing the services associated with the identification of one or more tasks.

19. The method of claim 18 further comprising transmitting a request to a local service provider for ancillary services based on user profile and context of the identified task.

20. The method of claim 16 wherein said location service channel availability depends on user profile.

21. The method of claim 16 wherein said service is provided by a local service provider or a remote service provider, and said provider receives information from the user profile.

22. The method of claim 1 further comprising redirecting the delivery of the service from the first location service channel to a second location service channel.

23. The method according to claim 22 wherein said redirecting is in response to a request received from the mobile device.

24. The method according to claim 22 wherein the said redirecting is in response to physical relocation of the mobile device to a position of closer proximity to the second location service channel.

25. The method according to claim 22 wherein said redirecting is in response to a request received from location-based personnel.

26. The method of claim 1 wherein said location service channel comprises location-based personnel.

27. The method of claim 1 further comprising transmitting a request to location-based personnel to provide service to the user.

28. The method of claim 27 wherein the request is received from a service provider.

29. The method according to claim 27 wherein said location-based personnel are equipped with a mobile device having access to a profile of the user.

30. A system for using a mobile device to provide enhanced delivery of services available at a location comprising:

a mobile device having a display,

a plurality of context-based user interface templates capable of being displayed on the mobile device, wherein each context-based user interface

includes a selection of services available at the location from one or more of a local service provider and a remote service provider; and

one or more location service channels;

wherein the services available at said location are deliverable through the mobile device or the one or more location service channels.

31. The system according to claim 30 further comprising an automatic location identifying system, and a processor programmed with logic stored on computer-readable medium that selects the appropriate user interface based on the location identified.

32. The system according to claim 30 further comprising

a database for storing a user profile, the user profile containing an identification of relationships between a user of the mobile device and one or more of local service providers and remote service providers, and

a system for dynamically identifying appropriate local or remote service providers based on relationships between a user of the mobile device and the one or more of local and remote service providers stored in the user profile and relevant to an identified task and the location.

33. The system according to claim 30 wherein the selection of services on the user interface is based on the user profile.

34. The system according to claim 30 wherein the selection of services on the user interface are those services commonly used in support of an identified task.

35. The system according to claim 30 further comprising

a computer-readable medium for storing computer executable instructions thereon, wherein the instructions provide for the method of identifying one or more location service channels associated with the location through which services can be provided to the user;

the mobile device further includes sensors to provide for remote identification of physical objects proximate to the mobile device; and

the user interface further includes templates for permitting the user to select a physical object detected by the sensors, to select tasks that may be accomplished at the location by utilizing one or more of the location service channels and the mobile device service channel, and to coordinate the delivery of services through one or more of the location service channels and the mobile device service channel.

36. The system according to claim 30 further comprising

one or more location service channel identifiers for identifying to the mobile device the location service channels available at the location.

37. A method of using a mobile device to provide enhanced delivery of services available at a location, the method comprising:

storing the identification of a plurality of locations on an aggregation system;

storing the identification of the location service channels associated with the plurality of locations;

identifying a request for services to be delivered to a user of a mobile device at a location;

determining the availability of at least one of the location service channels proximate the user to a remote service provider; and

delivering services from the remote service provider through at least one available location service channel.

38. The method according to claim 37 further comprising

identifying the user of the mobile device; and

accessing a stored profile of the user.

39. The method according to claim 38 further comprising

assigning levels of privacy to different categories of information in the stored user profile; and

providing the remote service provider with access to categories of information in the user profile having predetermined levels of privacy.

40. The method according to claim 38 wherein the availability of a location service channel is based on the user profile.

41. The method according to claim 38 wherein the availability of a location service channel is based on a profile of the location.

42. The method according to claim 38 wherein the remote service provider is charged a fee for delivering the service through the location service channel.

43. The method according to claim 38 wherein a plurality of remote service providers may bid for delivery of services through a location service channel.

44. The method according to claim 38 wherein a plurality of remote service providers bid for delivery of services through a plurality of location service channels, and the location service channels are assigned to the remote service providers in a manner to maximize the total fees paid by the remote service providers to deliver services through the assigned location service channels.

45. The method according to claim 44 wherein the bids may be based on characteristics of the user profile and a profile of the location service channel, and the location.

46. The method according to claim 38 wherein the user is charged a fee for having the service delivered through the location service channel.

47. The method according to claim 38 further comprising sending a request for location-based personnel to provide service to the user, wherein the

request is based on one or more of a request transmitted from the mobile device, a request transmitted from the remote service provider, a request based on a combination of the user profile and the user history of services delivered through the locations service channels, and service preferences stored on the user profile.

48. The method according to claim 37 further comprising

determining a context of the mobile device user, and transmitting the context to the remote service provider.

49. The method according to claim 37 further comprising

tracking requests for services for the users at the locations;

tracking services provided to the users by local service providers;

tracking purchase transactions made by the user at the locations; and

when the purchase transactions at one location are associated with at least one of said services services provided at a second location, compensating the local service provider associated with the second location.

50. A system for using a mobile device to provide enhanced delivery of services available at a location comprising:

a mobile user node having a browser program in communication with said network, said mobile user node providing requests for information on a network,

a plurality of location service channel nodes in communication with the network, said channel nodes capable of displaying services in response to requests by the mobile user node;

a remote service provider server node responsive to requests for information from said mobile user node, said remote service provider node providing services to mobile user node through the location service channel nodes and the mobile user node;

an aggregator server node in communication with the network, said aggregator server node coordinating the delivery of services from the remote service provider node to the location service channel.

51. The system according to claim 50 further comprising

a user profile storage node including a memory storage device for storing profiles of mobile device node users, the user profile node providing access to one level of information in the stored profile to the remote service provider nodes, and access to a second level of information in the stored profile to the aggregator node.

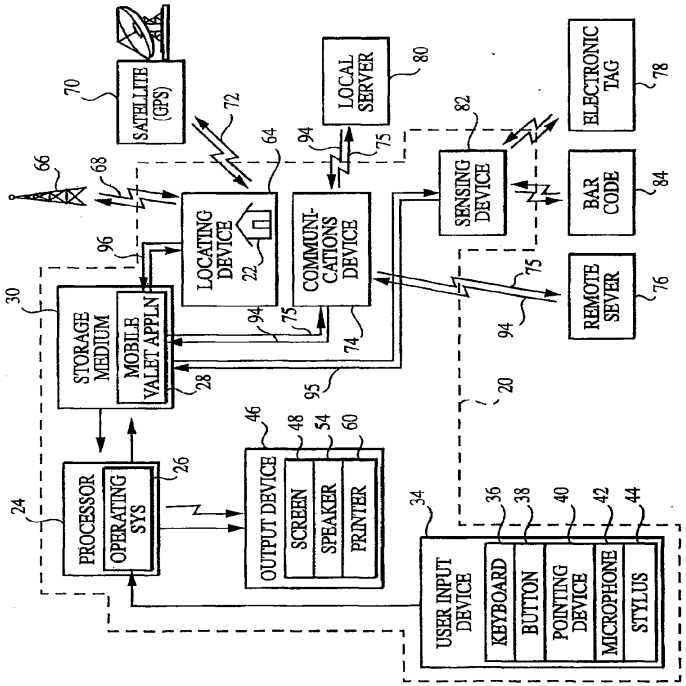


FIG. 1

Motorola Solutions, Inc., Ex1003, p. 347

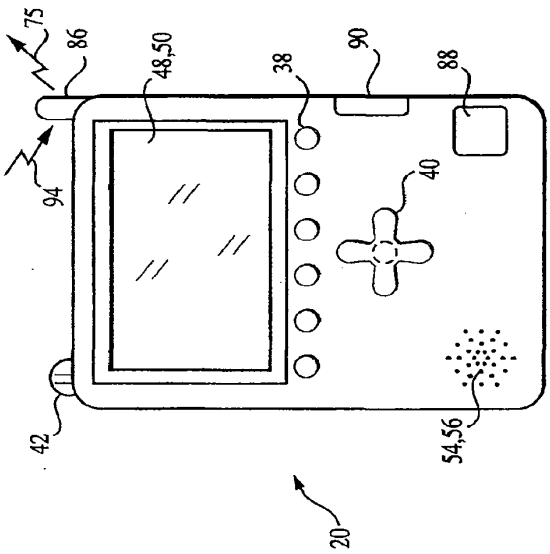


FIG. 2

Motorola Solutions, Inc., Ex1003, p. 348

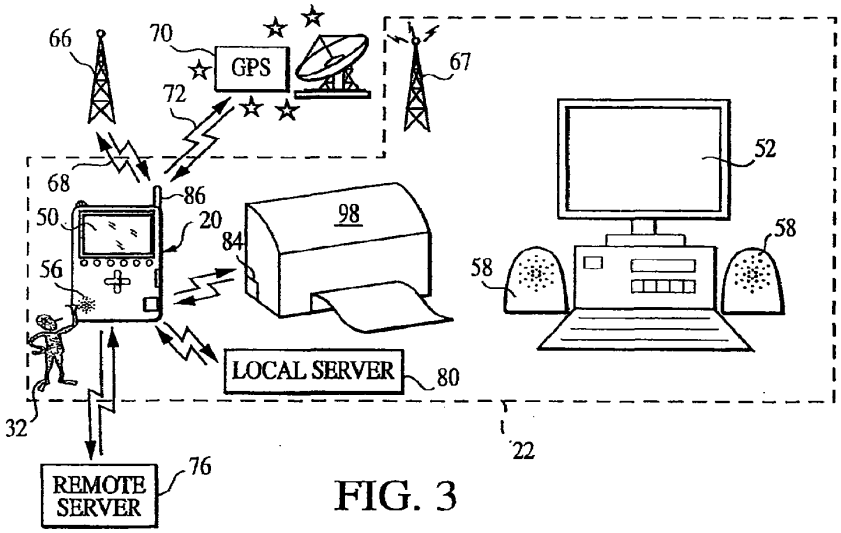


FIG. 3

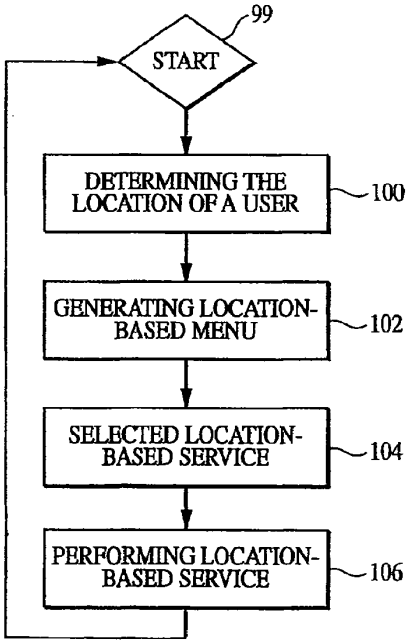


FIG. 4

Motorola Solutions, Inc., Ex1003, p. 349

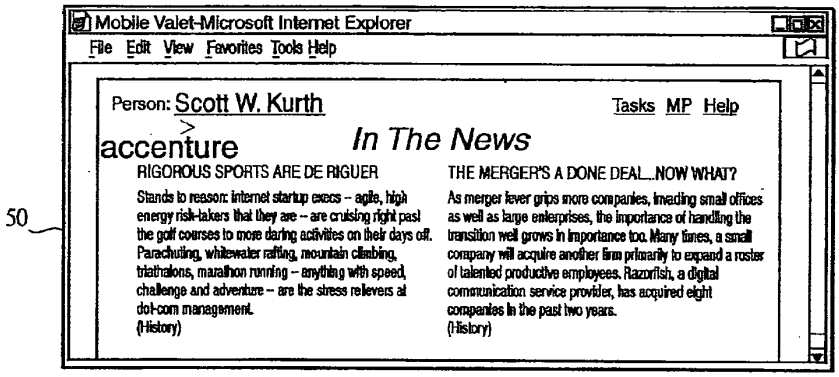


FIG. 5

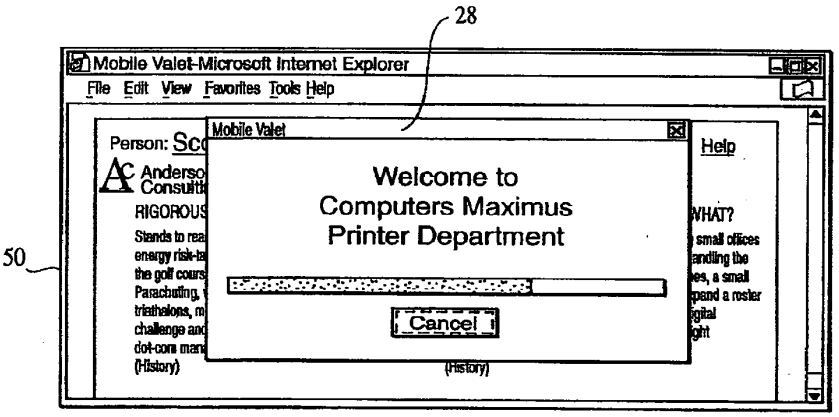


FIG. 6

Motorola Solutions, Inc., Ex1003, p. 350

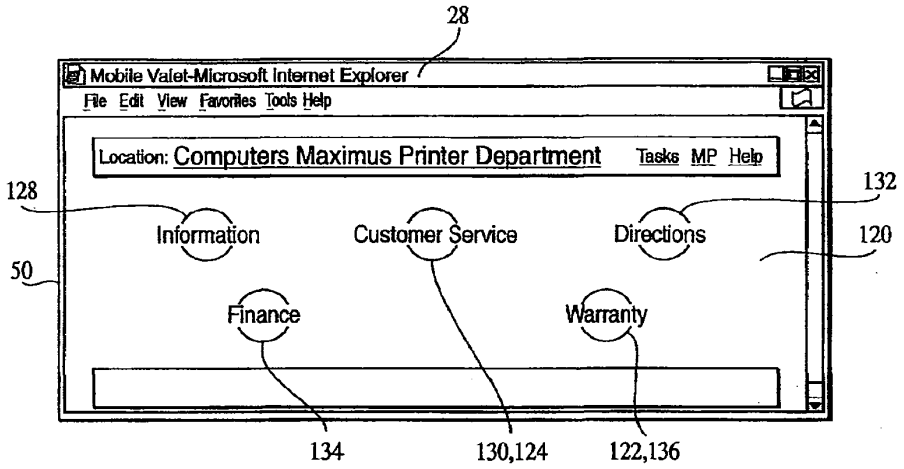


FIG. 7

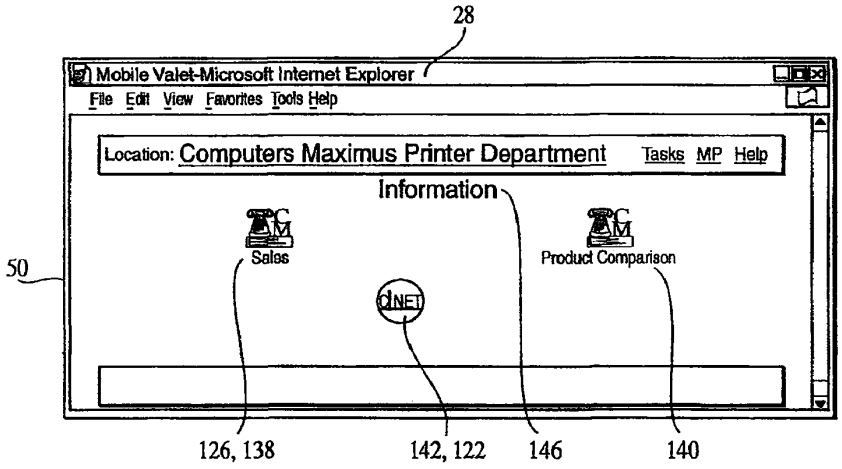


FIG. 8

Motorola Solutions, Inc., Ex1003, p. 351

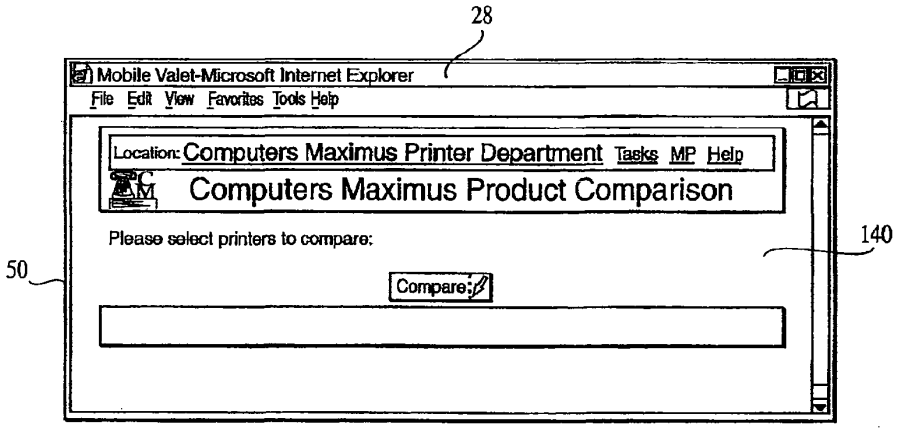


FIG. 9

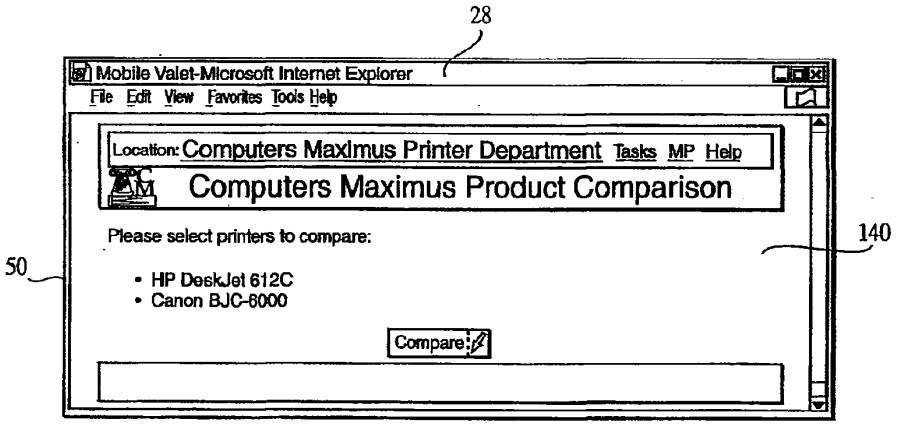


FIG. 10

Motorola Solutions, Inc., Ex1003, p. 352

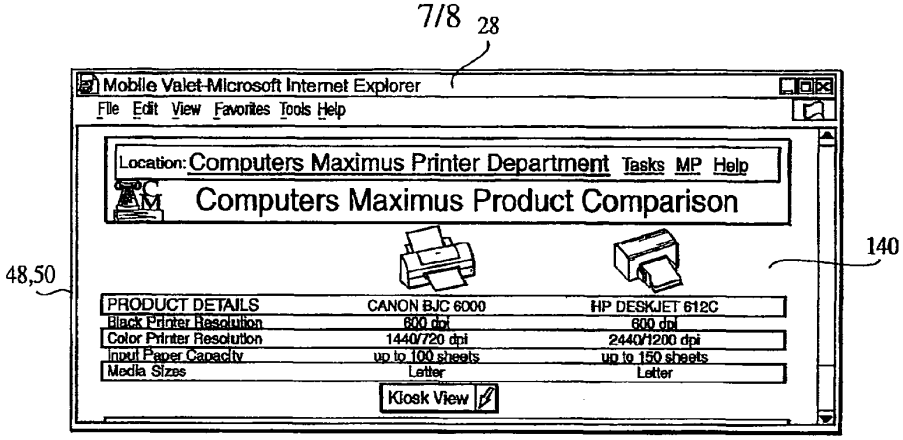


FIG. 11

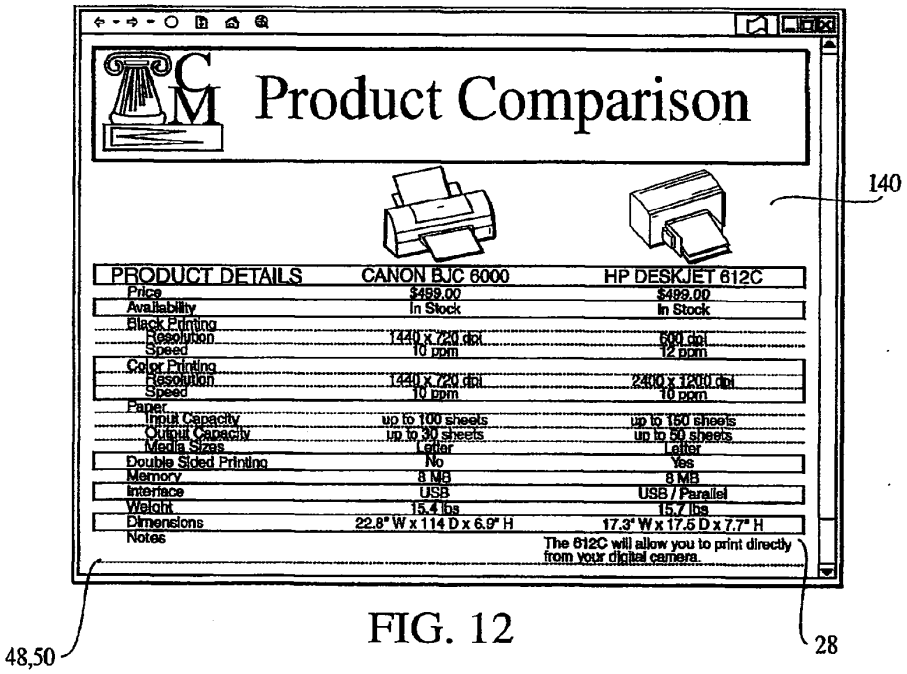


FIG. 12

Motorola Solutions, Inc., Ex1003, p. 353

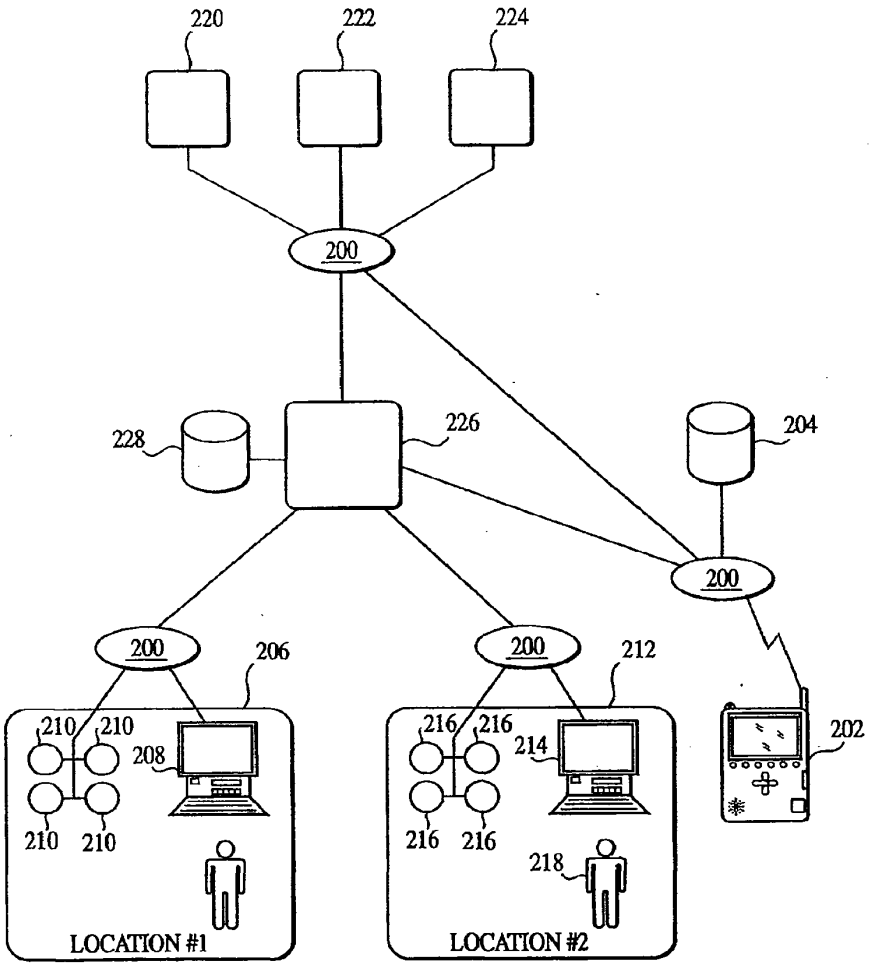


FIG. 13

Motorola Solutions, Inc., Ex1003, p. 354

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 December 2006 (21.12.2006)

PCT

(10) International Publication Number
WO 2006/135533 A2

(51) International Patent Classification:
H04Q 7/20 (2006.01)

(21) International Application Number:
PCT/US2006/019227

(22) International Filing Date: 17 May 2006 (17.05.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/149,041 8 June 2005 (08.06.2005) US

(71) Applicant *(for all designated States except US)*: **CISCO TECHNOLOGY, INC.** [US/US]; 170 West Tasman Drive, San Jose, CA 95134 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHAFFER, Shmuel** [US/US]; 1211 Cowper Street, Palo Alto, CA 94301 (US). **TALUKDER, Shah** [US/US]; 101 Oak Hill Way, Los Gatos, CA 95030 (US). **ZANONE, Dean, M.** [US/US]; 3097 Shadow Canyon, Norco, CA 92860 (US). **KALLEY, Yogesh** [IN/US]; 1066 Reed Avenue, #17, Sunnyvale, CA 94086 (US). **NAGESH, Kittur, V.** [US/US]; 20800 Fourth Street, #11, Saratoga, CA 94070 (US).

(74) Agent: **SHOWALTER, Barton, E.**; BAKER BOTTS L.L.P., 2001 Ross Avenue, Suite 600, Dallas, TX 75201 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

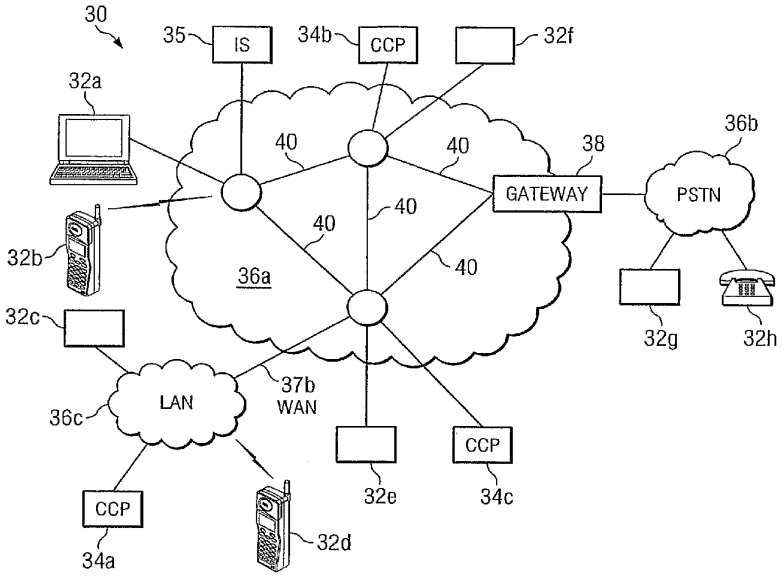
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

[Continued on next page]

(54) **Title:** METHOD AND SYSTEM FOR COMMUNICATING USING POSITION INFORMATION



(57) **Abstract:** A method for communicating using position information includes communicating on a first communication network at a first location using one or more first communication parameters of the first communication network and, upon moving from the first location to a second location, receiving position information identifying the second location. The method includes adjusting the one or more first communication parameters to one or more second communication parameters based on the second location and communicating on a second communication network at the second location using the one or more second communication parameters.

WO 2006/135533 A2

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

METHOD AND SYSTEM FOR COMMUNICATING USING POSITION INFORMATION

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to communication systems and, more particularly, to a method and system for communicating using position information.

BACKGROUND OF THE INVENTION

Many security and safety personnel, such as police, fire fighters and ambulance drivers use radio systems for communication. Radio frequencies are allocated based on the agency to which the safety and security team belongs and on their geographical location. For example, the Palo Alto police department may use one set of radio frequencies while the San Jose police department may utilize a different set of frequencies. This method allows each team to use their radio to broadcast communications to their own team without overwhelming a neighboring team with information which may not be relevant for their operations. In addition, this method enables the reuse of the limited frequency bands for communication by other teams.

Statewide agencies like the California Highway Patrol (CHP) or nationwide agencies like the Federal Bureau of Investigation (FBI) may need to communicate with local safety and security agencies as part of their normal operations. For example, if the CHP needs to chase a car on highway a certain highway, they may need to coordinate the event with the local agencies along the chase path. Some systems rely on a centrally located dispatch to coordinate communication with local agencies. Some systems rely on a handbook of frequencies for

different agencies at a variety of locations. In addition, some safety and security personnel utilize frequency scanners to locate the set of frequencies utilized in specific geographical locations. Many communications over such frequencies are increasingly becoming encrypted.

SUMMARY OF THE INVENTION

The present invention provides a method and system for communicating using position information that substantially eliminates or reduces at least some of the disadvantages and problems associated with previous methods and systems.

In accordance with a particular embodiment, a method for communicating using position information includes communicating on a first communication network at a first location using one or more first communication parameters of the first communication network and, upon moving from the first location to a second location, receiving position information identifying the second location. The method includes adjusting the one or more first communication parameters to one or more second communication parameters based on the second location and communicating on a second communication network at the second location using the one or more second communication parameters.

The first and second communication parameters may comprise a frequency, a modulation method and/or an encryption key. The communication networks may comprise safety and security agency networks of the first and second locations. Adjusting the one or more first communication parameters to one or more second communication parameters based on the second location may

comprise automatically adjusting the one or more first communication parameters to one or more second communication parameters based on the move to the second location, adjusting the one or more first communication parameters to one or more second communication parameters in response to a user command or adjusting the one or more first communication parameters to one or more second communication parameters based on predefined user instructions.

In accordance with another embodiment, a system for communicating using position information includes a processor operable to communicate on a first communication network at a first location using one or more first communication parameters of the first communication network. The system includes a receiver coupled to the processor and operable to, upon moving from the first location to a second location, receive position information identifying the second location. The processor is also operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location and communicate on a second communication network at the second location using the one or more second communication parameters.

Technical advantages of particular embodiments include providing a mobile endpoint user the ability to communicate, while changing locations, with different communication networks that utilize different communication parameters, such as different radio frequencies, modulation methods and/or encryption keys. As a user moves locations, GPS information may be used to recognize a new location. A user's endpoint may then, either automatically, through specific user command or

predefined instructions, alter its communication parameters so that the user may communicate on one or more local or other networks that correspond to the user's location. Accordingly, effort and time associated with determining appropriate communication parameters when moving to a new location are reduced.

Other technical advantages will be readily apparent to one skilled in the art from the following figures, descriptions and claims. Moreover, while specific advantages have been enumerated above, various embodiments may include all, some or none of the enumerated advantages.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and its advantages, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 illustrates a communication system including a plurality of endpoints operable to communicate among each other, in accordance with a particular embodiment;

FIGURE 2 illustrates a system for communicating using position information, in accordance with a particular embodiment;

FIGURE 3 illustrates a communication system having an interoperability system, in accordance with a particular embodiment;

FIGURE 4 illustrates an example mobile endpoint, in accordance with a particular embodiment; and

FIGURE 5 illustrates a method for communicating using position information, in accordance with a particular embodiment.

DETAILED DESCRIPTION OF THE INVENTION

FIGURE 1 illustrates a communication system 30 including a plurality of endpoints 32a-32h having the ability to establish communication sessions between each other and/or communication control posts (CCPs) 34a-34c and interoperability system (IS) 35 using one or more of communication networks 36a-36c. In particular embodiments, at least some of endpoints 32 comprise mobile devices capable of communicating with other endpoints and devices through any of a variety of communication parameters, such as radio frequencies. modulation methods and encryption keys. As discussed in further detail below, CCPs 34 aid in providing communication parameters to mobile endpoints as system configurations require, and IS 35 facilitates interoperability between endpoints and devices of various communication networks.

Particular embodiments provide a mobile endpoint user the ability to communicate, while changing locations, with different communication networks that utilize different communication parameters, such as different radio frequencies, modulation methods and/or encryption keys. As a user moves locations, GPS information may be used to recognize a new location. A user's endpoint may then, either automatically, through specific user command or predefined instructions, alter its communication parameters so that the user may communicate on one or more local or other networks that correspond to the user's location.

In the illustrated embodiment, communication network 36a enables communication between a plurality of endpoints 32a-32g, CCPs 34a-34c and IS 35 distributed across multiple cities and geographic regions.

Communication network 36b may comprise a public switched telephone network (PSTN) that couples endpoints 32g and 32h with communication network 36a through gateway 38. Communication network 36c is a local area network (LAN), which couples endpoints 32c and 32d and CCP 34a with communication network 36a. Accordingly, users of endpoints 32a-32h, CCPs 34a-34c and IS 35 can establish communication sessions between and among each network component coupled for communication with one or more of networks 36a-36c. Communication links 37a and 37b couple communication networks 36a and 36b, and communication networks 36a and 36c, respectively. In the illustrated embodiment, communication link 37b is a wide area network (WAN), which couples communication networks 36a and 36c.

Communication network 36a includes a plurality of segments 40 and nodes 41 that couple endpoints 32a, 32b, 32e and 32f with CCP 34b and IS 35, gateway 38 and communication networks 36b-36c. Therefore, a user of endpoint 32a is provided with access to endpoints 32b-32h, and CCPs 34a-34c. Nodes 41 may include any combination of network components, gatekeepers, call managers, conference bridges, routers, hubs, switches, gateways, base stations, endpoints or other hardware, software or embedded logic implementing any number of communication protocols that allow for the exchange of data in communication system 30.

Although the illustrated embodiment includes three communication networks 36a-36c, the term "communication network" should be interpreted as generally defining any network capable of transmitting audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Any one of networks 36a-36c may be implemented as a local area network (LAN),

wide area network (WAN), cellular network, global distributed network such as the Internet, Intranet, Extranet, or any other form of wireless or wireline communication network. Communication network 36a may include any number and combination of segments 40, nodes 41, endpoints 32, CCPs 34 and/or ISs 35.

Communications over communication networks 36a-36c may use any suitable communication protocol. In a particular embodiment, communication network 36a employs voice communication protocols that allow for the addressing or identification of endpoints, nodes, and/or other components coupled to communication network 36a. For example, using Internet protocol (IP), each of the components coupled together by communication network 36a in communication system 30 may be identified in information directed using IP addresses. In this manner, network 36a may support any form and/or combination of point-to-point, multicast, unicast, or other techniques for exchanging media packets among components in communication system 30. Any network components capable of exchanging audio, video, or other data are included within the scope of the present invention.

Network 36a may be directly coupled to other IP networks including, but not limited to, another LAN or the Internet. Since IP networks share a common method of transmitting data, telecommunication signals may be transmitted between telephony devices located on different, but interconnected, IP networks. In addition to being coupled to other IP networks, communication network 36a may also be coupled to non-IP telecommunication networks, for example through the use of interfaces or components. In the illustrated embodiment, communication network 36a is coupled with

PSTN 36b through gateway 38. PSTN 36b includes switching stations, central offices, mobile telephone switching offices, pager switching offices, remote terminals, and other related telecommunications equipment that are located throughout the world. IP networks transmit data (including voice and video data) by placing the data in packets and sending each packet individually to the selected destination, along one or more communication paths. Unlike a circuit-switched network (like PSTN 36b), a dedicated circuit is not required for the duration of a call or fax transmission over IP networks.

Technology that allows telecommunications to be transmitted over an IP network may comprise Voice over IP (VoIP), or simply Voice over Packet (VoP). In the illustrated embodiment, one or more of endpoints 32d, CCPs 34 and gateway 38 may be IP telephony devices capable of participating in IM, video, and other multimedia communication sessions. IP telephony devices have the ability of encapsulating a user's voice (or other input) into IP packets so that the voice can be transmitted over network 36a. IP telephony devices may include telephones, fax machines, computers running telephony software, nodes, gateways, wired or wireless devices, hand held PDA, or any other device capable of performing telephony functions over an IP network.

In particular embodiments, communication system 30 may receive and transmit data in a session initiation protocol (SIP) environment. SIP is an application-layer control protocol that includes primitives for establishing, modifying and terminating communication sessions. SIP works independently of underlying transport protocols and without dependency on the type of session that is being established. SIP also

transparently supports name mapping and redirection services, which support personal mobility.

It will be recognized by those of ordinary skill in the art that endpoints 32a-32h, CCPs 34a-34s and/or gateway 38 may be any combination of hardware, software, and/or encoded logic that provides communication services to a user. For example, endpoints 32a-32h may include a telephone, a personal computer (PC), a video monitor, a camera, an IP phone, a cell phone, a land mobile radio (LMR), a personal digital assistant (PDA), a command center or any other communication hardware, software and/or encoded logic that supports the communication of audio, video or other data, using packets of media (or frames) or otherwise, using communication network 36a. Endpoints 32a-32h may also include unattended or automated systems, gateways, other intermediate components or other devices that can establish media sessions. Although FIGURE 1 illustrates a particular number and configuration of endpoints, CCPs, an IS, segments, nodes, and gateways, communication system 30 contemplates any number or arrangement of such components for communicating media.

FIGURE 2 illustrates a communication system 50 for communicating using position information, in accordance with a particular embodiment. Communication system 50 includes a plurality of geographic regions 52-55, communication networks 60-64, endpoints 70 and 74 and CCP 80.

In particular embodiments, geographic regions 52-55 may correspond to buildings, campuses, municipalities, counties, states, countries or any other particular geographical area. As illustrated, geographic area 52 includes communication networks 60 and 61 that

communicate information in area 52; geographic area 53 includes communication network 62 that communicates information in area 53; geographic area 54 includes communication network 63 that communicates information in area 54; and geographic area 55 includes communication network 64 that communicates information in area 55. Communication networks 60-64 each may communicate information (e.g., signals, data or messages) over assigned radio frequencies, modulation methods and/or various encryption keys to support communication among network communication devices. In particular embodiments, each communication network 60-64 may support communication among communication endpoints of one or more groups, such as safety and security agencies and other public or private organizations. For example, various groups may have their own communication networks that utilize particular communication parameters. Communication endpoints and devices of these networks may comprise any suitable communication components, such as land mobile radios. Communication networks 60-64 may comprise any number and combination of segments, nodes and endpoints to enable communication among network devices and components and may be similar to other communication networks described herein.

In some cases, some of communication networks 60-64 may support communication on the same or overlapping frequency bands, while in some cases some of communication networks 60-64 may support communication on different frequency bands. For example, geographic region 52 may comprise a particular municipality, and communication networks 60 and 61 may support communications for a police department and a fire department, respectively, of the municipality. In some

cases, the police department network and the fire department network may communicate on different frequencies to ensure that devices on one such network do not receive irrelevant information from devices on the other network. In addition, communication networks 60 and 61 may use distinct encryption protocols or methods (e.g., distinct encryption keys) to provide secure communications within the respective networks.

As another example, geographic areas 52 and 54 may comprise separate municipalities proximate to each other, and communication networks 60 and 63 may support communications for respective police departments of the municipalities on different frequencies and using different modulation methods and encryption keys. In this example, geographic area 53 may comprise a particular county that overlaps with municipalities 52 and 54. Geographic area 55 may comprise a particular state or country that includes geographic areas 52-54 and communication network 64. For example, communication network 64 may support communications for a state police agency, such as a state highway patrol, or a national agency, such as the FBI, on different frequencies than those used for communication networks 60-63.

As indicated above, geographic areas may be defined using any suitable criteria. As an additional example, geographic areas 52 and 54 may comprise separate companies' facilities that each use respective communication networks (e.g., communication networks 60 and 63, respectively) to provide communications among their endpoints using separate frequencies, modulation methods or encryption keys.

In accordance with particular embodiments, frequencies, modulation methods and/or encryption keys

utilized by the various communication networks 60-64 may be embedded in memory of mobile endpoints. For example, as mobile endpoint 70 (e.g., a LMR in a safety vehicle) moves between geographic areas, the endpoint may use GPS information to pin-point its location and automatically adjust its current communication radio frequency, modulation method and/or encryption key settings to allow the user of the endpoint to communicate with local safety and security forces in the area in which the endpoint is currently located. For example, mobile endpoint 70 may be currently located in geographic area 52 and may be communicating on communication network 60 (e.g., with other mobile endpoints, control centers or other communication devices) on a radio frequency X using encryption key J used by communication network 60. Safety and security personnel associated with a vehicle in which mobile endpoint 70 is used (e.g., a police officer) may need to drive to geographic area 54 and communicate on communication network 63 with users of that communication network (e.g., a police department network of a municipality 54). However, communication network 63 may support communications using a different frequency and encryption key, for example radio frequency Z and encryption key L. This information regarding particular radio frequencies and encryption protocols used by various communication networks may be stored in a memory of mobile endpoint 70. As mobile endpoint 70 enters geographic area 54, it recognizes is location through, for example, GPS technology, and adjusts its communication settings (e.g., radio frequency and encryption key) to allow for communication with other devices of communication network 63.

In some cases the endpoint may be set to automatically switch communication settings upon such a move once the endpoint enters an area of a different or particular communication network. In some cases such a switch may occur through a user interface, such as a user pressing a button to enable the switch. For example, specific buttons may be used to switch communication settings. In some embodiments, each network for which communication settings are stored may have its own switch command or button (e.g., "City A Police," "City A Fire," "City B Police," etc.) that may be operable when in the network's geographic area. In some cases, buttons used to switch may be generically mapped to a local area in which the endpoint is present (e.g., "local fire," "local police," "state police," etc.). The present invention contemplates great flexibility in using various interfaces to switch communication settings of an endpoint.

As another example, a user of mobile endpoint 70 may be communicating on communication network 64 of geographic area 55 using that communication network's respective frequency, modulation method and encryption key. As mobile endpoint 70 moves into local geographic area 54 (located within geographic area 55), the user may still desire to communicate on communication network 64. However, through GPS information, mobile endpoint 70 will still recognize the move into geographic area 54. If the user of mobile endpoint 70 desires to communicate on locally-specific communication network 63, the user may press a button, such as a local network button. Mobile endpoint 70 will recognize its location and switch its communication settings (e.g., frequency, modulation method and/or encryption key) to those of the

communication network 63. The switching of communication settings using positioning information (e.g., GPS technology) to allow communication on the new settings may be implemented in any suitable manner, such as pressing a button, voice activation or predefined rules or instructions. For example, in some cases a mobile endpoint user may set the endpoint to switch endpoint communication settings upon entering certain networks but not to switch communication settings upon entering other networks.

In another example, an officer, such as a state highway patrol officer, may be provided with a PC with a touch screen. The PC comprises a mobile endpoint. Icons on the touch screen may provide the officer the ability to join communication sessions with local safety and security forces (e.g., firefighters, police, etc.) as the officer's vehicle moves between communication domains. The officer may be provided with a plurality of options for communication (e.g., various communication networks and/or groups of endpoints) based on his location. Upon receiving instructions from the officer, communication parameters used by the endpoint may be automatically adjusted based on the officer's current location.

In some embodiments, frequencies, modulation methods and encryption keys utilized by various communication networks (e.g., communication networks of various groups or agencies) may be kept in a centralized communication and control post. For example, CCP 80 may include mappings of various communication settings and communication networks via location and may be located at any suitable location. As a mobile endpoint (e.g., mobile endpoint 74 in a safety vehicle) moves between geographic areas (e.g., from geographic area 54 to

geographic area 52), the endpoint sends its GPS information to CCP 80. CCP 80 may authenticate the mobile station and/or its user using any suitable information transmitted with or separate from the GPS information. Upon successful authentication, CCP 80 determines that the vehicle has moved to a new communication region (e.g., geographical area 52) and instructs endpoint 74 to adjust its frequencies, modulation methods and encryption keys to match parameters of one or more communication networks of the geographical area (e.g., parameters of communication network 61). In particular embodiments, communication between CCP 80 and mobile endpoint 74 may be performed automatically without human intervention resulting in automatic adjustment of the frequencies, modulation methods and encryption keys. This allows a user of the endpoint, such as a mobile officer, to automatically connect with network devices of a communication network (e.g., local safety and security forces) once the user enters the network's area. In some cases one or more interface actions, such as the pressing of a key stroke, and/or predefined instructions may be used to adjust endpoint communication settings transmitted by CCP 80 based on location information to allow communication between mobile endpoint 74 and devices of a communication network as the endpoint moves into the network's area.

In some embodiments, a user may be given the option of contacting local agency networks. In some embodiments, the endpoint may store in memory the communication parameters of the previous communication region. The user may be given the option to connect with either the local agencies or with the agencies from the previous communication region. In yet another

embodiment, for the sake of continuity the user may mark a specific frequency and or multicast address with the associated encryption keys. This feature may be used to facilitate quick communication with specific people from a given agency who were involved in the early phase of the specific event. In some embodiments, the system notifies the user as he moves between communication regions. The notification of a move between communication regions may include automatically converting position information, such as GPS information, to location information of a particular region (e.g., county or city) to which the user has moved such that, in particular embodiments, the name of the new region and/or networks may be announced to the user (e.g., "You have moved from City A to City B").

FIGURE 3 illustrates a communication system 100, in accordance with a particular embodiment. Communication system 100 includes communication networks 110-114, interoperability system (IS) 120 and endpoints 122. In the illustrated embodiment, communication network 110 comprises a radio or wireless network, communication network 111 comprises a LAN, communication network 112 comprises a PSTN, communication network 113 comprises a radio network and communication network 114 comprises an IP network. It should be understood, however, that communication system 100 may comprise any number of IP or non-IP communication networks of any wireless or wireline form capable of communicating audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Communication networks 110-114 may comprise any number and combination of segments, nodes and endpoints to enable communication among network devices and components. A radio network

may support communication among portable mobile station endpoints, such as land mobile radios (LMRs), using any suitable communication methods or features, such as cellular and push-to-talk (PTT). Communication networks 110-113 may comprise networks of particular groups or agencies (e.g., a municipality's police department network), whether operational with respect to a particular area or otherwise. In the illustrated embodiment, endpoints 122 comprise a PC (endpoint 122a), a PDA (endpoint 122b) and an IP phone 122c). However, as indicated above, IS 120 may be configured to communicate with any type of communication endpoint. Segments 130, which may comprise any suitable wireless or wireline communication links, including one or more communication networks (e.g., WANs) as appropriate, coupled various networks with each other and with endpoints 122 and IS 120. In particular embodiments, segments may include gateways for facilitating communication between various networks, such as an LMR gateway between radio network 110 and IP network 114. In particular embodiments, communication system 100 may include similar components and networks as described with respect to communication systems 10 and 50 of FIGURES 1 and 2, respectively.

IS 120 enables, facilitates and/or provides for interoperable communication among communication endpoints and devices, such as LMRs, cellular phones, IP phones, PCs, PDAs, PSTN phones, video monitors, cameras, sensors and CCPs of one or more communication networks (e.g., communication networks 110-113) using Internet Protocol. In particular embodiments, IS 120 may control gateways (for example, of segments 130) in order to map radio frequencies of particular mobile radio endpoints to IP addresses for communication to other types of radio

endpoints or IP devices. In some embodiments, IS 120 may host audio conferences that bridge communications received from endpoints. As indicated, communication system 100 (including IS 120) may include any suitable number or type of gateways (e.g., LMR and PSTN gateways), servers (e.g., multipoint conference servers), switches, routers, firewalls, access points, processors, memory or other hardware, software or encoded logic to provide functionality described herein. IS 120 is coupled to communication networks 110-113 and endpoints 122 through IP network 114, which may comprise any suitable IP network.

As indicated above, IS 120 uses IP to enable communication among endpoints of various networks. For example, IS 120 may communicate with endpoints using multicast IP addresses assigned to an endpoint of a communication network, a group of endpoints of a communication network or one or more endpoints of multiple communication networks or alternatively using a peer to peer dialed connection. For example, a group of endpoints may be combined into a virtual talk group for communication using a particular IP address. The use of multicast IP addresses allows communication devices and endpoints of various communication networks to communicate with each other through IS 120 to provide network interoperability.

The multicast IP addresses can be used to enable IS 120 to provide the functionality described above with respect to communication system 50 of FIGURE 2. In accordance with some embodiments, multicast IP addresses, radio frequencies, modulation methods and encryption keys utilized by various networks (e.g., agencies) may be embedded in memory of the mobile endpoint. The multicast

addresses in the IS 120 are mapped into a set of communication radio frequencies that are used by the networks (e.g., local safety and security agencies). As the mobile endpoint (e.g., in a safety vehicle) moves between communication regions, the endpoint uses GPS information to pinpoint its location and automatically adjusts communication parameters (e.g., IP addresses, radio frequencies, modulation methods and encryption keys) to achieve interoperability. This allows the mobile endpoint user to connect with local safety and security forces manually with, for example, a single key stroke or automatically based on pre-determined collaboration polices maintained in the mobile endpoint.

In some embodiments, IS 120 may act in a similar manners as CCPs of FIGURES 1, 2 and 4. For example, multicast addresses, radio frequencies, modulation methods and encryption keys utilized by various agencies may be kept with IS 120 as a centralized communication and control post. The multicast addresses may be mapped into a set of communication radio frequencies, modulation methods and/or encryption keys that are used by local safety and security agencies. As a mobile endpoint moves between communication regions, the endpoint may periodically send its GPS information to IS 120. Upon successful authentication of the endpoint, IS 120 may determine that the endpoint has moved to a new communication region and may instruct the endpoint to adjust its multicast addresses, radio frequencies, modulation methods and/or encryption keys to match the new communication region's parameters.

Therefore, as discussed above, the present invention contemplates embodiments that can apply to both IP and non-IP mobile endpoints and communication networks.

Communication between a CCP and mobile endpoints may occur without any human intervention resulting in automatic adjustment of the frequencies, modulation methods, encryption keys and IP addresses. This allows a mobile officer to connect with local safety and security forces with a single key stroke.

FIGURE 4 illustrates a mobile endpoint 200, in accordance with a particular embodiment. Mobile endpoint 200 may be similar to and provide similar functionality to other endpoints described herein, such as endpoints 70 and 74 of FIGURE 2.

In the illustrated embodiment, endpoint 200 includes a transmitter/receiver 202, a user interface 204, a processor 206 and a memory module 208. Transmitter/receiver 202 obtains signals from GPS satellites or ground stations of a communication network in order to determine a position of endpoint 200 and receives and transmits voice and other data between endpoint 200 and other network devices and components. User interface 204 provides a mechanism through which a user of mobile endpoint 200 may operate the endpoint and communicate with other network devices. For example, through interface 204 a user may input instructions regarding adjustment of the endpoint's communication settings (e.g., radio frequency, modulation method and encryption key) upon entering a new communication network. Interface 204 may comprise a keypad, display, touch screen, audio input or any other suitable interface. Instructions may be submitted through speech recognition, collection of keystrokes, soft key or otherwise.

Processor 206 may be a microprocessor, controller, or any other suitable computing device, resource, or

combination of hardware, software and/or encoded logic operable to perform endpoint functionality. Processor 206, either alone or in conjunction with other endpoint components, provides endpoint functionality discussed herein. Memory module 208 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component.

In the illustrated embodiment, memory module 208 includes network communication parameter listings 210 which contains mappings of communication settings, such as radio frequencies and encryption keys, of communication networks by location. As indicated above, locations of communication networks may be defined in any suitable manner, such as by latitude/longitude coordinates, buildings, campuses, cities, counties, states, countries or any other particular geographical area. The illustrated embodiment includes city A, city B, state C and country D. The locations may be stored in memory module 208 with GPS coordinates so that upon receiving GPS coordinates via transmitter/receiver 202, endpoint 200 will know within which location(s) the endpoint is currently positioned. Also stored in parameter listings 210 are various communication networks corresponding to the locations, such as police and fire. Any suitable communication networks may be identified stored as corresponding to a location. Stored with the communication networks are frequencies and encryption keys utilized by those networks. The stored frequencies may correspond to one or more frequency ranges utilized by a network, and the stored encryption key may correspond to any suitable encryption method utilized by

the network. For example, the police network of city A communicates on frequency X and uses encryption key J.

Communication parameter listings 210 are accessed in various embodiments to provide communication system functionality as described above. For example, as an endpoint moves into a new location, it may recognize the new location through GPS technology and automatically adjust its communication settings (e.g., radio frequency and/or encryption key) to allow its user to communicate on a communication network of the location.

It will be recognized by those of ordinary skill in the art that mobile endpoints, CCPs and interoperability systems disclosed herein are merely example configurations in accordance with particular embodiments. These systems may include any number of interfaces, processors, memory modules, and other components to accomplish the functionality and features described herein. In addition, these components and other desired components for performing the above described functionality may be centrally located (local) with respect to one another, or distributed throughout communication systems 30, 50 and 100. In addition, one or more components of these systems and devices may work together in performing various functionalities described herein.

FIGURE 5 is a flowchart illustrating a method for communicating using position information, in accordance with a particular embodiment. At step 300, one or more communication parameters are used to communicate on a first communication network at a first location. The communication parameters may comprise a radio frequency, modulation method and/or an encryption key of the first communication network. As an example, an officer may be

communicating on a police network using a PC in the officer's vehicle. At step 302, the officer moves from the first location to a second location. At step 304, position information, such as GPS information, is received identifying the second location. The second location may comprise, for example, a city or area away from a city or area of the first location.

At step 306, the first communication parameter(s) are adjusted to second communication parameter(s) based on the second location. This may include "replacing" the first communication parameter(s) with the second communication parameter(s) based on the second location. The second communication parameters may be stored at the communicating endpoint and may be based on one or more communication networks of the second location, such as a police network of the second location. Such adjustment may occur automatically as the user moves to the second location, in response to a user interface action, such as one or more key strokes or a voice command, or according to predefined rules or instructions. At step 308, the second communication parameters (e.g., radio frequency, modulation method and/or encryption key of the second communication network) are used to communicate on the second communication network at the second location.

Some of the steps illustrated in FIGURE 5 may be combined, modified or deleted where appropriate, and additional steps may also be added to the flowchart. Additionally, steps may be performed in any suitable order without departing from the scope of the invention.

As indicated above, technical advantages of particular embodiments of the present invention include utilizing GPS information to adjust parameters of a mobile endpoint and automatically tune its parameters to

match local network requirements. Particular embodiments automatically modify the frequencies of the mobile endpoint to match those of local agencies. Systems support multiple radio networks, with roaming, for seamless access. Particular embodiments automatically modify multicast addresses of a mobile communication system which may be mapped to frequencies of local agency networks. Embodiments also modify , modulation methods and encryption keys of a mobile communication system to match those of the local agencies.

In some embodiments, audible indication is provided to the mobile endpoint user regarding changing parameters, informing him that the specific local agency key will connect him to a different district. The system may automatically announce the name of the communication region as the user's mobile endpoint moves between communication regions. Some embodiments provide a means of marking a specific frequency and/or multicast address for future communications. Various embodiments reduce the manual setup of communication parameters allowing security forces to focus on serving the public rather than on manually fine tuning their communication system. In addition, organizational polices for collaboration can be applied to determine and meet the levels of interoperability.

Although the present invention has been described in detail with reference to particular embodiments, it should be understood that various other changes, substitutions, and alterations may be made hereto without departing from the spirit and scope of the present invention. For example, although the present invention has been described with reference to a number of elements included within communication systems 30, 50 and 100 and

endpoint 200, these elements may be combined, rearranged or positioned in order to accommodate particular routing architectures or needs. In addition, any of these elements may be provided as separate external components to communication systems 30, 50 and 100 and endpoint 200 or each other where appropriate. The present invention contemplates great flexibility in the arrangement of these elements as well as their internal components.

Numerous other changes, substitutions, variations, alterations and modifications may be ascertained by those skilled in the art and it is intended that the present invention encompass all such changes, substitutions, variations, alterations and modifications as falling within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A method for communicating using position information, comprising:

communicating on a first communication network at a first location using one or more first communication parameters of the first communication network;

upon moving from the first location to a second location, receiving position information identifying the second location;

adjusting the one or more first communication parameters to one or more second communication parameters based on the second location; and

communicating on a second communication network at the second location using the one or more second communication parameters.

2. The method of Claim 1, wherein:

the one or more first communication parameters of the first communication network comprise a first frequency of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second frequency of the second communication network.

3. The method of Claim 1, wherein:

the one or more first communication parameters of the first communication network comprise a first encryption key of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second encryption key of the second communication network.

4. The method of Claim 1, wherein:

the one or more first communication parameters of the first communication network comprise a first modulation method of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second modulation method of the second communication network.

5. The method of Claim 1, wherein:

the first communication network comprises a safety and security agency network of the first location; and

the second communication network comprises a safety and security agency network of the second location.

6. The method of Claim 1, wherein adjusting the one or more first communication parameters to one or more second communication parameters based on the second location comprises automatically adjusting the one or more first communication parameters to one or more second communication parameters based on the move to the second location.

7. The method of Claim 1, wherein adjusting the one or more first communication parameters to one or more second communication parameters based on the second location comprises adjusting the one or more first communication parameters to one or more second communication parameters based on predefined user instructions.

8. The method of Claim 1, further comprising:

notifying a user of the move from the first location to the second location;

prompting the user with an option to adjust the one or more first communication parameters in response to the move; and

wherein adjusting the one or more first communication parameters to one or more second communication parameters based on the second location comprises adjusting the one or more first communication parameters to one or more second communication parameters in response to a user command.

9. The method of Claim 8, wherein the user command comprises pressing a button specific to the second communication network.

10. The method of Claim 8, wherein the user command comprises pressing a button associated with a local network of the second location.

11. A system for communicating using position information, comprising:

a processor operable to communicate on a first communication network at a first location using one or more first communication parameters of the first communication network;

a receiver coupled to the processor, the receiver operable to, upon moving from the first location to a second location, receive position information identifying the second location;

the processor operable to:

adjust the one or more first communication parameters to one or more second communication parameters based on the second location; and

communicate on a second communication network at the second location using the one or more second communication parameters.

12. The system of Claim 11, wherein:

the one or more first communication parameters of the first communication network comprise a first frequency of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second frequency of the second communication network.

13. The system of Claim 11, wherein:

the one or more first communication parameters of the first communication network comprise a first encryption key of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second encryption key of the second communication network.

14. The system of Claim 11, wherein:

the one or more first communication parameters of the first communication network comprise a first modulation method of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second modulation method of the second communication network.

15. The system of Claim 11, wherein:

the first communication network comprises a safety and security agency network of the first location; and

the second communication network comprises a safety and security agency network of the second location.

16. The system of Claim 11, wherein a processor operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location comprises a processor operable to automatically adjust the one or more first communication parameters to one or more second communication parameters based on the move to the second location.

17. The system of Claim 11, wherein a processor operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location comprises a processor operable to adjust the one or more first communication parameters to one or more second communication parameters based on predefined user instructions.

18. The system of Claim 11, wherein the processor is further operable to:

notify a user of the move from the first location to the second location;

prompt the user with an option to adjust the one or more first communication parameters in response to the move; and

wherein a processor operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location comprises a processor operable to adjust the one or more first communication parameters to one or more second communication parameters in response to a user command.

19. The system of Claim 18, wherein the user command comprises pressing a button specific to the second communication network.

20. The system of Claim 18, wherein the user command comprises pressing a button associated with a local network of the second location.

21. A system for communicating using position information, comprising:

means for communicating on a first communication network at a first location using one or more first communication parameters of the first communication network;

means for, upon moving from the first location to a second location, receiving position information identifying the second location;

means for adjusting the one or more first communication parameters to one or more second communication parameters based on the second location; and

means for communicating on a second communication network at the second location using the one or more second communication parameters.

22. Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:

communicate on a first communication network at a first location using one or more first communication parameters of the first communication network;

upon moving from the first location to a second location, receive position information identifying the second location;

adjust the one or more first communication parameters to one or more second communication parameters based on the second location; and

communicate on a second communication network at the second location using the one or more second communication parameters.

23. The medium of Claim 22, wherein:

the one or more first communication parameters of the first communication network comprise a first frequency of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second frequency of the second communication network.

24. The medium of Claim 22, wherein:

the one or more first communication parameters of the first communication network comprise a first encryption key of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second encryption key of the second communication network.

25. The medium of Claim 22, wherein

the one or more first communication parameters of the first communication network comprise a first modulation method of the first communication network; and

the one or more second communication parameters of the second communication network comprise a second modulation method of the second communication network.

26. The medium of Claim 22, wherein:

the first communication network comprises a safety and security agency network of the first location; and

the second communication network comprises a safety and security agency network of the second location.

27. The medium of Claim 22, wherein code operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location comprises code operable to automatically adjust the one or more first communication parameters to one or more second communication parameters based on the move to the second location.

28. The medium of Claim 22, wherein code operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location comprises code operable to adjust the one or more first communication parameters to one or more second communication parameters based on predefined user instructions.

29. The medium of Claim 22, further comprising code operable to:

notify a user of the move from the first location to the second location;

prompt the user with an option to adjust the one or more first communication parameters in response to the move; and

wherein code operable to adjust the one or more first communication parameters to one or more second communication parameters based on the second location comprises code operable to adjust the one or more first

communication parameters to one or more second communication parameters in response to a user command.

30. The medium of Claim 29, wherein the user command comprises pressing a button specific to the second communication network.

31. The medium of Claim 29, wherein the user command comprises pressing a button associated with a local network of the second location.

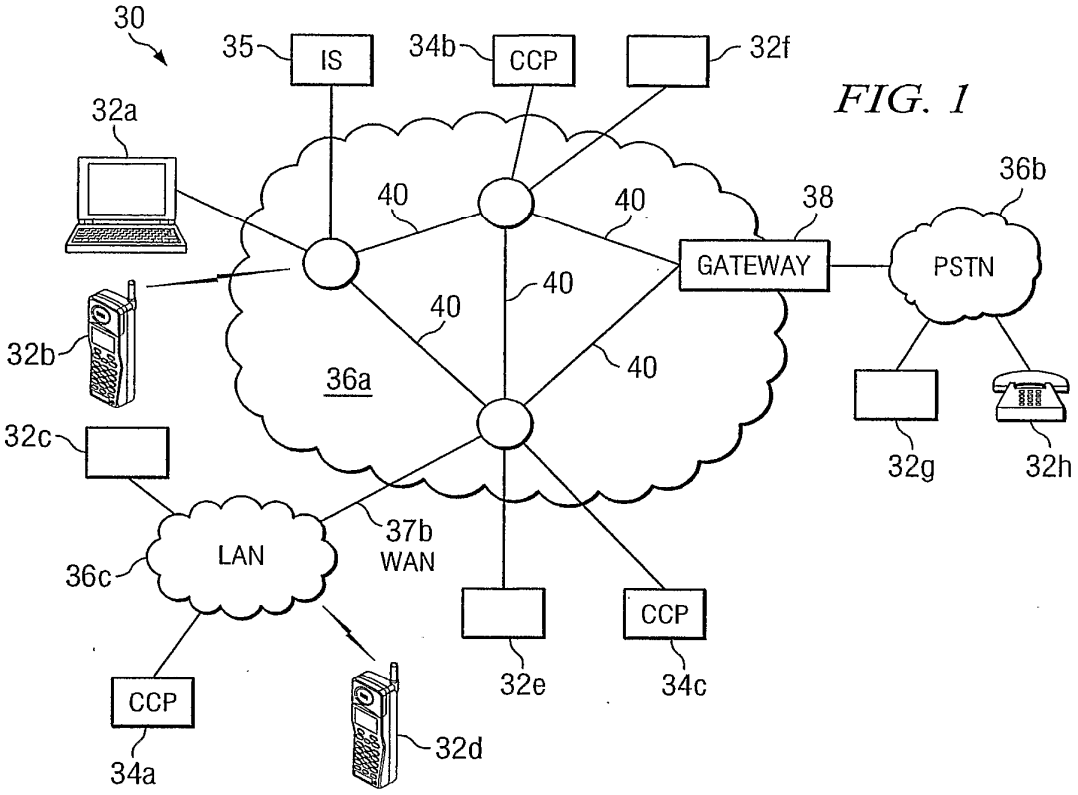

30
35
IS
34b
CCP
32f
32a
40
40
38
36b
GATEWAY
PSTN
40
40
32b
36a
40
32c
32g
32h
LAN
37b
WAN
36c
CCP
CCP
32e
34c
CCP
34a
32d

FIG. 1

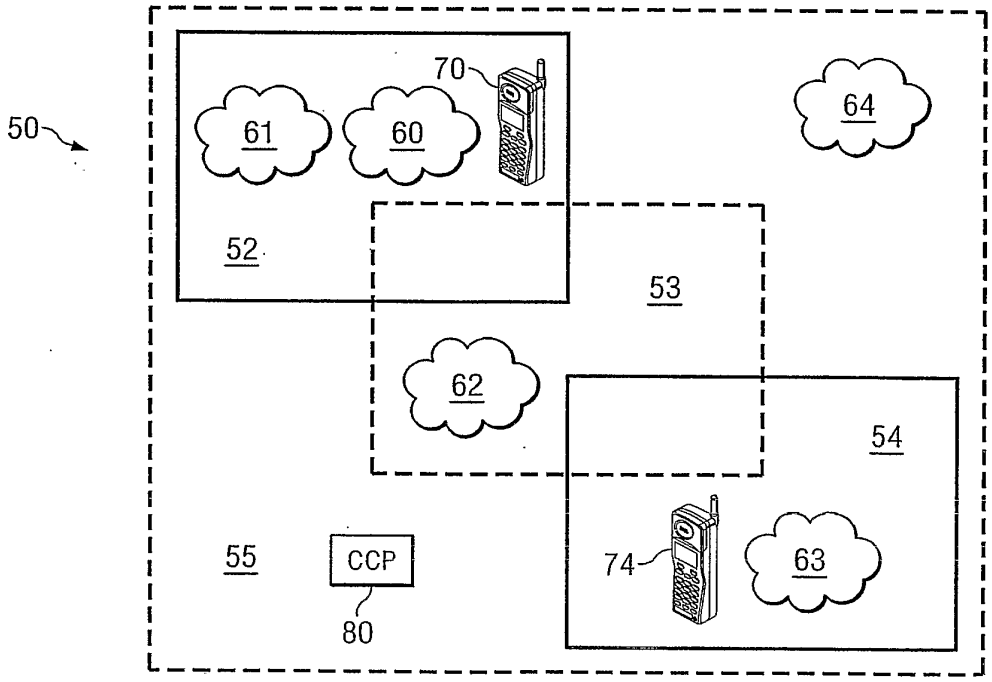

50
70
61
60
64
52
53
62
54
55
CCP
80
74
63

FIG. 2

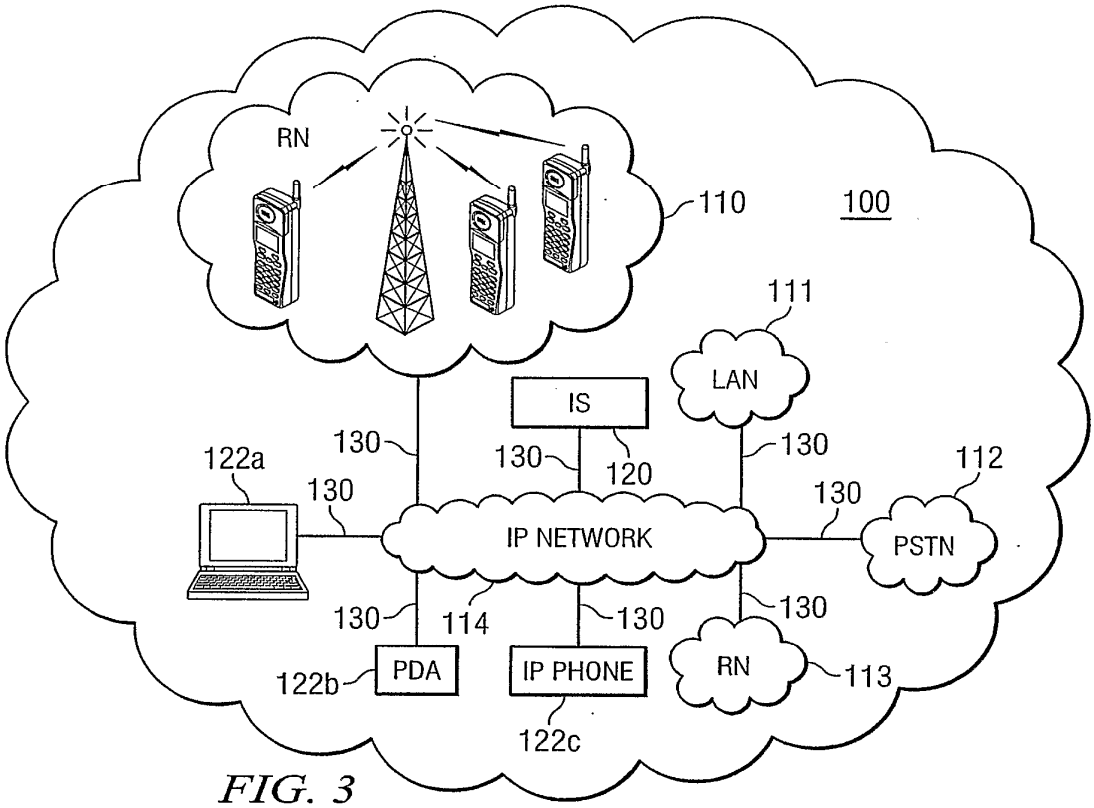

RN
110
100
111
LAN
IS
130
130
120
130
122a
112
130
130
IP NETWORK
PSTN
130
114
130
130
122b
PDA
IP PHONE
RN
113
122c

FIG. 3

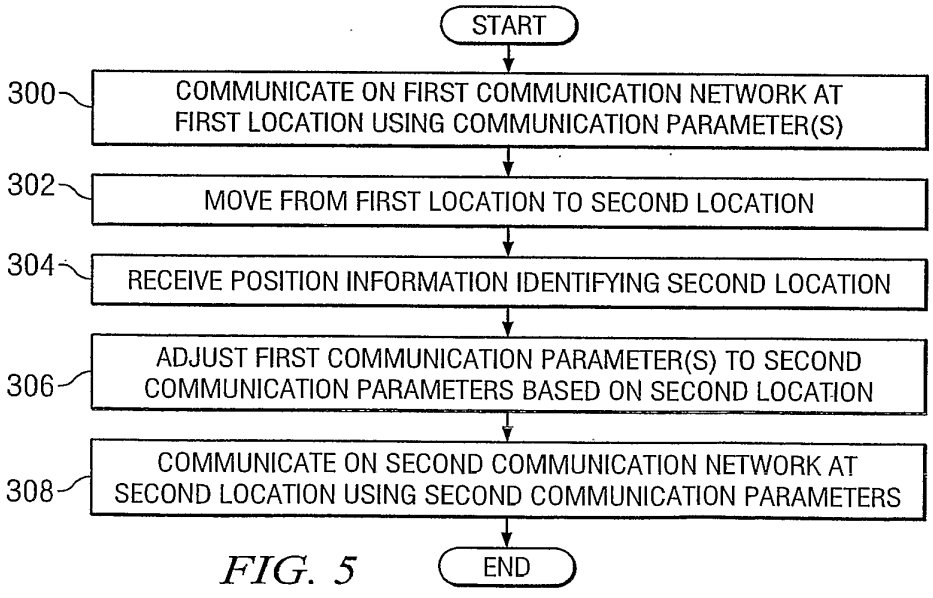
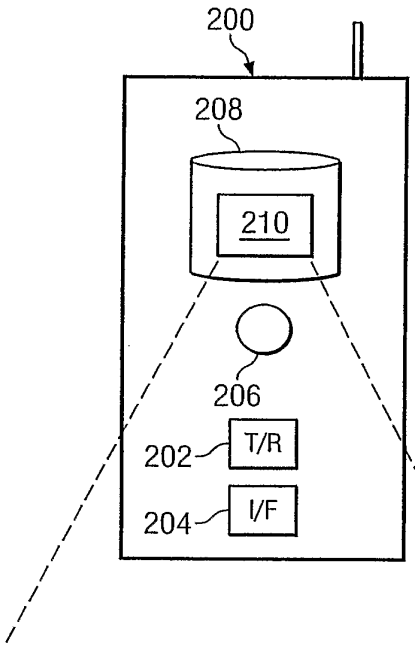

START
300
COMMUNICATE ON FIRST COMMUNICATION NETWORK AT FIRST LOCATION USING COMMUNICATION PARAMETER(S)
302
MOVE FROM FIRST LOCATION TO SECOND LOCATION
304
RECEIVE POSITION INFORMATION IDENTIFYING SECOND LOCATION
306
ADJUST FIRST COMMUNICATION PARAMETER(S) TO SECOND COMMUNICATION PARAMETERS BASED ON SECOND LOCATION
308
COMMUNICATE ON SECOND COMMUNICATION NETWORK AT SECOND LOCATION USING SECOND COMMUNICATION PARAMETERS
END

FIG. 5



LOCATION	NETWORK	FREQUENCY (Hz)	ENCRYPTION KEY
CITY A	POLICE	X	J
CITY A	FIRE	Y	K
CITY B	POLICE	Z	L
STATE C	POLICE	P	M
COUNTRY D	POLICE	Q	N

FIG. 4

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 February 2007 (22.02.2007)

PCT

(10) International Publication Number
WO 2007/021586 A2

(51) International Patent Classification:
H04Q 7/24 (2006.01)

(21) International Application Number:
PCT/US2006/030447

(22) International Filing Date: 3 August 2006 (03.08.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11/201,832	10 August 2005 (10.08.2005)	US
11/202,400	10 August 2005 (10.08.2005)	US
11/202,403	10 August 2005 (10.08.2005)	US

(71) Applicant *(for all designated States except US)*: **CISCO TECHNOLOGY, INC.** [US/US]; 170 West Tasman Drive, San Jose, CA 95134 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHAFFER, Shmuel** [US/US]; 1211 Cowper Street, Palo Alto, CA 94301 (US). **TALUKDER, Shah** [US/US]; 101 Oak Hill Way, Los Gatos, CA 95030 (US). **KALLEY, Yogesh** [IN/US]; 1066 Reed Avenue, #17, Sunnyvale, CA 94086 (US). **NAGESH, Kittur, V.** [US/US]; 20800 Fourth Street, #11, Saratoga, CA 94070 (US). **HALL, Douglas, J.** [US/US]; 7266 Lee Road, Westerville, OH 43081 (US). **METZGER, Larry, R.** [US/US]; 7501 Welcome Drive, Wake Forest, NC 27587 (US).

(74) Agents: **SHOWALTER, Barton, E.** et al.; BAKER BOTTS L.L.P., 2001 ROSS AVENUE, Suite 600, Dallas, TX 75201 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND SYSTEM FOR MANAGING VIRTUAL TALK GROUP MEDIA

(57) Abstract: A method for automatic configuration of virtual talk groups based on location of media source includes monitoring communications from a plurality of mobile endpoints. Each communication comprises a media message and location information identifying a location of its transmitting endpoint . The method includes selecting a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints. The method also includes configuring a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints. The first group of mobile endpoints comprises mobile endpoints of different communication networks.

WO 2007/021586 A2

METHOD AND SYSTEM FOR MANAGING VIRTUAL TALK GROUP MEDIA

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to communication systems and, more particularly, to a method and system for automatic configuration of virtual talk groups based on location of media source.

BACKGROUND OF THE INVENTION

Many public and private groups, such as security and safety personnel (e.g., police, fire fighters and ambulance drivers) use various communication networks of differing technologies and types for communication. Many networks utilize land mobile radios communicating through push-to-talk technologies. However, communications among different endpoints of different networks such as endpoints of different police, fire or other security networks may be difficult. Collaboration between the different agencies and networks tends to be ad hoc and inefficient. When achieved, it often involves laborious manual intervention. Organizations working towards interoperability solutions include Raytheon JPS Communications, IP Blue, Twisted Pair, M/A-COM and Cisco Systems.

SUMMARY OF THE INVENTION

The present invention provides a method and system for automatic configuration of virtual talk groups based on location of media source that substantially eliminates or reduces at least some of the disadvantages and problems associated with previous methods and systems.

In accordance with a particular embodiment, a method for providing interoperable communications with location information includes receiving communications from a plurality of virtual talk groups. Each virtual talk group comprises a plurality of endpoints of different communication networks. The method includes receiving from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication. The first communication comprises a first media message and location information identifying a location of the first mobile endpoint. The method includes presenting to a user the first media message from the first mobile endpoint and the location of the first mobile endpoint.

In accordance with another embodiment, a method for automatic configuration of virtual talk groups based on location of media source includes monitoring communications from a plurality of mobile endpoints. Each communication comprises a media message and location information identifying a location of its transmitting endpoint. The method includes selecting a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints. The method also includes configuring a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints. The first group of mobile endpoints comprises mobile endpoints of different communication networks.

In accordance with an additional embodiment, a method for communicating media based on location of media source includes receiving communications from a plurality of endpoints. Each communication comprises a media

message and location information identifying a location of its transmitting endpoint. The method includes receiving a selection of a geographical area and comparing the location information of each communication with the selected geographical area. The method also includes presenting to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

Technical advantages of particular embodiments include systems and methods for providing interoperable communications among endpoints of various types that utilize differing technologies. Virtual talk groups may be created dynamically to enable communication among a subset of endpoints for particular circumstances, such as particular security events that arise. Particular embodiments present to a user location information of an endpoint communicating through an interoperable communication system so that the user may more easily monitor various endpoints and various virtual talk groups of a subset of endpoints. As a result, the user may be better able to make decisions based on current communications. Embodiments may also provide an identification of a particular virtual talk group of which the communicating endpoint is a member, particularly when a user is receiving communications from endpoints of a plurality of virtual talk groups.

In addition, in some embodiments a user may be able to select a geographical area and receive interoperable communications from all endpoints within the selected geographical area. For example, the user's endpoint may receive communications from a plurality of endpoints from multiple areas and may filter those communications to present to the user only communications from endpoints

transmitting from the selected geographical area. This enables a user to monitor only communications of interest for critical security or other needs. Moreover, particular embodiments provide automated configuration of endpoints into virtual talk groups based on the locations of the endpoints. For example, according to configuration instructions from a user, a virtual talk group may be automatically configured as including endpoints of a particular neighborhood, such as endpoints within a configurable distance from an event or as all endpoints who are in proximity to the user.

Other technical advantages will be readily apparent to one skilled in the art from the following figures, descriptions and claims. Moreover, while specific advantages have been enumerated above, various embodiments may include all, some or none of the enumerated advantages.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and its advantages, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 illustrates a communication system with various communication networks and an interoperability system, in accordance with a particular embodiment;

FIGURE 2 illustrates an example interoperability system, in accordance with a particular embodiment;

FIGURE 3 illustrates an example endpoint, in accordance with a particular embodiment;

FIGURE 4 illustrates an example display used in providing interoperable communications with location information, in accordance with a particular embodiment;

FIGURE 5 illustrates an example display used for communicating media based on location of media source, in accordance with a particular embodiment;

FIGURE 6 illustrates an example display used in providing interoperable communications according to scene-related virtual talk groups, in accordance with a particular embodiment;

FIGURE 7 illustrates a method for providing interoperable communications with location information, in accordance with a particular embodiment;

FIGURE 8 illustrates a method for communicating media based on location of media source, in accordance with a particular embodiment; and

FIGURE 9 illustrates a method for automatic configuration of virtual talk groups based on location of media source, in accordance with a particular embodiment.

DETAILED DESCRIPTION

FIGURE 1 illustrates a communication system 10, in accordance with a particular embodiment. Communication system 10 includes communication networks 24a-24e, interoperability system (IS) 20 and endpoints 22a-22c. IS 20 is able to facilitate interoperable communication sessions between and among various communication devices, such as endpoints of communication networks 24 and endpoints 22. IS 20 uses a systems approach to offer a framework based on IP protocols and services to immediately achieve secure voice, video and other data interoperability among communication endpoints and networks utilizing different technologies.

In particular embodiments when a user of a mobile endpoint communicates audio, video or other information to one or more other endpoints, GPS information

identifying the mobile endpoint's location is included in the transmission such that the mobile endpoint's location can be presented to the one or more other endpoints in connection with the communicated audio, video or other information. In some embodiments, GPS information may be steganographically embedded within a communication stream, such as a voice stream. The communication of location information may be used to notify a user monitoring various endpoints and various virtual talk groups of a subset of endpoints of the location of a particular transmitting endpoint. Thus, the user may be better able to make decisions based on current communications.

In some embodiments, a user may be able to select a geographical area and have presented by the user's endpoint communications from all endpoints within the selected geographical area. The endpoint may receive communications from additional endpoints but may filter out for presentation to its users only those communications from endpoints within the selected area. This enables a user to monitor only communications of interest for critical security or other needs.

Moreover, particular embodiments provide automated configuration of endpoints into virtual talk groups based on the locations of the endpoints. For example, according to configuration instructions from a user, a virtual talk group may be automatically configured as including endpoints of a particular neighborhood, such as endpoints within a configurable distance from an event or as all endpoints who are in proximity to the user.

In the illustrated embodiment, communication networks 24a and 24d comprise radio networks (RNs), communication network 24b comprises a local area network

(LAN), communication network 24c comprises a PSTN and communication network 24e comprises an IP network. It should be understood, however, that communication system 10 may comprise any number of IP or non-IP communication networks of any wireless or wireline form capable of communicating audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Communication networks 24a-24e may include any number and combination of segments, nodes and endpoints to enable communication among network devices and components. Communication networks 24a-24e may be distributed locally or across multiple cities and geographic regions. Nodes may include any combination of network components, gatekeepers, call managers, conference bridges, routers, hubs, switches, gateways, base stations, endpoints or other hardware, software or embedded logic implementing any number of communication protocols that allow for the exchange of data in communication system 10. Segments 30, which may comprise any suitable wireless or wireline communication links, including one or more communication networks (e.g., WANs) as appropriate, couple various networks with each other and with endpoints 22 and IS 20. In particular embodiments, segments may include gateways for facilitating communication between various networks, such as an LMR gateway between radio network 24a and IP network 24e.

In some cases, users of endpoints of one of communication networks 24a-24e may communicate with endpoints of another of communication networks 24a-24e through IS 20. A radio network, such as radio network 24a or 24d, may support communication among portable mobile station endpoints, such as land mobile radios

(LMRs), using any suitable communication methods or features, such as cellular and push-to-talk (PTT). Communication networks 24a-24e may comprise networks of particular groups or agencies (e.g., a municipality's police department network), whether operational with respect to a particular area or otherwise.

IS 20 enables, facilitates and/or provides for interoperable communication among communication endpoints and devices, such as LMRs, cellular phones, IP phones, PCs, PDAs, PSTN phones, video monitors, cameras and sensors of one or more communication networks (e.g., communication networks 24a-24e) using Internet Protocol. Such endpoints may comprise IP or non-IP-enabled endpoints. In particular embodiments, IS 20 may control gateways (for example, of segments 30) in order to map radio frequencies of particular mobile radio endpoints to IP addresses for communication to other types of radio endpoints or IP devices. For example, a particular gateway may be able to receive communications from various types of endpoints (e.g., on various types of communication networks) and may convert such communications for transmission to other types of endpoints. IS 20's control of the gateway may control the various endpoints and/or networks that receive particular communications, depending on system functionality and configuration as further discussed below. As indicated, such control may include the mapping of communications and endpoints to IP addresses for interoperable communication. In some embodiments, IS 20 may host audio conferences that bridge communications received from endpoints. As indicated above, communication system 10 (including IS 20) may include any suitable number or type of gateways (e.g., LMR and PSTN

gateways), servers (e.g., multipoint conference servers), switches, routers, firewalls, access points, processors, memory or other hardware, software or encoded logic to provide functionality described herein. IS 20 is coupled to communication networks 24a-24d and endpoints 22 through IP network 24e, which may comprise any suitable IP network.

As indicated above, IS 20 uses IP to enable communication among endpoints of various networks. The manner in which IS 20 facilitates communications among endpoints may vary according to location and system or operational needs. For example, IS 20 may communicate with endpoints using multicast IP addresses assigned to an endpoint of a communication network, a group of endpoints of a communication network or one or more endpoints of multiple communication networks or alternatively using a peer to peer dialed connection or a nailed dialed connection. A group of endpoints may be combined into a virtual talk group for communication using a particular IP address. As an example, the virtual talk group may be assigned a multicast IP address through which users of various endpoints may communicate on the talk group. The use of multicast IP addresses allows IS 20 to facilitate communications among communication devices and endpoints of various communication networks to provide audio, data, video and control network interoperability. As an additional example, in some cases multicast streams (e.g., utilizing multicast IP addresses) may be used. In some cases nailed dialed connections, such as those using SIP protocol, may be used for communication among endpoints and with IS 20. Various embodiments may combine communication methods to facilitate communication among

endpoints. For example, in some cases certain endpoints of a virtual talk group may participate in the talk group through a multicast IP address while other endpoints may utilize a nailed SIP connection. IS 20 may control this participation, such as by controlling gateways, multipoint conferences and the mapping of communications to IP addresses.

IS 20 may be utilized and implemented in any number of market segments, such as enterprise safety and security (e.g., loss prevention), transportation, retail, public safety and federal agencies in order to provide radio and non-radio network interoperability within and between such market segments. As indicated above, such network interoperability includes the interoperability of push-to-talk voice technology within various networks and the interoperability between push-to-talk and full duplex dialed connections.

It will be recognized by those of ordinary skill in the art that endpoints 22 and IS 20 may be any combination of hardware, software, and/or encoded logic that provides communication services to a user. In the illustrated embodiment, endpoints 22 comprise a PC (endpoint 22a), a PDA (endpoint 22b) and an IP phone 22c). However, in other embodiments, endpoints 22 may include a telephone, a personal computer (PC), a video monitor, a camera, an IP phone, a cell phone, a land mobile radio (LMR), a personal digital assistant (PDA), a command center or any other communication hardware, software and/or encoded logic that supports the communication of audio, video or other data, using packets of media (or frames) or otherwise, through communication system 10. Endpoints 22 as well as endpoints and components of communication networks 24 may

be capable of communicating using any particular type of technology, such as cellular, IP, PSTN, CDMA, GSM, TDMA and satellite. Endpoints 22 and IS 20 may also include unattended or automated systems, gateways, other intermediate components or other devices that can establish media sessions.

Although the illustrated embodiment includes five communication networks 24a-24e, the term "communication network" should be interpreted as generally defining any network capable of transmitting audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Any one of networks 24a-24e may be implemented as a local area network (LAN), wide area network (WAN), cellular network, global distributed network such as the Internet, Intranet, Extranet, PSTN, LMR network, CDMA network, GSM network, TDMA network, satellite network or any other form of wireless or wireline communication network.

Communications over communication networks 24a-24e may use any suitable communication protocol. In a particular embodiment, some communication networks may employ voice communication protocols that allow for the addressing or identification of endpoints, nodes, and/or other components coupled to the communication network. For example, using Internet protocol (IP), each of the components coupled together by, for example, communication network 24b in communication system 10 may be identified in information directed using IP addresses. In this manner, network 24b may support any form and/or combination of point-to-point, multicast, unicast, or other techniques for exchanging media packets among components in communication system 10. Any network components capable of exchanging audio, video, or other

data are included within the scope of the present invention.

Since IP networks share a common method of transmitting data, telecommunication signals may be transmitted between telephony devices located on different, but interconnected, IP networks. In addition to being coupled to other IP networks, communication network 24b may also be coupled to non-IP telecommunication networks, for example through the use of interfaces or components, including gateways. In the illustrated embodiment, communication network 24b may be coupled with PSTN 24c through a gateway. In some embodiments the gateway may be a part of IS 20 or network 24e. PSTN 24c includes switching stations, central offices, mobile telephone switching offices, pager switching offices, remote terminals, and other related telecommunications equipment that are located throughout the world. IP networks transmit data (including voice and video data) by placing the data in packets and sending each packet individually to the selected destination, along one or more communication paths. Unlike a circuit-switched network (like PSTN 24c), a dedicated circuit is not required for the duration of a call or fax transmission over IP networks.

Technology that allows telecommunications to be transmitted over an IP network may comprise Voice over IP (VoIP), or simply Voice over Packet (VoP). In the illustrated embodiment, one or more of endpoints 22, and endpoints and components of communication networks 24 may be IP telephony devices capable of participating in IM, video, and other multimedia communication sessions. IP telephony devices have the ability of encapsulating a user's voice (or other input) into IP packets so that the

voice can be transmitted over a communication network. IP telephony devices may include telephones, fax machines, computers running telephony software, nodes, gateways, wired or wireless devices, hand held PDAs, or any other device capable of performing telephony functions over an IP network.

In particular embodiments, communication system 10 may receive and transmit data in a session initiation protocol (SIP) environment. SIP is an application-layer control protocol that includes primitives for establishing, modifying and terminating communication sessions. SIP works independently of underlying transport protocols and without dependency on the type of session that is being established. SIP also transparently supports name mapping and redirection services, which support personal mobility.

Although FIGURE 1 illustrates a particular number and configuration of endpoints, IS and communication networks, communication system 10 contemplates any number or arrangement of such components for communicating media.

FIGURE 2 illustrates interoperability system (IS) 50, in accordance with a particular embodiment. IS 50 may be similar to and provide the same functionality as IS 20 of FIGURE 1. In the illustrated embodiment, IS 50 includes interface 51, gateways 52, operations management application (OMA) 54, multipoint conference system (MCS) 56, policy engine 58, authentication and security system 60, call manager 62, processor 64 and memory module 66. IS 50 is coupled to a PC endpoint 70 that may be used to access, configure and control various functionality provided by IS 50. PC endpoint 70 may run a client application for such access, configuration and control.

The client application may enable a user of endpoint 70 to receive and monitor communications from various endpoints and virtual talk groups. In particular embodiments, other types of endpoints may be utilized to access, configure and control IS 50, such as IP phones, PDAs and mobile devices. IS 50 may be coupled to such endpoints (including PC endpoint 70) through one or more communication networks.

Interface 51 is used in the communication of audio, video, signaling and other data between IS 50 and other network components. For example, interface 51 may receive communications from endpoints such as endpoints of communication networks 24, endpoints 22 and endpoint 70. The communication may take place over IP networks thereby negating the need for dedicated wiring between the endpoints and the IS.

Gateways 52 may include any suitable gateways to provide network interoperability and back-end legacy application integration, such as LMR gateways, PSTN gateways and application gateways. Gateways 52 provide mapping between IP services and the interoperable networks, such as LMR network 24a of FIGURE 1. In some cases gateways 52 may not be located within an IS but may be distributed throughout a communication system for enabling communications among various communication networks.

Operations management application (OMA) 54 includes functionality for configuration, management and control of IS 50, including conference and collaboration management, and may be accessed by a user via, for example, PC endpoint 70. In particular embodiments, OMA 54 may enable a user, such as dispatch personnel or administrators or a mobile user (e.g., a first responder

mobile user) accessing IS 50 via a mobile endpoint, the ability to configure, manage and participate in one or more virtual talk groups and ad hoc conferences simultaneously. In particular embodiments, OMA 54 may be accessed through a web interface, functioning for example as a soft phone for radios. A screen display may be controlled using a mouse, keypad, touch screen, voice commands or any other suitable interface. OMA 54 screens may include any number of functional controls to provide interoperable communications. OMA 54 may authenticate a user and obtain user configuration information upon a user accessing the OMA. OMA 54 may monitor and provide communication ability for any number of channels at one time to provide the ability for an OMA user to communicate on and control multiple virtual talk groups at once.

Multipoint conference system (MCS) 56 provides collaboration and conference services for multiple endpoints of one or more networks. For example, users of multiple endpoints (such as LMRs of different networks (e.g., networks of different agencies or groups) and different types of endpoints of different networks) may be bridged together through MCS 56 to provide virtual talk group communications. MCS 56 may include any suitable number or type of conference bridges, ports, digital signal processors or other components to facilitate communications discussed herein.

Policy engine 58 includes policies for undertaking various operations and functionality upon the occurrence of various events to provide dynamic incident management. These policies may include both pre-determined and ad hoc policies. For example, upon the occurrence of a particular incident, the incident may include a unique

identifier and may have basic incident attributes such as time of creation, name of user creating and status. A pre-determined policy may then be executed by an incident manager or dispatch personnel as action for the specific incident. In particular embodiments, policy engine may receive inputs from alarms and sensors to setup device agnostic communications interoperability and one-way video and data collaboration and to trigger additional events such as pagers, e-mails, notifications, dial-outs, recording and information escalation.

Authentication and security system 60 manages access, configuration and control privileges for users of IS 50 and those participating in interoperable communications. For example, different users may have different privileges assigned for interoperable communications. Some users may only have transmit or listen privileges with respect to one or more particular talk groups, while other users may have the ability to communicate in all talk groups or setup and configure various talk groups. User privileges may change dynamically upon the occurrence of particular events.

Call manager 62 maintains information regarding various users, such as users of IP networks for which interoperable communications are provided by IS 50. This facilitates in the extension of PTT to IP networks and in the provision of voice and data interoperability across radio and non-radio networks. In particular embodiments, call manager 62 may maintain a listing, table, or other organization of information about users. The information may include a name or other identifier and contact information such as phone numbers and email addresses for the users. In particular embodiments call manager 62 may represent any appropriate combination of hardware,

software and/or encoded logic distributed throughout a communication network coupled with IS.

Processor 64 may be a microprocessor, controller, or any other suitable computing device, resource, or combination of hardware, software and/or encoded logic operable to provide, either alone or in conjunction with other IS components such as OMA 54, IS 50 functionality. Such functionality may include providing various features discussed herein to a user, such as a user of an endpoint accessing IS 50 through OMA 54. Such features may include providing to the user endpoint location information of communicating endpoints of a plurality of monitored endpoints and/or virtual talk groups, enabling the user to listen to and/or participate in communications involving endpoints and/or virtual talk groups of a particular geographic area, presenting communications of endpoints of scene-related virtual talk groups according to preconfigured or received instructions and controlling various gateways and other network components to facilitate interoperable communications among various endpoints.

Memory module 66 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component. Memory module 66 may store any suitable data or information, including software and encoded logic, utilized by IS 50. In particular embodiments, memory module 66 may include data for user management, talk-group management, resource pool management, privileges, backup configuration and information and/or timestamp and activity tracking.

IS 50 may also include any number of switches, routers, firewalls, mobile access routers, access points, wireless bridges and other components in order to accommodate particular operational desires and needs.

In particular embodiments such as in the LMR network interoperability context, IS 50 may, through one or more components discussed above or through other components, encode received audio with a standard audio codec, such as G.711 or G.729. Those audio samples may be packaged in standards-based real-time transport protocol (RTP) packets suitable for transport on an IP network. At this point, the communication element may be abstracted from the distinctive characteristics of each radio system. These audio packets can be sent across the network to other radio systems either individually (unicast) or as a group (multicast). The recipient of the audio packets may be a device capable of receiving and decoding the RTP stream, such as an IP telephone or PC with appropriate software. The IP network and IP-enabled devices can be used to allow users to monitor or transmit on a particular radio channel from a desk without issuing another radio.

As indicated above, IS 50 may facilitate communication among users of endpoints of various networks through virtual channels or talk groups. For example, a channel may comprise a unidirectional or bidirectional path for transmitting and/or receiving electrical or electromagnetic signals. This may comprise, for example, a conventional radio physical RF channel. A talk group in this context may be a subgroup of users (e.g., radio users) who share a common functional responsibility and typically coordinate actions amongst themselves without radio interface with

other subgroups. For example, a municipality's police department network may include various talk groups.

A virtual talk group (VTG) represents interoperability of a group of channels, for example, as an audio conference or meeting. A virtual talk group may include an associated virtual channel and an ID. Virtual channels may comprise an address, such as an IP address, associated with a virtual talk group through which users may access the virtual talk group and/or through which communications from VTG member-endpoints are bridged. Various types of virtual talk groups may be utilized in particular embodiments, such as a multicast address usable by all endpoints of the VTG, a VTG comprising multiple talk groups (e.g., multiple radio sources from different frequencies whose communications are mixed), a unicast group and a combination unicast and multicast group.

As an example, a particular virtual talk group may comprise a conference or meeting of the following: (1) a channel or other multicast path used by certain users of a police department's radio network, (2) a channel or other multicast path used by certain users of a fire department's radio network, (3) a channel or other multicast path used by certain users of a corporation's security radio network and (4) a plurality of users of IP-enabled endpoints such as IP phones, IP-enabled PDAs or PCs. An operator of IS 50 may configure the virtual talk group using any suitable interface, such as by dragging and dropping the included channels and IP endpoints into a single area representing the virtual talk group. MCS 56 may provide the functionality for the conference of the virtual talk group members. In particular embodiments, multiple talk groups may be

patched together on a dynamic, as needed basis. In some cases a virtual talk group may not necessarily include communications through an IS but may instead include member endpoints whose communications are mapped to IP addresses at gateways (such as LMR gateways) controlled by an IS.

Any number of virtual talk groups may be configured to provide any suitable audio, data, video and control network interoperability. Virtual talk groups may be created using any suitable user/endpoint groups or channels based on location, organizational requirements, event requirements or any other suitable characteristic. An administrator or operator may configure channel details such as name, description, participants, multicast IP addresses, codec and latch options through, for example, OMA 54.

FIGURE 3 illustrates an endpoint 80, which may comprise a mobile endpoint, in accordance with a particular embodiment. Endpoint 80 may be similar to, and may provide similar functionality to, other endpoints discussed herein.

In the illustrated embodiment, endpoint 80 includes a transmitter/receiver 82, a user interface 84, a processor 86 and a memory module 88. Transmitter/receiver 82 obtains signals from GPS satellites or ground stations of a communication network in order to determine a position of endpoint 80 and also receives and transmits communications such as audio, video and other data to and from other network components. User interface 84 provides a mechanism through which a user of endpoint 80 may operate the endpoint and communicate with other network devices. Interface 84 may comprise a keypad, display, touch

screen, audio input or any other suitable interface. Instructions may be submitted through speech recognition, collection of keystrokes, soft key or otherwise.

Processor 86 may be a microprocessor, controller, or any other suitable computing device, resource, or combination of hardware, software and/or encoded logic operable to perform endpoint functionality. Processor 86, either alone or in conjunction with other endpoint components, provides endpoint functionality discussed herein. Memory module 88 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component.

In particular embodiments, communications from endpoints such as endpoint 80 may include GPS information indicating the location of the endpoint from which a particular communication is transmitted. The GPS information may be carried by both unicast and multicast communications. With this information, whenever a user utilizes an endpoint to communicate, the specific location from where the media (e.g., PTT or other communication) was transmitted may be identified, for example at PC endpoint 70 through IS 50. In some cases, a gateway may be used to bridge between media streams that include location information of a transmitting endpoint and media streams that do not include location information of a transmitting endpoint. For example, some legacy mobile devices may not be able to embed or otherwise include GPS information within a media stream.

In particular embodiments, endpoint 80 may be used by a command officer or other user and may run a client application of IS 50. In some cases endpoint 80 may

receive communications from a plurality of endpoints, and processor 86 may filter out certain communications for presentation to a user of endpoint 80 based on the location of the transmitting endpoints of the communications. As discussed herein, communications received may include GPS or other location information identifying locations of their transmitting endpoints.

As discussed above, particular embodiments provide the ability to transport geographical location information from mobile endpoints to each other and to an IS and the utilization of this information for displaying the location (e.g., as a street or block number within a city or in another manner) to other users, as well as presenting an icon associated with the specific mobile endpoint and with its location. In some embodiments GPS information may be appended to a multicast stream in a header of a packet transmission or to a unicast stream. GPS information may be carried by being steganographically embedded within a voice stream or in the header of IP packets. With the location information, whenever an end-user at a mobile station talks, rather than simply having an indicator show the VTG of the last communication, an icon or other indicator (e.g., on a map) may show the specific location from where the media (e.g., PTT media) arrived. In some cases, special attention may be given to conferencing when more than one speaker talks when, for example, SIP and unicast may be used. In this case the plurality of location information from all talkers may be embedded within the media stream, and all icons of all speakers may blink to indicate where the speakers are located. Particular embodiments also provide backwards compatibility to existing systems. For example, when a speaker from an unknown location speaks,

the system may indicate the VTG over which the voice came, but the location of that speaker may not be presented on the map.

Furthermore, particular embodiments provide the ability of an endpoint such as endpoint 80 to filter communications presented to its user based on the location of transmitting endpoints of the communications. For example, an endpoint used by personnel monitoring a plurality of interoperable communications facilitated by an IS (such as endpoint 80 running a client application of IS 50) may receive many media streams from a variety of VTGs. The endpoint may present to its user only the media streams that originate from within a pre-defined neighborhood. As discussed above, communications may include GPS information of transmitting endpoints appended to multicast and/or unicast media streams. In some cases the user may draw an area of interest on a map, and the communications that originate with the area may be filtered for presentation to the user. For example, when a supervisor wants to listen to activities from a specific site, he can click on that area of the map and/or highlight a specific area on the map and select a "listen" or "participate" function. As discussed above, in one embodiment the filter steps may be performed at the user's endpoint. In some embodiments, the filter may be generated at an IS and downloaded to the relevant endpoint. This allows the filter to be stored and managed from a central IS. In some embodiments a user such as a policeman may want to obtain information from sensors in his area of interest. In this embodiment, GPS information may be embedded in the information stream from the specific sensors. In some cases, as the system establishes a conference of

users or a VTG, the location information is used in the speaker selection algorithm. For example, in accordance with one embodiment, as the system selects the top three speakers, the speakers who are closest to the center of the event are given priority over users who are farther away from the center of the event.

Moreover, particular embodiments provide automated configuration of endpoints into VTGs based on their locations. GPS information is appended to multicast and/or unicast media streams. In one embodiment, a user through a client application may establish connection with an IS, such as IS 50, and may continuously update the IS regarding the user's location. Using GPS source location, the IS may configure endpoints as participants in a VTG that spans their neighborhood. In some embodiments, the neighborhood may be defined by a configurable distance from an event or as all endpoints who are in proximity to the user (e.g., within 4 miles from the user). In other embodiments, the neighborhood may be defined by drawing an area on a map on the user's endpoint display. By defining the area of the neighborhood, the client application user's endpoint may be automatically joined into a VTG with all users whose locations fall within the defined neighborhood. In addition, participant endpoints in the VTG may dynamically change (e.g., may be added and removed from the VTG) since the endpoints may be mobile and their locations may continuously change.

In some cases, the IS may apply hysteresis. As a result, once a user joins the geographically defined VTG he may remain a member through the end of the event. In some cases, hysteresis may be utilized based on an area. For example, one a user is automatically added to a

geographically defined VTG based on the user's location within a first area, the user may remain a member of the VTG despite leaving the first area as long as the user is within a second, larger area that includes the first area. Hysteresis may be applied to any of the functionality discussed herein, including the mere receipt of communications from endpoints within a particular area. In some cases, a user may elect to opt out of the VTG if he travels out of the area defined by the system as the event location area. Embodiments may automatically conference users who are joining the VTG via unicast with, e.g., SIP signaling. Some embodiments may also automatically and dynamically add and drop users into/from a conference bridge using hysteresis as a key part of an add/drop user algorithm. In one embodiment, users of endpoints may be requested to approve the automatic action of dropping them out of the VTG. In some cases, a user traveling through different areas may be coming in and out of multicast range. An IS in some embodiments may automatically switch the user between multicast connectivity and a nailed SIP connection to accommodate capabilities of a locally available network. In addition, in some cases if a user is continuously moving in and out of a multicast area, the IS may fix their connectivity to a VTG via a nailed dialed connection.

FIGURE 4 is an example display 200 of an endpoint, such as PC endpoint 70 or another mobile or non-mobile endpoint, accessing IS 50 through OMA 54, in accordance with a particular embodiment. In the illustrated embodiment, display 200 includes location portion 202 and VTG control portion 204; however, it should be understood that displays of endpoints accessing IS 50 in other

embodiments may include additional or different information related to functionality of IS 50 and communications facilitated therethrough.

In this embodiment, location portion 202 displays a particular geographical area showing multiple mobile endpoints 210a-210c, 212a-212c and 214a-214c. VTG control portion 204 shows three virtual talk groups (1, 2 and 3), each comprising a plurality of members. For example, VTG 1 comprises endpoints 210a-210c; VTG 2 comprises endpoints 212a-212c; and VTG 3 comprises endpoints 214a-214c. As discussed above, particular endpoints of various networks (e.g., various public safety agency networks) may be grouped together in virtual talk groups according to any number of factors. In the illustrated embodiment, endpoints 212a, 212b and 212c make up VTG 2 and are associated with incident 213, which may comprise a burglary, fire or other incident. For example, if incident 213 is a fire, a user of endpoint 212a may be a city police officer and endpoint 212a may be part of that city's police department network. A user of endpoint 212b may be fire department personnel responding to the fire, and endpoint 212b may typically communicate on a different fire department network. As also illustrated, endpoints 214a, 214b and 214c form VTG 3 and are associated with incident 215.

As discussed, endpoints of each VTG may be a part of different networks, such as different radio networks of different public or private agencies or groups. For example, with respect to VTG 1, endpoint 210a may be a land mobile radio of a police officer from a particular municipality police network, endpoint 210b may be a land mobile radio of a police officer from a different municipality police network and endpoint 210c may be a

cellular phone of a federal agency network. As discussed above, IS 50, through Internet Protocol, enables various endpoints of different networks to communicate in talk groups using the technology of such networks. For example, communications among endpoints 210a-210c may use PTT technology and may be facilitated by IS 50.

A user such as a command officer or dispatch personnel may use display 200 to monitor communications of various channels or talk groups, such as various talk groups composed of land mobile radio or other endpoint users. For example, a command officer may use display 200 to monitor communications on VTGs 1, 2 and 3. Whenever a particular mobile endpoint 210, 212 or 214 user communicates through the endpoint, such as when a user communicates a PTT audio message, the endpoint of display 200 (e.g., PC endpoint 70) may communicate the transmission through the PC endpoint. As indicated above, communications transmitted from a mobile endpoint may comprise audio, video or other data (including PTT messages, IMs, e-mails, streaming video, etc.). Display 200 indicates from which VTG and/or mobile endpoint the communication is transmitted. The communication from the mobile endpoint may also include location information (e.g., GPS information) identifying the location of the mobile endpoint transmitting the message. IS 50 may receive this location information and present to the command officer the location of the mobile endpoint as it communicates the actual message from the endpoint.

For example, assume in the illustrated example that mobile endpoint 212a is a police officer's land mobile radio and that its police officer user is communicating an audio message to other members of VTG 2. These other members may include, for example, users of endpoints 212b

and 212c as well as all other users, such as administrative, command or dispatch users, that have access privileges to receive communications of members of this virtual talk group. When transmitting the audio message, endpoint 212a also transmits information identifying its location. This message may be communicated through a base station and other components of one or more communication networks and received at IS 50. IS 50 then communicates the message to other endpoints of the talk group (e.g., endpoints 212b and 212c) if such endpoints are not a part of the same radio network as endpoint 212a. In addition, when communicating the audio message from endpoint 212a, IS 50 may communicate the location information identifying the location of endpoint 212a. Thus, a user of an endpoint presenting display 200 using the endpoint and associated display to monitor communications on VTGs 1, 2 and 3 will know the location of endpoint 212a as the user receives communications from the endpoint.

The communication of the particular VTG or endpoint identification of a particular communication as well as the endpoint's location may be performed in any of a variety of ways according to particular operational needs and desires. As an example, in display 200 a particular endpoint transmitting a message communicated to a user of IS 50 may be highlighted or otherwise identified in VTG control portion 204. In addition, the associated VTG number may be highlighted or otherwise identified as well. Moreover, as indicated, as the endpoint of display 200 transmits the audio message from endpoint 212a, display 200 may highlight endpoint 212a (as illustrated) and may identify the particular endpoint's location, such

as identifying a street address location of the endpoint (as illustrated).

The illustrated example shows locations of various endpoints 210, 212 and 214. In some cases, the locations of these endpoints may be updated when a user of the endpoint transmits an audio, video or other message through the endpoint since location information may be transmitted at that time (e.g., embedded within the media stream).

As indicated above, display 200 is only one example of communicating information as described herein, and other embodiments may communicate endpoint location information of communicating endpoints of various networks and talk groups in any suitable manner. Endpoint location information may be transmitted with endpoint communications in any suitable manner, such as through GPRS or steganographically. In particular cases, the communications from mobile endpoints comprise multicast communications that are transmitted to other endpoints of the same network and to IS 50 for transmission to endpoints of other networks. In some embodiments, location information and other meta information, such as unit ID, priority and channel, may be communicated using a separate associated multicast port/channel.

In some cases, location information may be transported in a real-time transport protocol (RTP) header extension. For example, RTP headers include a reserved area in the header to put a variable length header extension that could contain additional information about an RTP talker. As another example, location information may be transported using the real-time control protocol (RTCP) stream. The RTCP port is

one higher than the RTP port by definition. In particular cases, other attributes about the endpoint may already be included using RTCP. The location information may comprise, for example, GPS latitude/longitude information or street and/or city information. In some embodiments, the associated RTP stream may include the location information. As an example, 239.1.1.1:21111 might be a RTP multicast address:port through which the voice stream is transported, and another address:port (for example, the RTP VoIP port + 2 for the RTP signaling port) may be used to include the location information.

In particular embodiments, the location information may be communicated to all original streams, such as via multipoint conference system 56 of IS 50 or directly between the endpoints without traversing through the IS. For example, GPS1, GPS2 and GPS3 may comprise GPS information from three separate endpoints involved in a talk group. In the case of the appended RTP header example, the multipoint conference system may combine and/or append the meta data components at the point of the mixing or bridging function. In the case of the separate control channel example, the streams may flow to all application aware endpoints, and an endpoint may recognize and determine the interesting or relevant GPS information from multiple meta streams. In the case of the RTCP model example, RTCP streams may be typically collected and terminated at each endpoint. Multipoint conference system 56 may terminate the RTCP meta information and regenerate an associated RTCP stream on the other side for transmission to endpoints of the virtual talk group. In some cases, either the RTP header extension or a new payload type may be used. In particular cases, a description field may be used. In a

situation where MCS 56 mixes more than one media stream, the location description field may include the locations of a plurality of speaking endpoints. The RTP header may be sent for every packet and may be large overhead but may be best for real time changing information. The particular data, application and operational requirements and desires may dictate the best methodology for transmission of the location information.

FIGURE 5 is an example display 300 of an endpoint 302 which may comprise a mobile or non-mobile endpoint, in accordance with a particular embodiment. Display 300 also includes endpoints 304, 306, 308, 310, 312, 314 and 316, which may comprise any type of mobile or non-mobile endpoints of one or more communication networks, such as endpoints and communication networks described above. When transmitting communications, endpoints 304, 306, 308, 310, 312, 314 and 316 may include GPS information identifying their locations in a similar manner as discussed above with respect to FIGURES 3 and 4.

Some of the illustrated endpoints are members of virtual talk groups configured through IS 50. Table 301 lists virtual talk groups 1-5 and current endpoint members of each such VTG. For example, VTG 1 includes endpoints 304a-304e, VTG 2 includes endpoints 306a-306b, VTG 3 includes endpoints 308a-308c, VTG 4 includes endpoints 310a-310e and VTG 5 includes endpoints 316a-316f. Currently, endpoints 312 and 314 are not included in any VTG of the IS.

Endpoints 304, 306, 308, 310 and 316 may be assigned a VTG for any operational need, such as geography and/or event or incident. For example, endpoints 316a-316f may be grouped into a VTG (e.g., VTG 5) to respond to a particular incident. The incident may have occurred, for

example, proximate endpoints 316a, 316d, 316e and 316f. While endpoints 316b and 316c are not currently in the immediate vicinity of the incident, it may be desired, for any particular reason, to include those endpoints so that they can participate in the VTG communications.

The endpoints illustrated on display 300 may be part of different communication networks. For example, endpoint 310a may be a mobile endpoint of a police department network that communicates on a particular radio frequency, and endpoint 310d may be a mobile endpoint of an ambulance service network that communicates on a different radio frequency. In some cases, endpoints of different communication networks may include endpoints that are communicating on different channels or frequencies (e.g., one endpoint may be communicating on a frequency reserved for police department A while another endpoint may be communicating on a frequency reserved for fire department B). IS 50 facilitates interoperable communications among such endpoints such that communications transmitted by endpoint 310a may be communicated, through one or more base stations or other network components, to endpoint 310d. In addition, IS 50 may convert communications received from these endpoints to IP packets for transmission and receipt by particular IP endpoints which may include, for example, other endpoints 310 of talk group 4 as well as command personnel accessing IS 50 through OMA 54. In some cases, IS 50 may control various gateways to facilitate the conversion of communications to IP packets.

Particular embodiments enable a user to listen, participate or otherwise communicate with particular endpoints or VTGs according to location. As indicated

above, endpoint 302 presents display 300 to a user such as a command officer or dispatch personnel. In particular embodiments, such a user may configure endpoint 302 to listen to discussions or otherwise receiving communications in a particular geographical area of display 300. Such area may include any suitable geographical area identified by the user, such as an area within a particular radius of the current location of endpoint 302 or another area that does not include the current location of endpoint 302. For example, in some cases when a user of endpoint 302 desires to listen to activities from a particular site, the user may click on a particular area of the display map presented and/or highlight a specific area of the map and select a "listen" or "participate" function. As a result, IS 50 may automatically configure the user's endpoint to be a part of the VTGs active in this geographical area. The interface through which a user may identify and select a particular area may comprise any suitable interface according to operational needs and desires, such as a mouse, touch screen, key pad or audio command. In particular embodiments, a user may zoom in or out on a particular display to identify and select a geographical area of particular virtual talk groups or endpoints. In some cases, a display may be partitioned into multiple segments or portions for selection by a user.

As an example, a user of endpoint 302 may select a particular distance from endpoint 302 that defines a geographical area 320 so that the user of endpoint may be presented (by his endpoint) with communications from all endpoints included within this area, including VTGs that include endpoints within this area. Thus, in the illustrated embodiment, a user of endpoint 302 could

listen to or communicate with endpoints 304b, 304e, 310b, 310d, 310e, 312, 316b and 316c. Endpoint 302 may receive GPS information from endpoints identifying their location to determine whether the endpoints are within area 320 such that their communications should be presented to its user. Endpoint 302 may receive communications from, for example, all endpoints of the display but may filter or otherwise select communications from endpoints within the selected area for presentation to its user. Such presentation may be made through, for example, a speaker, display or other interface. In some embodiments, a policy engine of an IS may store pre-defined areas of interest that are invoked as part of a specific policy.

It should be understood that since endpoints 304b and 304e are part of VTG 1, endpoints 310b, 310d, and 310e are part of VTG 4 and endpoints 316b and 316c are part of VTG 5, in some cases the user of endpoint 302 may be able to communicate with endpoints of VTGs 1, 4 and 5 not included within geographical area 320. For example, assume endpoints 304a and 304b are a part of the same LMR network such that they communicate on the same radio frequency. To allow endpoint 302 to communicate with endpoint 304b (since endpoint 304b is within area 320), IS 50 would have to receive communications from endpoint 302 and transmit the communications to endpoint 304a on the applicable radio frequency that endpoint 304b may also be able to receive.

In particular cases, endpoint 302 may be a mobile endpoint such that when it moves, area 320 moves since area 320 is defined by a particular distance from endpoint 302. For example, if endpoint 302 moves eastward, then endpoint 304b, if stationary, may no longer be within area 320 such that a user of endpoint

302 may no longer be able to communicate with endpoint 304b according to this criteria.

As another example, a user of endpoint 302 may select a geographical area to communicate with that does not include the present location of endpoint 302. For example, a user of endpoint 302 may identify and select area 330. Endpoint 302 may then determine, based on GPS information received, that endpoints 310a and 310c and endpoints 316a, 316d, 316e and 316f are presently within area 330 and may ensure that the user of endpoint 302 is presented communications from such endpoints. In some cases, endpoint 302 may present all communications received by those endpoints within area 330. For example, endpoints 310a and 310c communicate in VTG 4 and may thus receive communications from other members of the VTG, such as endpoints 310b, 310d and 310e. If a user of endpoint 302 is configured to receive communications received by all endpoints within area 330, then the user may also receive communications from, for example, endpoint 310b since VTG 4 communications from this endpoint will be received by endpoint 310a which is within area 330.

In particular embodiments, in response to the selection of a geographical area, a virtual talk group comprising all endpoints currently in that area may be formed. As such endpoints leave the area, they may be removed from the VTG. Similarly, as other endpoints enter the selected area, they may be added to the VTG. In this manner, VTGs may be created based on location of endpoints. In some cases, only certain types of endpoints (e.g., such as only public security agency endpoints) may be added to a VTG defined by endpoints of a particular geographical area.

As discussed above, in particular embodiments a mobile endpoint may filter received communication streams according to the location from which the streams are transmitted. This may be accomplished, for example, when the media streams include the GPS or other location information of the transmitting endpoint. For example, a mobile endpoint such as endpoint 304b may receive all communications from each endpoint in VTG 1. Each such communication may include GPS information identifying the location of the communication's source endpoint. Endpoint 304b may include a processor, similar to that described above with respect to an IS, that filters out for communication to a user of endpoint 304b only those communications received from endpoints in a selected or predefined geographical area. Such geographical area may be selected and/or predefined by a user of endpoint 304b in a similar manners as in other embodiments described above with respect to endpoint 302. Thus, even though the endpoint may receive communications from various locations, the endpoint may examine the GPS information in such communications to play or otherwise present to its user only those communications coming from a particular location, region or area. While some embodiments discussed above discuss location information or GPS information filter functionality at an endpoint, it should be understood that this filter functionality may be performed at an IS and selected or filtered communications may then be transmitted to a user's endpoint for presentation to the user.

FIGURE 6 is an example display 400 of an endpoint 420 which may comprise a mobile or non-mobile endpoint accessing IS 50 through OMA 54, in accordance with a particular embodiment. Display 400 also shows endpoints

402a-402d, 404a-404e, and 410a-410c, which may comprise any type of mobile or non-mobile endpoints of one or more communication networks, such as endpoints and communication networks described above. In addition, display 400 shows hospital network 406 and police station network 408 which each include one or more endpoints at the hospital and police station, respectively. When transmitting communications, the illustrated endpoints may include GPS information identifying their locations in a similar manner as discussed above.

Illustrated endpoints are members of virtual talk groups configured through IS 50. Table 401 lists virtual talk groups 1-4 and current endpoint members of each such VTG. For example, VTG 1 includes endpoints 402a-402d and hospital 406, VTG 2 includes endpoints 404a-404e and police station 408, VTG 3 includes endpoints 410a-410c and VTG 4 includes hospital 406. As discussed above, endpoints in particular embodiments may be assigned a VTG for any operational need, such as geography, scene or event or incident. As used herein, the terms scene, event or incident can be used interchangeably to describe one another. For example, a scene may include an event or incident. In this example, VTG 1 is associated with a scene 403, VTG 2 is associated with a scene 405, VTG 3 is associated with a scene 411 and VTG 4 is associated with hospital scene 406 which, as discussed above, includes one or more hospital endpoints. The endpoints illustrated on display 400, including hospital 406 and police station 408, may be part of different communication networks. Such different communication networks may include different LMR networks, LANs, cellular networks or any other type of communication network as discussed herein.

In particular embodiments, a user's endpoint may be configured to listen, participate or otherwise communicate with particular endpoints or VTGs according to scene, incident or event. As indicated above, endpoint 420 presents display 400 to a user such as a command officer or dispatch personnel. In particular embodiments, such a user may configure endpoint 420 to listen to discussions or otherwise receive communications according to a particular scene using any suitable criteria or instructions. Configuration instructions may be received by an interface of IS 50 from a user through an endpoint interface or from a system operator, administrator or other personnel. In some cases, a user's endpoint may be preconfigured to listen to particular scene-related VTGs according to any suitable set of preconfiguration instructions.

As an example, assume that a user of endpoint 420 is a police command officer currently communicating on VTG 1 associated with a car accident scene 403. VTG 1 includes endpoints 402a-402d and hospital 406. Assume that scene 405 comprises a burglary and that the police command officer using endpoint needs to drive to the burglary scene. As indicated above, VTG 2 is associated with scene 405 and includes endpoints 404a-404e and police station 408. In particular embodiments, endpoint 420 is configured to automatically switch to VTG 2 of burglary scene 405 as endpoint 420 gets close to the scene. In some cases, endpoint 420 may switch to one or more VTGs of the closest scene to endpoint 420. For example, when endpoint 420 becomes closer to scene 405 than scene 403, the endpoint may switch to VTG 2. Similarly, if endpoint 420 was closest to scene 411, it would switch to VTG 3.

As another example, assume that a user of endpoint 420 is an ambulance driver at car accident scene 403. Endpoint 420 may thus be patched into VTG 1 associated with scene 403. The ambulance driver may need to take a victim of the accident to hospital 406. As indicated above, endpoints of hospital 406 may also be a part of another group, VTG 4, associated with the hospital. As endpoint 420 gets closer to hospital 406, the endpoint may be configured to automatically switch to VTG 4. This may be done because the driver may no longer need to speak with members of VTG 1 since he has left scene 403. Switching to VTG 4 which just includes hospital endpoints 406 may reduce unnecessary information flow to the ambulance driver and help him focus on delivering the patient promptly to the hospital. By removing communications from VTG members at the scene of the accident, overflow of irrelevant information to the driver is reduced and the driver is allowed to focus on hospital-specific information.

Instead of switching to a VTG associated with a closest scene, in some cases an endpoint 420 may be configured to switch to one or more VTGs of scenes within a particular distance of the endpoint. Thus, the endpoint may receive communications from a plurality of VTGs associated with a plurality of scenes. GPS information received by endpoint 302 may be used by IS 50 to determine the location of endpoint 302 and therefore the proper VTG(s) in which endpoint 302 would participate based on suitable instructions.

Endpoints may be configured to switch to VTGs of particular scenes according to any suitable criteria or instructions. In some cases, endpoint 302 may be configured to switch to all VTGs associated with scenes,

events or incidents of a particular priority level. For example, if scenes 403, 405 and 411 comprised a hostage crisis, an armed robbery and a car accident, respectively, scenes 403 and 405 may be assigned a higher priority than scene 411. As such, endpoint 420 may be configured to automatically participate in VTGs 1 and 2 (associated with scenes 403 and 405). Various priority levels may be assigned to scenes in accordance with particular needs. In addition, endpoint 420 may automatically switch to various VTGs dynamically as scenes, events and incidents occur in a similar manner as the switching of endpoint 420 to VTGs based on location.

As another example, in some cases endpoint 420 may be configured to switch to all VTGs associated with scenes, events or incidents of a particular type. For example, VTGs may exist for various types of incidents, such as police incidents, fire incidents, rescue incidents, federal incidents, investigation incidents and private organization incidents. In some cases, endpoint 302 may be configured to listen to all police incidents as they arise. In some cases, endpoint 420 may be configured to listen to all burglary scenes or all hostage scenes or all fire scenes or all car accidents as they arise. In other cases, a user of endpoint 420 may comprise a company security officer whose endpoint 420 automatically listens to all VTGs associated with security-related incidents. In some embodiments, the selection of scenes (e.g., by priority, type or other characteristic) may be combined with a particular geographical area. For example, endpoint 420 may be configured to listen to all high priority scenes in a particular geographic area or all car accident scenes in a particular area. Particular embodiments may enable an

endpoint to be configured to listen to and/or communication with any of a variety of event, incident or scene-specific virtual talk groups according to any of a variety of factors, characteristics, or criteria. For example, a chief of police of Washington, D.C. may always be tuned into any communication originating from the vicinity of the White House.

As indicated above, endpoints whose communications are facilitated by an IS may include PTT endpoints. Since PTT endpoints are typically half duplex devices, one must "control the floor" in order to talk to other endpoints in a talk group. Particular embodiments may selectively provide floor control to an endpoint requesting to talk based on the distance of the endpoint to an incident or scene associated with a virtual talk group, particularly if more than one PTT endpoints is requesting to talk at the same time. For example, an IS may give floor control to the endpoint requesting to talk that is closest to an event associated with a VTG of which the endpoints requesting to talk are members. As is the case in other embodiments, the IS may analyze location information transmitted in communications or in the actual talk request control signal from the endpoints.

It will be recognized by those of ordinary skill in the art that endpoints and interoperability systems disclosed herein are merely example configurations in accordance with particular embodiments. These systems may include any number of interfaces, processors, memory modules, and other components to accomplish the functionality and features described herein. In addition, these components and other desired components for performing the above described functionality may be

centrally located (local) with respect to one another, or distributed throughout communication systems and networks. In addition, one or more components of these systems and devices may work together in performing various functionality described herein.

FIGURE 7 is a flowchart illustrating a method for providing interoperable communications with location information, in accordance with a particular embodiment. The method begins at step 500 where communications from a plurality of virtual talk groups are received. The virtual talk groups may each comprise a plurality of endpoints of different communication networks. It should be understood that for purposes of the descriptions and claims herein, whenever a VTG is described as comprising a plurality of endpoints of different communication networks, in addition to including at least some endpoints of different communication networks, the VTG may also include some endpoints of the same communication network. For example, the VTG may include a plurality of endpoints of the same police department network in addition to one or more endpoints of other communication networks, such as other police or fire department or private company networks. Moreover, in some cases, endpoints of different communication networks may include endpoints that are communicating on different channels or frequencies. The different communication networks may comprise networks of different technologies, such as IP, cellular, PSTN, LMR, CDMA, GSM, TDMA, GPRS and satellite. In particular embodiments, at least some of the endpoints of the virtual talk groups may communicate through PTT technology. In addition, some of the endpoints may comprise IP endpoints. Moreover, the different communication networks may comprise networks of various

safety and security agencies, whether public or private as well as networks of public and private groups, companies or organizations. The communications may be received at an interoperability system and/or at a client application of an interoperability system.

The communications may be received via a multicast stream whose header includes the location information or via a unicast stream with the location information. The virtual talk groups may include communications (from the various endpoints) that are facilitated by an IS by mapping the communications to a multicast IP address or by bridging the communications at a multipoint conference system of the IS.

At step 502, a first communication is received from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups. The first communication comprises a first media message and location information identifying a location of the first mobile endpoint. The location information may comprise GPS information. The message may comprise an audio, video, IM or other data message from the first endpoint, such as a push-to-talk communication from a land mobile radio.

At step 504, the first media message is presented to a user. At step 506, an identification of the first virtual talk group may be presented to the user. At step 508, the location of the first mobile endpoint is presented to the user. The user may be receiving communication from endpoints of the monitored plurality of virtual talk groups, for example, through a PC, IP phone or other endpoint running a client application that accesses an IS. As the first message from the first mobile endpoint is presented to the user, an

identification of the first virtual talk group of which the first mobile endpoint is a member may be transmitted to the user by an IS. This may aid a user who is presented information from multiple virtual talk groups to determine from which virtual talk group the first communication is transmitted. In addition, the location of the first mobile endpoint may be presented to the user by the IS. Such presentation of the first virtual talk group identification and location of the first mobile endpoint may be through a display of an endpoint through which the user accesses the IS using any suitable presentation method. In some embodiments, the location of the first mobile endpoint may be presented as a geographical address, such as a street address or longitude and latitude or other coordinate address.

FIGURE 8 is a flowchart illustrating a method for communicating media based on location of media source, in accordance with a particular embodiment. The method begins at step 600 where communications comprising a media message and location information are received from a plurality of endpoints. The communications may be received at a user's mobile endpoint. In some cases an IS may facilitate the transmittal of the communications to the endpoint, such as by controlling LMR gateways or other components, by mapping communications to a multicast IP address, by bridging communications into a mixed stream or by other methods. In some cases the communications may be received from endpoints of different virtual talk groups. The communications may be received via multicast streams or nailed dialed connections, such as those using SIP protocol. In particular embodiments, at least some of the transmitting endpoints may communicate through PTT technology. In

addition, some of the endpoints may comprise IP endpoints. The location information identifies a location of the endpoint communicating the message and may comprise GPS information.

At step 602, a selection of a geographical area is received from a user. The user may be a command officer or other user utilizing a mobile endpoint. The selection of a geographical area may be received by the user, for example, selecting the area on a display of his endpoint such as by drawing the area on a map shown on a touch screen display.

At step 604, location information of each communication is compared with the selected geographical area. Such comparison may be performed at the user's mobile endpoint. As indicated above, the location information identifies a location of the endpoint transmitting the communication. At step 606, the endpoint determines whether the location information of each transmitting endpoint is within the selected geographic area. For each endpoint whose location information indicates that the transmitting endpoint is not in the selected geographic area, the method ends. However, the method may continue to check whether other endpoints move into the selected geographic area or whether endpoints not in the area come to be within the area as a result of the area moving.

At step 608, for each transmitting endpoint whose location information indicates that the endpoint is within the selected geographic area, each message from each such endpoint is presented to the user by, for example, the user's endpoint. These messages may be communicated to the user through a display, speaker or other audio interface. The messages may comprise push-

to-talk messages received from LMR endpoints within the selected geographic area. In particular embodiments, communications from the plurality of endpoints may be presented to the user as long as the various endpoints are within the geographical area. In addition, as other endpoints enter the selected geographical area, their communications may be presented to the user as well. Thus, some embodiments may send an audio stream to a user that mixes communications from all endpoints currently within an area, and the mixed stream may account for and dynamically include (and exclude) communications from endpoints as they enter and leave the area.

FIGURE 9 is a flowchart illustrating a method for automatic configuration of virtual talk groups based on location of media source, in accordance with a particular embodiment. The method begins at step 700 where communications from a plurality of endpoints are monitored, such as at an interoperability system. Each communication may comprise a media message and location information identifying a location of its transmitting endpoint. At step 702, virtual talk group configuration instructions based on the locations of the mobile endpoints are received. In some cases virtual talk group configuration instructions may be received from a user accessing an OMA 54 of an IS through an IS client application. In some cases virtual talk group configuration instructions may be pre-loaded or pre-configured on the IS.

The virtual talk group configuration instructions may include, for example, instructions to configure a virtual talk group of mobile endpoints within a first distance of an event (e.g., a car accident, burglary, terrorist or other event), within a first distance of a

particular user's mobile endpoint (e.g., such as a user accessing an IS through a client application) or within a geographic area selected on a map by a user. Virtual talk group instructions based on locations of mobile endpoints may include instructions to configure the virtual talk group based on any of a variety of suitable or desired operational factors or characteristics.

At step 704, a first group of mobile endpoints is selected according to the virtual talk group configuration instructions. For example, if the virtual talk group configuration instructions include instructions to configure a virtual talk group of all mobile endpoints within a particular distance of an event, then all such endpoint may be selected at step 704. At step 706, a first virtual talk group comprising the selected first group of mobile endpoints is configured to facilitate communications among the selected first group of mobile endpoints. The selected first group of mobile endpoints may include mobile endpoints of different communication networks. The communications among members of the virtual talk group may be facilitated by an IS by, for example, controlling LMR and other gateways coupling various types of communication networks. In some cases the communications may be mapped to one or more multicast IP addresses to enable the virtual talk group. In some cases communications from the various endpoints may be bridged by a multipoint conference system into a communication stream for transmission to endpoints of the virtual talk group.

As in other embodiments, a virtual talk group may comprise endpoints utilizing different technologies. In particular embodiments, at least some of the endpoints

may communicate through PTT technology. In addition, some of the endpoints may comprise IP endpoints. Moreover, the different communication networks may comprise networks of various safety and security agencies, whether public or private as well as networks of public and private groups, companies or organizations.

Some of the steps illustrated in FIGURES 7, 8 and 9 may be combined, modified or deleted where appropriate, and additional steps may also be added to the flowcharts. Additionally, steps may be performed in any suitable order without departing from the scope of the invention.

While various implementations and features are discussed with respect to multiple embodiments, it should be understood that such implementations and features may be combined in various embodiments. For example, features and functionality discussed with respect to a particular figure such as one of FIGURES 4-9 may be used in connection with features and functionality discussed with respect to another such figure according to operational needs or desires.

Although the present invention has been described in detail with reference to particular embodiments, it should be understood that various other changes, substitutions, and alterations may be made hereto without departing from the spirit and scope of the present invention. For example, although the present invention has been described with reference to a number of elements included within communication system 10 and illustrated endpoints and interoperability systems, these elements may be combined, rearranged or positioned in order to accommodate particular routing architectures or needs. In addition, any of these elements may be provided as separate external components to communication system 10

and illustrated endpoints and interoperability systems, or each other where appropriate. The present invention contemplates great flexibility in the arrangement of these elements as well as their internal components.

Numerous other changes, substitutions, variations, alterations and modifications may be ascertained by those skilled in the art and it is intended that the present invention encompass all such changes, substitutions, variations, alterations and modifications as falling within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A method for automatic configuration of virtual talk groups based on location of media source, comprising:

monitoring communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

selecting a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and

configuring a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints, the first group of mobile endpoints comprising mobile endpoints of different communication networks.

2. The method of Claim 1, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a first event.

3. The method of Claim 1, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a mobile endpoint of a user.

4. The method of Claim 1, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a selected geographic area.

5. The method of Claim 4, wherein the geographic area is selected on a map by a user.

6. The method of Claim 1, further comprising:

receiving the virtual talk group configuration instructions from a user; and

adding a mobile endpoint of the user to the first virtual talk group such that communications from the first group of mobile endpoints are communicated to the user.

7. The method of Claim 1, further comprising removing a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when the first mobile endpoint leaves a geographic area associated with the first virtual talk group.

8. The method of Claim 1:

wherein the virtual talk group configuration instructions relate to a first geographical area and the first virtual talk group is configured based on mobile endpoints within the first geographical area; and

further comprising removing a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when the first mobile endpoint leaves a second geographical area, the second geographical area including and greater than the first geographical area.

9. The method of Claim 1, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are mapped to a multicast IP address.

10. The method of Claim 1, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are bridged.

11. The method of Claim 1, wherein the first group of mobile endpoints of the first virtual talk group comprises land mobile radios operable to communicate on different frequencies.

12. The method of Claim 1, wherein communications from the plurality of mobile endpoints comprises push-to-talk communications.

13. The method of Claim 1, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

14. The method of Claim 1:

wherein the first virtual talk group is associated with a geographical area;

further comprising determining whether each of the selected first group of mobile endpoints are within a multicast reach of the geographical area; and

wherein configuring the first virtual talk group comprises joining in the first virtual talk group via multicast each of the selected first group of mobile endpoints that are within the multicast reach of the geographical area.

15. The method of Claim 14, wherein configuring the first virtual talk group comprises joining in the first virtual talk group via nailed dialed connections each of the selected first group of mobile endpoints that are not within the multicast reach of the geographical area.

16. The method of Claim 15, wherein the joining via nailed dialed connections comprises joining using SIP protocol.

17. The method of Claim 1:

wherein the first virtual talk group is associated with a geographical area;

wherein configuring a first virtual talk group comprising the first group of mobile endpoints comprises:

determining that a first mobile endpoint of the first group of mobile endpoints is within a multicast reach of the geographical area; and

joining in the first virtual talk group via multicast the first mobile endpoint of the first group of mobile endpoints; and

further comprising switching the first mobile endpoint to a nailed SIP connection to the first virtual talk group when the first mobile endpoint leaves the multicast reach of the geographical area.

18. The method of Claim 1,

wherein the first virtual talk group is associated with a geographical area; and

further comprising:

determining that a first mobile endpoint of the first group of mobile endpoints is continuously moving in

and out of a multicast reach of the geographical area; and

in response to the determination that the first mobile endpoint is continuously moving in and out of the multicast reach, providing a connection for the first mobile endpoint to the first virtual talk group via a nailed dialed connection.

19. A system for automatic configuration of virtual talk groups based on location of media source, comprising a processor operable to:

monitor communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

select a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and

configure a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints, the first group of mobile endpoints comprising mobile endpoints of different communication networks.

20. The system of Claim 19, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a first event.

21. The system of Claim 19, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile

endpoints within a first distance of a mobile endpoint of a user.

22. The system of Claim 19, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a selected geographic area.

23. The system of Claim 22, wherein the geographic area is selected on a map by a user.

24. The system of Claim 19:

an interface coupled to the processor and operable to receive the virtual talk group configuration instructions from a user; and

wherein the processor is further operable to add a mobile endpoint of the user to the first virtual talk group such that communications from the first group of mobile endpoints are communicated to the user.

25. The system of Claim 19, wherein the processor is further operable to remove a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when the first mobile endpoint leaves a geographic area associated with the first virtual talk group.

26. The system of Claim 19, wherein:

the virtual talk group configuration instructions relate to a first geographical area and the first virtual talk group is configured based on mobile endpoints within the first geographical area; and

the processor is further operable to remove a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when the first mobile endpoint leaves a second geographical area, the second geographical area including and greater than the first geographical area.

27. The system of Claim 19, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are mapped to a multicast IP address.

28. The system of Claim 19, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are bridged.

29. The system of Claim 19, wherein the first group of mobile endpoints of the first virtual talk group comprises land mobile radios operable to communicate on different frequencies.

30. The system of Claim 19, wherein communications from the plurality of mobile endpoints comprises push-to-talk communications.

31. The system of Claim 19, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

32. The system of Claim 19, wherein:

the first virtual talk group is associated with a geographical area;

the processor is further operable to determine whether each of the selected first group of mobile endpoints are within a multicast reach of the geographical area; and

a processor operable to configure the first virtual talk group comprises a processor operable to join in the first virtual talk group via multicast each of the selected first group of mobile endpoints that are within the multicast reach of the geographical area.

33. The system of Claim 32, wherein a processor operable to configure the first virtual talk group comprises a processor operable to join in the first virtual talk group via nailed dialed connections each of the selected first group of mobile endpoints that are not within the multicast reach of the geographical area.

34. The system of Claim 33, wherein the joining via nailed dialed connections comprises joining using SIP protocol.

35. The system of Claim 19, wherein:

the first virtual talk group is associated with a geographical area;

a processor operable to configure a first virtual talk group comprising the first group of mobile endpoints comprises a processor operable to:

determine that a first mobile endpoint of the first group of mobile endpoints is within a multicast reach of the geographical area; and

join in the first virtual talk group via multicast the first mobile endpoint of the first group of mobile endpoints; and

the processor is further operable to switch the first mobile endpoint to a nailed SIP connection to the first virtual talk group when the first mobile endpoint leaves the multicast reach of the geographical area.

36. The system of Claim 19, wherein:

the first virtual talk group is associated with a geographical area; and

the processor is further operable to:

determine that a first mobile endpoint of the first group of mobile endpoints is continuously moving in and out of a multicast reach of the geographical area; and

in response to the determination that the first mobile endpoint is continuously moving in and out of the multicast reach, provide a connection for the first mobile endpoint to the first virtual talk group via a nailed dialed connection.

37. A system for automatic configuration of virtual talk groups based on location of media source, comprising:

means for monitoring communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

means for selecting a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and

means for configuring a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints, the first group of mobile endpoints comprising mobile endpoints of different communication networks.

38. Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:

monitor communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

select a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and

configure a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints, the first group of mobile endpoints comprising mobile endpoints of different communication networks.

39. A method for communicating media based on location of media source, comprising:

receiving communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

receiving a selection of a geographical area;

comparing the location information of each communication with the selected geographical area; and

presenting to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

40. The method of Claim 39, wherein:

receiving communications from a plurality of endpoints comprises receiving communications from a plurality of virtual talk groups each comprising endpoints of different communication networks; and

presenting to the user each message received from each endpoint of the plurality of endpoints located within the selected geographical area comprises presenting to the user messages from endpoints of different virtual talk groups.

41. The method of Claim 39, wherein receiving communications from a plurality of endpoints comprises receiving communications from a plurality of endpoints via a multicast stream.

42. The method of Claim 39, wherein receiving communications from a plurality of endpoints comprises receiving communications from a plurality of endpoints via a nailed dialed connection.

43. The method of Claim 39, wherein receiving a selection of a geographical area comprises receiving a selection of a geographical area on a map presented to the user.

44. The method of Claim 39, wherein comparing the location information of each communication with the selected geographical area comprises comparing the

location information of each communication with the selected geographical area at an endpoint of the user.

45. The method of Claim 39, wherein the location information comprises global positioning satellite (GPS) information.

46. The method of Claim 39, wherein each media message comprises an audio message and the location information is steganographically embedded within the audio message.

47. The method of Claim 39, wherein:

the plurality of endpoints comprise sensors; and

the media messages of the communications from the plurality of endpoints comprise information received at the sensors.

48. The method of Claim 39, wherein the communications from the plurality of endpoints comprise push-to-talk communications.

49. The method of Claim 39, wherein the plurality of endpoints located within the selected geographical area includes endpoints from at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

50. The method of Claim 39:

further comprising mixing each message received from each endpoint located within the selected geographical area into an output stream;

wherein presenting to the user each message received from each endpoint located within the selected geographical area comprises presenting the output stream to the user;

further comprising receiving from a first endpoint of the endpoints located within the selected geographical area a new communication comprising a new message and new location information identifying a new location of the first endpoint;

comparing the new location information with a second geographical area, the second geographical area larger than the selected geographical area and including the selected geographical area;

adding the new message to the output stream if the new location of the first endpoint is within the second geographical area; and

excluding the new message from the output stream if the new location of the first endpoint is not within the second geographical area.

51. A method for communicating media based on location of media source, comprising:

receiving communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

receiving a selection of a geographical area;

comparing the location information of each communication with the selected geographical area;

selecting endpoints of the plurality of endpoints based on their proximity to the selected geographical area; and

presenting to a user each message received from each selected endpoint.

52. The method of Claim 51, wherein selecting endpoints of the plurality of endpoints based on their proximity to the selected geographical area comprises selecting a first number of endpoints closest to the geographical area.

53. The method of Claim 51:

further comprising mixing each message received from each selected endpoint into an output stream;

wherein presenting to the user each message received from each selected endpoint comprises presenting the output stream to the user;

further comprising receiving from a first endpoint of the plurality of endpoints a new communication comprising a new message and new location information identifying a new location of the first endpoint;

comparing the new location information with the selected geographical area; and

adding the new message to the output stream based on the proximity of the new location of the first endpoint to the selected geographical area.

54. A system for communicating media based on location of media source, comprising:

an interface operable to:

receive communications from a plurality of endpoints, each communication comprising a media message

and location information identifying a location of its transmitting endpoint;

receive a selection of a geographical area; and

a processor coupled to the interface and operable to:

compare the location information of each communication with the selected geographical area; and

present to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

55. The system of Claim 54:

wherein an interface operable to receive communications from a plurality of endpoints comprises an interface operable to receive communications from a plurality of virtual talk groups each comprising endpoints of different communication networks; and

wherein a processor operable to present to the user each message received from each endpoint of the plurality of endpoints located within the selected geographical area comprises a processor operable to present to the user messages from endpoints of different virtual talk groups.

56. The system of Claim 54, wherein an interface operable to receive communications from a plurality of endpoints comprises an interface operable to receive communications from a plurality of endpoints via a multicast stream.

57. The system of Claim 54, wherein an interface operable to receive communications from a plurality of endpoints comprises an interface operable to receive

communications from a plurality of endpoints via a nailed dialed connection.

58. The system of Claim 54, wherein an interface operable to receive a selection of a geographical area comprises an interface operable to receive a selection of a geographical area on a map presented to the user.

59. The system of Claim 54, wherein a processor operable to compare the location information of each communication with the selected geographical area comprises a processor operable to compare the location information of each communication with the selected geographical area at an endpoint of the user.

60. The system of Claim 54, wherein the location information comprises global positioning satellite (GPS) information.

61. The system of Claim 54, wherein each media message comprises an audio message and the location information is steganographically embedded within the audio message.

62. The system of Claim 54, wherein:

the plurality of endpoints comprise sensors; and

the media messages of the communications from the plurality of endpoints comprise information received at the sensors.

63. The system of Claim 54, wherein the communications from the plurality of endpoints comprise push-to-talk communications.

64. The system of Claim 54, wherein the plurality of endpoints located within the selected geographical area includes endpoints from at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

65. The system of Claim 54, wherein:

the processor is further operable to mix each message received from each selected endpoint into an output stream;

a processor operable to present to the user each message received from each selected endpoint comprises a processor operable to present the output stream to the user;

the interface is further operable to receive from a first endpoint of the endpoints located within the selected geographical area a new communication comprising a new message and new location information identifying a new location of the first endpoint; and

the processor is further operable to:

compare the new location information with a second geographical area, the second geographical area larger than the selected geographical area and including the selected geographical area;

add the new message to the output stream if the new location of the first endpoint is within the second geographical area; and

exclude the new message from the output stream if the new location of the first endpoint is not within the second geographical area.

66. A system for communicating media based on location of media source, comprising:

an interface operable to:

receive communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint; and

receive a selection of a geographical area; and

a processor coupled to the interface and operable to:

compare the location information of each communication with the selected geographical area;

select endpoints of the plurality of endpoints based on their proximity to the selected geographical area; and

present to a user each message received from each selected endpoint.

67. The system of Claim 66, wherein a processor operable to select endpoints of the plurality of endpoints based on their proximity to the selected geographical area comprises a processor operable to select a first number of endpoints closest to the geographical area.

68. The system of Claim 66, wherein:

the processor is further operable to mix each message received from each selected endpoint into an output stream;

a processor operable to present to the user each message received from each selected endpoint comprises a processor operable to present the output stream to the user;

the interface is further operable to receive from a first endpoint of the plurality of endpoints a new communication comprising a new message and new location information identifying a new location of the first endpoint; and

the processor if further operable to:

compare the new location information with the selected geographical area; and

add the new message to the output stream based on the proximity of the new location of the first endpoint to the selected geographical area.

69. A system for communicating media based on location of media source, comprising:

means for receiving communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

means for receiving a selection of a geographical area;

means for comparing the location information of each communication with the selected geographical area; and

means for presenting to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

70. Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:

receive communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;

receive a selection of a geographical area;

compare the location information of each communication with the selected geographical area; and

present to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

71. A method for providing interoperable communications with location information, comprising:

receiving communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;

receiving from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information identifying a location of the first mobile endpoint; and

presenting to a user:

the first media message from the first mobile endpoint; and

the location of the first mobile endpoint.

72. The method of Claim 71, wherein presenting the location of the first mobile endpoint comprises presenting a street address of the first mobile endpoint.

73. The method of Claim 71, wherein the location information comprises global positioning satellite (GPS) information.

74. The method of Claim 71, wherein:

the first communication comprises a multicast stream with a header; and

the header comprises the location information.

75. The method of Claim 71, wherein the first communication comprises a unicast stream comprising the location information.

76. The method of Claim 71, wherein the first media message comprises an audio message and the location information is steganographically embedded within the audio message.

77. The method of Claim 71, further comprising:

receiving from a second mobile endpoint of a second virtual talk group of the plurality of virtual talk groups a second communication, the second communication comprising a second media message and location information identifying a location of the second mobile endpoint; and

presenting to the user:

the second media message from the second mobile endpoint;

an identification of the second virtual talk group comprising the second mobile endpoint; and

the location of the second mobile endpoint.

78. The method of Claim 71, wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address.

79. The method of Claim 71:

wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are bridged; and

further comprising:

simultaneously receiving from a plurality of additional endpoints of the first virtual talk group a plurality of additional communications, each comprising a media message and location information identifying a location of a respective transmitting endpoint of the plurality of additional endpoints; and

presenting to the user:

a bridged communication stream comprising each media message; and

the locations of the plurality of additional endpoints.

80. The method of Claim 71, wherein:

the first virtual talk group comprises a second mobile endpoint; and

the first and second mobile endpoints comprise land mobile radios operable to communicate on different frequencies.

81. The method of Claim 71, wherein:

the first mobile endpoint comprises a push-to-talk endpoint; and

the first media communication comprises a push-to-talk communication.

82. The method of Claim 71, wherein the different communication networks comprise at least two of: a police department communication network, a fire department

communication network, an ambulance communication network and a company communication network.

83. A system for providing interoperable communications with location information, comprising:

an interface operable to receive communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;

the interface operable to receive from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information identifying a location of the first mobile endpoint; and

a processor coupled to the interface and operable to present to a user:

the first media message from the first mobile endpoint; and

the location of the first mobile endpoint.

84. The system of Claim 83, wherein a processor operable to present the location of the first mobile endpoint comprises a processor operable to present a street address of the first mobile endpoint.

85. The system of Claim 83, wherein the location information comprises global positioning satellite (GPS) information.

86. The system of Claim 83, wherein:

the first communication comprises a multicast stream with a header; and

the header comprises the location information.

87. The system of Claim 83, wherein the first communication comprises a unicast stream comprising the location information.

88. The system of Claim 83, wherein the first media message comprises an audio message and the location information is steganographically embedded within the audio message.

89. The system of Claim 83, wherein:

the interface is further operable to receive from a second mobile endpoint of a second virtual talk group of the plurality of virtual talk groups a second communication, the second communication comprising a second media message and location information identifying a location of the second mobile endpoint; and

the processor is further operable to present to the user:

the second media message from the second mobile endpoint;

an identification of the second virtual talk group comprising the second mobile endpoint; and

the location of the second mobile endpoint.

90. The system of Claim 83, wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address.

91. The system of Claim 83, wherein:

the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are bridged;

the interface is further operable to:

simultaneously receive from a plurality of additional endpoints of the first virtual talk group a plurality of additional communications, each comprising a media message and location information identifying a location of a respective transmitting endpoint of the plurality of additional endpoints; and

the processor is further operable to present to the user:

a bridged communication stream comprising each media message; and

the locations of the plurality of additional endpoints.

92. The system of Claim 83, wherein:

the first virtual talk group comprises a second mobile endpoint; and

the first and second mobile endpoints comprise land mobile radios operable to communicate on different frequencies.

93. The system of Claim 83, wherein:

the first mobile endpoint comprises a push-to-talk endpoint; and

the first media communication comprises a push-to-talk communication.

94. The system of Claim 83, wherein the different communication networks comprise at least two of: a police

department communication network, a fire department communication network, an ambulance communication network and a company communication network.

95. A system for providing interoperable communications with location information, comprising:

means for receiving communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;

means for receiving from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information identifying a location of the first mobile endpoint; and

means for presenting to a user:

the first media message from the first mobile endpoint; and

the location of the first mobile endpoint.

96. The system of Claim 95, further comprising means for presenting to the user an identification of the first virtual talk group comprising the first mobile endpoint.

97. Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:

receive communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;

receive from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information identifying a location of the first mobile endpoint; and

present to a user:

the first media message from the first mobile endpoint; and

the location of the first mobile endpoint.

98. The medium of Claim 97, wherein code operable to present the location of the first mobile endpoint comprises code operable to present a street address of the first mobile endpoint.

99. The medium of Claim 97, wherein the location information comprises global positioning satellite (GPS) information.

100. The medium of Claim 97, wherein:

the first communication comprises a multicast stream with a header; and

the header comprises the location information.

101. The medium of Claim 97, wherein the first communication comprises a unicast stream comprising the location information.

102. The medium of Claim 97, wherein the first media message comprises an audio message and the location information is steganographically embedded within the audio message.

103. The medium of Claim 97, wherein the code is further operable to:

receive from a second mobile endpoint of a second virtual talk group of the plurality of virtual talk groups a second communication, the second communication comprising a second media message and location information identifying a location of the second mobile endpoint; and

present to the user:

the second media message from the second mobile endpoint;

an identification of the second virtual talk group comprising the second mobile endpoint; and

the location of the second mobile endpoint.

104. The medium of Claim 97, wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address.

105. The medium of Claim 97:

wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are bridged; and

wherein the code is further operable to:

simultaneously receive from a plurality of additional endpoints of the first virtual talk group a plurality of additional communications, each comprising a media message and location information identifying a location of a respective transmitting endpoint of the plurality of additional endpoints; and

present to the user:

a bridged communication stream comprising each media message; and

the locations of the plurality of additional endpoints.

106. The medium of Claim 97, wherein:

the first virtual talk group comprises a second mobile endpoint; and

the first and second mobile endpoints comprise land mobile radios operable to communicate on different frequencies.

107. The medium of Claim 97, wherein:

the first mobile endpoint comprises a push-to-talk endpoint; and

the first media communication comprises a push-to-talk communication.

108. The medium of Claim 97, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

109. A method for providing interoperable communications with location information, comprising:

receiving communications from a plurality of push-to-talk endpoints of a virtual talk group, each communication comprising a media message and location information identifying a location of a transmitting endpoint, the virtual talk group comprising push-to-talk endpoints of different communication networks;

bridging the communications from the plurality of push-to-talk endpoints of the virtual talk group;

simultaneously receiving requests to talk from a plurality of requesting push-to-talk endpoints of the virtual talk group; and

providing floor priority one of the requesting push-to-talk endpoints based on its proximity to the event.

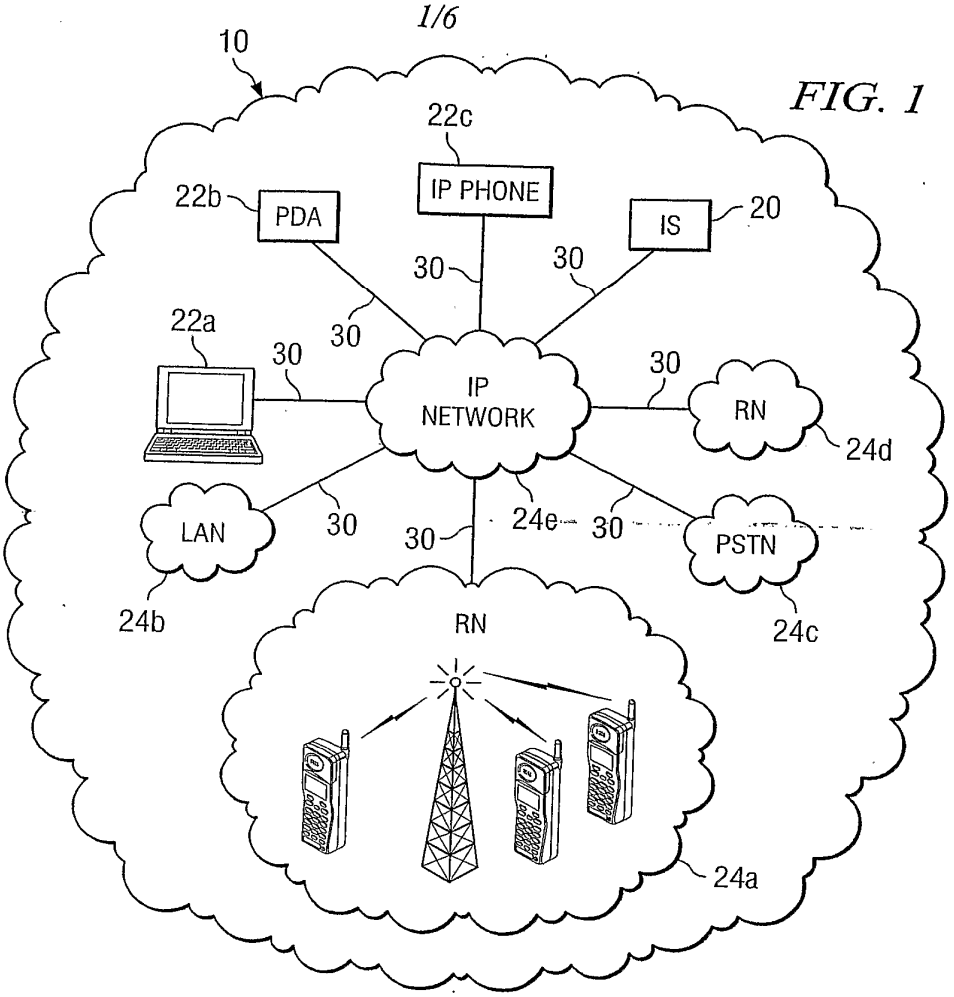

10
22c
IP PHONE
22b
PDA
IS
20
30
30
30
22a
30
30
IP
NETWORK
30
RN
24d
LAN
30
30
24e
30
PSTN
24b
RN
24c
24a

FIG. 1

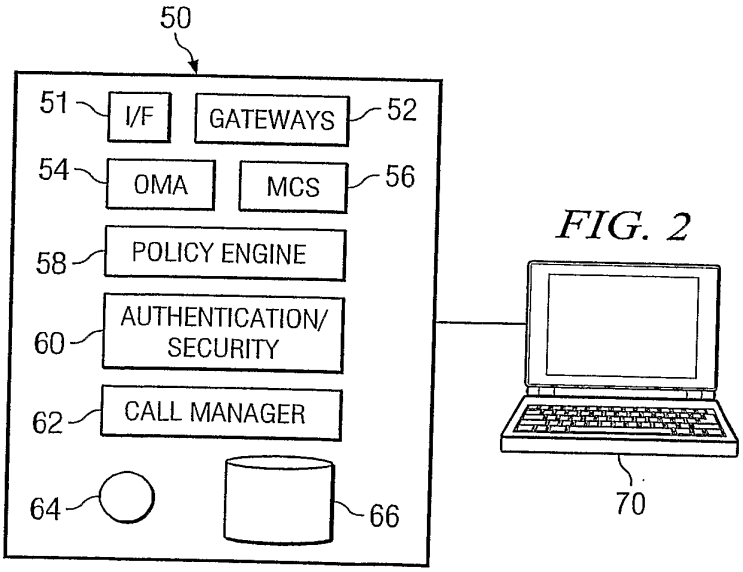

50
51
I/F
GATEWAYS
52
54
OMA
MCS
56
58
POLICY ENGINE
60
AUTHENTICATION/
SECURITY
62
CALL MANAGER
64
66
70

FIG. 2

FIG. 3

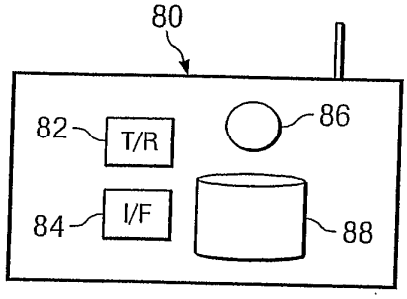

80
82
T/R
86
84
I/F
88

FIG. 7

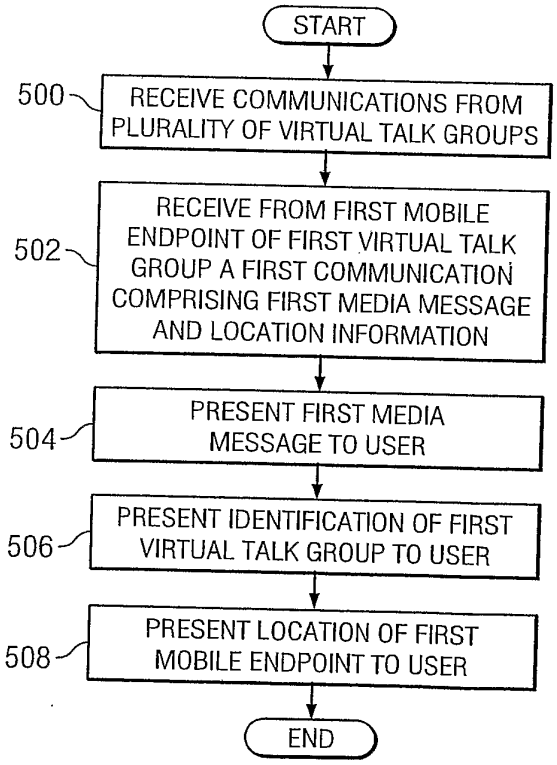
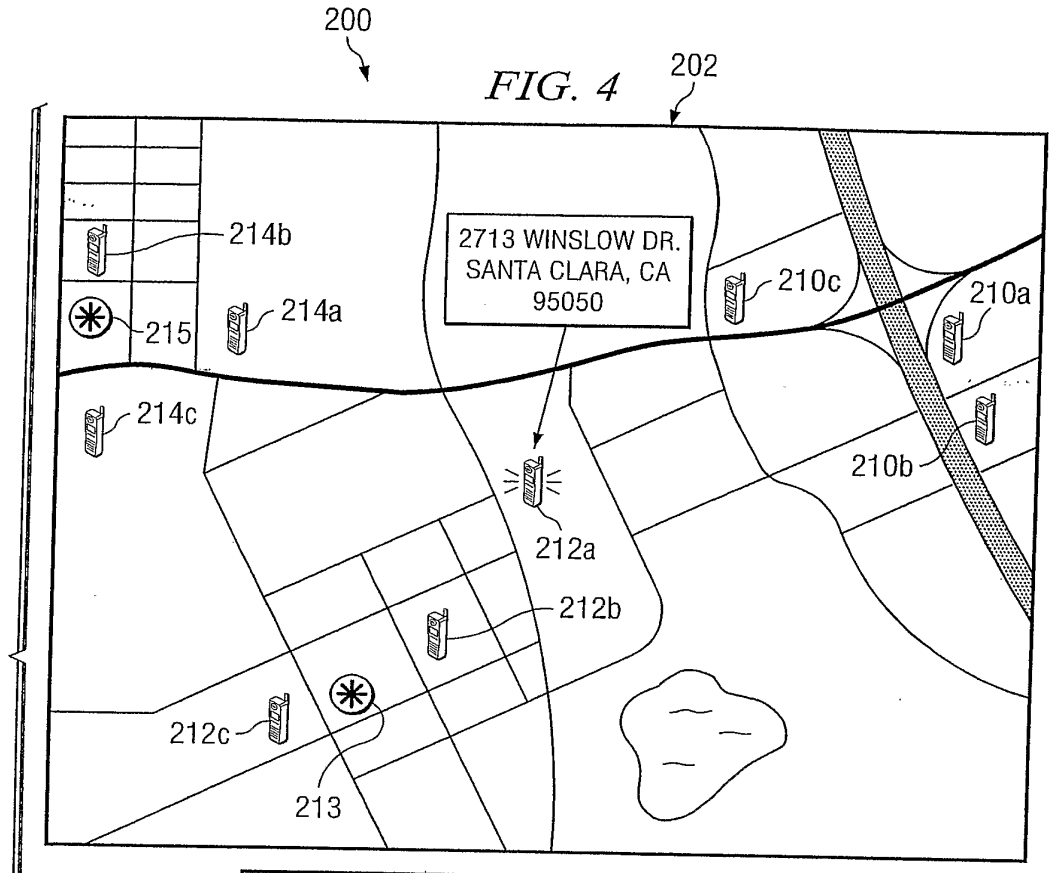

START
500
RECEIVE COMMUNICATIONS FROM PLURALITY OF VIRTUAL TALK GROUPS
502
RECEIVE FROM FIRST MOBILE ENDPOINT OF FIRST VIRTUAL TALK GROUP A FIRST COMMUNICATION COMPRISING FIRST MEDIA MESSAGE AND LOCATION INFORMATION
504
PRESENT FIRST MEDIA MESSAGE TO USER
506
PRESENT IDENTIFICATION OF FIRST VIRTUAL TALK GROUP TO USER
508
PRESENT LOCATION OF FIRST MOBILE ENDPOINT TO USER
END

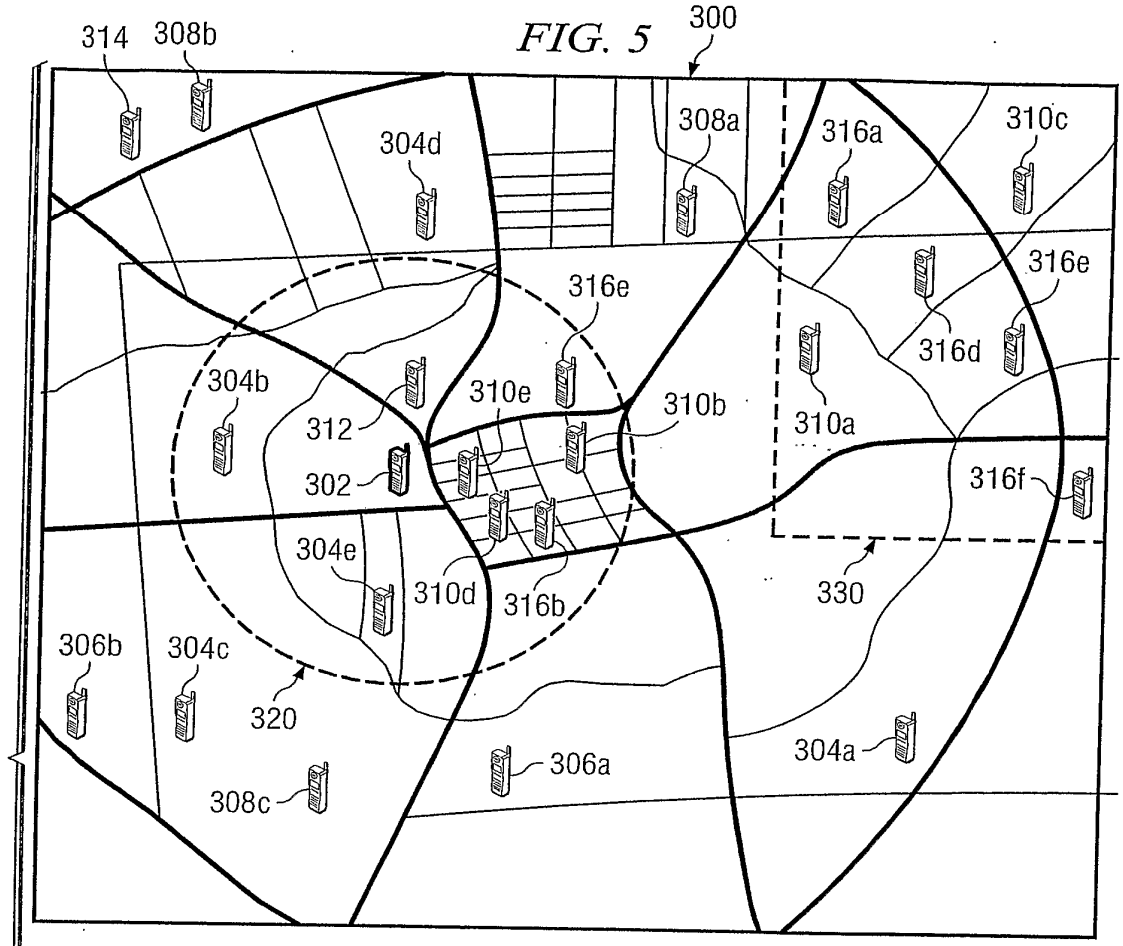
FIG. 4



VIRTUAL TALK GROUP	INCIDENT	MEMBERS
1		210a, 210b, 210c
2	213	212a, 212b, 212c
3	215	214a, 214b, 214c

204

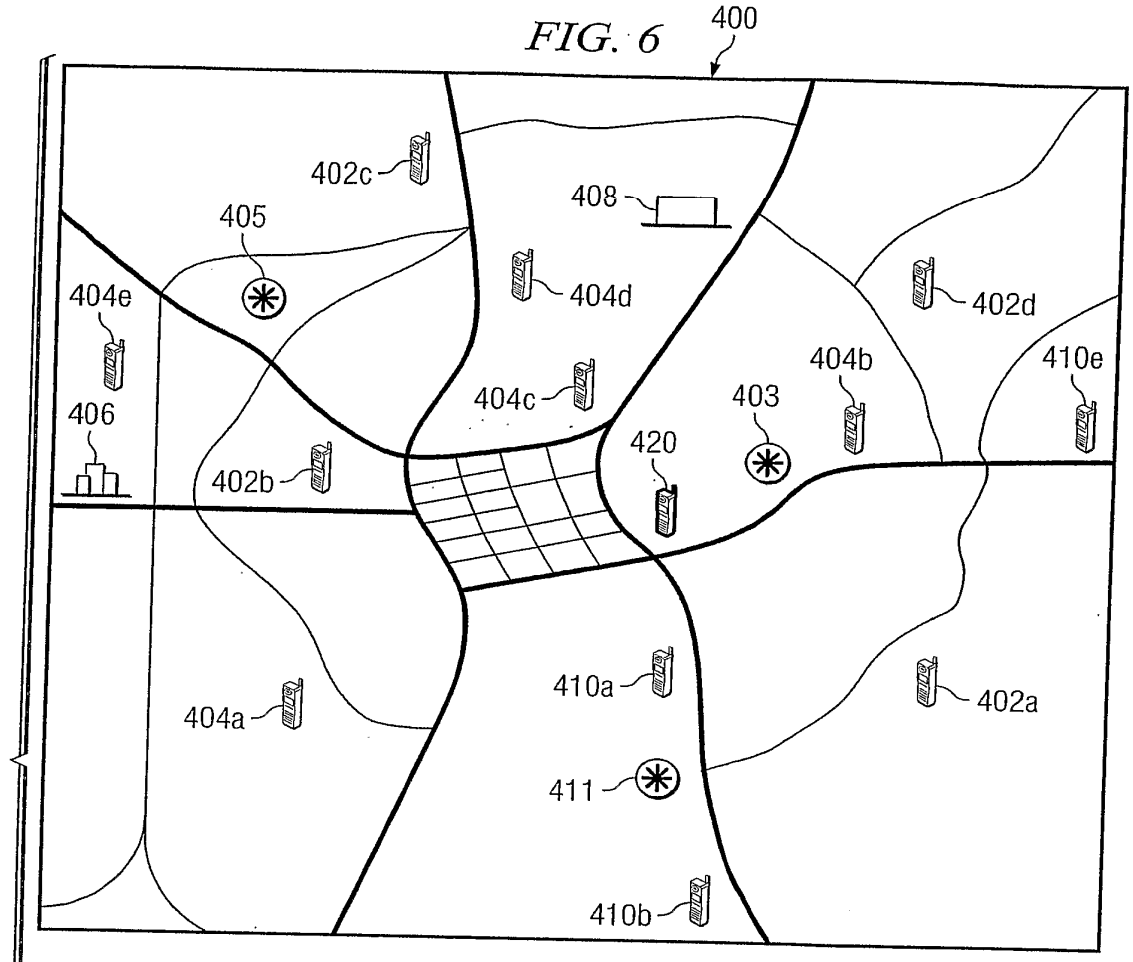
FIG. 5



VIRTUAL TALK GROUP	MEMBERS
1	304a, 304b, 304c, 304d, 304e
2	306a, 306b
3	308a, 308b, 308c
4	310a, 310b, 310c, 310d, 310e
5	316a, 316b, 316c, 316d, 316e, 316f

301

FIG. 6



VIRTUAL TALK GROUP	SCENE	MEMBERS
1	403	402a, 402b, 402c, 402d, 406
2	405	404a, 404b, 404c, 404d, 404e, 408
3	411	410a, 410b, 410c
4	406	406

401

FIG. 8

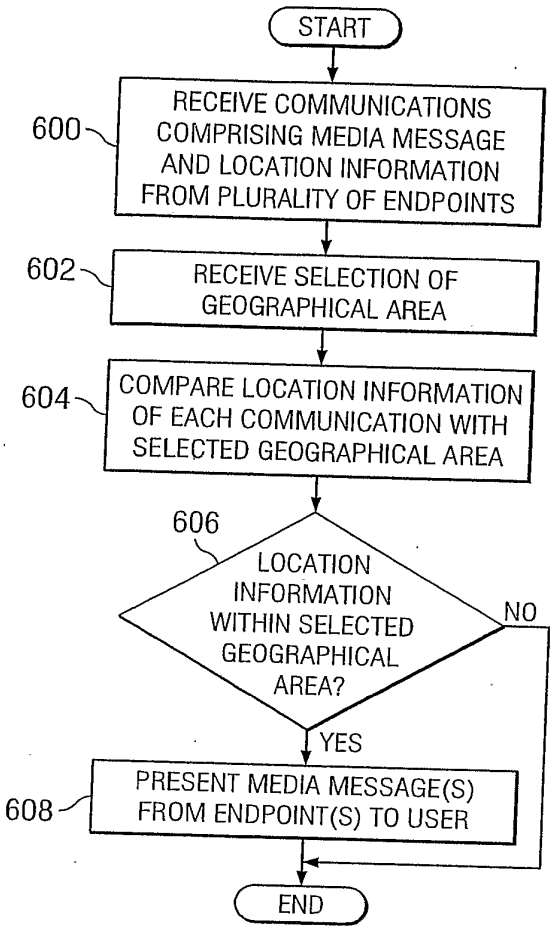
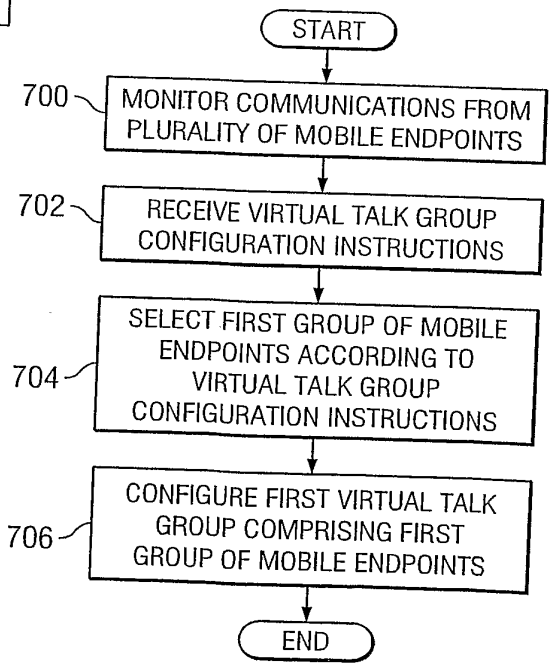

START
600
RECEIVE COMMUNICATIONS COMPRISING MEDIA MESSAGE AND LOCATION INFORMATION FROM PLURALITY OF ENDPOINTS
602
RECEIVE SELECTION OF GEOGRAPHICAL AREA
604
COMPARE LOCATION INFORMATION OF EACH COMMUNICATION WITH SELECTED GEOGRAPHICAL AREA
606
LOCATION INFORMATION WITHIN SELECTED GEOGRAPHICAL AREA?
NO
YES
608
PRESENT MEDIA MESSAGE(S) FROM ENDPOINT(S) TO USER
END

FIG. 9


START
700
MONITOR COMMUNICATIONS FROM PLURALITY OF MOBILE ENDPOINTS
702
RECEIVE VIRTUAL TALK GROUP CONFIGURATION INSTRUCTIONS
704
SELECT FIRST GROUP OF MOBILE ENDPOINTS ACCORDING TO VIRTUAL TALK GROUP CONFIGURATION INSTRUCTIONS
706
CONFIGURE FIRST VIRTUAL TALK GROUP COMPRISING FIRST GROUP OF MOBILE ENDPOINTS
END

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 March 2007 (08.03.2007)

PCT

(10) International Publication Number
WO 2007/027356 A2

(51) International Patent Classification:
H04Q 7/00 (2006.01)

(21) International Application Number:
PCT/US2006/030294

(22) International Filing Date: 2 August 2006 (02.08.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/214,582 29 August 2005 (29.08.2005) US

(71) Applicant *(for all designated States except US)*: **CISCO TECHNOLOGY, INC.** [US/US]; 170 West Tasman Drive, San Jose, CA 95134 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHAFFER, Shmuel** [US/US]; 121 Cowper Street, Palo Alto, CA 94301 (US). **HALL, Douglas, J.** [US/US]; 7266 Lee Road, Westerville, OH 43081 (US).

(74) Agent: **SHOWALTER, Barton, E.**; Baker Botts L.L.P., 2001 Ross Avenue, Suite 600, Dallas, TX 75201 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

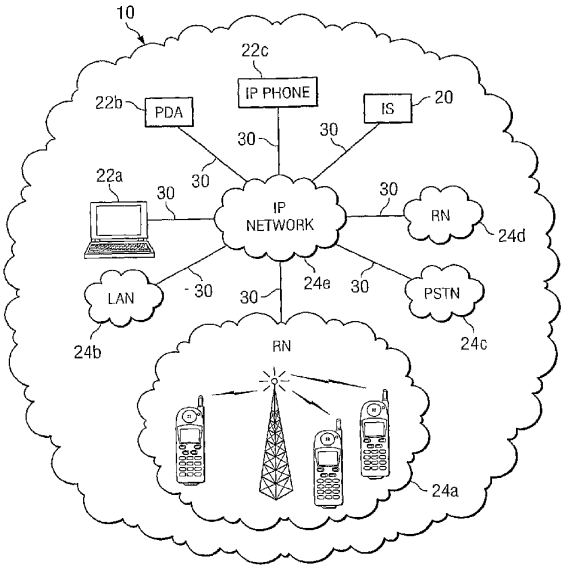
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *without international search report and to be republished upon receipt of that report*

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR CONVEYING MEDIA SOURCE LOCATION INFORMATION



(57) Abstract: A method for conveying media source location information includes receiving a first communication from a first endpoint and receiving location information indicating a first location of the first endpoint . The method also includes presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint .

WO 2007/027356 A2

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

METHOD AND SYSTEM FOR CONVEYING MEDIA SOURCE LOCATION INFORMATION

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to communication systems and, more particularly, to a method and system for conveying media source location information.

BACKGROUND OF THE INVENTION

Many public and private groups, such as security and safety personnel (e.g., police, fire fighters and ambulance drivers) use various communication networks of differing technologies and types for communication. Many networks utilize land mobile radios communicating through push-to-talk technologies. However, communications among different endpoints of different networks such as endpoints of different police, fire or other security networks may be difficult. Collaboration between the different agencies and networks tends to be ad hoc and inefficient. When achieved, it often involves laborious manual intervention. Organizations working towards interoperability solutions include Raytheon JPS Communications, IP Blue, Twisted Pair, M/A-COM and Cisco Systems.

In some systems, dispatchers divide various voice channels into two groups and direct their voice systems to deliver more important channels to their, for example, right ear while the other less important channels are directed to their left ear. Some systems allow users and dispatchers to present voice streams from any desired fixed direction.

U.S. Patent No. 5,048,082, entitled "Voice direction recognition in a digital telephone station"

describes a method for controlling a voice-controlled voice direction recognition unit for a digital telephone. It allows users to alter the direction of arrival of their voice by manipulating the attenuation of the signals to the headset. Some conferencing systems divide conferencing presentation sound fields into sectors and allocate one or more sectors to each conferencing endpoint. These systems allow a conference participant to increase his comprehension when multiple participants are speaking simultaneously, as well as to alleviate confusion as to who is speaking at any given time. Some methods convey GPS information of speakers to listeners and facilitate a presentation of an icon on a map that identifies the location of a speaker.

SUMMARY OF THE INVENTION

The present invention provides a method and system for conveying media source location information that substantially eliminates or reduces at least some of the disadvantages and problems associated with previous methods and systems.

In accordance with a particular embodiment, a method for conveying media source location information includes receiving a first communication from a first endpoint and receiving location information indicating a first location of the first endpoint. The method also includes presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint.

Presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint may comprise presenting the first communication to the user

from a direction relative to the user corresponding to a direction of the first location relative to the second location. The method may comprise receiving orientation information indicating an orientation of the user. The method may also comprise presenting the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location. Presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint may comprise presenting the first communication to the user in a manner to reflect a distance between the first location and the second location. Presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint may comprise attenuating an output signal of at least one speaker of a plurality of speakers used to present the first communication to the user of the second endpoint. The first communication may comprise an audio message and the location information may be steganographically embedded within the audio message. The first endpoint may comprise a push-to-talk endpoint, and the first communication may comprise a push-to-talk communication.

In accordance with another embodiment, a system for conveying media source location information includes an interface operable to receive a first communication from a first endpoint and receive location information indicating a first location of the first endpoint. The system also includes a processor coupled to the interface and operable to present the first communication to a user of a second endpoint in a manner to reflect the first

location relative to a second location of the second endpoint.

Technical advantages of particular embodiments include the ability to render a communication stream, such as a voice stream, to an end user from the real direction of the speaker relative to the end user. Particular embodiments also provide the listener with an indication about the distance of the speaker from the listener by, for example, altering the volume of the rendered audio. Media streams carrying location information to facilitate the conveyance of relative locations of transmitting endpoints may be integrated with those that do not have associated location information. For example, a distinct audible tone may be provided to mark media streams for which the direction of arrival is unknown.

Other technical advantages will be readily apparent to one skilled in the art from the following figures, descriptions and claims. Moreover, while specific advantages have been enumerated above, various embodiments may include all, some or none of the enumerated advantages.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and its advantages, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 illustrates a communication system with various communication networks and an interoperability system, in accordance with a particular embodiment;

FIGURE 2 illustrates an example interoperability system, in accordance with a particular embodiment;

FIGURE 3 illustrates a plurality of endpoints capable of conveying media source location information, in accordance with a particular embodiment;

FIGURES 4A and 4B illustrate example speaker configurations that may be used in particular embodiments; and

FIGURE 5 illustrates a method for conveying media source location information, in accordance with a particular embodiment.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

FIGURE 1 illustrates a communication system 10, in accordance with a particular embodiment. Communication system 10 includes communication networks 24a-24e, interoperability system (IS) 20 and endpoints 22a-22c. IS 20 is able to facilitate interoperable communication sessions between and among various communication devices, such as endpoints of communication networks 24 and endpoints 22. IS 20 uses a systems approach to offer a framework based on IP protocols and services to immediately achieve secure voice, video and other data interoperability among communication endpoints and networks utilizing different technologies.

In some communication systems, such as communication systems for push to talk (PTT) and other media (e.g., communication system 10), the direction of a speaker relative to a recipient of a particular communication may convey critical information. For example, when SWAT team members talk with each other, the relative position of each member may provide critical information to the other team members. In this environment, when a team member calls for help or spots a target, it may be critical for the other team members to obtain the relative direction

of the speaker. In another scenario, a fire fighter may need help and may find it difficult to describe his location because of smoke. As another example, when soldiers ride in closed vehicles and communicate via PTT devices, it may be critical for them to convey to their battalion members not only what they see through their limited field of view but also where they are positioned in the battlefield.

Particular embodiments enable team members to determine relative locations of speakers thus facilitating communications and updates about a situation or event in their specific areas of operation. Using systems and functionality described herein that can present media streams as if arriving from any particular direction, particular embodiments convey communicated media in a manner to reflect a location of the communication's transmitting endpoint.

In particular embodiments, IS 20 has the ability to communicate transmitted media to users in a manner to indicate the location of the source of the transmitted media relative to the position and orientation of the recipient(s). For example, if a transmitting endpoint is to the left of a recipient of a communication, then the communication may be presented to the recipient as if coming from the recipient's left. The closer the transmitting endpoint, the louder the media may be communicated to the recipient. The manner in which the relative position of the transmitting endpoint is communicated may depend on the number, nature and position of speakers or other audio communication components used to transmit the media. While particular embodiments discuss an IS providing this functionality, other embodiments may provide this functionality without

using an interoperability system. Various methods through which this functionality may be provided are further discussed below.

In the illustrated embodiment, communication networks 24a and 24d comprise radio networks (RNs), communication network 24b comprises a local area network (LAN), communication network 24c comprises a PSTN and communication network 24e comprises an IP network. It should be understood, however, that communication system 10 may comprise any number of IP or non-IP communication networks of any wireless or wireline form capable of communicating audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Communication networks 24a-24e may include any number and combination of segments, nodes and endpoints to enable communication among network devices and components. Communication networks 24a-24e may be distributed locally or across multiple cities and geographic regions. Nodes may include any combination of network components, gatekeepers, call managers, conference bridges, routers, hubs, switches, gateways, base stations, endpoints or other hardware, software or embedded logic implementing any number of communication protocols that allow for the exchange of data in communication system 10. Segments 30, which may comprise any suitable wireless or wireline communication links, including one or more communication networks (e.g., WANs) as appropriate, couple various networks with each other and with endpoints 22 and IS 20. In particular embodiments, segments may include gateways for facilitating communication between various networks, such as an LMR gateway between radio network 24a and IP network 24e.

In some cases, users of endpoints of one of communication networks 24a-24e may communicate with endpoints of another one of communication networks 24a-24e through IS 20. A radio network, such as radio network 24a or 24d, may support communication among portable mobile station endpoints, such as land mobile radios (LMRs), using any suitable communication methods or features, such as cellular and push-to-talk (PTT). Communication networks 24a-24e may comprise networks of particular groups or agencies (e.g., a municipality's police department network), whether operational with respect to a particular area or otherwise.

IS 20 enables, facilitates and/or provides for interoperable communication among communication endpoints and devices, such as LMRs, cellular phones, IP phones, PCs, PDAs, PSTN phones, video monitors, cameras and sensors of one or more communication networks (e.g., communication networks 24a-24e) using Internet Protocol. Such endpoints may comprise IP or non-IP-enabled endpoints. In particular embodiments, IS 20 may control gateways (for example, of segments 30) in order to map radio frequencies of particular mobile radio endpoints to IP addresses for communication to other types of radio endpoints or IP devices. For example, a particular gateway may be able to receive communications from various types of endpoints (e.g., on various types of communication networks) and may convert such communications for transmission to other types of endpoints. IS 20's control of the gateway may control the various endpoints and/or networks that receive particular communications, depending on system functionality and configuration as further discussed below. As indicated, such control may include the

mapping of communications and endpoints to IP addresses for interoperable communication. In some embodiments, IS 20 may host audio conferences that bridge communications received from endpoints. As indicated above, communication system 10 (including IS 20) may include any suitable number or type of gateways (e.g., LMR and PSTN gateways), servers (e.g., multipoint conference servers), switches, routers, firewalls, access points, processors, memory or other hardware, software or encoded logic to provide functionality described herein. IS 20 is coupled to communication networks 24a-24d and endpoints 22 through IP network 24e, which may comprise any suitable IP network.

As indicated above, IS 20 uses IP to enable communication among endpoints of various networks. The manner in which IS 20 facilitates communications among endpoints may vary according to location and system or operational needs. For example, IS 20 may communicate with endpoints using multicast IP addresses assigned to an endpoint of a communication network, a group of endpoints of a communication network or one or more endpoints of multiple communication networks or alternatively using a peer to peer dialed connection or a nailed dialed connection. A group of endpoints may be combined into a virtual talk group for communication using a particular IP address. As an example, the virtual talk group may be assigned a multicast IP address through which users of various endpoints may communicate on the talk group. The use of multicast IP addresses allows IS 20 to facilitate communications among communication devices and endpoints of various communication networks to provide audio, data, video and control network interoperability. As an additional

example, in some cases multicast streams (e.g., utilizing multicast IP addresses) may be used. In some cases nailed dialed connections, such as those using SIP protocol, may be used for communication among endpoints and with IS 20. Various embodiments may combine communication methods to facilitate communication among endpoints. For example, in some cases certain endpoints of a virtual talk group may participate in the talk group through a multicast IP address while other endpoints may utilize a nailed SIP connection. IS 20 may control this participation, such as by controlling gateways, multipoint conferences and the mapping of communications to IP addresses.

IS 20 may be utilized and implemented in any number of market segments, such as enterprise safety and security (e.g., loss prevention), transportation, retail, public safety and federal agencies in order to provide radio and non-radio network interoperability within and between such market segments. As indicated above, such network interoperability includes the interoperability of push-to-talk voice technology within various networks and the interoperability between push-to-talk and full duplex dialed connections.

It will be recognized by those of ordinary skill in the art that endpoints 22 and IS 20 may be any combination of hardware, software and/or encoded logic that provides communication services to a user. In the illustrated embodiment, endpoints 22 comprise a PC (endpoint 22a), a PDA (endpoint 22b) and an IP phone 22c). However, in other embodiments, endpoints 22 may include a telephone, a personal computer (PC), a video monitor, a camera, an IP phone, a cell phone, a land mobile radio (LMR), a personal digital assistant (PDA), a

command center or any other communication hardware, software and/or encoded logic that supports the communication of audio, video or other data, using packets of media (or frames) or otherwise, through communication system 10. Endpoints 22 as well as endpoints and components of communication networks 24 may be capable of communicating using any particular type of technology, such as cellular, IP, PSTN, CDMA, GSM, TDMA and satellite. Endpoints 22 and IS 20 may also include unattended or automated systems, gateways, other intermediate components or other devices that can establish media sessions.

Although the illustrated embodiment includes five communication networks 24a-24e, the term "communication network" should be interpreted as generally defining any network capable of transmitting audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Any one of networks 24a-24e may be implemented as a local area network (LAN), wide area network (WAN), cellular network, global distributed network such as the Internet, Intranet, Extranet, PSTN, LMR network, CDMA network, GSM network, TDMA network, satellite network or any other form of wireless or wireline communication network.

Communications over communication networks 24a-24e may use any suitable communication protocol. In a particular embodiment, some communication networks may employ voice communication protocols that allow for the addressing or identification of endpoints, nodes, and/or other components coupled to the communication network. For example, using Internet protocol (IP), each of the components coupled together by, for example, communication network 24b in communication system 10 may

be identified in information directed using IP addresses. In this manner, network 24b may support any form and/or combination of point-to-point, multicast, unicast, or other techniques for exchanging media packets among components in communication system 10. Any network components capable of exchanging audio, video, or other data are included within the scope of the present invention.

Since IP networks share a common method of transmitting data, telecommunication signals may be transmitted between telephony devices located on different, but interconnected, IP networks. In addition to being coupled to other IP networks, communication network 24b may also be coupled to non-IP telecommunication networks, for example through the use of interfaces or components, including gateways. In the illustrated embodiment, communication network 24b may be coupled with PSTN 24c through a gateway. In some embodiments the gateway may be a part of IS 20 or network 24e. PSTN 24c includes switching stations, central offices, mobile telephone switching offices, pager switching offices, remote terminals, and other related telecommunications equipment that are located throughout the world. IP networks transmit data (including voice and video data) by placing the data in packets and sending each packet individually to the selected destination, along one or more communication paths. Unlike a circuit-switched network (like PSTN 24c), a dedicated circuit is not required for the duration of a call or fax transmission over IP networks.

Technology that allows telecommunications to be transmitted over an IP network may comprise Voice over IP (VoIP), or simply Voice over Packet (VoP). In the

illustrated embodiment, one or more of endpoints 22, and endpoints and components of communication networks 24 may be IP telephony devices capable of participating in IM, video, and other multimedia communication sessions. IP telephony devices have the ability of encapsulating a user's voice (or other input) into IP packets so that the voice can be transmitted over a communication network. IP telephony devices may include telephones, fax machines, computers running telephony software, nodes, gateways, wired or wireless devices, hand held PDAs, or any other device capable of performing telephony functions over an IP network.

In particular embodiments, communication system 10 may receive and transmit data in a session initiation protocol (SIP) environment. SIP is an application-layer control protocol that includes primitives for establishing, modifying and terminating communication sessions. SIP works independently of underlying transport protocols and without dependency on the type of session that is being established. SIP also transparently supports name mapping and redirection services, which support personal mobility.

Although FIGURE 1 illustrates a particular number and configuration of endpoints, IS and communication networks, communication system 10 contemplates any number or arrangement of such components for communicating media.

FIGURE 2 illustrates interoperability system (IS) 50, in accordance with a particular embodiment. IS 50 may be similar to and provide the same functionality as IS 20 of FIGURE 1. In the illustrated embodiment, IS 50 includes interface 51, gateways 52, operations management application (OMA) 54, multipoint conference system (MCS)

56, policy engine 58, authentication and security system 60, call manager 62, processor 64 and memory module 66. IS 50 is coupled to a PC endpoint 70 that may be used to access, configure and control various functionality provided by IS 50. PC endpoint 70 may run a client application for such access, configuration and control. The client application may enable a user of endpoint 70 to receive and monitor communications from various endpoints and virtual talk groups and communicate with such endpoints and virtual talk groups as well (e.g., in a similar manner as dispatch personnel). In particular embodiments, other types of endpoints may be utilized to access, configure and control IS 50, such as IP phones, PDAs and other mobile endpoints. IS 50 may be coupled to such endpoints (including PC endpoint 70) through one or more communication networks.

Interface 51 is used in the communication of audio, video, signaling and other data between IS 50 and other network components. For example, interface 51 may receive communications from endpoints such as endpoints of communication networks 24, endpoints 22 and endpoint 70. The communication may take place over IP networks thereby negating the need for dedicated wiring between the endpoints and the IS.

Gateways 52 may include any suitable gateways to provide network interoperability and back-end legacy application integration, such as LMR gateways, PSTN gateways and application gateways. Gateways 52 provide mapping between IP services and the interoperable networks, such as LMR network 24a of FIGURE 1. In some cases gateways 52 may not be located within an IS but may be distributed throughout a communication system for

enabling communications among various communication networks.

Operations management application (OMA) 54 includes functionality for configuration, management and control of IS 50, including conference and collaboration management, and may be accessed by a user via, for example, PC endpoint 70. In particular embodiments, OMA 54 may enable a user, such as dispatch personnel or administrators or a mobile user (e.g., a first responder mobile user) accessing IS 50 via a mobile endpoint, the ability to configure, manage and participate in one or more virtual talk groups and ad hoc conferences simultaneously. In particular embodiments, OMA 54 may be accessed through a web interface, functioning for example as a soft phone or PTT device for radios. A screen display may be controlled using a mouse, keypad, touch screen, voice commands or any other suitable interface. OMA 54 screens may include any number of functional controls to provide interoperable communications. OMA 54 may authenticate a user and obtain user configuration information upon a user accessing the OMA. OMA 54 may monitor and provide communication ability for any number of channels at one time to provide the ability for an OMA user to communicate on and control multiple virtual talk groups at once.

Multipoint conference system (MCS) 56 provides collaboration and conference services for multiple endpoints of one or more networks. For example, users of multiple endpoints (such as LMRs of different networks (e.g., networks of different agencies or groups) and different types of endpoints of different networks) may be bridged together through MCS 56 to provide virtual talk group communications. MCS 56 may include any

suitable number or type of conference bridges, ports, digital signal processors or other components to facilitate communications discussed herein.

Policy engine 58 includes policies for undertaking various operations and functionality upon the occurrence of various events to provide dynamic incident management. These policies may include both pre-determined and ad hoc policies. For example, upon the occurrence of a particular incident, the incident may include a unique identifier and may have basic incident attributes such as time of creation, name of user creating and status. A pre-determined policy may then be executed by an incident manager or dispatch personnel as action for the specific incident. In particular embodiments, policy engine may receive inputs from alarms and sensors to setup device agnostic communications interoperability and one-way video and data collaboration and to trigger additional events such as pagers, e-mails, notifications, dial-outs, recording and information escalation.

Authentication and security system 60 manages access, configuration and control privileges for users of IS 50 and those participating in interoperable communications. For example, different users may have different privileges assigned for interoperable communications. Some users may only have transmit or listen privileges with respect to one or more particular talk groups, while other users may have the ability to communicate in all talk groups or setup and configure various talk groups. User privileges may change dynamically upon the occurrence of particular events.

Call manager 62 maintains information regarding various users, such as users of IP networks for which interoperable communications are provided by IS 50. This

facilitates in the extension of PTT to IP networks and in the provision of voice and data interoperability across radio and non-radio networks. In particular embodiments, call manager 62 may maintain a listing, table, or other organization of information about users. The information may include a name or other identifier and contact information such as phone numbers and email addresses for the users. In particular embodiments call manager 62 may represent any appropriate combination of hardware, software and/or encoded logic distributed throughout a communication network coupled with IS.

Processor 64 may be a microprocessor, controller, or any other suitable computing device, resource, or combination of hardware, software and/or encoded logic operable to provide, either alone or in conjunction with other IS components such as OMA 54 and its components, IS 50 functionality. Such functionality may include providing various features discussed herein to a user, such as a user of an endpoint accessing IS 50 through OMA 54. Such features may include, as further discussed herein, conveying communicated media to a user in a manner to reflect the position of the media's source relative to the user.

Memory module 66 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component. Memory module 66 may store any suitable data or information, including software and encoded logic, utilized by IS 50. In particular embodiments, memory module 66 may include data for user management, talk-group management, resource pool

management, privileges, backup configuration and information and/or timestamp and activity tracking.

IS 50 may also include any number of switches, routers, firewalls, mobile access routers, access points, wireless bridges and other components in order to accommodate particular operational desires and needs.

In particular embodiments such as in the LMR network interoperability context, IS 50 may, through one or more components discussed above or through other components, encode received audio with a standard audio codec, such as G.711 or G.729. Those audio samples may be packaged in standards-based real-time transport protocol (RTP) packets suitable for transport on an IP network. At this point, the communication element may be abstracted from the distinctive characteristics of each radio system. These audio packets can be sent across the network to other radio systems either individually (unicast) or as a group (multicast). The recipient of the audio packets may be a device capable of receiving and decoding the RTP stream, such as an IP telephone or PC with appropriate software. The IP network and IP-enabled devices can be used to allow users to monitor or transmit on a particular radio channel from a desk without issuing another radio.

As indicated above, IS 50 may facilitate communication among users of endpoints of various networks through virtual channels or talk groups. For example, a channel may comprise a unidirectional or bidirectional path for transmitting and/or receiving electrical or electromagnetic signals. This may comprise, for example, a conventional radio physical RF channel. A talk group in this context may be a subgroup of users (e.g., radio users) who share a common

functional responsibility and typically coordinate actions amongst themselves without radio interface with other subgroups. For example, a municipality's police department network may include various talk groups.

A virtual talk group (VTG) represents interoperability of a group of channels, for example, as an audio conference or meeting. A virtual talk group may include an associated virtual channel and an ID. Virtual channels may comprise an address, such as an IP address, associated with a virtual talk group through which users may access the virtual talk group and/or through which communications from VTG member-endpoints are bridged. Various types of virtual talk groups may be utilized in particular embodiments, such as a multicast address usable by all endpoints of the VTG, a VTG comprising multiple talk groups (e.g., multiple radio sources from different frequencies whose communications are mixed), a unicast group and a combination unicast and multicast group.

As an example, a particular virtual talk group may comprise a conference or meeting of the following: (1) a channel or other multicast path used by certain users of a police department's radio network, (2) a channel or other multicast path used by certain users of a fire department's radio network, (3) a channel or other multicast path used by certain users of a corporation's security radio network and (4) a plurality of users of IP-enabled endpoints such as IP phones, IP-enabled PDAs or PCs. An operator of IS 50 may configure the virtual talk group using any suitable interface, such as by dragging and dropping the included channels and IP endpoints into a single area representing the virtual talk group. MCS 56 may provide the functionality for the

conference of the virtual talk group members. In particular embodiments, multiple talk groups may be patched together on a dynamic, as needed basis. In some cases a virtual talk group may not necessarily include communications through an IS but may instead include member endpoints whose communications are mapped to IP addresses at gateways (such as LMR gateways) controlled by an IS.

Any number of virtual talk groups may be configured to provide any suitable audio, data, video and control network interoperability. Virtual talk groups may be created using any suitable user/endpoint groups or channels based on location, organizational requirements, event requirements or any other suitable characteristic. An administrator or operator may configure channel details such as name, description, participants, multicast IP addresses, codec and latch options through, for example, OMA 54.

In the illustrated embodiment, OMA 54 also includes media position module (MPM) 68. MPM 68 utilizes both location information (e.g., through GPS or other information) identifying the position of an endpoint transmitting media and the position of a communication recipient (e.g., a user of endpoint 70) relative to the position of the transmitting endpoint to calculate a real voice arrival direction and distance of the speaker from the recipient. The volume of communicated media and its attenuation ratio which determines the perceived direction of the speaker may be altered based on the location of the transmitting endpoint and its distance from a recipient. Thus, the relative volume of different media streams within any specific channel may be altered to convey relative position information of the sources of

the media streams. For example, team members who are closer to the listener may be rendered louder than remote speakers. In addition, the relative direction of the transmitted media can be conveyed through the speakers used by the listener. As the listener changes his orientation, the perceived direction of the speaker may change accordingly to reflect the true location of the talker relative to the listener. Thus, MPM 68 may also monitor the orientation of the user of endpoint 70 to provide its functionality. MPM 68 may be centrally located in an IS or otherwise distributed in one or more network components. For example, endpoints may include an MPM to provide functionality as further discussed below.

Media communicated throughout communication system 10 may include GPS information identifying a transmitting mobile endpoint's location such that the mobile endpoint's location can be conveyed to the one or more other endpoints in connection with the communicated audio, video or other information. Endpoint location information may be transmitted with endpoint communications in any suitable manner, such as through GPRS or steganographically. In particular cases, the communications from mobile endpoints comprise multicast communications that are transmitted to other endpoints of the same network and to IS 50 for transmission to endpoints of other networks. In some embodiments, location information and other meta information, such as unit ID, priority and channel, may be communicated using a separate associated multicast port/channel.

In some cases, location information may be transported in a real-time transport protocol (RTP) header extension. For example, RTP headers include a

reserved area in the header to put a variable length header extension that could contain additional information about an RTP talker. As another example, location information may be transported using the real-time control protocol (RTCP) stream. The RTCP port is one higher than the RTP port by definition. In particular cases, other attributes about the endpoint may already be included using RTCP. The location information may comprise, for example, GPS latitude/longitude information or street and/or city information. In some embodiments, the associated RTP stream may include the location information. As an example, 239.1.1.1:21111 might be a RTP multicast address:port through which the voice stream is transported, and another address:port (for example, the RTP VoIP port + 2 for the RTP signaling port) may be used to include the location information.

In particular embodiments, the location information may be communicated to all original streams, such as via multipoint conference system 56 of IS 50 or directly between the endpoints without traversing through the IS. For example, GPS1, GPS2 and GPS3 may comprise GPS information from three separate endpoints involved in a talk group. In the case of the appended RTP header example, the multipoint conference system may combine and/or append the meta data components at the point of the mixing or bridging function. In the case of the separate control channel example, the streams may flow to all application aware endpoints, and an endpoint may recognize and determine the interesting or relevant GPS information from multiple meta streams. In the case of the RTCP model example, RTCP streams may be typically collected and terminated at each endpoint. Multipoint conference system 56 may terminate the RTCP meta

information and regenerate an associated RTCP stream on the other side for transmission to endpoints. In some cases, either the RTP header extension or a new payload type may be used. In particular cases, a description field may be used. In a situation where MCS 56 mixes more than one media stream, the location description field may include the locations of a plurality of speaking endpoints. The RTP header may be sent for every packet and may be large overhead but may be best for real time changing information. The particular data, application and operational requirements and desires may dictate the best methodology for transmission of the location information.

In some embodiments, location information may not be transmitted in connection with transmitted media, but a network component such as IS 50 may monitor locations of transmitting endpoints. Other methods may also be used to determine a location of a transmitting endpoint, such as RFID technology, triangulation (e.g., to in-building wireless antennas), accelerometers (e.g., for calculating position corrections from a last known position) and mesh wireless technologies (e.g., based on neighbors and signal strength measurements as indicated by, for example, received signal strength indication (RSSI)). Some embodiments may use any suitable combination of location technologies. In this way, the IS 50 may still convey the location of a transmitting endpoint to a recipient when media from such endpoint is presented to the recipient. MPM 68 uses location information to present, in connection with processor 64, media to a user of endpoint 70 in a manner to reflect the real arrival direction and distance of the media based on the positions of the transmitting endpoint and the user. As

indicated above and further discussed below, in some embodiments endpoints may include an MPM to determine a position of a sender of media relative to a recipient of the media and determine the appropriate manner to present the media to convey the relative position information.

FIGURE 3 illustrates a plurality of endpoints 80 and 90a-90c, in accordance with a particular embodiment. Endpoints 80 and 90a-90c may comprise mobile endpoints and may be similar to, and may provide similar functionality to, other endpoints discussed herein. Endpoints 80 and 90a-90c may communicate with each other (e.g., audio, video or other data communications) using one or more communication networks and components such as those described above with respect to communication system 10 of FIGURE 1. In some cases, endpoints 80 and 90a-90c may be of the same communication network, such as a PTT mobile radio network communicating on a particular frequency. However, in some embodiments endpoints 80 and 90a-90c may be part of different communication networks and may communicate interoperably. For example, endpoints 80 and 90a-90c may be a part of different radio networks of different public or private agencies or groups. The endpoints' interoperable communications may be facilitated by an interoperability system such as those described herein.

In the illustrated embodiment, endpoint 80 includes a transmitter/receiver 82, a user interface 84, a MPM 85, a processor 86 and a memory module 88. Transmitter/receiver 82 obtains signals from GPS satellites or ground stations of a communication network in order to determine the position (e.g., including orientation) of endpoint 80 and also receives and transmits communications such as audio, video and other

data to and from other network components. Transmitter/receiver 82 may also be referred to as an interface. User interface 84 provides a mechanism through which a user of endpoint 80 may operate the endpoint and communicate with other network devices. Interface 84 may comprise a keypad, display, touch screen, audio input and output or any other suitable interface. Interface 84 may also include a stereo headset or other output for presenting media to the user of endpoint 80. Instructions for endpoint 80 may be submitted through speech recognition, collection of keystrokes, soft key or otherwise.

Processor 86 may be a microprocessor, controller, or any other suitable computing device, resource, or combination of hardware, software and/or encoded logic operable to perform endpoint functionality. Processor 86, either alone or in conjunction with other endpoint components, provides endpoint functionality discussed herein. Memory module 88 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component.

In particular embodiments, communications from endpoints such as endpoints 80 and 90a-90c may include GPS or other information indicating the location of the endpoint from which a particular communication is transmitted. The GPS or other location information may be carried by both unicast and multicast communications and, in addition, may be derived locally by a particular endpoint.

MPM 85 may comprise any suitable hardware, software or encoded logic and may provide similar functionality as

MPM 68 of IS 50 described above. For example, MPM 85 may take communications received from endpoints 90a-90c and present such communications to a user of endpoint 80 in a manner to indicate the respective location of the communications transmitting endpoints. For example, assuming a user of endpoint 80 is oriented in the manner in which endpoint 80 is depicted, communications originating from endpoint 90a may be presented to the user as arriving from the user's left-front side. Similarly, communications originating from endpoint 90b may be presented to the user as arriving from the user's right-front side and may be presented at a lower volume relative to communications from endpoint 90a to reflect that endpoint 90b is further away than endpoint 90a. MPM 85 may determine the locations of transmitting endpoints 90a-90c in any particular manner, such as by analyzing location information embedded in media transmitted from the endpoints or by obtaining the location information from other network components or devices. In addition, MPM 85 may determine the orientation (or direction that the user of endpoint 80 is facing) in any suitable manner, if such information is applicable in a particular embodiment. For example, endpoint 80 may be used in a vehicle, and the current direction of the vehicle may be used to determine the user's orientation. In some cases, the orientation of a user may be derived in the headset of the user (e.g., using any suitable technology) and communicated to the applicable MPM. In some cases, such as in the case of a stationary dispatch personnel, the user's orientation may be static and may not be used in the process of conveying the location information through the presentation of transmitted communications.

FIGURES 4A and 4B illustrate example speaker configurations that may be used in particular embodiments. FIGURE 4A includes listener 102 and two speakers 104a and 104b. In this case, for example, media originating from an endpoint that is directly to the listener's left may be presented using speaker 104a (while speaker 104b is mute), and media originating from an endpoint that is directly to the listener's right may be presented using speaker 104b (while speaker 104a is mute). Media coming from an endpoint at another location relative to listener 102 may be presented using speakers 104 to convey the endpoint's location using any suitable presentation method.

FIGURE 4B includes listener 112 and four speakers 114a, 114b, 114c and 114d. Speakers 114 may be used together to present media in a manner to reflect the location of the media's source relative to listener 112. For example, media originating from an endpoint that is directly in front of the listener may be presented using speakers 114a and 114 equally.

As indicated herein, media may be presented in any suitable manner using speakers positioned or oriented in any particular manner in order to convey the location of the media's source. For example, other embodiments may include the same number or a different number of speakers positioned in the same or in a different manner than embodiments specifically illustrated herein. In addition, various methods may be used to convey the distance of media's source relative to a listener, such as volume adjustment.

In particular embodiments the manner in which communications are presented to listeners may change based not only on the location of the listener but also

on the listener's orientation. For example, communications presented while the listener is facing northward may be presented in an opposite manner (from a location standpoint) if the listener turns to face south. This feature may be useful, for example, if the speakers used to present the media in a manner to convey the relative location of the media's source are in a headset. This feature may also be useful if the listener is in a mobile vehicle. In this case, the direction/orientation of the vehicle may be utilized to determine the relative location of the media's source. Any suitable methods or technologies may be used to determine the direction/orientation of a listener and/or endpoint in order to determine the manner in which communicated media should be presented to convey the location of the media's source. In some cases, speakers used in particular embodiments may be static or attached to the headset of the user. When the speakers are static, embodiments may calculate the orientation of the, for example, vehicle in which the end-user drives and in which the speakers are mounted. When speakers are located in the headset, the system may calculate the orientation of the head of the end-user in order to present to him the true voice arrival direction.

In some embodiments, a user receiving communications may use his endpoint's interface to override a volume setting of one or more specific speakers and may manually alter the volume of one or more specific channels. In addition, some embodiments may provide the ability for users to fix the relative direction of a specific channel at any desired direction such that the true orientation of the speaker relative to the listener is not reflected when the media is communicated to the listener.

The aforementioned embodiments with manual configuration may be used, for example, whenever the received media stream does not carry GPS or other location information. Thus, the listener may configure his endpoint, an IS or other component, device or system presenting media to reflect relative source location such that the media is presented as if coming from a particular direction (e.g., the far left direction). In some cases, a distinct signal, such as a beep, may be mixed with media that does not carry GPS or other location information to alert the listener that the direction of the speaker does not represent the real arrival direction of the media.

As indicated above, particular embodiments work not only with PTT audio communications but also with other forms of media, such as IM, video and other forms of audio communications. For example, IM or other communications transmitted through a communication system such as communication system 10 may carry GPS or other location information that indicates a position of the sender. This information may be utilized to identify for a recipient the relative location of the sender through, for example, one or more distinctive beeps to the recipient from the real arrival direction of the IM sender. The volume and/or number of beeps may be altered to indicate distance from the recipient to the sender. Other methods and/or signals may also be used to convey the relative location (e.g., direction and/or distance) of an IM or other media sender upon presentation of the media. In some embodiments, a communicated IM message may be converted to a voice message which is played to a recipient to convey the relative arrival direction of the IM message. For example, using text to speech (TTS)

technology, a network component may convert a communicated text or other IM message to an audio communication to be presented to a recipient in a manner to reflect a relative position of a transmitting endpoint as discussed herein with respect to various embodiments. Such conversion may be made by an MPM or any other suitable network component.

FIGURE 5 illustrates a method for conveying media source location information, in accordance with a particular embodiment. The method begins at step 200 wherein a first communication is received from a first endpoint. The first communication may include an audio communication, such as a PTT communication, or any other audio, video or data communication (e.g., including IM or e-mail). At step 202, location information indicating a first location of the first endpoint is received. The location information may comprise GPS information and may be received in conjunction with the first communication. In some embodiments, the location information may be steganographically embedded in the first communication. The first communication and the location information may be received at an interface of a second endpoint or at an interface of another component, such as an interoperability system providing interoperable communications between endpoints of different communication networks.

At step 204, the first communication is presented to a user of a second endpoint from a direction relative to the user that corresponds to a direction of the first location of the first endpoint relative to a second location of the second endpoint. For example, if the first endpoint is west of the second endpoint, then the first communication may be presented through the left ear

of the user of the second endpoint. Such presentation may be made by attenuating the output of one or more audio speakers used to present communications to the user. In some cases, the orientation of the user of the second endpoint (e.g., the direction that the user is facing) may be taken into account when presenting the first communication from its arrival direction relative to the user or the second endpoint.

At step 206, the first communication may be presented to the user of the second endpoint in a manner to reflect the distance between the first location of the first endpoint and the second location of the second endpoint. For example, communications may be presented at a higher volume level when the first and second endpoint's are closer together in order to reflect the shorter distance between them.

Thus, steps 204 and 206 illustrate the presentation of the first communication to the user of the second endpoint in a manner to reflect the first location of the first endpoint relative to the second location of the second endpoint. The orientation of the user of the second endpoint may also be taken into account in such presentation of the first communication. These steps may be performed by any suitable processor (such as by a mobile positioning module) of a network component. In some cases such processor and functionality may reside in the second endpoint. In some embodiments such processor and functionality may be provided by an interoperability system that facilitates the presentation of the communications to the second endpoint (e.g., coupled to the interoperability system through a communication network). This may be the case, for example, when the first and second endpoints comprise endpoints of

different communication networks and/or endpoints communicating on different frequencies. As indicated above, embodiments also provide for presentation of communications to reflect arrival location of text communications, such as SMS text messages, IM and e-mail.

Some of the steps illustrated in FIGURE 5 may be combined, modified or deleted where appropriate, and additional steps may also be added to the flowchart. Additionally, steps may be performed in any suitable order without departing from the scope of the invention.

Thus, technical advantages of particular embodiments include the ability to render a communication stream, such as a voice stream, to an end user from the real direction of the speaker relative to the end user. Particular embodiments also provide the listener with an indication about the distance of the speaker from the listener by, for example, altering the volume of the rendered audio. Media streams carrying location information to facilitate the conveyance of relative locations of transmitting endpoints may be integrated with those that do not have associated location information. For example, a distinct audible tone may be provided to mark media streams for which the direction of arrival is unknown. In particular embodiments, a user may override the real arrival direction of the media to enable any channel or individual media to be presented from a preferred desired direction and/or at a preferred volume. Particular embodiments also provide the real arrival direction of IM messages and other text communications by rendering a distinct beep or other signal to the end user. The distinct beep or other signal is perceived to arrive from the real direction of the sender.

While various implementations and features are discussed with respect to multiple embodiments, it should be understood that such implementations and features may be combined in various embodiments.

Although the present invention has been described in detail with reference to particular embodiments, it should be understood that various other changes, substitutions, and alterations may be made hereto without departing from the spirit and scope of the present invention. For example, although the present invention has been described with reference to a number of elements included within communication system 10 and illustrated endpoints and interoperability systems, these elements may be combined, rearranged or positioned in order to accommodate particular routing architectures or needs. In addition, any of these elements may be provided as separate external components to communication system 10 and illustrated endpoints and interoperability systems, or each other where appropriate. The present invention contemplates great flexibility in the arrangement of these elements as well as their internal components.

Numerous other changes, substitutions, variations, alterations and modifications may be ascertained by those skilled in the art and it is intended that the present invention encompass all such changes, substitutions, variations, alterations and modifications as falling within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A method for conveying media source location information, comprising:

receiving a first communication from a first endpoint;

receiving location information indicating a first location of the first endpoint; and

presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint.

2. The method of Claim 1, wherein presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises presenting the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location.

3. The method of Claim 1:

further comprising receiving orientation information indicating an orientation of the user; and

wherein presenting the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location comprises presenting the first communication to the user from a direction relative to the orientation of the user corresponding to a direction of the first location relative to the second location.

4. The method of Claim 1, wherein presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second

location of the second endpoint comprises presenting the first communication to the user in a manner to reflect a distance between the first location and the second location.

5. The method of Claim 1, wherein presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises attenuating an output signal of at least one speaker of a plurality of speakers used to present the first communication to the user of the second endpoint.

6. The method of Claim 1:

wherein the first location of the first endpoint is a first distance from the second location of the second endpoint and wherein the first communication is presented at a first volume level;

further comprising:

receiving a second communication from a third endpoint;

receiving location information indicating a third location of the third endpoint, the third location a second distance from the second location of the second endpoint, the second distance greater than the first distance; and

presenting the second communication to the user of the second endpoint in a manner to reflect the third location relative to the second location of the second endpoint; and

wherein the second communication is presented at a second volume level that is less than the first volume level.

7. The method of Claim 1, wherein receiving location information indicating a first location of the first endpoint comprises receiving global positioning satellite (GPS) information indicating the first location of the first endpoint.

8. The method of Claim 1, wherein:

the first communication comprises an audio message; and

the location information is steganographically embedded within the audio message.

9. The method of Claim 1, further comprising:

receiving a second communication from a third endpoint; and

presenting the second communication to the user of the second endpoint in a manner to reflect that a location of the third endpoint is unknown.

10. The method of Claim 1, wherein:

the first communication comprises a text communication; and

presenting the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint comprises:

presenting the text communication to the user of the second endpoint; and

communicating an audio signal to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint.

11. The method of Claim 1, wherein:

the first communication comprises a text communication; and

presenting the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint comprises presenting the first communication to the user of the second endpoint as an audio message using text to speech (TTS) in a manner to reflect the first location relative to the second location of the second endpoint.

12. The method of Claim 1, wherein:

the first endpoint comprises a push-to-talk endpoint; and

the first communication comprises a push-to-talk communication.

13. A system for conveying media source location information, comprising:

an interface operable to:

receive a first communication from a first endpoint; and

receive location information indicating a first location of the first endpoint; and

a processor coupled to the interface and operable to present the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint.

14. The system of Claim 13, wherein a processor operable to present the first communication to a user of

a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises a processor operable to present the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location.

15. The system of Claim 13, wherein:

the interface is further operable to receive orientation information indicating an orientation of the user; and

a processor operable to present the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location comprises a processor operable to present the first communication to the user from a direction relative to the orientation of the user corresponding to a direction of the first location relative to the second location.

16. The system of Claim 13, wherein a processor operable to present the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises a processor operable to present the first communication to the user in a manner to reflect a distance between the first location and the second location.

17. The system of Claim 13, wherein a processor operable to present the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second

endpoint comprises a processor operable to attenuate an output signal of at least one speaker of a plurality of speakers used to present the first communication to the user of the second endpoint.

18. The system of Claim 13, wherein:

the first location of the first endpoint is a first distance from the second location of the second endpoint and wherein the first communication is presented at a first volume level;

the interface is further operable to:

receive a second communication from a third endpoint; and

receive location information indicating a third location of the third endpoint, the third location a second distance from the second location of the second endpoint, the second distance greater than the first distance; and

the processor is operable to present the second communication to the user of the second endpoint in a manner to reflect the third location relative to the second location of the second endpoint; and

the second communication is presented at a second volume level that is less than the first volume level.

19. The system of Claim 13, wherein an interface operable to receive location information indicating a first location of the first endpoint comprises an interface operable to receive global positioning satellite (GPS) information indicating the first location of the first endpoint.

20. The system of Claim 13, wherein:

the first communication comprises an audio message; and

the location information is steganographically embedded within the audio message.

21. The system of Claim 13, wherein:

the interface is further operable to receive a second communication from a third endpoint; and

the processor is further operable to present the second communication to the user of the second endpoint in a manner to reflect that a location of the third endpoint is unknown.

22. The system of Claim 13, wherein:

the first communication comprises a text communication; and

a processor operable to present the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint comprises a processor operable to:

present the text communication to the user of the second endpoint; and

communicate an audio signal to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint.

23. The system of Claim 13, wherein:

the first communication comprises a text communication; and

a processor operable to present the first communication to the user of the second endpoint in a

manner to reflect the first location relative to the second location of the second endpoint comprises a processor operable to present the first communication to the user of the second endpoint as an audio message using text to speech (TTS) in a manner to reflect the first location relative to the second location of the second endpoint.

24. The system of Claim 13, wherein:

the first endpoint comprises a push-to-talk endpoint; and

the first communication comprises a push-to-talk communication.

25. A system for conveying media source location information, comprising:

means for receiving a first communication from a first endpoint;

means for receiving location information indicating a first location of the first endpoint; and

means for presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint.

26. Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:

receive a first communication from a first endpoint;

receive location information indicating a first location of the first endpoint; and

present the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint.

27. The medium of Claim 26, wherein code operable to present the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises code operable to present the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location.

28. The medium of Claim 26, wherein:

the code is further operable to receive orientation information indicating an orientation of the user; and

wherein code operable to present the first communication to the user from a direction relative to the user corresponding to a direction of the first location relative to the second location comprises code operable to present the first communication to the user from a direction relative to the orientation of the user corresponding to a direction of the first location relative to the second location.

29. The medium of Claim 26, wherein code operable to present the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises code operable to present the first communication to the user in a manner to reflect a distance between the first location and the second location.

30. The medium of Claim 26, wherein code operable to present the first communication to a user of a second

endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises code operable to attenuate an output signal of at least one speaker of a plurality of speakers used to present the first communication to the user of the second endpoint.

31. The medium of Claim 26, wherein:

the first location of the first endpoint is a first distance from the second location of the second endpoint and wherein the first communication is presented at a first volume level;

the code is further operable to:

receive a second communication from a third endpoint;

receive location information indicating a third location of the third endpoint, the third location a second distance from the second location of the second endpoint, the second distance greater than the first distance; and

present the second communication to the user of the second endpoint in a manner to reflect the third location relative to the second location of the second endpoint; and

the second communication is presented at a second volume level that is less than the first volume level.

32. The medium of Claim 26, wherein code operable to receive location information indicating a first location of the first endpoint comprises code operable to receive global positioning satellite (GPS) information indicating the first location of the first endpoint.

33. The medium of Claim 26, wherein:

the first communication comprises an audio message; and

the location information is steganographically embedded within the audio message.

34. The medium of Claim 26, wherein the code is further operable to:

receive a second communication from a third endpoint; and

present the second communication to the user of the second endpoint in a manner to reflect that a location of the third endpoint is unknown.

35. The medium of Claim 26, wherein:

the first communication comprises a text communication; and

code operable to present the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint comprises code operable to:

present the text communication to the user of the second endpoint; and

communicate an audio signal to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint.

36. The medium of Claim 26, wherein:

the first communication comprises a text communication; and

code operable to present the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the

second endpoint comprises code operable to present the first communication to the user of the second endpoint as an audio message using text to speech (TTS) in a manner to reflect the first location relative to the second location of the second endpoint.

37. The medium of Claim 26, wherein:

the first endpoint comprises a push-to-talk endpoint; and

the first communication comprises a push-to-talk communication.

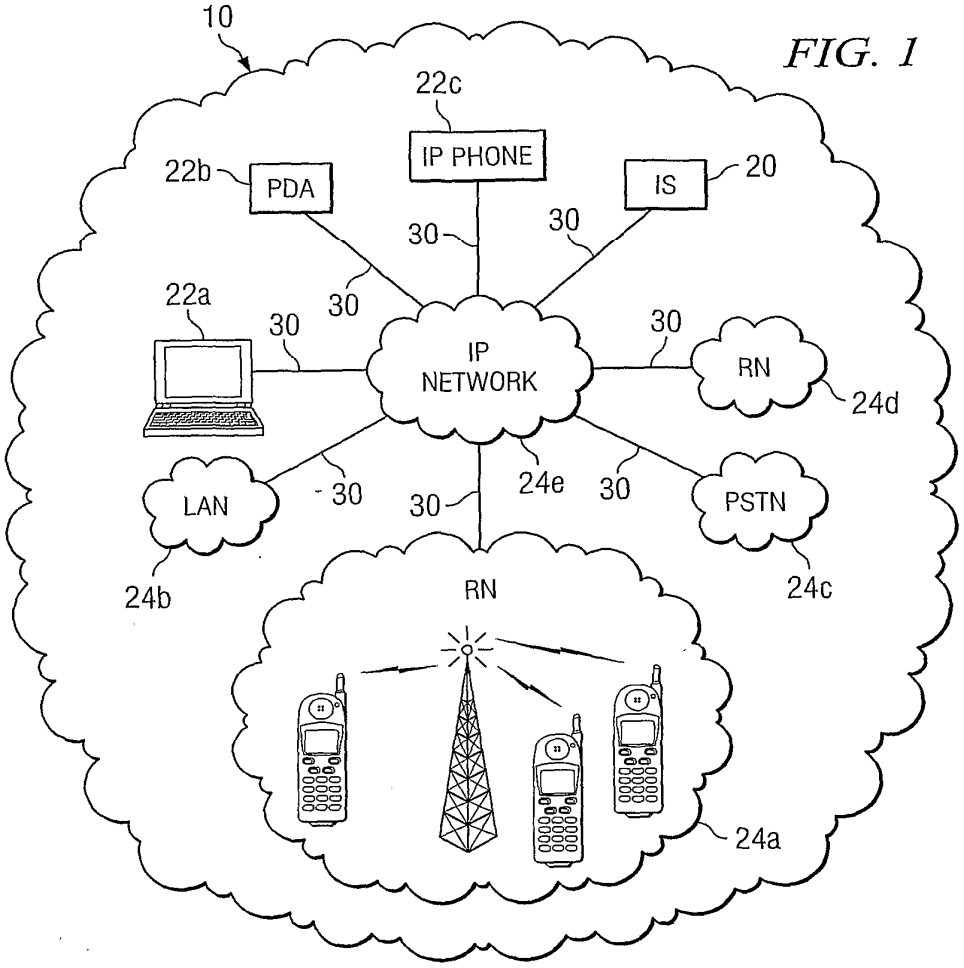

10
22c
IP PHONE
22b
PDA
IS
20
30
30
22a
30
30
IP
NETWORK
30
RN
24d
LAN
30
30
24e
30
PSTN
24b
RN
24c
24a

FIG. 1

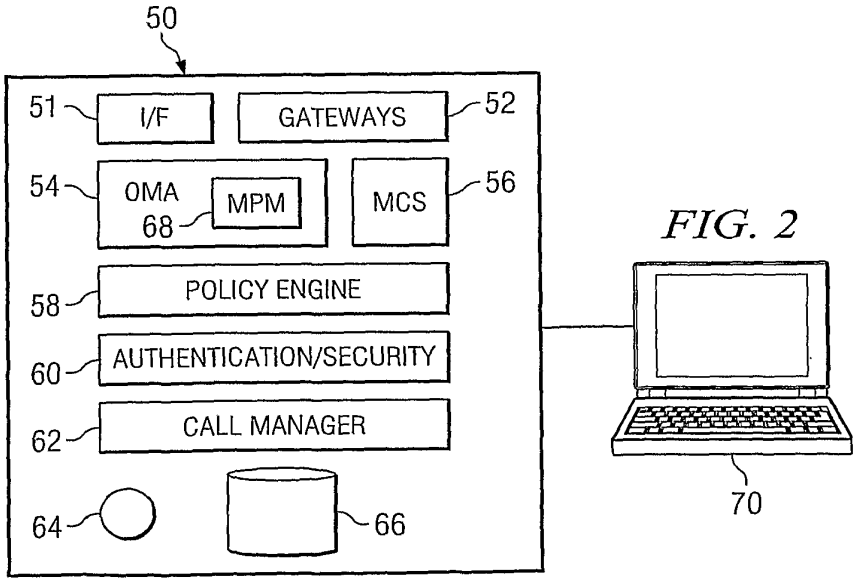

50
51
I/F
GATEWAYS
52
54
OMA
MPM
68
MCS
56
58
POLICY ENGINE
60
AUTHENTICATION/SECURITY
62
CALL MANAGER
64
66
70

FIG. 2

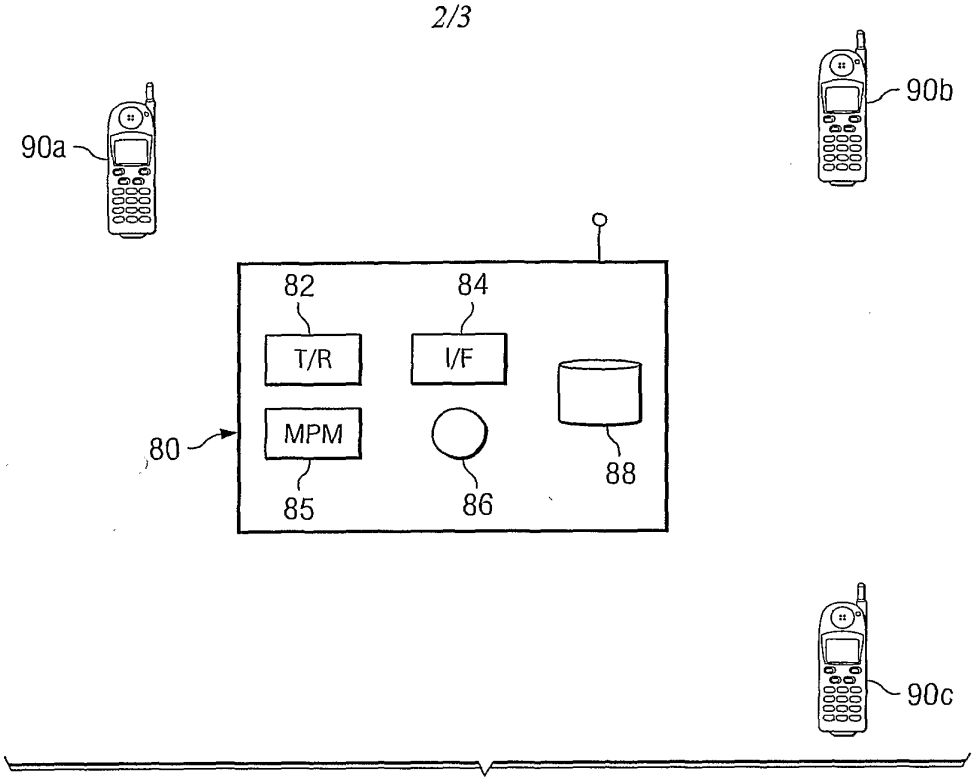


FIG. 3

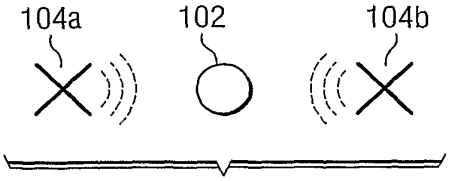


FIG. 4A

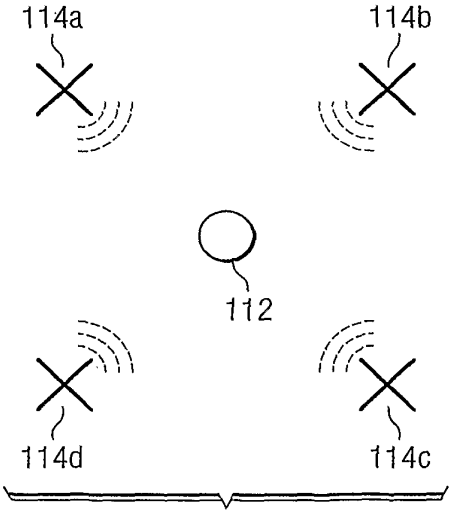
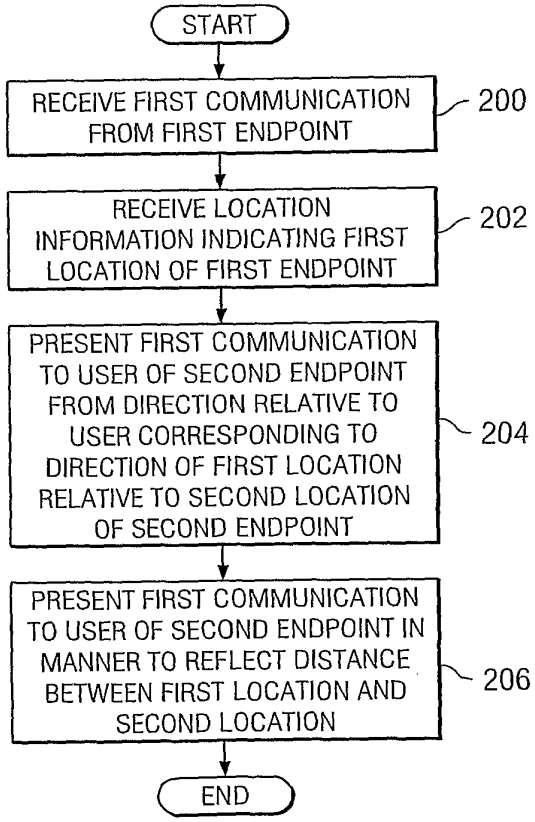


FIG. 4B

FIG. 5


START
RECEIVE FIRST COMMUNICATION FROM FIRST ENDPOINT
200
RECEIVE LOCATION INFORMATION INDICATING FIRST LOCATION OF FIRST ENDPOINT
202
PRESENT FIRST COMMUNICATION TO USER OF SECOND ENDPOINT FROM DIRECTION RELATIVE TO USER CORRESPONDING TO DIRECTION OF FIRST LOCATION RELATIVE TO SECOND LOCATION OF SECOND ENDPOINT
204
PRESENT FIRST COMMUNICATION TO USER OF SECOND ENDPOINT IN MANNER TO REFLECT DISTANCE BETWEEN FIRST LOCATION AND SECOND LOCATION
206
END

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 December 2007 (13.12.2007)

PCT

(10) International Publication Number
WO 2007/142961 A2

(51) International Patent Classification:
H04L 12/28 (2006.01)

(21) International Application Number:
PCT/US2007/012728

(22) International Filing Date: 29 May 2007 (29.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/421,994 2 June 2006 (02.06.2006) US

(71) Applicant *(for all designated States except US)*: **CISCO TECHNOLOGY, INC.** [US/US]; 170 West Tasman Drive, San Jose, CA 95134 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHAFFER, Shmuel** [US/US]; 1211 Cowper Street, Palo Alto, CA 94301 (US). **TALUKDER, Shah** [US/US]; 101 Oak Hill Way, Los Gatos, CA 95030 (US). **NAGESH, Kittur, V.** [US/US]; 20345 Argonaut Drive, Saratoga, CA 95070 (US). **HALL, Douglas, J.** [US/US]; 7266 Lee Road, Westerville, OH 43081 (US).

(74) Agent: **SHOWALTER, Barton, E.**; Baker Botts L.L.P., 2001 Ross Avenue, Suite 600, Dallas, TX 75201 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

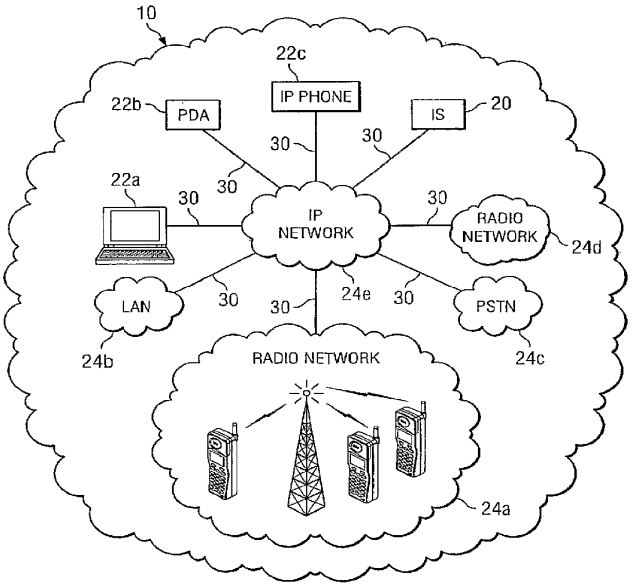
Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR JOINING A VIRTUAL TALK GROUP



(57) Abstract: A method for joining a virtual talk group includes facilitating communications of a virtual talk group. The virtual talk group includes a plurality of endpoints of different communication networks. The method also includes recording the communications of the plurality of endpoints of the virtual talk group. The method also includes adding a first endpoint to the virtual talk group and presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

WO 2007/142961 A2

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

METHOD AND SYSTEM FOR JOINING A VIRTUAL TALK GROUP

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to communication systems and, more particularly, to a method and system for joining a virtual talk group.

BACKGROUND OF THE INVENTION

Many public and private groups, such as security and safety personnel (e.g., police, fire fighters and ambulance drivers) use various different communication devices operating on various different communication networks. For example, many public service organizations, such as police, fire and EMT, utilize land mobile radios communicating through push-to-talk technologies. Each organization may have its own communication network and/or its own communications channel. However, communications among different endpoints of different networks such as endpoints of different police, fire or other security networks may present a challenge. Collaboration between the different agencies and networks tends to be ad hoc and inefficient. When achieved, it often involves laborious manual intervention. Organizations working towards interoperability solutions include Raytheon JPS Communications, IP Blue, Twisted Pair, M/A-COM, Motorola, EADS, and Cisco Systems.

SUMMARY OF THE INVENTION

The present invention provides a method and system for joining a virtual talk group that substantially eliminates or reduces at least some of the disadvantages

and problems associated with previous methods and systems.

In accordance with a particular embodiment, a method for joining a virtual talk group includes facilitating communications of a virtual talk group. The virtual talk group includes a plurality of endpoints of different communication networks. The method also includes recording the communications of the plurality of endpoints of the virtual talk group. The method also includes adding a first endpoint to the virtual talk group and presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

In particular embodiments of the present invention the method may also include facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications. In some embodiments this may include presenting the first endpoint with the recorded communications when there is a pause in the communications of the plurality of endpoints of the virtual talk group.

In particular embodiments facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications may include pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication. In some embodiments this may include pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication having a priority greater than the recorded communication.

In particular embodiments of the present invention the method may also include providing an indication to the first endpoint. The indication may indicate that the first endpoint is being presented with the recorded communications of the virtual talk group such that the first endpoint may distinguish the recorded communications from the communications of the plurality of endpoints of the virtual talk group. In particular embodiments of the present invention the method may also include receiving a request from the first endpoint to change the manner by which the recorded communications are presented or receiving a request from the first endpoint to control the manner of the presentation of the recorded communications.

Where the method includes presenting the first endpoint with the recorded communications, the method may include increasing the rate by which the recorded communications are presented.

In some embodiments the method may include determining that a condition of a predetermined policy has been satisfied and recording the communications of the plurality of endpoints of the virtual talk group based on the satisfaction of the condition of the predetermined policy. In particular embodiments determining that a condition of a predetermined policy has been satisfied may include detecting the absence of the first endpoint from the virtual talk group.

In particular embodiments of the present invention the method may also include determining that the first endpoint is not present in the virtual talk group. The method may also include recording the communications of the plurality of endpoints of the virtual talk group

based on the first endpoint not being present in the virtual talk group.

In accordance with another embodiment, a system for joining a virtual talk group includes a processor operable to facilitate communications of a virtual talk group. The virtual talk group includes a plurality of endpoints of different communication networks. The processor is further operable to record the communications of the plurality of endpoints of the virtual talk group. The processor is also operable to add a first endpoint to the virtual talk group. The system also includes an interface coupled to the processor and operable to present the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

Technical advantages of particular embodiments include systems and methods for providing an automated way of apprising users of endpoints that join a virtual talk group of the current situation within the virtual talk group. Accordingly, users of other endpoints within the virtual talk group may remain focused on their task, instead of diverting their attention to update the recently added endpoint. Particular embodiments may allow a user of the recently added endpoint to control the presentation of the previously recorded communications. Accordingly, the user may receive the information he wants, when and how he wants it. Particular embodiments allow for the information to be presented when there are no other communications within the virtual talk group. Accordingly, a user of an added endpoint may receive the recorded communications without missing current communications. In some embodiments the recorded communications may be presented to the endpoint

such that they may be distinguished from the virtual talk group's communications. Thus, the user of the endpoint receiving both the recorded communications and the virtual talk group communications is able to distinguish between them.

Other technical advantages will be readily apparent to one skilled in the art from the following figures, descriptions and claims. Moreover, while specific advantages have been enumerated above, various embodiments may include all, some or none of the enumerated advantages.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and its advantages, reference is now made to the following description, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 illustrates a communication system with various communication networks and an interoperability system, in accordance with a particular embodiment;

FIGURE 2 illustrates an example interoperability system, in accordance with a particular embodiment;

FIGURE 3 illustrates an example endpoint, in accordance with a particular embodiment; and

FIGURE 4 illustrates a method for joining a virtual talk group, in accordance with a particular embodiment.

DETAILED DESCRIPTION

FIGURE 1 illustrates a communication system 10, in accordance with a particular embodiment. Communication system 10 includes communication networks 24a-24e, interoperability system (IS) 20 and endpoints 22a-22c. IS 20 is able to facilitate interoperable communication

sessions between and among various communication devices, such as endpoints of communication networks 24 and endpoints 22. IS 20 uses a systems approach to offer a framework based on IP protocols and services to achieve secure voice, video and other data interoperability among communication endpoints and networks utilizing different technologies.

In particular embodiments, a virtual talk group (VTG) may be formed to allow endpoints from different communication networks to communicate with one another as though they were part of the same communication network. Often a VTG may be formed in response to a particular situation. The situation may be dynamic, for example a VTG formed in response to an event; or it may be static, for example a VTG formed based on a particular location. Regardless of how the VTG is formed, during the life of the VTG the endpoints that make up the VTG may change. When an endpoint joins the VTG that endpoint may not fully understand or know the situation within the VTG. To update the new endpoint, particular embodiments may play back previously recorded communications from endpoints within the VTG. These communications may have been recorded and subsequently played back via IS 20.

In the illustrated embodiment, communication networks 24a and 24d comprise radio networks (RNs), communication network 24b comprises a local area network (LAN), communication network 24c comprises a PSTN and communication network 24e comprises an IP network. It should be understood, however, that communication system 10 may comprise any number of IP or non-IP communication networks of any wireless or wireline form capable of communicating audio and/or video telecommunication signals, data, and/or messages, including signals, data

or messages. Communication networks 24a-24e may include any number and combination of segments, nodes and endpoints to enable communication among network devices and components. Communication networks 24a-24e may be distributed locally or across multiple cities and geographic regions. Nodes may include any combination of network components, gatekeepers, call managers, conference bridges, routers, hubs, switches, gateways, base stations, endpoints or other hardware, software or embedded logic implementing any number of communication protocols that allow for the exchange of data in communication system 10. Segments 30, which may comprise any suitable wireless or wireline communication links, including one or more communication networks (e.g., WANs) as appropriate, couple various networks with each other and with endpoints 22 and IS 20. In particular embodiments, segments may include gateways for facilitating communication between various networks, such as an LMR gateway between radio network 24a and IP network 24e.

In some cases, users of endpoints of one of communication networks 24a-24e may communicate with endpoints of another of communication networks 24a-24e through IS 20. IS 20 may facilitate the communication between endpoints of different networks by itself rebroadcasting the communications of one network to another network or IS 20 may cause other components which it can control to rebroadcast the communication. A radio network, such as radio network 24a or 24d, may support communication among portable mobile station endpoints, such as LMRs, using any suitable communication methods or features, such as cellular and push-to-talk (PTT). Communication networks 24a-24e may comprise networks of

particular groups or agencies (e.g., a municipality's police department network), whether operational with respect to a particular area or otherwise.

IS 20 enables, facilitates and/or provides for interoperable communication among communication endpoints and devices, such as LMRs, cellular phones, IP phones, PCs, PDAs, PSTN phones, video monitors, cameras and sensors of one or more communication networks (e.g., communication networks 24a-24e) using Internet Protocol. Such endpoints may comprise IP or non-IP-enabled endpoints. In particular embodiments, IS 20 may control gateways (for example, of segments 30) in order to map radio frequencies of particular mobile radio endpoints to IP addresses for communication to other types of radio endpoints or IP devices. For example, a particular gateway may be able to receive communications from various types of endpoints (e.g., on various types of communication networks) and may convert such communications for transmission to other types of endpoints. IS 20's control of the gateway may control the various endpoints and/or networks that receive particular communications, depending on system functionality and configuration as further discussed below. Such control may include the mapping of communications and endpoints to IP addresses for interoperable communication. In some embodiments, IS 20 may host audio conferences that bridge communications received from endpoints. As indicated above, communication system 10 (including IS 20) may include any suitable number or type of gateways (e.g., LMR and PSTN gateways), servers (e.g., multipoint conference servers), switches, routers, firewalls, access points, processors, memory or other hardware, software or encoded logic to

provide functionality described herein. IS 20 is coupled to communication networks 24a-24d and endpoints 22 through IP network 24e, which may comprise any suitable IP network.

As indicated above, IS 20 uses IP to enable communication among endpoints of various networks. The endpoints of these various networks may not (without the aid of IS 20) normally be able to communicate with one another. The manner in which IS 20 facilitates communications among these endpoints may vary according to location and system or operational needs. For example, IS 20 may communicate with endpoints using multicast IP addresses assigned to an endpoint of a communication network, a group of endpoints of a communication network or one or more endpoints of multiple communication networks or alternatively using a peer to peer dialed connection or a nailed dialed connection. A group of endpoints may be combined into a VTG for communication using a particular IP address. As an example, the VTG may be assigned a multicast IP address through which users of various endpoints may communicate on the VTG. The use of multicast IP addresses allows IS 20 to facilitate communications among communication devices and endpoints of various communication networks to provide audio, data, video and control network interoperability. As an additional example, in some cases multicast streams (e.g., utilizing multicast IP addresses) may be used. In some cases nailed dialed connections, such as those using SIP protocol, may be used for communication among endpoints and with IS 20. Various embodiments may combine communication methods to facilitate communication among endpoints. For example, in some cases certain endpoints

of a virtual talk group may participate in the talk group through a multicast IP address while other endpoints may utilize a nailed SIP connection. Unless otherwise noted, participating in a VTG may include being able to both transmit and receive communications. IS 20 may control participation, for example, by controlling gateways, multipoint conferences and the mapping of communications to IP addresses.

IS 20 may be utilized and implemented in any number of market segments, such as enterprise safety and security (e.g., loss prevention), transportation, retail, public safety and federal agencies in order to provide radio and non-radio network interoperability within and between such market segments. As indicated above, such network interoperability includes the interoperability of push-to-talk voice technology within various networks and the interoperability between push-to-talk and full duplex dialed connections.

It will be recognized by those of ordinary skill in the art that endpoints 22 and IS 20 may be any combination of hardware, software, and/or encoded logic that provides communication services to a user. In the illustrated embodiment, endpoints 22 comprise a PC (endpoint 22a), a personal data assistant (PDA) (endpoint 22b) and an IP phone (endpoint 22c). However, in other embodiments, endpoints 22 may include a telephone, a video monitor, a camera, a cell phone, a land mobile radio (LMR), a command center or any other communication hardware, software and/or encoded logic that supports the communication of audio, video or other data, using packets of media (or frames) or otherwise, through communication system 10. Endpoints 22 as well as endpoints and components of communication networks 24 may

be capable of communicating using any particular type of technology, such as cellular, IP, PSTN, CDMA, GSM, TDMA and satellite. Endpoints 22 and IS 20 may also include unattended or automated systems, gateways, other intermediate components or other devices that can establish media sessions.

Although the illustrated embodiment includes five communication networks 24a-24e, the term "communication network" should be interpreted as generally defining any network capable of transmitting audio and/or video telecommunication signals, data, and/or messages, including signals, data or messages. Any one of networks 24a-24e may be implemented as a local area network (LAN), wide area network (WAN), cellular network, global distributed network such as the Internet, Intranet, Extranet, PSTN, LMR network, radio network (RN), CDMA network, GSM network, TDMA network, satellite network or any other form of wireless or wireline communication network.

Communications over communication networks 24a-24e may use any suitable communication protocol. In a particular embodiment, some communication networks may employ voice communication protocols that allow for the addressing or identification of endpoints, nodes, and/or other components coupled to the communication network. For example, using Internet protocol (IP), each of the components coupled together by, for example, communication network 24b in communication system 10 may be identified in information directed using IP addresses. In this manner, network 24b may support any form and/or combination of point-to-point, multicast, unicast, or other techniques for exchanging media packets among components in communication system 10. Any network

components capable of exchanging audio, video, or other data are included within the scope of the present invention.

Since IP networks share a common method of transmitting data, telecommunication signals may be transmitted between telephony devices located on different, but interconnected, IP networks. In addition to being coupled to other IP networks, communication network 24b may also be coupled to non-IP telecommunication networks, for example through the use of interfaces or components, including gateways. In the illustrated embodiment, communication network 24b may be coupled with PSTN 24c through a gateway. In some embodiments the gateway may be a part of IS 20 or network 24e. PSTN 24c includes switching stations, central offices, mobile telephone switching offices, pager switching offices, remote terminals, and other related telecommunications equipment that are located throughout the world. IP networks transmit data (including voice and video data) by placing the data in packets and sending each packet individually to the selected destination, along one or more communication paths. Unlike a circuit-switched network (like PSTN 24c), a dedicated circuit is not required for the duration of a call or fax transmission over IP networks.

Technology that allows telecommunications to be transmitted over an IP network may comprise Voice over IP (VoIP), or simply Voice over Packet (VoP). In the illustrated embodiment, one or more of endpoints 22, and endpoints and components of communication networks 24 may be IP telephony devices capable of participating in IM, video, and other multimedia communication sessions. IP telephony devices have the ability of encapsulating a

user's voice (or other input) into IP packets so that the voice can be transmitted over a communication network. IP telephony devices may include telephones, fax machines, computers running telephony software, nodes, gateways, wired or wireless devices, hand held PDAs, or any other device capable of performing telephony functions over an IP network.

In particular embodiments, communication system 10 may receive and transmit data in a session initiation protocol (SIP) environment. SIP is an application-layer control protocol that includes primitives for establishing, modifying and terminating communication sessions. SIP works independently of underlying transport protocols and without dependency on the type of session that is being established. SIP also transparently supports name mapping and redirection services, which support personal mobility.

Although FIGURE 1 illustrates a particular number and configuration of endpoints, IS and communication networks, communication system 10 contemplates any number or arrangement of such components for communicating media.

FIGURE 2 illustrates interoperability system (IS) 50, in accordance with a particular embodiment. IS 50 may be similar to and provide similar functionality as IS 20 of FIGURE 1. In the illustrated embodiment, IS 50 includes interface 51, gateways 52, operations management application (OMA) 54, multipoint conference system (MCS) 56, policy engine 58, authentication and security system 60, call manager 62, processor 64 and memory module 66. IS 50 is coupled to PC endpoint 70 and LMR endpoints 75, 80, and 85 via communication network 90. Communication network 90 may include one or more of communication

networks 24 depicted in Figure 1. PC endpoint 70 may be used to access, configure and control various functionality provided by IS 50. PC endpoint 70 may run a client application for such access, configuration and control. The client application may enable a user of endpoint 70 to receive and monitor communications from various endpoints and virtual talk groups. In particular embodiments, other types of endpoints may be utilized to access, configure and control IS 50, such as IP phones, web based thin clients, PDAs and mobile devices. IS 50 may be coupled to such endpoints (including PC endpoint 70) through one or more communication networks.

Interface 51 is used in the communication of audio, video, signaling and other data between IS 50 and other network components. For example, interface 51 may receive communications from endpoints such as endpoints of communication networks 90, endpoints 75, 80 and 85. The communication may take place, in whole or in part, over IP networks thereby negating the need for dedicated wiring between the endpoints and the IS.

Gateways 52 may include any suitable gateways to provide network interoperability and back-end legacy application integration, such as LMR gateways, PSTN gateways and application gateways. Gateways 52 provide mapping between IP services and the interoperable networks, such as LMR network 24a of FIGURE 1. In some cases gateways 52 may not be located within an IS but may be distributed throughout a communication system for enabling communications among various communication networks.

Operations management application (OMA) 54 includes functionality for configuration, management and control of IS 50, including conference and collaboration

management, and may be accessed by a user via, for example, PC endpoint 70. In particular embodiments, OMA 54 may enable a user, such as dispatch personnel or administrators or a mobile user (e.g., a first responder mobile user) accessing IS 50 via a mobile endpoint, to configure, manage and participate in one or more virtual talk groups and ad hoc conferences simultaneously. In particular embodiments, OMA 54 may be accessed through a web interface, functioning for example as a soft phone for radios. A screen display may be controlled using a mouse, keypad, touch screen, voice commands or any other suitable interface. OMA 54 screen displays may include any number of functional controls to provide interoperable communications. OMA 54 may authenticate a user and obtain user configuration information upon a user accessing the OMA. OMA 54 may monitor and provide communication ability for any number of channels and modalities at one time to provide the ability for an OMA user to communicate on and control multiple virtual talk groups at once. In particular embodiments, OMA 54 may manage and control recording and oversee the playback of recorded communications in particular VTGs.

Multipoint conference system (MCS) 56 provides collaboration and conference services for multiple endpoints of one or more networks. For example, users of multiple endpoints (such as LMRs of different networks (e.g., networks of different agencies or groups) and different types of endpoints of different networks) may be bridged together through MCS 56 to provide virtual talk group communications. MCS 56 may include any suitable number or type of conference bridges, ports, digital signal processors or other components to facilitate communications discussed herein.

Policy engine 58 includes policies for undertaking various operations and functionality upon the occurrence of various events to provide dynamic incident management. These policies may include both pre-determined and ad hoc policies. For example, upon detecting a new endpoint within a VTG, a predetermined policy may be executed to seamlessly update that endpoint with the status of the VTG. During the update process, the endpoint may, on an ad hoc basis, adjust the way in which the update is presented. The adjustments may be, for example, to any of the following: the speed at which the recorded communications are played back (e.g., speed up or slow down the playback), the type of communications that are played back (e.g., from certain endpoints or from certain communication networks), when the communications are presented (e.g., before or after the endpoint is able to participate in the VTG or only when there is silence in the VTG's communications), how communications are presented (e.g., pitch or tone, audible or text, background or foreground) or any other aspect that may be desirable to change (e.g., how far back the playback begins). Similarly, policy engine 58 may include policies for determining when the communications of a VTG should be recorded, such as any of the policies discussed below. Policy engine 58 may determine which particular endpoints are to be updated and what capabilities they may have (e.g., audio only, audio and visual, visual only) for receiving the update.

Authentication and security system 60 manages access, configuration and control privileges for users of IS 50 and those participating in interoperable communications. For example, different users may have different privileges assigned for interoperable

communications. Some users may only have transmit or listen privileges with respect to one or more particular talk groups, while other users may have the ability to communicate in all talk groups or setup and configure various talk groups. User privileges may change dynamically upon the occurrence of particular events.

Call manager 62 maintains information regarding various users, such as users of IP networks for which interoperable communications are provided by IS 50. This facilitates in the extension of PTT to IP networks and in the provision of voice and data interoperability across radio and non-radio networks. In particular embodiments, call manager 62 may maintain a listing, table, or other organization of information about users. The information may include a name or other identifier and contact information such as phone numbers and email addresses for the users. In some embodiments, the information about users is maintained within other components coupled to call manager 62 through, for example, network 90 so that call manager 62 may use the network to access the information about users. In particular embodiments call manager 62 may represent any appropriate combination of hardware, software and/or encoded logic distributed throughout a communication network coupled with an IS.

Processor 64 may be a microprocessor, controller, or any other suitable computing device, resource, or combination of hardware, software and/or encoded logic operable to provide, either alone or in conjunction with other IS components such as OMA 54, IS 50 functionality. Such functionality may include providing various features discussed herein to a user, such as a user of an endpoint accessing IS 50 through OMA 54. Such features may include controlling how and when the communications of a

particular VTG are recorded and how and when to playback the communications to update endpoints added to the VTG.

Memory module 66 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component. Memory module 66 may store any suitable data or information, including software and encoded logic, utilized by IS 50. In some embodiments memory module 66 may store recorded communications and/or playback options or settings (e.g., for an individual, a group or a VTG). In particular embodiments, memory module 66 may include data for user management, talk-group management, resource pool management, privileges, backup configuration and information and/or timestamp and activity tracking.

IS 50 may also include any number of switches, routers, firewalls, mobile access routers, access points, wireless bridges and other components in order to accommodate particular operational desires and needs.

In particular embodiments such as in the LMR network interoperability context, IS 50 may, through one or more components discussed above or through other components, encode received audio with a standard audio codec, such as G.711 or G.729. Those audio samples may be packaged in standards-based real-time transport protocol (RTP) or real-time transport control protocol (RTCP) packets suitable for transport on an IP network. At this point, the communication element may be abstracted from the distinctive characteristics of each radio system. These audio packets can be sent across the network to other radio systems either individually (unicast) or as a group (multicast). The recipient of the audio packets may be a

device capable of receiving and decoding the RTP or RTCP stream, such as an IP telephone or PC with appropriate software. The IP network and IP-enabled devices can be used to allow endpoints to monitor or transmit on a particular radio channel from a desk without issuing another radio.

As indicated above, IS 50 may facilitate communication among endpoints of various networks through virtual channels or talk groups. For example, a channel may comprise a unidirectional or bidirectional path for transmitting and/or receiving electrical or electromagnetic signals. This may comprise, for example, a conventional radio physical RF channel. A talk group in this context may be a subgroup of users who share a common functional responsibility and typically coordinate their actions amongst themselves without communicative interaction with other subgroups. For example, a building's security force network may include various endpoints that do not usually require radio connectivity with other functional groups but who are in constant communication amongst themselves, whether by radio, telephone or other forms of electronic communication.

A virtual talk group (VTG) represents interoperability of a group of channels, for example, as an audio conference or meeting. A virtual talk group may include an associated virtual channel and an ID. Virtual channels may comprise an address, such as an IP address, associated with a virtual talk group through which users may access the virtual talk group and/or through which communications from VTG member-endpoints are bridged. Various types of virtual talk groups may be utilized in particular embodiments, such as a multicast address usable by all endpoints of the VTG, a VTG comprising

multiple talk groups (e.g., multiple radio sources from different frequencies whose communications are mixed), a unicast group and a combination unicast and multicast group.

As an example, a particular virtual talk group may comprise any one or more of the following: (1) a channel or other multicast path used by certain users of a police department's radio network, (2) a channel or other multicast path used by certain users of a fire department's radio network, (3) a channel or other multicast path used by certain users of a corporation's security radio network and (4) a plurality of users of IP-enabled endpoints such as IP phones, IP-enabled PDAs or PCs. An operator of IS 50 may configure the virtual talk group using any suitable interface, such as by dragging and dropping the included channels and IP endpoints into a single area representing the virtual talk group. The VTG may also be configured by IS 50 through, for example, the use of OMA 54, policy engine 58, and processor 64, according to an organization's defined policies. During the life of this VTG the communications of the various endpoints within the VTG may be recorded. The recorded communications may then be played back for users of endpoints that join the VTG. The playback may be used to update or apprise the users of the endpoints of the situation of the VTG.

MCS 56 may provide the functionality for conferencing of the virtual talk group members. In particular embodiments, multiple talk groups may be patched together on a dynamic, as needed basis. In some cases a virtual talk group may not necessarily include communications through an IS but may instead include member endpoints whose communications are mapped to IP

addresses at gateways (such as LMR gateways) controlled by an IS.

The following scenario is presented to help in understanding the functionality of particular embodiments. It should be noted that this scenario is for illustrative purposes only and depicts only some of the features and workings of a particular embodiment. It is not intended to illustrate all features of all embodiments.

For purposes of this scenario, assume that LMRs 75, 80 and 85 are all part of different communication networks. For example, assume that LMR 75 is part of a police department communication network (PDCN), that LMR 80 is part of a buildings security communication network (SCN) and that LMR 85 is part of a FBI communication network (FBICN). LMRs 75, 80 and 85 may not normally be in direct communication with each other. For simplicity, PO 75 may be used to refer to either a police officer or her LMR 75, SO 75 may be used to refer to either a security officer or his LMR 80, and FBI 85 may be used to refer to either a FBI agent or his LMR 85.

Assume that there has been a bomb threat in a building in which SO 80 is currently on-duty. Upon receiving notice of the bomb threat, a dispatcher from the local police department may create a virtual talk group to facilitate communications among those endpoints that are dealing with the bomb threat. For purposes of this scenario, the only other endpoint that was in the vicinity of the building and available to participate in the bomb threat VTG (besides SO 80) was PO 75. Thus, when the dispatcher creates the bomb threat VTG she may include PO 75, SO 80 and herself in the bomb threat VTG, thereby allowing PO 75 and SO 80 to communicate with one

another as though they are part of the same communication network even though they are still using their original communication network (i.e., PDCN and SCN, respectively). Particular embodiments of the present invention may also include other types of endpoints within the bomb threat VTG (or any other VTG that may be created). For example, the bomb threat VTG may include PSTN telephones located inside the building, cell phones belonging to people interested in the bomb threat (e.g., the owner of the building, the police chief), other LMRs or any other endpoint that supports communication in some form.

Upon the dispatcher creating the bomb threat VTG, IS 50 may begin recording the communications being transmitted between endpoints PO 75 and SO 80 within the VTG. The communications may be received through IF 51 and stored within memory module 66. The recording of the VTG's communications may be triggered by any of several different events or factors depending on the policies being used by IS 50. For example, in some embodiments the mere creation of a VTG may cause the communications therein to be recorded. Particular embodiments may begin recording if a particular type of VTG (e.g., fire or bomb threat, VTGs of specific size, duration or location) is created. In some embodiments the recording may be triggered by the absence from the VTG of one or more particular endpoints. As mentioned above, particular embodiments may combine different criteria in determining when to record the VTG's communications. For example, some embodiments may begin recording if the fire chief is not present in a VTG formed in response to a fire in a residential area. In particular embodiments a dispatcher may need to enable the recording.

The length of recording that is stored, for example within memory module 66, may depend on the configuration of IS 50. In some embodiments IS 50 may store the communications transmitted during the life of the VTG (i.e., from the formation to the termination of the VTG). In particular embodiments, IS 50 may store those communications transmitted or received within a certain amount of time (e.g., the last hour). In particular embodiments IS 50 may use the same storage scheme (e.g., store communications for the life of the VTG or for a certain amount of time) for every VTG, while in others an IS may use different recording lengths for different VTGs. Within those embodiments that may use different recording lengths for different VTGs, some embodiments may allow the dispatcher to set the length of recording, and some may associate such length with the type of VTG. Furthermore, some embodiments may utilize a simplified recording in which IS 50 may continuously record everything within a VTG (including the communications, silence, and/or noise), while particular embodiments may use a form of smart recording, for example recording only when there is a communication. Where IS 50 only records when there is a communication, memory module 66 may store each communication as a separate discrete communication or it may store them as a single large communication. Furthermore, in some embodiments in which IS 50 only records when there is a communication, memory module 66 may store information relating to the timing of the communications (e.g., the time or location and duration of the silence between communications). This information may be used in re-creating the timing of the communications of the VTG so that it may more accurately reflect the original VTG communications. This may allow

an endpoint to playback the communications with or without the silences.

Some time after the bomb threat VTG is formed and IS 50 begins recording the communications therein, FBI 85 may be added to the bomb threat VTG. He may be added by himself, the dispatcher, some other endpoint, or IS 50 (including any components coupled thereto). IS 50 may add him for a variety of reasons, for example based on his location or his function (e.g., he is the FBI bomb threat expert). Upon being added to the bomb threat VTG, FBI 85 may need to be apprised of the situation because he was not previously a part of the bomb threat VTG and may not be aware of the situation within the VTG. Furthermore, it may not be desirable for one of the other endpoints of the bomb threat VTG, who may be knowledgeable of the situation, to provide FBI 85 with an update. For example, the other endpoints may not have the time, ability or capability of updating FBI 85; they may not want to tie-up the communication channels of several endpoints to update a single endpoint; or the VTG may be adding/removing endpoints at a relatively high rate such that it may not be efficient and/or practical to use knowledgeable endpoints to update the new endpoints. However, while it may not be desirable to have one of the knowledgeable endpoints within the VTG update FBI 85, it may still be desirable for FBI 85 to be updated.

To update FBI 85 IS 50 may, through some combination of OMA 54, policy engine 58, processor 64, memory 66 and interface 51, play back the communications stored within memory module 66. How the communications are played back may depend on several factors such as how IS 50 and/or

policy engine 58 have been configured and/or the input from FBI 85 and/or the dispatcher.

In particular embodiments FBI 85 may receive the recorded communications before he is able to participate in the VTG. In most situations this may not be desirable because it may delay FBI 85's participation in the VTG. However, where IS 50 plays back a certain number of discrete communications and/or increases the playback speed (both of which are discussed in more detail below), the amount of time lost by FBI 85 while he waits for the update to finish may not be significant.

In some embodiments, FBI 85 may be updated while he participates in the VTG. This may be facilitated in some embodiments by the use of a whisper feature in playing back the recorded communications. The whisper playback may allow FBI 85 to participate in the bomb threat VTG while he is being updated. The whisper feature plays the recorded communications at a lower volume than live communications so that FBI 85 may hear the live communications over the recorded communications.

In some embodiments IS 50 may allow FBI 85 to control the playback of the recorded communications. Thus, FBI 85 may be able to rewind back to a communication that he missed (e.g., where a live communication drowns out a recorded communication being presented using the whisper feature) or that was particularly important and he wants to make sure he heard it all. Similarly, FBI 85 may fast forward through parts that are not particularly relevant or interesting or which convey information of which he may already be aware. The playback control may also allow him to pause the playback, for instance, when he needs to give a particular task his undivided attention or when he wants

to be able to listen to VTG communications without being distracted by recorded communications. The control of the playback of the recorded communications may be used whether or not a whisper feature is used.

In particular embodiments, IS 50 may temporarily stop or pause playback when live communications are detected. This has the effect of only playing back the recorded communications when there may not be any VTG communications. Depending on the particular embodiment and the current arrangement of VTGs, it may be that IS 50 stops playing back the recorded communications when there is silence within the particular VTG that is the source of the recorded communications, or when there is silence within all the VTGs of which the endpoint is a member (e.g., a dispatcher may be part of several VTGs and so it may be desirable to have playback only occur when there is silence throughout all the VTGs). Within those embodiments that temporarily stop or pause the playback of the recorded communications, some may resume playback from the spot where it stopped, and some may resume playback from a previous spot a certain amount of time before the spot where it last stopped or paused the playback. In particular embodiments, IS 50 may associate a priority with each communication. The priority may be based on the endpoint that created the communication or the VTG from which the communication originated. When the recorded communications are being played back for FBI 85, IS 50 may pause the playback if it detects a communication, from any endpoint having a higher priority than the recorded communication. The higher priority communication may come from any endpoint with which FBI 85 is in contact (e.g., endpoints from the bomb threat VTG, any other VTGs of which FBI 85 is a member, or

endpoints using the FBICN). Thus, only higher priority endpoints may interrupt the update process.

Presenting FBI 85 with both the recorded communications and the bomb threat VTG's communications may cause him confusion in determining which are VTG communications and which are recorded communications. Different embodiments may use different techniques to differentiate between VTG and recorded communications. For example, some embodiments may change the way the recorded communications sound by altering such aspects as the pitch or tone of the recorded communications. Some embodiments of IS 50 may include a unique identifier that helps FBI 85 differentiate between live and recorded communications. For example, some embodiments may use a visual identifier, such as a light located on the endpoint or a particular color or image for the background for endpoints that have a graphical display. Particular embodiments may use an audible signal, such as a tone in the background, or beeps before and/or after presenting recorded communications to signify which communications are recorded and which are live.

There are at least two different points at which policy engine 58 may be done updating FBI 85 with recorded communications. The first possible stopping point may be the point at which FBI 85 joined the VTG. This may be useful where FBI 85 was able to hear both the live communications and the recorded communications. Thus, there would not be a need to present the recorded communications that he may already have received once he joined the VTG. Another possible stopping point may be the point at which FBI 85 has heard all the recorded communications up to the present. This may be useful

where FBI 85 was not able to hear VTG communications until he was finished being updated.

The VTG communications may be recorded for reasons other than to be played back to update particular endpoints added to particular VTGs. For example, VTG communications may be recorded to maintain a record of what took place within a VTG during a particular event. In particular embodiments, FBI 85 may want to get guidance from another endpoint who is not a member of the bomb threat VTG. To do so FBI 85 may communicate a request to IS 50 to have IS 50 play the recorded communications from the bomb threat VTG for the other endpoint. In some embodiments, IS 50, through for example policy engine 58, may keep track of the privileges required to listen to particular recorded communications. Then, prior to playing a recorded communication, IS 50 may check, via policy engine 58 and memory module 66, the privileges stored for the endpoint and allow the playback of the recorded communication if the stored privileges of the endpoint match with the policy's privilege requirements. If they match IS 50 may then allow the endpoint to listen to the recorded communications from the bomb threat VTG as though he were a member of the VTG.

Thus far several different embodiments and features have been presented. Particular embodiments may combine one or more of these features depending on operational needs and/or component limitations. This allows for great adaptability of IS 50 to the needs of various organizations and users. For example, a particular embodiment may record the communications of a VTG using smart recording that only records when VTG communications are being transmitted. The recording may be triggered by

a VTG created for a bank robbery in which the chief of police is not presently available. Then, once the police chief becomes available the communications may be presented to him using a whisper feature when there is silence among all the VTGs to which the police chief is a member.

Any number of virtual talk groups may be configured to provide any suitable audio, data, video and control network interoperability. Virtual talk groups may be created using any suitable user/endpoint groups or channels based on location, organizational requirements, event requirements or any other suitable characteristic. An administrator or operator may configure channel details such as name, description, participants, multicast IP addresses, codec and latch options through, for example, OMA 54.

FIGURE 3 illustrates an endpoint 90, which may comprise a mobile endpoint, in accordance with a particular embodiment. Endpoint 90 may be similar to, and may provide functionality similar to, other endpoints discussed herein, such as LMRs, cellular phones, IP phones, PCs, PDAs, PSTN phones, video monitors, cameras or sensors.

In the illustrated embodiment, endpoint 90 includes a transmitter/receiver 92, a user interface 94, a processor 96 and a memory module 98. Transmitter/receiver 92 receives and transmits communications such as audio, video and other data to and from other network components and also may receive and transmit location information. User interface 94 provides a mechanism through which a user of endpoint 90 may operate the endpoint and communicate with other network devices. Interface 94 may comprise a keypad,

display, touch screen, audio input or any other suitable interface. Instructions may be submitted through speech recognition, collection of keystrokes, soft key or otherwise. Such instructions may include, for example, an override command sent from endpoint 90 to prevent it from being assigned to a particular VTG or instructions/requests to control the playback of the recorded communications.

Processor 96 may be a microprocessor, controller, or any other suitable computing device, resource, or combination of hardware, software and/or encoded logic operable to perform endpoint functionality. Processor 96, either alone or in conjunction with other endpoint components, provides endpoint functionality discussed herein. Memory module 98 may be any form of volatile or non-volatile memory including, without limitation, magnetic media, optical media, random access memory (RAM), read-only memory (ROM), removable media, or any other suitable local or remote memory component.

In particular embodiments, endpoint 90 may be used by a command officer or other user and may run a client application of IS 50. In some cases endpoint 90 may receive communications from a plurality of endpoints, and processor 96 may filter out certain communications for presentation to a user of endpoint 90 based on the VTG of the transmitting endpoint or any other criteria the command officer may choose.

It will be recognized by those of ordinary skill in the art that endpoints and interoperability systems disclosed herein are merely example configurations in accordance with particular embodiments. These systems may include any number of interfaces, processors, memory modules, or other components to accomplish the

functionality and features described herein. In addition, these components and other desired components for performing the above described functionality may be centrally located (local) with respect to one another, or distributed throughout communication systems and networks. In addition, one or more components of these systems and devices may work together in performing various functionality described herein.

FIGURE 4 illustrates a method for joining a virtual talk group. The method begins at step 400 where communications of endpoints of a virtual talk group are facilitated. The specific composition of the various endpoints of the VTG may vary, as may the type of device which they are using to communicate with. For example, one VTG may include endpoints from different law enforcement agencies (e.g., highway patrol, sheriff, FBI, CIA, etc.) using LMRs and another VTG may include some endpoints that are using LMRs and some endpoints that are using cell phones. Regardless of the device or communication channel that is being used, the endpoints within the VTG may be able to communicate with one another through an IS. A particular VTG may be created in response to an event (e.g., a fire or a robbery) or as part of an organization's normal operating procedures (e.g., a building may have a VTG that includes the phones in the building and the security officers' LMRs).

When particular VTGs are created, it may be advantageous to record the communications of the endpoints therein. This may be useful where the communications will be replayed/analyzed later, where endpoints may be joining the VTG and want to be updated as to what has already been communicated, or where endpoints want advice from another endpoint and wants to

provide that other endpoint with information about what has gone on within the VTG. Thus, at step 410, the communications of the VTG are recorded. In particular embodiments the recording may begin at different times depending on the policies being used by the IS. For example, it may automatically begin once the VTG has been created, it may begin if a certain type of VTG is created (e.g., a VTG created in response to a specific event, such as a high-speed chase), it may begin if the endpoint that created the VTG indicates that the communications should be recorded, or it may begin if a particular endpoint is not within a particular VTG. Some embodiments may combine multiple criteria for determining when to begin to record communications. Furthermore, within particular embodiments the recording may not begin at the same time every time. Thus, some embodiments may allow recording to begin if a certain VTG is created during a certain time but may not begin recording if the same VTG is created at a different time. For example, if a particular endpoint is not part of a particular type of VTG, but that endpoint is on duty, the IS may begin to record the communications. If that endpoint is off duty then the IS may not record the communications because there is a much smaller chance that the off duty endpoint will even be able to join the VTG to be updated.

Similarly, different embodiments may store different lengths of recorded communications. For example, some embodiments may store those communications transmitted or received during the life of a VTG. Particular embodiments may store those communications transmitted or received within a certain amount of time (e.g., those communications transmitted within the last hour). Furthermore, some embodiments may utilize plain recording

in which the IS records regardless of whether communications are being transmitted. Particular embodiments may use smart recording in which the IS records when communications are being transmitted within the VTG. In some embodiments, the IS may not record when there is silence within the VTG, but it may keep a record of the timing and the duration of the silence. This information may be used at a later time to obtain real-time forensic information required to analyze the operation.

As indicated above, during the life of a particular VTG endpoints may be added. These endpoints may not be fully aware of what is going on within the VTG and may thus need to be updated. After adding a first endpoint to the VTG, at step 420, the first endpoint may be presented with the recorded communications of the endpoints within the VTG at step 440. In some embodiments, as or before the first endpoint is presented with the recorded communications he is alerted that the communications he is receiving are recorded communications. This is shown at step 430. Once the first endpoint has been added to the VTG (and in particular embodiments, been updated) he is able to communicate with the other endpoints within the VTG as though they were all using the same communication network.

Depending on the embodiment, configuration, and user choices, both the indication and the presentation of the recorded messages can vary greatly. For example, the indication received at step 430 may be any of the following: illuminating a light on the endpoint (solid or flashing), changing the color of a light on the endpoint, changing the background of a graphical display,

displaying a message or icon on a graphical display, providing a background tone, generating one or more beeps, changing the sound of the recorded communications, or any other means of alerting the first endpoint that the communications that are currently being presented are recorded communications. Similarly, in some embodiments, the first endpoint may display an indication when the VTG's communications are being presented. Thus, the user of the first endpoint is able to distinguish between the VTG's communications and the recorded communications.

As mentioned above, the presentation of the recorded communications can be quite varied. For example, the recorded communications presented at step 440 may be presented in any of the following ways: by presenting, in part or in whole, the recorded communications before the first endpoint is able to transmit or receive communications; by presenting the recorded communications at an accelerated rate so that, for example, a half-hour of recorded communications can be presented in twenty minutes; by presenting the recorded communications only when there is a break in the communications of the VTG; presenting the recorded communications if there is not a higher priority endpoint communicating within the VTG; by allowing the user to control the presentation of the recorded communications (e.g., pause, rewind or fast-forward the recorded communications); by allowing the first user to increase or decrease the rate at which the recorded communications are presented; by using a whisper feature in which the recorded communications are played in the background as the VTG's communications are presented in the foreground; and/or by any other method that may be desirable.

At step 450, either while the first endpoint is being presented with recorded communications or after the first endpoint has been presented with the recorded communications, the communications of the first endpoint and the plurality of endpoints within the VTG are facilitated. This allows the first endpoint to communicate with the other endpoints of the VTG as though they were using the same communication channel.

Some of the steps illustrated in FIGURE 4 may be combined, modified or deleted where appropriate, and additional steps may also be added to the flowchart. Additionally, steps may be performed in any suitable order without departing from the scope of the invention.

Although the present invention has been described in detail with reference to particular embodiments, it should be understood that various other changes, substitutions, and alterations may be made hereto without departing from the spirit and scope of the present invention. For example, although the present invention has been described with reference to a number of elements included within communication system 10 and illustrated endpoints and interoperability systems, these elements may be combined, rearranged or positioned in order to accommodate particular routing architectures or needs. In addition, any of these elements may be provided as separate external components to communication system 10 and illustrated endpoints and interoperability systems, or each other where appropriate. The present invention contemplates great flexibility in the arrangement of these elements as well as their internal components.

Numerous other changes, substitutions, variations, alterations and modifications may be ascertained by those skilled in the art and it is intended that the present

invention encompass all such changes, substitutions, variations, alterations and modifications as falling within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A method for joining a virtual talk group, comprising:

facilitating communications of a virtual talk group, the virtual talk group comprising a plurality of endpoints of different communication networks;

recording the communications of the plurality of endpoints of the virtual talk group;

adding a first endpoint to the virtual talk group; and

presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

2. The method of Claim 1, further comprising facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications.

3. The method of Claim 2, wherein facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises presenting the first endpoint with the recorded communications when there is a pause in the communications of the plurality of endpoints of the virtual talk group.

4. The method of Claim 2, wherein facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded

communications comprises pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication.

5. The method of Claim 4, wherein pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication comprises pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication having a priority greater than the recorded communication.

6. The method of Claim 1, further comprising providing an indication to the first endpoint indicating that the first endpoint is being presented with the recorded communications of the virtual talk group such that the first endpoint may distinguish the recorded communications from the communications of the plurality of endpoints of the virtual talk group.

7. The method of Claim 1, further comprising receiving a request from the first endpoint to change the manner by which the recorded communications are presented.

8. The method of Claim 1, further comprising receiving a request from the first endpoint to control the manner of the presentation of the recorded communications.

9. The method of Claim 1, wherein presenting the first endpoint with the recorded communications comprises

increasing the rate by which the recorded communications are presented.

10. The method of Claim 1, further comprising:

determining that a condition of a predetermined policy has been satisfied; and

recording the communications of the plurality of endpoints of the virtual talk group based on the satisfaction of the condition of the predetermined policy.

11. The method of Claim 10, wherein determining that a condition of a predetermined policy has been satisfied comprises detecting the absence of the first endpoint from the virtual talk group.

12. A system for joining a virtual talk group, comprising:

a processor operable to:

facilitate communications of a virtual talk group, the virtual talk group comprising a plurality of endpoints of different communication networks;

record the communications of the plurality of endpoints of the virtual talk group; and

add a first endpoint to the virtual talk group; and

an interface coupled to the processor and operable to present the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

13. The system of Claim 12, wherein the processor is further operable to facilitate communications among

the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications.

14. The system of Claim 13, wherein the processor operable to facilitate communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises a processor operable to present the first endpoint with the recorded communications when there is a pause in the communications of the plurality of endpoints of the virtual talk group.

15. The system of Claim 13, wherein the processor operable to facilitate communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises a processor operable to pause the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication.

16. The system of Claim 15, wherein the processor operable to pause the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication comprises a processor operable to pause the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication having a priority greater than the recorded communication.

17. The system of Claim 12, wherein the processor is further operable to provide an indication to the first endpoint indicating that the first endpoint is being presented with the recorded communications of the virtual talk group such that the first endpoint may distinguish the recorded communications from the communications of the plurality of endpoints of the virtual talk group.

18. The system of Claim 12, wherein the processor is further operable to receive a request from the first endpoint to change the manner by which the recorded communications are presented.

19. The system of Claim 12, wherein the processor is further operable to receive a request from the first endpoint to control the manner of the presentation of the recorded communications.

20. The system of Claim 12, wherein an interface operable to present the first endpoint with the recorded communications comprises an interface operable to increase the rate by which the recorded communications are presented.

21. The system of Claim 12, wherein the processor is further operable to:

determine that a condition of a predetermined policy has been satisfied; and

record the communications of the plurality of endpoints of the virtual talk group based on the satisfaction of the condition of the predetermined policy.

22. The system of Claim 21, wherein the processor operable to determine that a condition of a predetermined policy has been satisfied comprises a processor operable to detect the absence of the first endpoint from the virtual talk group.

23. Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:

facilitate communications of a virtual talk group, the virtual talk group comprising a plurality of endpoints of different communication networks;

record the communications of the plurality of endpoints of the virtual talk group;

add a first endpoint to the virtual talk group; and

present the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

24. The medium of Claim 23, wherein the code is further operable to facilitate communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications.

25. The medium of Claim 24, wherein the code operable to facilitate communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises code operable to present the first endpoint with the recorded communications when there is a pause in the communications of the plurality of endpoints of the virtual talk group.

26. The medium of Claim 24, wherein the code operable to facilitate communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises code operable to pause the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication.

27. The medium of Claim 26, wherein the code operable to pause the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication comprises code operable to pause the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication having a priority greater than the recorded communication.

28. The medium of Claim 23, wherein the code is further operable to provide an indication to the first endpoint indicating that the first endpoint is being presented with the recorded communications of the virtual talk group such that the first endpoint may distinguish the recorded communications from the communications of the plurality of endpoints of the virtual talk group.

29. The medium of Claim 23, wherein the code is further operable to receive a request from the first endpoint to change the manner by which the recorded communications are presented.

30. The medium of Claim 23, wherein the code is further operable to receive a request from the first

endpoint to control the manner of the presentation of the recorded communications.

31. The medium of Claim 23, wherein the code operable to present the first endpoint with the recorded communications comprises code operable to increase the rate by which the recorded communications are presented.

32. The medium of Claim 23, wherein the code is further operable to:

determine that a condition of a predetermined policy has been satisfied; and

record the communications of the plurality of endpoints of the virtual talk group based on the satisfaction of the condition of the predetermined policy.

33. The medium of Claim 32, wherein the code operable to determinine that a condition of a predetermined policy has been satisfied comprises code operable to detect the absence of the first endpoint from the virtual talk group.

34. A system for joining a virtual talk group, comprising:

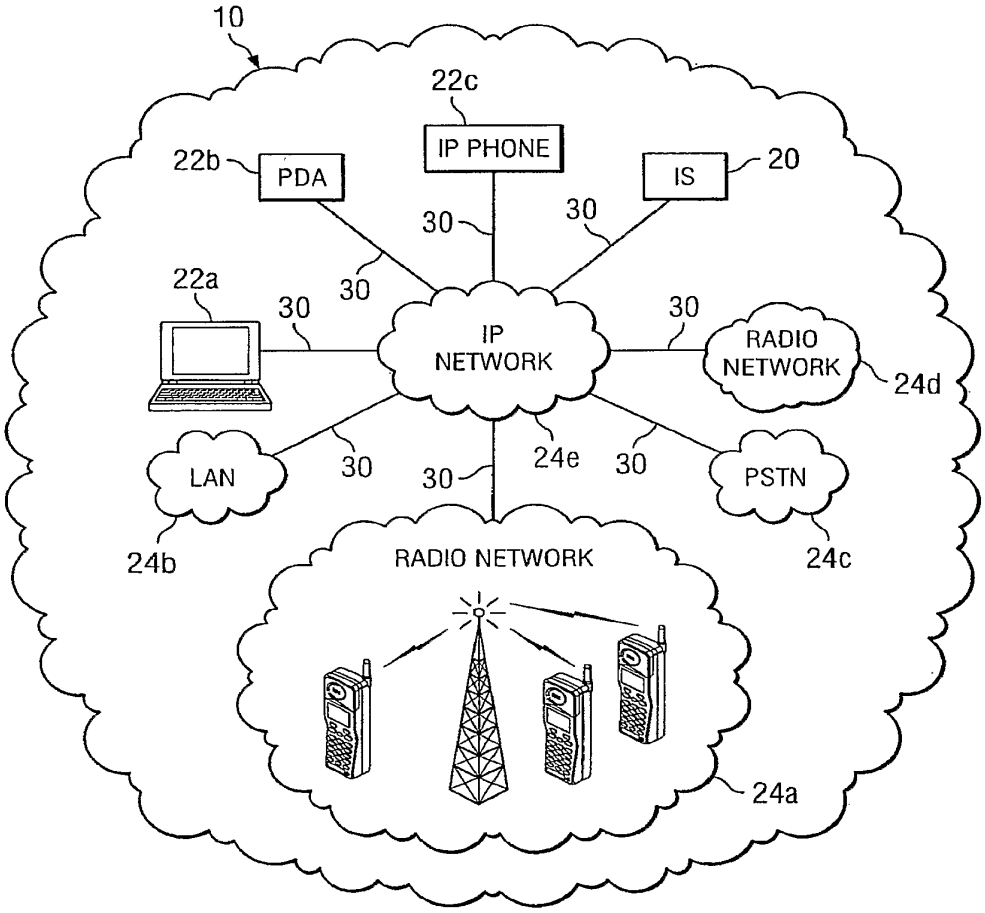
means for facilitating communications of a virtual talk group, the virtual talk group comprising a plurality of endpoints of different communication networks;

means for recording the communications of the plurality of endpoints of the virtual talk group;

means for adding a first endpoint to the virtual talk group; and

means for presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group.

FIG. 1


10
22c
IP PHONE
22b
PDA
IS
20
30
30
22a
30
30
IP
NETWORK
30
RADIO
NETWORK
24d
LAN
30
30
24e
30
PSTN
24b
RADIO NETWORK
24c
24a

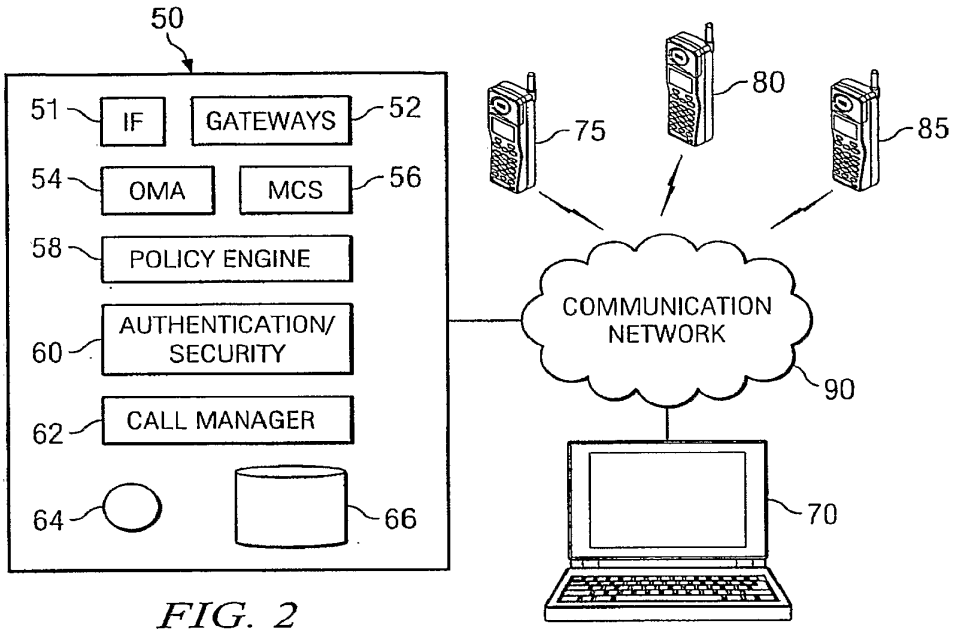


FIG. 2

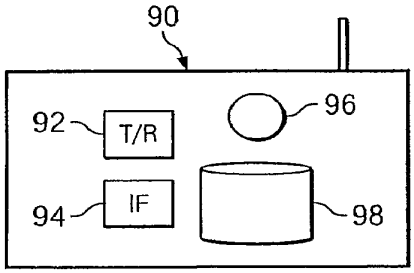


FIG. 3

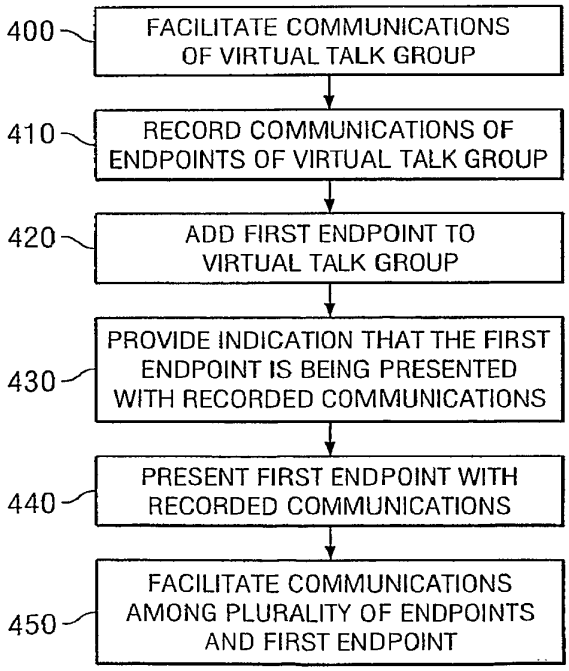


FIG. 4

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 01/04570

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04Q7/22 G08G1/123

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04Q G08G

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 674 355 A (GRP TAXI STE NOUVELLE) 25 September 1992 (1992-09-25) page 6, line 17 -page 8, line 30 page 9, line 17 -page 10, line 17	1,2,4,5, 13,14, 16,17, 20, 28-31, 33,35, 49-51
A	EP 0 849 964 A (JAMIN BERNARD ;BANNERY JACQUES (FR); DELFABBRO MARC (FR)) 24 June 1998 (1998-06-24) column 3, line 15 -column 4, line 52 column 6, line 11 -column 7, line 22	1-54

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier 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	Date of mailing of the international search report
25 September 2001	02/10/2001

Name and mailing address of the ISA	Authorized officer
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	Dionisi, M

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US06/30447

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **H04Q 7/24**

USPC: 370/338
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. : 370/338

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)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,885,874 B2 (GRUBE et al) 26 April 2005 (26.04.2005) Column 3 line 16- column 22 line 38	1-109
X	US 6,882,856 B1 (ALTERMAN et al) 19 April 2005 (19.04.2005) column 2 line 16-column 6 line 18	1, 37-39, 51,54, 66,69,70,71,83,95,97, 109

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
05 January 2007 (05.01.2007)	27 FEB 2007
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Lewis G. West Telephone No. 571-272-2600

Form PCT/ISA/210 (second sheet) (April 2005)

Continuation of B. FIELDS SEARCHED Item 3:
EAST (BRS):
key term: virtual talk group, group location

Motorola Solutions, Inc., Ex1003, p. 581

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US06/30294

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04L 12/66 (2007.01)
USPC - 370/352
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8) - H04L 12/66, 12/16; H04Q 11/00, 7/00; H04B 7/005; H04H 1/00; H04J 3/24; G01C 21/00, 21/30, 21/32 (2007.01)
USPC - 370/352, 271, 278, 312, 313; 701/200, 201, 202, 206, 211, 213

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)
MicroPatent (US, USPG-PUB, EPO, DERWENT)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0174991 A1 (KEAGY) 11 August 2005 (11.08.2005) entire document	1-5, 7-10, 12-17, 19-22, 24-30, 32-35 and 37
A	US 6,400,816 B2 (HJALMTYSSON et al) 04 June 2002 (04.06.2002) entire document	1-37
A	US 2004/0054428 A1 (SHEHA et al) 18 March 2004 (18.03.2004) entire document	1-37
A	WO 2001/091485 A1 (NAGHIAN et al) 29 November 2001 (29.11.2001) entire document	1-37
A	WO 2002/074051 A2 (FANO et al) 26 September 2002 (26.09.2002) entire document	1-37

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 January 2007	09 APR 2007
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/08419

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G01S 3/02
US CL : 701/201
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. : 701/201, 1, 14; 342/457, 450, 456

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)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US6,151,309 A (BUSUIOC et al) 21 November 2000, Figs. 1-3; col. 1 line 26-col. 2 line 37; col. 3 line 5-col. 5 line 64.	1-51
Y	US 5,689,245 A (NOREEN et al.) 18 November 1997, col. 7 lines 5-44; col. 5 lines 10-45; and claims	1-51
A	US 6,094,579 A (OLVERA-HERNANDEZ et al.) 25 July 2000, col. 5 line 14-col. 6 line 63	1-51

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent 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
26 May 2002 (26.05.2002)

Date of mailing of the international search report
13 FEB 2003

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
Marthe Marc-Coleman

Telephone No. (703) 305-4970

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/08419

Continuation of B. FIELDS SEARCHED Item 3:
West:
mobile, handheld, portable, pda, deliver, service, channel, connection, available, location, position, interest, preference, profile, bluetooth, network

Motorola Solutions, Inc., Ex1003, p. 584

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 06/19227

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - H04Q 7/20 (2007.01)
USPC - 455/456.2
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 455/456.2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 455/456.1

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT,PGPB,EPAB,JPAB); Google Scholar
Search Terms: communication network, position, frequency, safety, police, specialized mobile radio, location, gps, global position, mobile

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/0192353 A1 (MASON et al.) 30 September 2004 (30.09.2004), abstract, para [0020], [0024]-[0026], [0075]	1-31
A	US 2001/0028321 A1 (KRASNER) 11 October 2001 (11.10.2001), entire document	1-31
A	US 6,374,100 B1 (SMITH et al.) 16 April 2002 (16.04.2002), entire document	1-31

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 April 2007 (17.04.2007)	04 SEP 2007
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 062891.2149	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/019227	International filing date *(day/month/year)* 17 May 2006 (17.05.2006)	Priority date *(day/month/year)* 08 June 2005 (08.06.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CISCO TECHNOLOGY, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 11 December 2007 (11.12.2007)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Yolaine Cussac e-mail: pt11.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: BARTON E. SHOWALTER
BALER BOTTS LLP
2001 ROSS AVENUE
DALLAS, TEXAS 75201

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	04 SEP 2007
Applicant's or agent's file reference 062891.2149	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US 06/19227	17 May 2006 (17.05.2006)	08 June 2005 (08.06.2005)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04Q 7/20 (2007.01)
USPC - 455/456.2

Applicant CISCO TECHNOLOGY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	17 April 2007 (17.04.2007)	Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 06/19227

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____ , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Motorola Solutions, Inc., Ex1003, p. 588

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 06/19227

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	3, 8-10, 13, 18-20, 24, 29-31	YES
	Claims	1, 2, 4-7, 11, 12, 14-17, 21-23, 25-28	NO
Inventive step (IS)	Claims	NONE	YES
	Claims	1-31	NO
Industrial applicability (IA)	Claims	1-31	YES
	Claims	NONE	NO

2. Citations and explanations:

Claims 1, 2, 4-7, 11, 12, 14-17, 21-23 and 25-28 lack novelty under PCT Article 33(2) as being anticipated by US 2004/0192353 A1 to Mason et al. (hereinafter 'Mason').

As per claims 1, 11, 21 and 22, Mason discloses a method/system/code for communicating using position information (abstract), comprising: communicating on a first communication network at a first location using one or more first communication parameters of the first communication network (para [0024]); upon moving from the first location to a second location, receiving position information identifying the second location; adjusting the one or more first communication parameters based on the second location; and communicating on a second communication network at the second location using the one or more second communication parameters (para [0026]).

As per claims 2, 12 and 23, Mason discloses one of the communication parameters of the first and second communication networks is a frequency (para [0026]).

As per claims 4, 14 and 25, Mason discloses one of the communication parameters of the first and second communication networks is a modulation method (para [0075]).

As per claims 5, 15 and 26, Mason discloses a communication network that comprises a safety and security agency network [First Responder Communications System] (para [0020]).

As per claims 6, 16 and 27, Mason discloses automatically adjusting one or more first communication parameters to one or more second communication parameters based on the move to the second location (para [0026]).

As per claims 7, 17 and 28, Mason discloses adjusting the communication parameters based on predefined user [commander] instructions (para [0025]).

Claims 3, 8-10, 13, 18-20, 24 and 29-31 lack an inventive step under PCT Article 33(3) as being obvious over Mason.

As per claims 3, 13 and 24, it would have been obvious to one of ordinary skill in the art to change an encryption key when going from one communication network to another because encryption keys are used in secure communication and would therefore need to be changed in order to prevent other unauthorized users from communicating through the network.

As per claims 8, 18 and 29, it would have been obvious to one of ordinary skill in the art to notify and prompt a user with an option to adjust one or more communication parameters in response to a change in location because it would enable the user to make the decision on whether cooperation with other users on the different network is required.

As per claims 9, 10, 19, 20, 30 and 31, it would have been obvious to one of ordinary skill in the art to provide a button that is depressible in order to allow the user to switch communication parameters to a second or local network of another location because it is possible that the user will be in a dangerous situation where it would be necessary to be able to switch to another communication network with the least amount of effort such as pressing a button.

Claims 1-31 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

Motorola Solutions, Inc., Ex1003, p. 589

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 062891.2214	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/030447	International filing date *(day/month/year)* 03 August 2006 (03.08.2006)	Priority date *(day/month/year)* 10 August 2005 (10.08.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CISCO TECHNOLOGY, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 15 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 12 February 2008 (12.02.2008)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Yoshiko Kuwahara e-mail: pt07.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
BARTON E. SHOWALTER
BAKER BOTTS L.L.P.
2001 ROSS AVENUE
SUITE 600
DALLAS, TX 75201

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing (*day/month/year*) 27 FEB 2007

Applicant' s or agent' s file reference
062891.2214

FOR FURTHER ACTION
See paragraph 2 below

International application No.	International filing date (*day/month/year*)	Priority date (*day/month/year*)
PCT/US06/30447	03 August 2006 (03.08.2006)	10 August 2005 (10.08.2005)

International Patent Classification (IPC) or both national classification and IPC

IPC: **H04Q 7/24**
USPC: 370/338

Applicant

CISCO TECHNOLOGY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☒ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☐ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	16 February 2007 (16.02.2007)	Lewis G. West Telephone No. 571-272-2600

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/30447

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into ____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ on paper

☐ in electronic form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in electronic form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Motorola Solutions, Inc., Ex1003, p. 592

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/30447

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-109	NO
Inventive step (IS)	Claims 1-109	YES
	Claims NONE	NO
Industrial applicability (IA)	Claims 1-109	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/30447

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:
Claims 1-109 lack novelty under PCT Article 33(2) as being anticipated by Grube.

1. Grube discloses A method for automatic configuration of virtual talk groups based on location of media source, comprising: monitoring communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
selecting a first group of mobile endpoints of the
plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and
configuring a first virtual talk group comprising the first group of mobile endpoints to facilitate
communications among the first group of mobile endpoints, the first group of mobile endpoints comprising mobile endpoints of different communication networks.

2. Grube discloses The method of Claim 1, wherein the virtual talk
group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a first event.

3. Grube discloses The method of Claim 1, wherein the virtual talk
group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a mobile endpoint of a user.

4. Grube discloses The method of Claim 1, wherein the virtual talk
group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a selected geographic area.

5. Grube discloses The method of Claim 4, wherein the geographic area is selected on a map by a user.

Motorola Solutions, Inc., Ex1003, p. 594

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

6. Grube discloses The method of Claim 1. further comprising: receiving the virtual talk group configuration instructions from a user; and
adding a mobile endpoint of the user to the first virtual talk group such that communications from the first group of mobile endpoints are communicated to the user.

7. Grube discloses The method of Claim 1, further comprising removing a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when
the first mobile endpoint leaves a geographic area associated with the first virtual talk group.
8. Grube discloses The method of Claim 1:
wherein the virtual talk group configuration
instructions relate to a first geographical area and the first virtual talk group is configured based on mobile endpoints within the first geographical area; and
further comprising removing a first mobile endpoint of the first group of mobile endpoints from the first
virtual talk group when the first mobile endpoint leaves a second geographical area, the second geographical area including and greater than the first geographical area.

9. Grube discloses The method of Claim 1, wherein the first group
of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are mapped to a multicast IP address.
10. Grube discloses The method of Claim 1, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different
communication networks whose communications are bridged.

11. Grube discloses The method of Claim 1, wherein the first group of mobile endpoints of the first virtual talk group comprises land mobile radios operable to communicate on
different frequencies.

12. Grube discloses The method of Claim 1, wherein communications from the plurality of mobile endpoints comprises push-totalk communications.
13. Grube discloses The method of Claim 1, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network
and a company communication network.

14. Grube discloses The method of Claim 1:
wherein the first virtual talk group is associated with a geographical area;
further comprising determining whether each of the selected first group of mobile endpoints are within a multicast reach of the geographical area; and
wherein configuring the first virtual talk group comprises joining in the first virtual talk group via
multicast each of the selected first group of mobile endpoints that are within the multicast reach of the geographical area.

15. Grube discloses The method of Claim 14, wherein configuring the first virtual talk group comprises joining in the first virtual talk group via nailed dialed connections each of the selected first group of mobile endpoints that are not
within the multicast reach of the geographical area.

16. Grube discloses The method of Claim 15, wherein the joining via nailed dialed connections comprises joining using SIP protocol.
17. Grube discloses The method of Claim 1:
wherein the first virtual talk group is associated with a geographical area;
wherein configuring a first virtual talk group
comprising the first group of mobile endpoints comprises:
determining that a first mobile endpoint of the first group of mobile endpoints is within a multicast reach of the geographical area; and joining in the first virtual talk group via
multicast the first mobile endpoint of the first group of mobile endpoints; and
further comprising switching the first mobile
endpoint to a nailed SIP connection to the first virtual
talk group when the first mobile endpoint leaves the
multicast reach of the geographical area.

18. Grube discloses The method of Claim 1,
wherein the first virtual talk group is associated with a geographical area; and

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

further comprising:
determining that a first mobile endpoint of the first group of mobile endpoints is continuously moving in and out of a multicast reach of the geographical area; and
in response to the determination that the first mobile endpoint is continuously moving in and out of the multicast reach, providing a connection for the first mobile endpoint to the first virtual talk group via a nailed dialed connection.

19. Grube discloses A system for automatic configuration of virtual talk groups based on location of media source, comprising a processor operable to:
monitor communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
select a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and
configure a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints, the first group of mobile endpoints comprising mobile endpoints of different communication networks.

20. Grube discloses The system of Claim 19, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a first event.

21. Grube discloses The system of Claim 19, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a first distance of a mobile endpoint of a user.

22. Grube discloses The system of Claim 19, wherein the virtual talk group configuration instructions include instructions to configure a virtual talk group of mobile endpoints within a selected geographic area.

23. Grube discloses The system of Claim 22, wherein the geographic area is selected on a map by a user.

24. Grube discloses The system of Claim 19:
an interface coupled to the processor and operable to receive the virtual talk group configuration instructions from a user; and
wherein the processor is further operable to add a mobile endpoint of the user to the first virtual talk group such that communications from the first group of mobile endpoints are communicated to the user.

25. Grube discloses The system of Claim 19, wherein the processor is further operable to remove a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when the first mobile endpoint leaves a geographic area associated with the first virtual talk group.

26. Grube discloses The system of Claim 19, wherein:
the virtual talk group configuration instructions relate to a first geographical area and the first virtual talk group is configured based on mobile endpoints within the first geographical area; and
the processor is further operable to remove a first mobile endpoint of the first group of mobile endpoints from the first virtual talk group when the first mobile endpoint leaves a second geographical area, the second geographical area including and greater than the first geographical area.

27. Grube discloses The system of Claim 19, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are mapped to a multicast IP address.

28. Grube discloses The system of Claim 19, wherein the first group of mobile endpoints of the first virtual talk group comprise a plurality of mobile endpoints of different communication networks whose communications are bridged.

29. Grube discloses The system of Claim 19, wherein the first group

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

of mobile endpoints of the first virtual talk group comprises land mobile radios operable to communicate on different frequencies.

30. Grube discloses The system of Claim 19, wherein communications
from the plurality of mobile endpoints comprises push-totalk communications.

31. Grube discloses The system of Claim 19, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

32. Grube discloses The system of Claim 19, wherein:
the first virtual talk group is associated with a geographical area:
the processor is further operable to determine
whether each of the selected first group of mobile endpoints are within a multicast reach of the geographical area; and
a processor operable to configure the first virtual talk group comprises a processor operable to join in the
first virtual talk group via multicast each of the selected first group of mobile endpoints that are within the multicast reach of the geographical area.

33. Grube discloses The system of Claim 32, wherein a processor
operable to configure the first virtual talk group comprises a processor operable to join in the first virtual talk group via nailed dialed connections each of the selected first group of mobile endpoints that are not within the multicast reach of the geographical area.

34. Grube discloses The system of Claim 33, wherein the joining via nailed dialed connections comprises joining using SIP protocol.

35. Grube discloses The system of Claim 19, wherein:
the first virtual talk group is associated with a geographical area;
a processor operable to configure a first virtual talk group comprising the first group of mobile endpoints 30comprises a processor operable to: determine that a first mobile endpoint of the first group of mobile endpoints is within a multicast reach of the geographical area; and
join in the first virtual talk group via multicast the first mobile endpoint of the first group of mobile endpoints; and
the processor is further operable to switch the
first mobile endpoint to a nailed SIP connection to the first virtual talk group when the first mobile endpoint leaves the multicast reach of the geographical area.

36. Grube discloses The system of Claim 19, wherein:
the first virtual talk group is associated with a geographical area; and the processor is further operable to:
determine that a first mobile endpoint of the first group of mobile endpoints is continuously moving in
and out of a multicast reach of the geographical area; and in response to the determination that the first mobile endpoint is continuously moving in and out of the multicast reach, provide a connection for the first mobile endpoint to the first virtual talk group via a nailed dialed connection.

37. Grube discloses A system for automatic configuration of virtual talk groups based on location of media source, 25comprising:
means for monitoring communications from a plurality of mobile endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
means for selecting a first group of mobile endpoints of the plurality of endpoints according to virtual talk group configuration instructions based on the locations of the mobile endpoints; and
means for configuring a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints, the first group of mobile endpoints comprising
mobile endpoints of different communication networks.

38. Grube discloses Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:
monitor communications from a plurality of mobile
endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
select a first group of mobile endpoints of the plurality of endpoints according to virtual talk group
configuration instructions based on the locations of the mobile endpoints; and
configure a first virtual talk group comprising the first group of mobile endpoints to facilitate communications among the first group of mobile endpoints,
the first group of mobile endpoints comprising mobile endpoints of different communication networks.

39. Grube discloses A method for communicating media based on location of media source, comprising:

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

receiving communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
receiving a selection of a geographical area; comparing the location information of each communication with the selected geographical area; and
presenting to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

40. Grube discloses The method of Claim 39, wherein:
receiving communications from a plurality of endpoints comprises receiving communications from a plurality of virtual talk groups each comprising endpoints of different communication networks; and
presenting to the user each message received from each endpoint of the plurality of endpoints located within the selected geographical area comprises presenting to the user messages from endpoints of different virtual talk groups.

41. Grube discloses The method of Claim 39, wherein receiving communications from a plurality of endpoints comprises receiving communications from a plurality of endpoints via a multicast stream.

42. Grube discloses The method of Claim 39, wherein receiving communications from a plurality of endpoints comprises receiving communications from a plurality of endpoints via a nailed dialed connection.

43. Grube discloses The method of Claim 39, wherein receiving a selection of a geographical area comprises receiving a selection of a geographical area on a map presented to the user.

44. Grube discloses The method of Claim 39, wherein comparing the location information of each communication with the selected geographical area comprises comparing the
location information of each communication with the selected geographical area at an endpoint of the user.

45. Grube discloses The method of Claim 39, wherein the location
information comprises global positioning satellite (GPS) information.

46. Grube discloses The method of Claim 39, wherein each media message comprises an audio message and the location information is steganographically embedded within the
audio message.

47. Grube discloses The method of Claim 39, wherein:
the plurality of endpoints comprise sensors; and
the media messages of the communications from the
plurality of endpoints comprise information received at
the sensors.

48. Grube discloses The method of Claim 39,wherein the
communications from the plurality of endpoints comprise
push-to-talk communications.

49. Grube discloses The method of Claim 39, wherein the plurality of endpoints located within the selected geographical area includes endpoints from at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

50. Grube discloses The method of Claim 39:
further comprising mixing each message received from each endpoint located within the selected geographical area into an output stream;
wherein presenting to the user each message received from each endpoint located within the selected geographical area comprises presenting the output stream to the user;
further comprising receiving from a first endpoint
of the endpoints located within the selected geographical area a new communication comprising a new message and new location information identifying a new location of the first endpoint;
comparing the new location information with a second
geographical area, the second geographical area larger than the selected geographical area and including the selected geographical area;
adding the new message to the output stream if the new location of the first endpoint is within the second
geographical area; and

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

excluding the new message from the output stream if the new location of the first endpoint is not within the second geographical area.

51. Grube discloses A method for communicating media based on location of media source. comprising: receiving communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint; receiving a selection of a geographical area; comparing the location information of each communication with the selected geographical area; selecting endpoints of the plurality of endpoints based on their proximity to the selected geographical area; and presenting to a user each message received from each selected endpoint.

52. Grube discloses The method of Claim 51. wherein selecting endpoints of the plurality of endpoints based on their proximity to the selected geographical area comprises selecting a first number of endpoints closest to the geographical area.

53. Grube discloses The method of Claim 51: further comprising mixing each message received from each selected endpoint into an output stream; wherein presenting to the user each message received from each selected endpoint comprises presenting the output stream to the user; further comprising receiving from a first endpoint of the plurality of endpoints a new communication comprising a new message and new location information identifying a new location of the first endpoint; comparing the new location information with the selected geographical area; and adding the new message to the output stream based on the proximity of the new location of the first endpoint to the selected geographical area.

54. Grube discloses A system for communicating media based on location of media source, comprising: an interface operable to: receive communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint; receive a selection of a geographical area; and a processor coupled to the interface and operable to: compare the location information of each communication with the selected geographical area; and present to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

55. The system of Claim 54:wherein an interface operable to receive communications from a plurality of endpoints comprises an interface operable to receive communications from a plurality of virtual talk groups each comprising endpoints of different communication networks; and wherein a processor operable to present to the user each message received from each endpoint of the plurality of endpoints located within the selected geographical area comprises a processor operable to present to the user messages from endpoints of different virtual talk groups.

56. Grube discloses The system of Claim 54, wherein an interface operable to receive communications from a plurality of endpoints comprises an interface operable to receive communications from a plurality of endpoints via a multicast stream.

57. Grube discloses The system of Claim 54, wherein an interface operable to receive communications from a plurality of endpoints comprises an interface operable to receive communications from a plurality of endpoints via a nailed dialed connection.

58. Grube discloses The system of Claim 54, wherein an interface operable to receive a selection of a geographical area comprises an interface operable to receive a selection of a geographical area on a map presented to the user.

59. Grube discloses The system of Claim 54, wherein a processor operable to compare the location information of each communication with the selected geographical area comprises a processor operable to compare the location information of each communication with the selected geographical area at an endpoint of the user.

60. Grube discloses The system of Claim 54, wherein the location information comprises global positioning satellite (GPS)

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

information.

61. Grube discloses The system of Claim 54, wherein each media message comprises an audio message and the location information is steganographically embedded within the audio message.

62. Grube discloses The system of Claim 54, wherein:
the plurality of endpoints comprise sensors; and
the media messages of the communications from the plurality of endpoints comprise information received at the sensors.
63. Grube discloses The system of Claim 54. wherein the communications from the plurality of endpoints comprise push-to-talk communications.

64. Grube discloses The system of Claim 54, wherein the plurality of endpoints located within the selected geographical area includes endpoints from at least two of: a police
department communication network, a fire department communication network, an ambulance communication network and a company communication network.

65. Grube discloses The system of Claim 54, wherein:
the processor is further operable to mix each message received from each selected endpoint into an output stream;
a processor operable to present to the user each message received from each selected endpoint comprises a
processor operable to present the output stream to the
user;
the interface is further operable to receive from a first endpoint of the endpoints located within the selected geographical area a new communication comprising
a new message and new location information identifying a
new location of the first endpoint; and
the processor is further operable to:
compare the new location information with a second geographical area, the second geographical area larger than the selected geographical area and including
the selected geographical area;
add the new message to the output stream if the new location of the first endpoint is within the second geographical area; and
exclude the new message from the output stream if the new location of the first endpoint is not within the second geographical area.

66. Grube discloses A system for communicating media based on location of media source, comprising:
an interface operable to:
receive communications from a plurality of
endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint; and
receive a selection of a geographical area; and a processor coupled to the interface and operable
to: compare the location information of each communication with the selected geographical area;
select endpoints of the plurality of endpoints based on their proximity to the selected geographical
area; and
present to a user each message received from each selected endpoint.

67. Grube discloses The system of Claim 66, wherein a processor
operable to select endpoints of the plurality of endpoints based on their proximity to the selected geographical area comprises a processor operable to select a first number of endpoints closest to the geographical area.

68. Grube discloses The system of Claim 66, wherein:
the processor is further operable to mix each message received from each selected endpoint into an output stream;
a processor operable to present to the user each message received from each selected endpoint comprises a processor operable to present the output stream to the user;
the interface is further operable to receive from a first endpoint of the plurality of endpoints a new communication comprising a new message and new location information identifying a new location of the first
endpoint; and
the processor if further operable to:
compare the new location information with the selected geographical area; and
add the new message to the output stream based
on the proximity of the new location of the first endpoint to the selected geographical area.

Motorola Solutions, Inc., Ex1003, p. 600

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/30447

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

69. Grube discloses A system for communicating media based on location of media source, comprising:
means for receiving communications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
means for receiving a selection of a geographical area;
means for comparing the location information of each communication with the selected geographical area; and
means for presenting to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

70. Grube discloses Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:
receivecommunications from a plurality of endpoints, each communication comprising a media message and location information identifying a location of its transmitting endpoint;
receive a selection of a geographical area;
compare the location information of each communication with the selected geographical area; and present to a user each message received from each endpoint of the plurality of endpoints located within the selected geographical area.

71. Grube discloses A method for providinginteroperable communications with location information, comprising:
receiving communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;
receiving from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information identifying a location of the first mobile endpoint; and
presenting to a user:
the first media message from the first mobile 20 endpoint; and
the location of the first mobile endpoint.

72. Grube discloses The method of Claim 71, wherein presenting the location of the first mobile endpoint comprises 25 presenting a street address of the first mobile endpoint.
73. Grube discloses The method of Claim 71, wherein the location information comprises global positioning satellite (GPS) information.

74. Grube discloses The method of Claim 71, wherein:
the first communication comprises a multicast stream with a header; and
the header comprises the location information.

75. Grube discloses The method of Claim 71, wherein the first communication comprises a unicast stream comprising the location information.

76. Grube discloses The method of Claim 71, wherein the first media message comprises an audio message and the location information is steganographically embedded within the audio message.

77. Grube discloses The method of Claim 71, further comprising:
receiving from a second mobile endpoint of a second virtual talk group of the plurality of virtual talk groups a second communication, the second communication comprising a second media message and location information identifying a location of the second mobile endpoint; and
presenting to the user: the second media message from the second mobile endpoint;
an identification of the second virtual talk group comprising the second mobile endpoint; and
the location of the second mobile endpoint.
78. Grube discloses The method of Claim 71, wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address.
79. Grube discloses The method of Claim 71:
wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are bridged; and
further comprising:
simultaneously receiving from a plurality of additional endpoints of the first virtual talk group a plurality of additional communications, each comprising a media message and location information identifying a location of a respective transmitting endpoint of the plurality of additional endpoints; and

Motorola Solutions, Inc., Ex1003, p. 601

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

presenting to the user:
a bridged communication stream comprising each media message; and
the locations of the plurality of additional endpoints.

80. Grube discloses The method of Claim 71, wherein:
the first virtual talk group comprises a second 20 mobile endpoint; and
the first and second mobile endpoints comprise land mobile radios operable to communicate on different frequencies.

81. Grube discloses The method of Claim 71, wherein:
the first mobile endpoint comprises a push-to-talk endpoint; and
the first media communication comprises a push-totalk communication.
82. Grube discloses The method of Claim 71, wherein the different communication networks comprise at least two of: a police department communication network, a fire department
communication network, an ambulance communication network and a company communication network.

83. Grube discloses A system for providinginteroperable
communications with location information, comprising:
an interface operable to receive communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;
the interface operable to receive from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information identifying a location of the first mobile endpoint; and
a processor coupled to the interface and operable to present to a user:
the first media message from the first mobile endpoint; and
the location of the first mobile endpoint.

84. Grube discloses The system of Claim 83, wherein a processor operable to present the location of the first mobile endpoint comprises a processor operable to present a
street address of the first mobile endpoint.

85. Grube discloses The system of Claim 83, wherein the location information comprises global positioning satellite (GPS) information.
86. Grube discloses The system of Claim 83, wherein:
the first communication comprises a multicast stream with a header; and
the header comprises the location information.

87. Grube discloses The system of Claim 83, wherein the first communication comprises a unicast stream comprising the location information.

88. Grube discloses The system of Claim 83, wherein the first media message comprises an audio message and the location information is steganographically embedded within the
audio message.

89. Grube discloses The system of Claim 83, wherein:
the interface is further operable to receive from a second mobile endpoint of a second virtual talk group of
the plurality of virtual talk groups a second communication, the second communication comprising a second media message and location information identifying a location of the second mobile endpoint; and
the processor is further operable to present to the user:
the second media message from the second mobile endpoint;
an identification of the second virtual talk group comprising the second mobile endpoint; and
the location of the second mobile endpoint.

90. Grube discloses The system of Claim 83, wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are
mapped to a multicast IP address.

91. Grube discloses The system of Claim 83, wherein:
the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are bridged;
the interface is further operable to:
simultaneously receive from a plurality of additional endpoints of the first virtual talk group a plurality of additional communications,

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

each comprising a media message and location information identifying a
location of a respective transmitting endpoint of the plurality of additional endpoints; and
the processor is further operable to present to the user:
a bridged communication stream comprising each media message; and
the locations of the plurality of additional endpoints.

92. Grube discloses The system of Claim 83, wherein:
the first virtual talk group comprises a second mobile endpoint; and
the first and second mobile endpoints comprise land mobile radios operable to communicate on different frequencies.
93. Grube discloses The system of Claim 83, wherein:
the first mobile endpoint comprises a push-to-talk endpoint: and
the first media communication comprises a push-to-talk communication.

94. Grube discloses The system of Claim 83, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.

95. Grube discloses A system for providing interoperable
communications with location information, comprising:
means for receiving communications from a plurality of virtual talk groups, each virtual talk group comprising a plurality of endpoints of different
communication networks;
means for receiving from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and
location information identifying a location of the first mobile endpoint; and
means for presenting to a user:
the first media message from the first mobile endpoint; and
the location of the first mobile endpoint.

96. Grube discloses The system of Claim 95, further comprising means for presenting to the user an identification of the first virtual talk group comprising the first mobile
endpoint.

97. Grube discloses Logic embodied in a computer readable medium, the computer readable medium comprising code operable to:
receive communications from a plurality of virtual
talk groups, each virtual talk group comprising a plurality of endpoints of different communication networks;
receive from a first mobile endpoint of a first virtual talk group of the plurality of virtual talk groups a first communication, the first communication comprising a first media message and location information
identifying a location of the first mobile endpoint; and
present to a user:
the first media message from the first mobile endpoint; and
the location of the first mobile endpoint.
98. Grube discloses The medium of Claim 97, wherein code operable to present the location of the first mobile endpoint comprises code operable to present a street address of the first mobile endpoint.
99. Grube discloses The medium of Claim 97, wherein the location information comprises global positioning satellite (GPS) information.

100. Grube discloses The medium of Claim 97, wherein:
the first communication comprises a multicast stream with a header; and
the header comprises the location information.

101. Grube discloses The medium of Claim 97, wherein the first communication comprises a unicast stream comprising the location information.

102. Grube discloses The medium of Claim 97, wherein the first media 30 message comprises an audio message and the location information is steganographically embedded within the
audio message.

103. Grube discloses The medium of Claim 97, wherein the code is further operable to:
receive from a second mobile endpoint of a second virtual talk group of the plurality of virtual talk

Motorola Solutions, Inc., Ex1003, p. 603

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

groups a second communication, the second communication comprising a second media message and location information identifying a location of the second mobile endpoint; and
present to the user:
the second media message from the second mobile
endpoint;
an identification of the second virtual talk group comprising the second mobile endpoint; and
the location of the second mobile endpoint.
104. The medium of Claim 97, wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are mapped to a multicast IP address.
105. The medium of Claim 97:
wherein the first virtual talk group comprises a plurality of endpoints of different communication networks whose communications are bridged; and
wherein the code is further operable to:
simultaneously receive from a plurality of additional endpoints of the first virtual talk group a plurality of additional communications, each comprising a media message and location information identifying a
location of a respective transmitting endpoint of the plurality of additional endpoints; and
present to the user:
a bridged communication stream comprising each media message; and
the locations of the plurality of additional endpoints.

106. Grube discloses The medium of Claim 97, wherein:
the first virtual talk group comprises a second mobile endpoint; and
the first and second mobile endpoints comprise land mobile radios operable to communicate on different frequencies.

107. Grube discloses Grube discloses The medium of Claim 97, wherein:
the first mobile endpoint comprises a push-to-talk endpoint; and
the first media communication comprises a push-to -alk communication.

108. Grube discloses The medium of Claim 97, wherein the different communication networks comprise at least two of: a police department communication network, a fire department communication network, an ambulance communication network and a company communication network.
109. Grube discloses A method for providing interoperable communications with location information, comprising:
receiving communications from a plurality of push-
to-talk endpoints of a virtual talk group, each communication comprising a media message and location information identifying a location of a transmitting endpoint, the virtual talk group comprising push-to-talk endpoints of different communication networks;
bridging the communications from the plurality of
push-to-talk endpoints of the virtual talk group;
simultaneously receiving requests to talk from a plurality of requesting push-to-talk endpoints of the virtual talk group; and
providing floor priority one of the requesting push-
to-talk endpoints based on its proximity to the event.

Claims 1-109 meet the criteria set out in PCT Article 33(2)-(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Motorola Solutions, Inc., Ex1003, p. 604

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 062891.2215	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2006/030294	International filing date *(day/month/year)* 02 August 2006 (02.08.2006)	Priority date *(day/month/year)* 29 August 2005 (29.08.2005)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CISCO TECHNOLOGY, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 04 March 2008 (04.03.2008)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Philippe Becamel e-mail: pt12.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
Barton E. Showalter
Baker Botts L.L.P.
2001 Ross Avenue, Suite 600
Dallas, Texas 75201

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	09 APR 2007

Applicant's or agent's file reference	FOR FURTHER ACTION
062891.2215	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US06/30294	02 August 2006	29 August 2005

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04L 12/66 (2006.01)
USPC - 370/352

Applicant CISCO TECHNOLOGY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer:
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	23 January 2007	Blaine Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (April 2005)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/30294

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into _____ , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

   a. type of material

      ☐ a sequence listing

      ☐ table(s) related to the sequence listing

   b. format of material

      ☐ on paper

      ☐ in electronic form

   c. time of filing/furnishing

      ☐ contained in the international application as filed

      ☐ filed together with the international application in electronic form

      ☐ furnished subsequently to this Authority for the purposes of search

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Motorola Solutions, Inc., Ex1003, p. 607

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No
PCT/US06/30294

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	6, 11, 18, 23, 31 and 36	YES
	Claims	1-5, 7-10, 12-17, 19-22, 24-30, 32-35 and 37	NO
Inventive step (IS)	Claims	6, 11, 18, 23, 31 and 36	YES
	Claims	1-5, 7-10, 12-17, 19-22, 24-30, 32-35 and 37	NO
Industrial applicability (IA)	Claims	1-37	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-5, 7-10, 12-17, 19-22, 24-30, 32-35 and 37 lacks novelty under PCT Article 33(2) as being anticipated by Keagy (US 2005/0174991 A1).

With respect to Claims 1, 13, 25 and 26 Keagy discloses a method, system, and logic (programming) for conveying media source location information (ALI), comprising receiving a first communication (first protocol) from a first endpoint; receiving location information (510 Figure 5) indicating a first location of the first endpoint; and presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint (Paragraph 0015).

With respect to Claims 2, 14 and 27, Keagy discloses presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises presenting the first communication to the user from a direction relative to the user corresponding to a direction (GPS coordinates is the data that determines direction, Paragraph 0029) of the first location relative to the second location (Paragraph 0015).

With respect to Claims 3, 15 and 28, Keagy discloses receiving orientation information indicating an orientation of the user; and wherein presenting the first communication to the user from a direction (GPS coordinates is the data that determines direction, Paragraph 0029) relative to the user corresponding to a direction of the first location relative to the second location comprises presenting the first communication to the user from a direction relative to the orientation of the user corresponding to a direction of the first location relative to the second location (Paragraph 0024).

With respect to Claims 4, 16 and 29, Keagy discloses presenting the first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises presenting the first communication to the user in a manner to reflect a distance (GPS coordinates is the data that determines distance, Paragraph 0029) between the first location and the second location (Paragraph 0015).

With respect to Claims 5, 17 and 30, Keagy discloses first communication to a user of a second endpoint in a manner to reflect the first location relative to a second location of the second endpoint comprises attenuating an output signal of at least one speaker of a plurality of speakers (cellular telephone, radio or televisions are disclosed, all containing speakers) used to present the first communication to the user of the second endpoint (Paragraph 0015).

With respect to Claims 7, 19 and 32, Keagy discloses receiving location information indicating a first location of the first endpoint comprises receiving global positioning satellite (GPS) information (GPS coordinates, Paragraph 0029) indicating the first location of the first endpoint (Paragraph 0015).

With respect to Claims 8, 20 and 33, Keagy discloses the first communication comprising an audio message; location information is steganographically within the audio message (request packet comprises both call session setup and location information)(Paragraph 0015).

With respect to Claims 9, 21 and 34, Keagy discloses receiving a second communication from a third endpoint; and presenting the second communication to the user of the second endpoint in a manner to reflect that a location of the third endpoint is unknown (there is no mention of receiving information from the third endpoint) (Paragraph 0015).

With respect to Claims 10, 22 and 35, Keagy discloses the first communication comprises a communication; and presenting the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint comprises presenting the text communication (text messaging, Paragraph 0026) to the user of the second endpoint; and communicating an audio signal (telephone call, radio or television broadcasts, Paragraph 0026) to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint (Paragraph 0015).

With respect to Claims 12, 24 and 37, Keagy discloses the first endpoint comprises a push-to-talk endpoint (many cellular telephones have the walkie talkie feature which is push to talk); and the first communication comprises a push-to-talk communication (Paragraph 0026).

(Cont. in Supplemental Box)

Motorola Solutions, Inc., Ex1003, p. 608

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US06/30294

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:
Box No. V
2. Citations and explanations:

Claims 6, 11, 18, 23, 31 and 36 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the following features:

Regarding claims 6, 18 and 31, the features of first location of the first endpoint is a first distance from the second location of the second endpoint and wherein the first communication is presented at a first volume level; further comprising receiving a second communication from a third endpoint ; receiving location information indicating a third location of the third endpoint, the third location a second distance from the second location of the second endpoint, the second distance greater than the first distance ; and presenting the second communication to the user of the second endpoint in a manner to reflect the third location relative to the second location of the second endpoint; and wherein the second communication is presented at a second volume level that is less than the first volume level.

Regarding claims 11, 23 and 36, the features of the first communication comprises a text communication; and presenting the first communication to the user of the second endpoint in a manner to reflect the first location relative to the second location of the second endpoint comprises presenting the first communication to the user of the second endpoint as an audio message using text to speech (TTS) in a manner to reflect the first location relative to the second location of the second endpoint.

Claims 1-37 meets the criteria set out in PCT Article 33(4), and thus has industrial applicability because the subject matter claimed can be made or used in industry.

Motorola Solutions, Inc., Ex1003, p. 609

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
BARTON E. SHOWALTER
BAKER BOTTS L.L.P.
2001 ROSS AVENUE, SUITE 600
DALLAS, TX 75201

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*) 17 SEP 2008
Applicant's or agent's file reference 062891.2518	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US07/12728	International filing date (*day/month/year*) 29 May 2007 (29.05.2007)
Applicant CISCO TECHNOLOGY, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70.

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer /Fan Tsang/ Telephone No. (571) 272-2600

Form PCT/ISA/220 (January 2004)

(See notes on accompanying sheet)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 062891.2518	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US07/12728	International filing date (*day/month/year*) 29 May 2007 (29.05.2007)	(Earliest) Priority Date (*day/month/year*) 02 June 2006 (02.06.2006)
Applicant CISCO TECHNOLOGY, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the Report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      ☒ the international application in the language in which it was filed.
      ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 Rule 43.6 *bis(a)*
   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title**,
   ☐ the text is approved as submitted by the applicant.
   ☒ the text has been established by this Authority to read as follows:

Facilitating communications in a virtual talk group

5. With regard to the **abstract**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. _____
      ☐ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☒ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/12728

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **H04B 7/00**(2006.01)

USPC: 455/519
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.: 455/412.1,419

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	US 6,873,854 B2 (CROCKETT ET AL.) 29 March 2005, col 12, ln 3-52, col 15, ln 64-67, col 16, ln 1-64, col 17, ln 1-20, Figure 1, Figure 4, Figure 11.	1-34
Y, E	US 7,328,036 B2 (HART ET AL.) 05 Feb 2008, col 3, ln 46-67, col 4, ln 1-13, Figure 1.	1-34

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent 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
18 August 2008 (18.08.2008)

Date of mailing of the international search report
17 SEP 2008

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer
/Fan Tsang/

Telephone No. (571) 272-2600

Form PCT/ISA/210 (second sheet) (April 2007)

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
BARTON E. SHOWALTER
BAKER BOTTS L.L.P.
2001 ROSS AVENUE, SUITE 600
DALLAS, TX 75201

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

	Date of mailing (*day/month/year*)
Applicant's or agent's file reference 062891.2518	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US07/12728	International filing date (*day/month/year*) 29 May 2007 (29.05.2007)
Applicant CISCO TECHNOLOGY, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70.

   For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90*bis*.1 and 90*bis*.3, respectively, before the completion of the technical preparations for international publication.

   The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

   In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

   See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Fan Tsang Telephone No. (571) 272-2600

FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Form PCT/ISA/220 (January 2004) *(See notes on accompanying sheet)*

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 062891.2518	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below
International application No. PCT/US07/12728	International filing date (*day/month/year*) 29 May 2007 (29.05.2007)	(Earliest) Priority Date (*day/month/year*) 02 June 2006 (02.06.2006)
Applicant CISCO TECHNOLOGY, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of _____ sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the Report**
   a. With regard to the **language**, the international search was carried out on the basis of:
      ☒ the international application in the language in which it was filed.
      ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 Rule 43.6 *bis(a)*
   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
2. ☐ **Certain claims were found unsearchable** (See Box No. II)
3. ☐ **Unity of invention is lacking** (See Box No. III)
4. With regard to the **title**,
   ☐ the text is approved as submitted by the applicant.
   ☒ the text has been established by this Authority to read as follows:

Facilitating communications in a virtual talk group

5. With regard to the **abstract**,
   ☒ the text is approved as submitted by the applicant.
   ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. With regard to the **drawings**,
   a. the figure of the **drawings** to be published with the abstract is Figure No. _____
      ☐ as suggested by the applicant.
      ☐ as selected by this Authority, because the applicant failed to suggest a figure.
      ☐ as selected by this Authority, because this figure better characterizes the invention.
   b. ☒ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US07/12728

A. CLASSIFICATION OF SUBJECT MATTER
IPC: **H04B 7/00**(2006.01)

USPC: 455/519
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. : 455/412.1,419

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	US 6,873,854 B2 (CROCKETT ET AL.) 29 March 2005, col 12, ln 3-52, col 15, ln 64-67, col 16, ln 1-64, col 17, ln 1-20, Figure 1, Figure 4, Figure 11.	1-34
Y E	US 7,328,036 B2 (HART ET AL.) 05 Feb 2008, col 3, ln 46-67, col 4, ln 1-13, Figure 1.	1-34

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 August 2008 (18.08.2008)	
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Authorized officer Fan Tsang Telephone No. (571) 272-2600

FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Form PCT/ISA/210 (second sheet) (April 2007)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 062891.2518	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/US2007/012728	International filing date *(day/month/year)* 29 May 2007 (29.05.2007)	Priority date *(day/month/year)* 02 June 2006 (02.06.2006)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CISCO TECHNOLOGY, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

   - ☐ Box No. I — Basis of the report
   - ☐ Box No. II — Priority
   - ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV — Lack of unity of invention
   - ☐ Box No. V — Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI — Certain documents cited
   - ☐ Box No. VII — Certain defects in the international application
   - ☐ Box No. VIII — Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 03 December 2008 (03.12.2008)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Beate Giffo-Schmitt e-mail: pt03.pct@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
BARTON E. SHOWALTER
BAKER BOTTS L.L.P.
2001 ROSS AVENUE, SUITE 600
DALLAS, TX 75201

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	17 SEP 2008
Applicant's or agent's file reference 062891.2518	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US07/12728	29 May 2007 (29.05.2007)	02 June 2006 (02.06.2006)

International Patent Classification (IPC) or both national classification and IPC

IPC: **H04B 7/00**(2006.01)
USPC: 455/519

Applicant

CISCO TECHNOLOGY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(*b*) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	18 August 2008 (18.08.2008)	/Fan Tsang/ Telephone No. (571) 272-2600

Form PCT/ISA/237 (cover sheet) (April 2007)

Motorola Solutions, Inc., Ex1003, p. 617

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US07/12728

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
   - ☒ the international application in the language in which it was filed
   - ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:
   a. type of material
      - ☐ a sequence listing
      - ☐ table(s) related to the sequence listing
   b. format of material
      - ☐ on paper
      - ☐ in electronic form
   c. time of filing/furnishing
      - ☐ contained in the international application as filed.
      - ☐ filed together with the international application in electronic form.
      - ☐ furnished subsequently to this Authority for the purposes of search.
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US07/12728

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims NONE	YES
	Claims 1-34	NO
Inventive step (IS)	Claims NONE	YES
	Claims 1-34	NO
Industrial applicability (IA)	Claims 1-34	YES
	Claims NONE	NO

2. Citations and explanations:

Please See Continuation Sheet

Motorola Solutions, Inc., Ex1003, p. 619

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/US07/12728

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:
Claims 1-34 lack novelty under PCT Article 33(2) as being anticipated by Crockett (Crockett et al., US Pat No. 6,873,854).

Regarding claim 1, Crockett discloses a method for joining a virtual talk group (i.e. group call) (col. 15, line 64 -col. 16, line 32; col. 16, line 57 – col. 17, line 20), comprising: facilitating communications of a virtual talk group (col. 12, lines 3-52), the virtual talk group comprising a plurality of endpoints (Fig. 1: 120, 122) of different communication networks (col. 4, lines 4-13; col. 5, lines 15-46; col. 14, lines 10-21); recording the communications of the plurality of endpoints of the virtual talk group (col. 27, line 30 – col. 28, line 38); adding a first endpoint to the virtual talk group (col. 15, line 64 -col. 16, line 32; col. 16, line 57 – col. 17, line 20); and presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group (col. 16, lines 16-26; col. 27, line 30 – col. 28, line 38).

Regarding claim 2, the method of Claim 1, Crockett further comprising facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications (col. 16, lines 16-26; col. 27, line 30 – col. 28, line 38).

Regarding claim 3, the method of Claim 2, wherein Crockett discloses facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises presenting the first endpoint with the recorded communications when there is a pause in the communications of the plurality of endpoints of the virtual talk group (col. 16, lines 16-26; col. 27, line 30 – col. 28, line 38).

Regarding claim 4, the method of Claim 2, wherein Crockett discloses facilitating communications among the plurality of endpoints of the virtual talk group and the added first endpoint while presenting the first endpoint with the recorded communications comprises pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication (col. 16, lines 33-56).

Regarding claim 5, the method of Claim 4, wherein Crockett discloses pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication comprises pausing the presentation of the recorded communications to the first endpoint upon detecting an endpoint communication having a priority greater than the recorded communication (col. 16, lines 33-56).

Regarding claim 6, the method of Claim 1, Crockett further comprising providing an indication to the first endpoint indicating that the first endpoint is being presented with the recorded communications of the virtual talk group such that the first endpoint may distinguish the recorded communications from the communications of the plurality of endpoints of the virtual talk group (col. 8, lines 45-54; col. 16, lines 20-27; col. 21, lines 10-40).

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US07/12728

Supplemental Box
In case **the space in any of the preceding boxes is not sufficient.**

Regarding claim 7, the method of Claim 1, Crockett further comprising receiving a request from the first endpoint to change the manner by which the recorded communications are presented (col. 16, lines 33-56; col. 27, line 30 – col. 28, line 38).

Regarding claim 8, the method of Claim 1, Crockett further comprising receiving a request from the first endpoint to control the manner of the presentation of the recorded communications (col. 16, lines 33-56; col. 27, line 30 – col. 28, line 38).

Regarding claim 9, the method of Claim 1, wherein Crockett discloses presenting the first endpoint with the recorded communications comprises increasing the rate by which the recorded communications are presented (col. 27, line 8 – col. 28, line 38).

Regarding claim 10, the method of Claim 1, Crockett further comprising: determining that a condition of a predetermined policy has been satisfied (i.e. group call already in progress) (col. 16, lines 10-32); and recording the communications of the plurality of endpoints of the virtual talk group based on the satisfaction of the condition of the predetermined policy (col. 12, lines 3-52; col. 16, lines 10-32; col. 27, line 30 – col. 28, line 38).

Regarding claim 11, the method of Claim 10, wherein Crockett discloses determining that a condition of a predetermined policy has been satisfied comprises detecting the absence of the first endpoint from the virtual talk group (col. 16, lines 10-32).

Regarding claim 12, Crockett discloses a system for joining a virtual talk group (i.e. group call) (col. 15, line 64 -col. 16, line 32; col. 16, line 57 – col. 17, line 20), comprising: a processor (i.e. Media Control Unit (MCU); col. 8, lines 45-67) operable to: facilitate communications of a virtual talk group (col. 12, lines 3-52), the virtual talk group comprising a plurality of endpoints (Fig. 1: 120, 122) of different communication networks (col. 4, lines 4-13; col. 5, lines 15-46; col. 14, lines 10-21); record the communications of the plurality of endpoints of the virtual talk group (col. 27, line 30 – col. 28, line 38); and add a first endpoint to the virtual talk group (col. 15, line 64 - col. 16, line 32; col. 16, line 57 – col. 17, line 20); and an interface coupled to the processor (i.e. Media Control Unit (MCU); col. 8, lines 45-67) and operable to present the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group (col. 16, lines 16-26; col. 27, line 30 – col. 28, line 38).

Regarding claims 13-22, please see the rejections to claims 2-11, respectively, to reject the system in claims 13-22.

Regarding claim 23, Crockett logic embodied in a computer readable medium (i.e. Media Control Unit (MCU); col. 8, lines 45-67), the computer readable medium comprising code operable to: facilitate communications of a virtual talk group (col. 12, lines 3-52), the virtual talk group comprising a plurality of endpoints (Fig. 1: 120, 122) of different communication networks (col. 4, lines 4-13; col. 5, lines 15-46; col. 14, lines 10-21); record the communications of the plurality of endpoints of the virtual talk group (col. 27, line 30 – col. 28, line 38); add a first endpoint to the virtual talk group (col. 15, line 64 -col. 16, line 32; col. 16, line 57 – col. 17, line 20); and present the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group (col. 16, lines 16-26; col. 27, line 30 – col. 28, line 38).

Regarding claims 24-33, please see the rejections to claims 2-11, respectively, to reject the medium in claims 13-22.

Regarding claim 34, Crockett discloses a system for joining a virtual talk group (i.e. group call) (col. 15, line 64 -col. 16, line 32; col. 16, line 57 – col. 17, line 20), comprising: means for facilitating communications of a virtual talk group (col. 12, lines 3-52), the virtual talk group comprising a plurality of endpoints (Fig. 1: 120, 122) of different communication networks (col. 4, lines 4-13; col. 5, lines 15-46; col. 14, lines 10-21); means for recording the communications of the plurality of endpoints of the virtual talk group (col. 27, line 30 – col. 28, line 38); means for adding a first endpoint to the virtual talk group (col. 15, line 64 -col. 16, line 32; col. 16, line 57 – col. 17, line 20); and means for presenting the first endpoint with the recorded communications of the plurality of endpoints of the virtual talk group (col. 16, lines 16-26; col. 27, line 30 – col. 28, line 38).

Electronic Acknowledgement Receipt

EFS ID:	10805746
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame/Donna Roark
Filer Authorized By:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	24-AUG-2011
Filing Date:	
Time Stamp:	16:24:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	3919-0117-CON-IDSTransmittal.pdf	655388 86b45208091e5843abdd6f96b7f160db358e6c55	no	2

Warnings:	
Information:	

2	Information Disclosure Statement (IDS) Form (SB08)	3919-0117-CON-PTO1449.pdf	1393088 b6cc35235406da3896253a4cdd9feee152c2e2ac	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	CN101461152.pdf	7038631 0d512af94a1998ff26d888110a335987f911283d	no	30
Warnings:					
Information:					
4	Foreign Reference	EP0849964A1.pdf	995146 cd2ba21f84dafaa303f3f57bca4f4a69f728d190	no	17
Warnings:					
Information:					
5	Foreign Reference	EP1889495A2.pdf	16501 9e8e44d90bd9c63815d471117d310baa29bfeebd	no	1
Warnings:					
Information:					
6	Foreign Reference	EP1920568A2.pdf	16441 dead184dc9154ad34298edb757bd153dc2a9f022	no	1
Warnings:					
Information:					
7	Foreign Reference	EP1920615A2.pdf	16409 dfb2aed5f280ecd5f942bb3e059dd24704f02994	no	1
Warnings:					
Information:					
8	Foreign Reference	EP2030338A2.pdf	16163 9b7aad350b3a316e79e9db7129e316a8398cc00c	no	1
Warnings:					
Information:					
9	Foreign Reference	FR2674355.pdf	250063 4feb82e0f536371deafe5b97477cfdfc6a8862f8	no	19
Warnings:					
Information:					
10	Foreign Reference	WO-2001091485A1.pdf	1481805 0b9509acb726d0ded95ac889b0ca9d4f1920ff85	no	44

Warnings:					
Information:					
11	Foreign Reference	WO-2002074051A2.pdf	2395699 0f5370c105528acff8aaa36a485f62f795759ef3	no	56
Warnings:					
Information:					
12	Foreign Reference	WO2006135533.pdf	1678178 684d269a7288f4029907da1a4ce1b1f080d30b4a	no	39
Warnings:					
Information:					
13	Foreign Reference	WO2007021586.pdf	3671815 61a85d1a7aa0e5cd00116d1d333fb2412fe1046a	no	86
Warnings:					
Information:					
14	Foreign Reference	WO2007027356.pdf	2196454 9b16d4a7700f5ad05641a7e535c9f731939958d0	no	50
Warnings:					
Information:					
15	Foreign Reference	WO-2007142961A2.pdf	2156158 c88135a9315455ecf002e58c4135925ca20b6e35	no	49
Warnings:					
Information:					
16	Non Patent Literature	PCT-2001-2-10-ISR-PCTEP0104570.pdf	1292048 4db73de262b4029a51572b578b59fc01e3703564	no	1
Warnings:					
Information:					
17	Non Patent Literature	PCT-2007-02-27-ISR-PCTUS0630447.pdf	67352 6aa5a79e94e294e9f3672faca7eaf4398741af16	no	2
Warnings:					
Information:					
18	Non Patent Literature	PCT-2007-4-09-ISR-PCTUS0630294.pdf	56167 f0d53432b59497934404d5bcb95337ba29625f9b	no	1
Warnings:					
Information:					
19	Non Patent Literature	PCT-2007-09-04-ISR-PCTUS2002008419.pdf	63985 e8f9cd01f137e070dd78c44838fb312ad72d87fe	no	2

Warnings:					
Information:					
20	Non Patent Literature	PCT-2007-09-04-ISR-PCTUS0619227.pdf	48341 a08c1fba715fd0c929ec87a9bc4e76e49b329dd8	no	1
Warnings:					
Information:					
21	Non Patent Literature	PCT-2007-12-11-IPRP-PCTUS0619227.pdf	167969 c1d959140c0714d43c185fe040bd029f55a72d01	no	4
Warnings:					
Information:					
22	Non Patent Literature	PCT-2008-2-12-IPRP-PCTUS0630447.pdf	968428 00b8659f90bcdad2fde26e0431130f3b1fb76ff2	no	15
Warnings:					
Information:					
23	Non Patent Literature	PCT-2008-3-14-IPRP-PCTUS0630294.pdf	230207 7c6b9af2d1ecdde0e614c75523311b58a267a93f	no	5
Warnings:					
Information:					
24	Non Patent Literature	PCT-2008-9-17-ISR-PCTUS0712728.pdf	334460 a0861c4f00e94ce9240ee481b64f6b760a490af5	no	6
Warnings:					
Information:					
25	Non Patent Literature	PCT-2008-12-3-IPRP-PCTUS0712728.pdf	310535 bf79be80a8196d8d7bce82a87872ac25360f23ac	no	6
Warnings:					
Information:					
			Total Files Size (in bytes):	27517431	

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

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

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer et al.
Serial No.:	13/210,967
Filing Date:	August 16, 2011
Confirmation No.:	3197
Group Art Unit:	2617
Title:	*System and Method for Providing Channel Configurations in a Communications Environment*

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed PTO-1449 form. Any and all foreign patent documents and non-patent literature are enclosed. Any and all cited U.S. patents and patent application publications will be provided upon request. Copies of communications from a foreign patent office in a related application are also enclosed.

In addition to the references cited in the attached PTO-1449 form, Applicants also note that the co-pending applications listed are related to the present application: U.S. Patent Application Serial Nos.: 12/340,417 [Attorney Docket No. 03919.0117]; 12/340,451 [Attorney Docket No. 03919.0125]; 12/340,468 [Attorney Docket No. 03919.0126]; 12/722,389 [Attorney Docket No. 03919.0165]; and U.S. Patent No. 7,639,634 [Serial No. 11/421,994, Attorney Docket No. 062891.1970)] . Thus, the Examiner is invited to consider the Patent Office prosecution files for such applications. It is understood that the Examiner has convenient, electronic access to the Patent Office prosecution files of these applications and said prosecution files are not included. However, Applicants will provide copies of said files upon request.

This statement is being filed before the receipt of a first office action on the merits. No additional fees are believed due. However, please apply any other charges or credit any overpayment to Deposit Account No. 50-4889 of PATENT CAPITAL GROUP, referencing the Attorney Docket No. 03919.0117-CON (976240).

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: August 24, 2011

Customer No. 86421

PATENT CAPITAL GROUP

Thomas J. Frame
6119 McCommas
Dallas, TX 75214
(214) 823-1241 Direct Dial
(972) 226-4837 Direct Fax
thomasframe@patcapgroup.com

August 16, 2011

Attorney Docket No.: 03919-0117-CON (976240)

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

Presented for filing is a new continuation patent application of:

Applicant: SHMUEL SHAFFER and STEVEN CHRISTENSON

Title: SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

The prior application is assigned of record to McAfee, Inc., a Delaware corporation, by virtue of a chain of title to the current Assignee as follows:

1. From: Shmuel Shaffer and Steven Christenson
   To: Cisco Technology, Inc.

   The document was recorded on December 19, 2008, in the United States Patent and Trademark Office at Reel 022010, Frame 0530.

Enclosed are the following papers, including those required to receive a filing date under 37 C.F.R. § 1.53(b):

	Pages
Specification of Parent	18
Claims of Parent	6
Abstract of Parent	1
Drawings of Parent	5
Declaration of Parent	5
Preliminary Amendment	7

This application is a continuation (and claims the benefit of priority under 35 U.S.C. §120) of U.S. Application Serial No. 12/340,417, filed December 19, 2008, entitled "System and Method for Providing Channel Configurations in a Communications Environment." The disclosure of the prior application is considered part of (and is incorporated by reference in) the disclosure of this application.

	Large Entity
Basic Filing Fee	$330
Search Fee	$540
Examination fee	$220
Total Claims (20 - 20 = 0 x $52)	$0
Independent Claims (3 - 3 = 0 x $220)	$0
Fee for Multiple Dependent claims	$0
Fee for each additional 50 pages of Specification and Drawings over 100	$0
Total Filing fee	$1,090

The large entity and any excess claim fees in the amount of $1,090 are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account No. 50-4889 Authorization. It is believed that no other fee is due at this time. If this is incorrect, please apply any other charges or credits to Deposit Account No. 50-4889, referencing the attorney docket number shown above.

If this application is found to be incomplete, or if a telephone conference would otherwise be helpful, please call the undersigned at (214) 823-1241.

Please direct all correspondence to the following:

86421
PTO Customer Number

Respectfully submitted,

/Thomas J. Frame/

Thomas J. Frame
Reg. No. 47,232

Enclosures

SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to the field of communications and, more particularly, to a system and a method for providing channel configurations in a communications environment.

BACKGROUND OF THE INVENTION

Communications architectures have grown increasingly complex in communication environments. This complexity has resulted in numerous protocols being implemented to satisfy endpoints and to intelligently respond to challenging situations. Push-to-talk (PTT) devices are commonly used in safety and security environments. PTT devices carried by emergency response personnel (ERT) can support a single channel or a plurality of channels.

Typically, a management center supports a plurality of channels, where less important channels are rendered to one ear, and channels that are more important are rendered to the other ear. Universally, channels are statically configured, where the volume of each channel can be manually adjusted by an end user. When important information needs to be broadcast, channels should be configured optimally. If the channels are not fully utilized, then messages are not received by their intended recipients.

Thus, the ability to offer a system or a protocol that offers an effective coordination for channels in a communications environment provides a significant challenge to network designers, component manufacturers, service providers, and system administrators alike.

BRIEF DESCRIPTION OF THE DRAWINGS

To provide a more complete understanding of the present invention and features and advantages thereof, reference is made to the following description, taken in conjunction with the accompanying figures, wherein like reference numerals represent like parts, in which:

FIGURE 1 is a simplified block diagram of a communication system for providing channel configurations in a communications environment in accordance with one embodiment of the present invention;

FIGURE 2A is a simplified schematic diagram of a management center that may be part of the communication system in accordance with one embodiment of the present invention;

FIGURE 2B is a simplified schematic diagram of an aspect of the management center in accordance with one embodiment of the present invention;

FIGURE 3 is a simplified schematic diagram of an element that may be part of the management center in accordance with one embodiment of the present invention;

FIGURE 4 is a simplified schematic diagram illustrating another example implementation of the management center; and

FIGURE 5 is a simplified flowchart illustrating a scenario implicating the communication system.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

OVERVIEW

A method is provided in one example embodiment and includes monitoring a plurality of channels provisioned for an endpoint. The method also includes reacting to an alert message by adjusting one of the channels for the endpoint. The adjustment is a selected one of increasing a volume associated with the channel receiving the alert message, or changing a spatial direction from which the alert message and an associated media stream are conveyed to the endpoint. In other embodiments, the adjustment provisions the alert message from a left ear to a right ear of an end user of the endpoint. In still other embodiments, the adjustment includes determining which is a primary channel of the channels and provisioning the alert message to the primary channel of the endpoint. The media stream associated with the alert message is also moved to a same spatial direction along with the alert message.

In still other embodiments, the adjustment includes turning a volume down on every other channel besides a channel being used for the alert message. In yet other embodiments, the adjustment includes using out-of-band signaling. In other embodiments, the method includes sending the alert message until feedback has been received, which indicates that the alert message has been acknowledged by the endpoint.

FIGURE 1 is a simplified block diagram for coordinating communications received by one or more endpoints. Communication system 10 includes a server 14, which could include a server administration console, an

operational view, and a policy engine: all of which are depicted as element 18. FIGURE 1 also includes an IP network 20, which is coupled to a router media service (RMS) element 30 and a universal media service (UMS) element 34. UMS 34 is coupled to a public switched telephone network (PSTN) and can effectively coordinate sessions for a multitude of end-user devices, as is shown. RMS 30 is coupled to a management center 38 and a phone client 36. RMS 30 is also coupled to a series of end-user devices for which it may facilitate coordinating audio and/or data exchanges in the network.

Note that the end-user devices of FIGURE 1, as generally depicted at 40 and 50, are providing just some of the many examples that could be used in conjunction with the present invention. In a general sense, elements 40 and 50 are examples of field equipment, while element 24 is an example for end-user equipment, which resides in the control center. These devices (referred to as 'endpoint' as used herein in this document) may include VHF radios, UHF radios, PSTN telephones, IP phones, push-to-talk telephones, cellular telephones, laptops, desktop computers, personal digital assistants (PDAs), or any other suitable end-user device capable of exchanging audio or other data in the architecture. Before turning to the operational aspects of the present invention, FIGURE 2A is briefly introduced. FIGURE 2A is a simplified schematic diagram of a display 60, which can be part of management center 38. FIGURE 2A includes one or more groups for which a particular end-user is subscribed. The groups include a DevTest 70, a SysTestTeam 72, a server team 74, a management group 76, an EFT team 78, and a dispatcher 79. Also provided are

several pages on the left-hand side of the diagram, which help illustrate some of the end-users and some of the groups for this particular end-user. A tab 80 is also provided and can be used to expand the pages from the left-hand side of the user's screen. FIGURE 2A also includes a volume control 62 and each of the channels can have its own volume adjustment.

For purposes of illustrating the techniques of communication system 10, it is important to understand the typical communications that may be traversing the network. The following foundational information may be viewed as a basis from which the present invention may be properly explained. Such information is offered earnestly for purposes of explanation only and, accordingly, should not be construed in any way to limit the broad scope of the present invention and its potential applications.

PTT devices, such as those shown in FIGURE 1 [generally at 40 and 50], are commonly used in safety and security environments. PTT devices such as those [carried by emergency response personnel (ERT)] can support either a single channel or a plurality of channels. Management center 38 is an example of a PTT device, which supports a plurality of channels. Management center 38 can support a plurality of channels, where important channels are rendered to one ear (e.g., the right) and the less important channels are sent to the other ear (e.g., the left). It should be noted that some systems may provide users with the ability to position media streams at a variety of spatial arrival directions. The fact that we describe our system by way of example with respect to left and right ear should not

be viewed as limiting it only to these two arrival directions.

A problem occurs when a user turns down the volume of a given channel and, as a result, cannot hear an alert tone or the conversation that follows on that channel. This may result in a user not responding to an important alert signal sent by another user, or by the system. Consider an example involving a police officer, who is on a UHF radio. Management center 38 can listen in on a multitude of channels. For the police officer in this example, audio channels can be configured on his device such that certain types of audio data will be directed to either the left ear or the right ear. For example, one typical application could involve configuring a management center 38 to render to the right ear of the dispatcher communication over a UHF radio channel and turning the volume up on that channel. The left ear could be configured to receive passive communications that may not be critical to the police officer's routine activities (e.g., a VHF channel).

Following along with this example of the police officer, an urgent message is broadcast over this VHF radio. The channel could be called "North District" or "City Works" in this example. In this example, an officer has been shot or has been inured such that he requires assistance. In this instance, the alert came on the VHF non-high priority channel. This alert message may or may not have been heard by other officers, or, because the volume on that specific channel may have been turned down, the officer may not hear the following communication on the low priority VHF channel.

In accordance with the techniques and teachings of the present invention, communication system 10 can readily identify this alert message and respond in any number of ways to ensure that the message was properly received. One intelligent response mechanism of the present invention provisions communications from the left ear to the right ear or vice versa. Another intelligent response mechanism simply turn up the volume on a channel that the alert. Note that these responses could easily be combined into an automatic reconfiguration.

Another intelligent response for this scenario is for management center 38 to identify which channel is the primary channel for one or more end-users. Due to the urgency of this event alert, the system responds by moving the alert message to the primary channel and marginalizing all the other channels for a configurable period. Part of this response also includes turning the volume down on every other channel. Thus, management center 38 can promptly identify an event alert and coordinate a suitable response autonomously, or in conjunction with a server that would assist in provisioning the appropriate channels.

In other embodiments, a resource management server (capable of processing media services) can coordinate an effective response that includes either an audio tone or a message being sent out-of-band. This server could be UMS 34 or RMS 30. For the out-of-band signaling, the identification of the alert is provided in the header of a packet, in the payload of the packet, in control packets, or in any other suitable location. Furthermore, this out-of-band signaling is sent to management center 38, which can assist in processing this data. Management

center 38 promptly identifies the information included in these packets. In the case of out-of-band signaling, if an end user has stepped out (for whatever reason), because the specific channel has been moved, the actions taken by the system in response to the alert could signify to him what has occurred while he was away.

As can be appreciated by the foregoing description and the discussions herein, the coordination of the responses for these alert messages can occur at the edge of the network, at a server, or performed as a hybrid of these functions. The server is predominantly part of the network in the context of some of these discussions. Thus, an alert event can be captured and subsequent responses properly coordinated by management center 38, server 14, RMS 30, or UMS 34. All of these elements can have the intelligence to dictate an effective response mechanism, as prescribed herein.

Before turning to some of the operations of this architecture, a brief discussion is provided about some of the infrastructure of FIGURE 1. Software (which manages the operations of the system in accordance with some embodiments of the invention) can reside in the network. By "reside in the network" such terminology is meant connote that the software can be hosted on any suitable device or component, for example, included in management center 38, server 14, RMS 30, and UMS 34. These elements may include any suitable combination of software or hardware to execute the response mechanisms and/or perform the coordination of channels as outlined herein. All of these elements may be referred to as 'management elements' as used herein in this Specification, which could be routers, switches,

gateways, bridges, loadbalancers, firewalls, servers, or any other suitable device, component, element, or object operable to assist in these activities. Moreover, these management elements may include any suitable hardware, software, components, modules, interfaces, or objects that facilitate the operations thereof. This may be inclusive of appropriate algorithms and communication protocols that allow for the effective exchange of data or information in the architecture.

Each of these management elements can also include memory elements for storing information to be used in achieving the channel management and coordination operations as outlined herein. Additionally, each of these devices may include a processor that can execute software or an algorithm to perform the management activities as discussed in this specification. Memory elements and processors (which facilitate these outlined operations) may be included in these management elements or provided externally to these elements, or consolidated in any suitable fashion. The processors can readily execute code (software) for effectuating the activities described. These devices may further keep information in any suitable random access memory (RAM), read only memory (ROM), erasable programmable ROM (EPROM), electronically erasable PROM (EEPROM), application specific integrated circuit (ASIC), software, hardware, or in any other suitable component, device, element, or object where appropriate and based on particular needs.

Note also that the specific coordination and response mechanisms may be provided external to any of the management elements, as opposed to provided internally. In addition, some, all, or none of these

operations may be suitably combined across these elements, or provided in just one element to accomplish the operations as outlined herein in this document.

Turning to a particular component that may be entrusted with some of these response obligations, the UMS is the component that receives the audio streams in the architecture in certain embodiments of the present invention. It is not necessarily the only component that receives this audio information. The UMS can also receive out-of-band messages, and it too can have information regarding who is registered and who is listening to messages in the architecture. The UMS can simply re-stream media that it receives in certain embodiments. Because the UMS has information regarding who is listening on giving channels, it too can take the initiative in provisioning channels for endpoint devices. It has the intelligence to understand which streams should be given priority over other streams. Thus, the UMS can shift the streams or it can elect which streams and at which volume should propagate to end user devices.

In typical scenarios, users may be listening to multiple channels simultaneously. For a user to be able to listen to multiple channels, the media streams of the channels need to be mixed in a two dimensional mixer. A two dimensional mixer is a mixer that facilitates assigning of media streams to left and/or right ear. This mixer can also control the relative volume of each media stream played to the right and left ear. In accordance one example implementation, multiple media streams arrive at management center 38 and the mixing of these media streams takes place in management center 38.

In accordance with another example aspect of the present architecture, multiple media streams arrive at UMS 34 or RMS 30 and are being mixed there. The resulting two media streams (per user] are then streamed from the RMS/UMS to management center 38. Such an architecture has the advantage that the bandwidth it needs [between management center 38 and IP network 20] is enough to accommodate two media streams. In a hybrid architecture, some mixing takes place on the UMS/RMS and some at management center 38 is also covered by our invention. In this sense, the provisioning is being done externally, and the individual endpoints do not have to be capable of managing these alert messages.

Note that in previous embodiments, management center 38 would perform a certain amount of mixing functions for the endpoints. For example, ten different media streams could be propagating down to management center 38, which is relegated to task of managing the streams from multiple endpoints. Management center 38 is assigning each of those streams to either the left ear or the right ear or both. By properly managing the volume of the mixed channels, any channel can be configured to appear for the user from any designated arrival direction. Furthermore, each channel is receiving the stream at a prescribed volume.

This mixing functionality (which could be provided in software or in hardware) could effectively be moved to the UMS such that these activities are performed by one or more alternative components, and not necessarily performed by management center 38. In this sense, this functionality has been moved into the network (potentially residing on a server that includes a

processor and a memory element for storing code to be executed by the processor) and this embodiment is certainly within the broad scope of the present invention.

In other scenarios, management center 38 is monitoring all of the received media streams, where it can detect that media should be rendered to an active channel whose volume was set below a given threshold, and then assumes that the alert may have to be duplicated or a volume adjustment should be made. One reaction to this scenario would be to increase the volume of the channel where the tone is played and relatively decrease the volume of chatter on other channels. Please note that teachings of the present invention do not solely accommodate alert tones. Such an architecture can also handle events, where the priority of a given channel is elevated by the dispatcher, or when a dispatcher adds a high priority virtual talk group (VTG) to the channel. Note that the priority of the channel is elevated not only for the alert tone, but also for the following media stream. This is done by increasing the volume of the said channel and by moving it to the priority direction, e.g., right ear.

In still other scenarios, the present architecture can continuously signal the alert until feedback has been received that indicates that the alert has been acknowledged. In other embodiments, the alert could be continuously increased in volume and/or duration until properly acknowledged by an endpoint (either vocally, through software, through out-of-band signaling, etc.).

Turning now to some of the potential infrastructure of example embodiments of the present architecture,

FIGURE 2B is a simplified schematic diagram of the dispatcher channel controls and includes volume control 62. Various components of the architecture can control volume parameters on individual channels. Thus, channel controls can be independent of one another. Note also that management center 38 can be implemented in either software or hardware. Some of the FIGURES show management center 38 being implemented in software and, therefore, the buttons in FIGURES 2A and 2B are soft buttons. The present invention covers implementations of the system in hardware, software or any hybrid implementation of these elements.

FIGURE 3 is a simplified schematic diagram of a settings element within the management center. The settings include a status 82, a series of groups 90, and a spatial position 92. The groups 90 are depicted having certain positions, which may signify their respective priorities. The configuration of a specific position for any given communication group controls the location of this specific channel on the management center screen, as shown in FIGURE 2A. In this example, the management team is relegated to position number five, whereas the DevTest group, which was configured to position 01 has the highest priority and, therefore, is positioned at the top left of the management center screen. These groups may be configured by an end-user, a manager, or by an administrator of the system based on particular needs. Spatial position 92 includes a drop-down menu in which the user may select stereo, left, right, or another configuration for channels to be heard by an end-user. Also provided in FIGURE 3 is a skin tab, which can be

selected in order to change the appearance of management center 38.

FIGURE 4 is a simplified schematic diagram of an example management center 96. In this example case, the layout has changed and a number of important groups are highlighted for this particular end-user, who will receive alert messages intended for the groups for which he is subscribed (or configured). It is important to note that any suitable configuration or selection of end user groups may be accommodated by the present invention

Note that with the example provided above, as well as numerous other examples provided herein, interaction may be described in terms of two, three, or four network elements. However, this has been done for purposes of clarity and example only. In certain cases, it may be easier to describe one or more of the functionalities of a given set of flows by only referencing a limited number of network elements. It should be appreciated that communication system 10 (and its teachings) are readily scalable and can accommodate a large number of components, as well as more complicated/sophisticated arrangements and configurations. Accordingly, the examples provided should not limit the scope or inhibit the broad teachings of communication system 10 as potentially applied to a myriad of other architectures.

It is also important to note that the steps in the preceding flows illustrate only some of the possible scenarios that may be executed by, or within, communication system 10. Some of these steps may be deleted or removed where appropriate, or these steps may be modified or changed considerably without departing from the scope of the present invention. In addition, a

number of these operations have been described as being executed concurrently with, or in parallel to, one or more additional operations. However, the timing of these operations may be altered considerably. The preceding operational flows have been offered for purposes of example and discussion. Substantial flexibility is provided by communication system 10 in that any suitable arrangements, chronologies, configurations, and timing mechanisms may be provided without departing from the teachings of the present invention.

Although the present invention has been described in detail with reference to particular arrangements and configurations, these example configurations and arrangements may be changed significantly without departing from the scope of the present invention. For example, although the present invention has been described with reference to particular communication exchanges involving channels, communication system 10 can also manage alerts and events on other pathways. Note also that the term 'alert message' as used herein in this Specification is meant to connote any type of message or signal that was intended for one or more end users. The message may inform the end users or apprise them of some situation, or alternatively simply convey some information from a sender. This may include simple conversational exchanges and/or simple correspondence between two end users operating their endpoints.

The present architecture can also resolve any possible conflict between one or more alerts. This may involve a simple priority designation such that one alert is sounded or sent over (or in place of) another, or it may involve delay mechanisms, where one alert is sent

along at a later time. Additionally, although described with reference to emergency, police, and fire fighter type applications, the present invention can certainly be used in operational environments where there are communication flows propagating amongst users within a given group. These communication environments could involve non-emergency scenarios.

FIGURE 5 is a simplified flowchart illustrating an example scenario involving communication system 10. The flow begins at step 100, where a channel of an end-user device is set at a low priority and at a low volume. In this example, the end user is part of some group for which alert messages are sent. The name of this group is Eastern District Fire for this hypothetical. At step 102, the system checks to identify if an alert indication has been received.

If the answer to this query is NO, then the process circles back to the decision block of the flow. If, however, the answer to this query is YES, then the process moves to step 104, where the volume of the channel is increased and/or, the system moves the channel to the high priority spatial position.

At step 106, the volume of other channels is reduced in this example. Note also that the system is designed to check to see if multiple alerts were received at the same time. When this occurs, the system may delay one of the alert tones (but not the other actions, e.g., volume increase and move to high priority spatial position) to ensure that the user is made aware that multiple alerts for multiple events were sent. Any suitable combination of these response reactions are certainly within the broad scope of the present invention.

Numerous other changes, substitutions, variations, alterations, and modifications may be ascertained to one skilled in the art and it is intended that the present invention encompass all such changes, substitutions, variations, alterations, and modifications as falling within the scope of the appended claims. In order to assist the United States Patent and Trademark Office (USPTO) and, additionally, any readers of any patent issued on this application in interpreting the claims appended hereto, Applicant wishes to note that the Applicant: (a) does not intend any of the appended claims to invoke paragraph six (6) of 35 U.S.C. section 112 as it exists on the date of the filing hereof unless the words "means for" or "step for" are specifically used in the particular claims; and (b) does not intend, by any statement in the specification, to limit this invention in any way that is not otherwise reflected in the appended claims.

WHAT IS CLAIMED IS:

1. An apparatus, comprising:

a management element operable to monitor a plurality of channels provisioned for an endpoint, wherein an alert message is generated and the management element reacts to the alert message by adjusting one of the channels for the endpoint, and wherein the adjustment is a selected one of increasing a volume associated with the channel receiving the alert message, or changing a spatial direction from which the alert message and an associated media stream are conveyed to the endpoint.

2. The apparatus of Claim 1, wherein the adjustment provisions the alert message from a left ear to a right ear of an end user of the endpoint.

3. The apparatus of Claim 1, wherein the adjustment includes determining which is a primary channel of the channels and provisioning the alert message to the primary channel of the endpoint, and wherein the media stream associated with the alert message is also moved to a same spatial direction along with the alert message.

4. The apparatus of Claim 1, wherein the adjustment includes turning a volume down on every other channel besides the channel being used for the alert message.

5. The apparatus of Claim 1, wherein the adjustment includes using out-of-band signaling.

6. The apparatus of Claim 1, wherein identification of the alert message is provided in a header of a packet in the alert message or provided in control packets.

7. The apparatus of Claim 1, wherein a selected one of the channels is designated as a channel that has priority treatment for any audio communications on the selected channel.

8. The apparatus of Claim 1, wherein the management element identifies that a volume for a channel was set below a threshold such that the alert message will be duplicated and sent to the endpoint at a higher volume.

9. The apparatus of Clam 1, wherein when multiple alert messages arrive at a similar time period, the alert messages are duplicated and then sent at a prescribed delay to the endpoint.

10. A method, comprising:

monitoring a plurality of channels provisioned for an endpoint, wherein an alert message is generated; and

reacting to the alert message by adjusting one of the channels for the endpoint, and wherein the adjustment is a selected one of increasing a volume associated with the channel receiving the alert message, or changing a spatial direction from which the alert message and an associated media stream are conveyed to the endpoint.

11. The method of Claim 10, wherein the adjustment provisions the alert message from a left ear to a right ear of an end user of the endpoint.

12. The method of Claim 10, wherein the adjustment includes determining which is a primary channel of the channels and provisioning the alert message to the primary channel of the endpoint, and wherein the media stream associated with the alert message is also moved to a same spatial direction along with the alert message.

13. The method of Claim 10, wherein the adjustment includes turning a volume down on every other channel besides the channel being used for the alert message.

14. The method of Claim 10, wherein when multiple alert messages arrive at a similar time period, the alert messages are duplicated and then sent at a prescribed delay to the endpoint.

15. The method of Claim 10, further comprising:

performing mixing functions for the endpoint such that a plurality of media streams is coordinated across the channels for the endpoint.

16. The method of Claim 10, wherein the management element identifies that a volume for a channel was set below a threshold such that the alert message will be duplicated and sent to the endpoint at a higher volume.

17. Logic encoded in one or more tangible media for execution and when executed by a processor operable to:

monitor a plurality of channels provisioned for an endpoint, wherein an alert message is generated; and

react to the alert message by adjusting one of the channels for the endpoint, and wherein the adjustment is a selected one of increasing a volume associated with the channel receiving the alert message, or changing a spatial direction from which the alert message and an associated media stream are conveyed to the endpoint.

18. The logic of Claim 17, wherein the adjustment provisions the alert message from a left ear to a right ear of an end user of the endpoint.

19. The logic of Claim 17, wherein the adjustment includes determining which is a primary channel of the channels and provisioning the alert message to the primary channel of the endpoint, and wherein the media stream associated with the alert message is also moved to a same spatial direction along with the alert message.

20. The logic of Claim 17, wherein the adjustment includes turning a volume down on every other channel besides the channel being used for the alert message.

21. A system, comprising:

means for monitoring a plurality of channels provisioned for an endpoint, wherein an alert message is generated; and

means for reacting to the alert message by adjusting one of the channels for the endpoint, and wherein the adjustment is a selected one of increasing a volume associated with the channel receiving the alert message, or changing a spatial direction from which the alert message and an associated media stream are conveyed to the endpoint.

22. The system of Claim 21, wherein the adjustment provisions the alert message from a left ear to a right ear of an end user of the endpoint.

23. The system of Claim 21, wherein the adjustment includes determining which is a primary channel of the channels and provisioning the alert message to the primary channel of the endpoint, and wherein the media stream associated with the alert message is also moved to a same spatial direction along with the alert message.

24. The system of Claim 21, further comprising:

means for sending the alert message until feedback has been received, which indicates that the alert message has been acknowledged by the endpoint.

SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT

ABSTRACT OF THE DISCLOSURE

A method is provided in one example embodiment and includes monitoring a plurality of channels provisioned for an endpoint. The method also includes reacting to an alert message by adjusting one of the channels for the endpoint. The adjustment is a selected one of increasing a volume associated with the channel receiving the alert message, or changing a spatial direction from which the alert message and an associated media stream are conveyed to the endpoint. In other embodiments, the adjustment provisions the alert message from a left ear to a right ear of an end user of the endpoint. In still other embodiments, the adjustment includes determining which is a primary channel of the channels and provisioning the alert message to the primary channel of the endpoint. The media stream associated with the alert message is also moved to a same spatial direction along with the alert message.

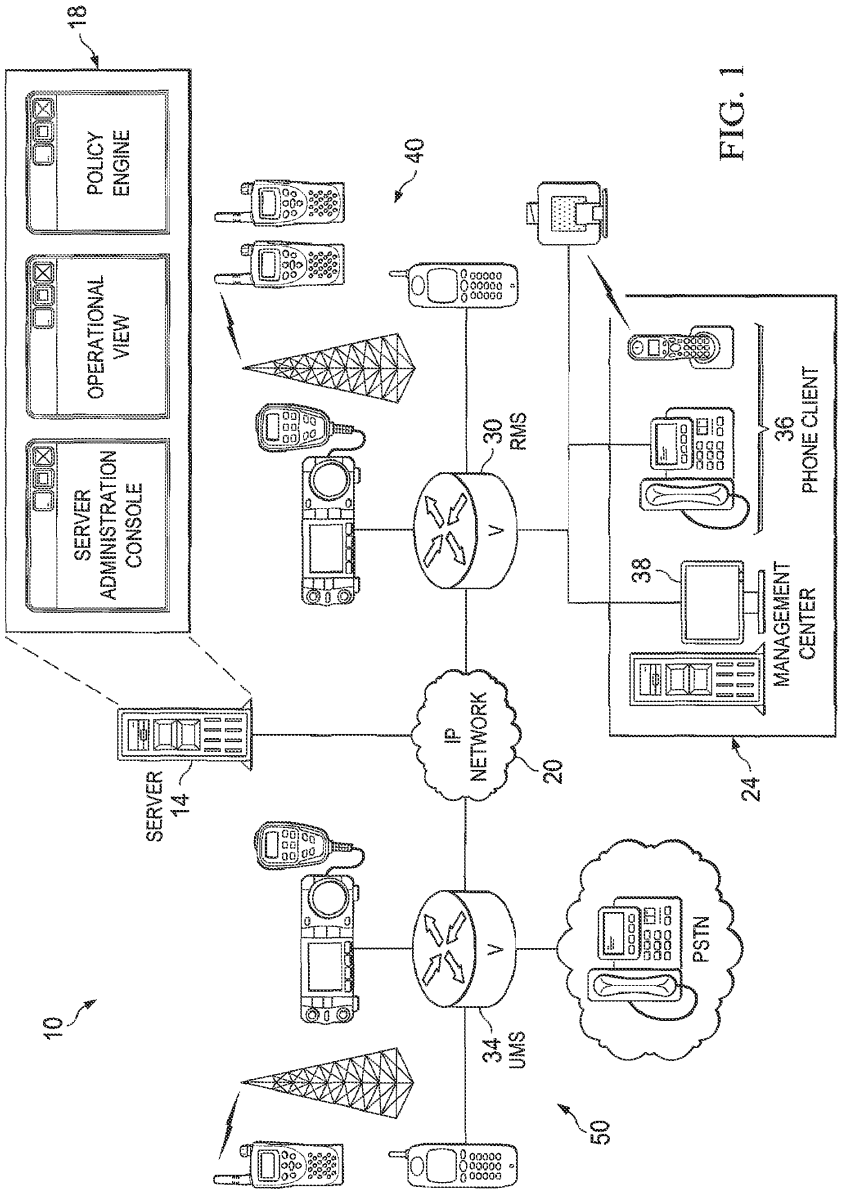

18
POLICY ENGINE
OPERATIONAL VIEW
SERVER ADMINISTRATION CONSOLE
40
30 RMS
36 PHONE CLIENT
38
MANAGEMENT CENTER
24
SERVER 14
IP NETWORK
20
PSTN
34 UMS
50
10

FIG. 1

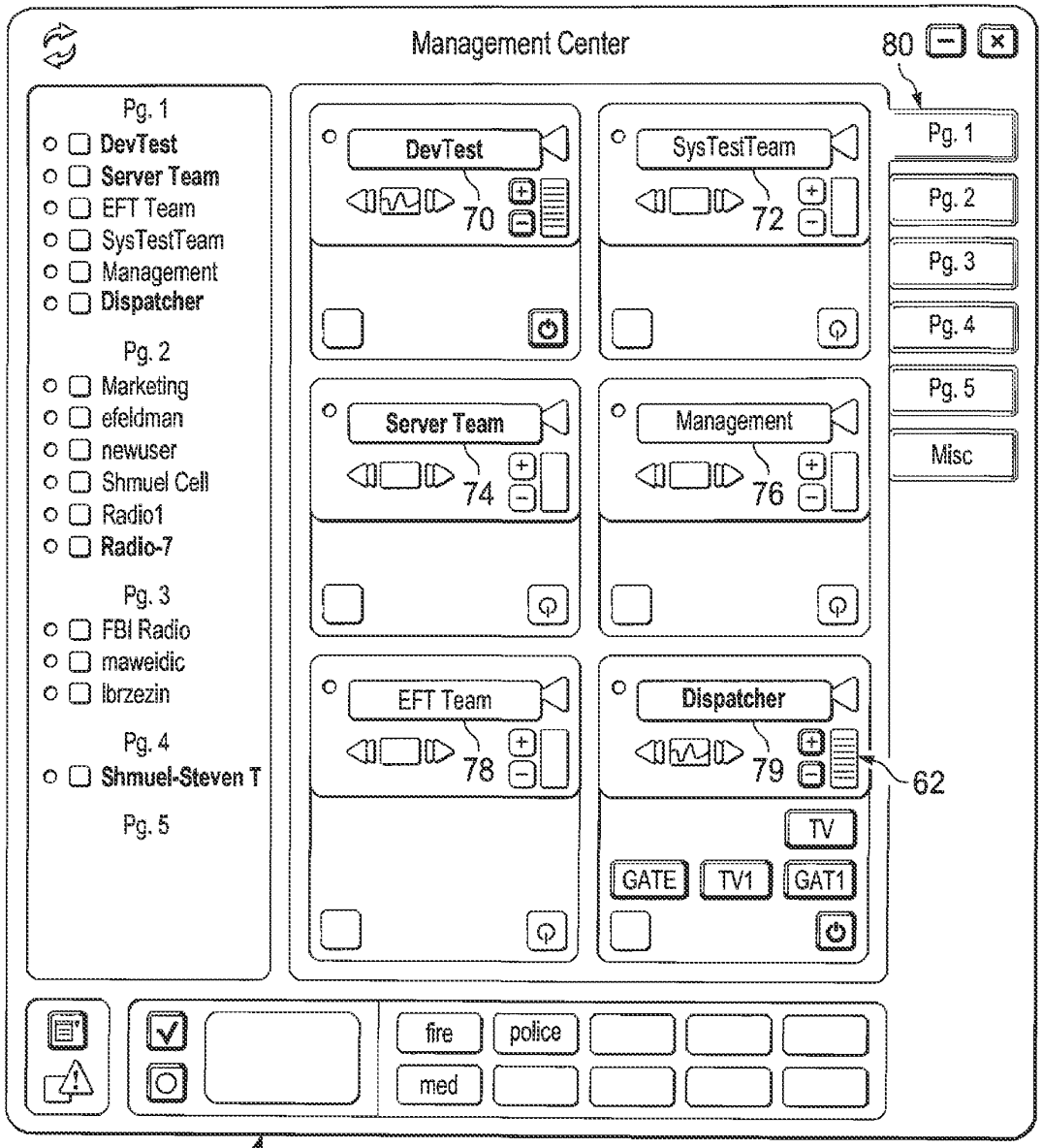

Management Center
80
Pg. 1
DevTest
Server Team
EFT Team
SysTestTeam
Management
Dispatcher
Pg. 2
Marketing
efeldman
newuser
Shmuel Cell
Radio1
Radio-7
Pg. 3
FBI Radio
maweidic
lbrzezin
Pg. 4
Shmuel-Steven T
Pg. 5
DevTest
70
SysTestTeam
72
Server Team
74
Management
76
EFT Team
78
Dispatcher
79
62
TV
GATE
TV1
GAT1
Pg. 1
Pg. 2
Pg. 3
Pg. 4
Pg. 5
Misc
fire
police
med
38
60

FIG. 2A

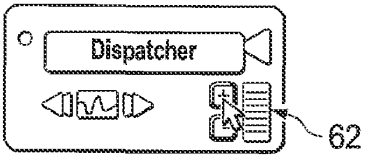

Dispatcher
62

FIG. 2B

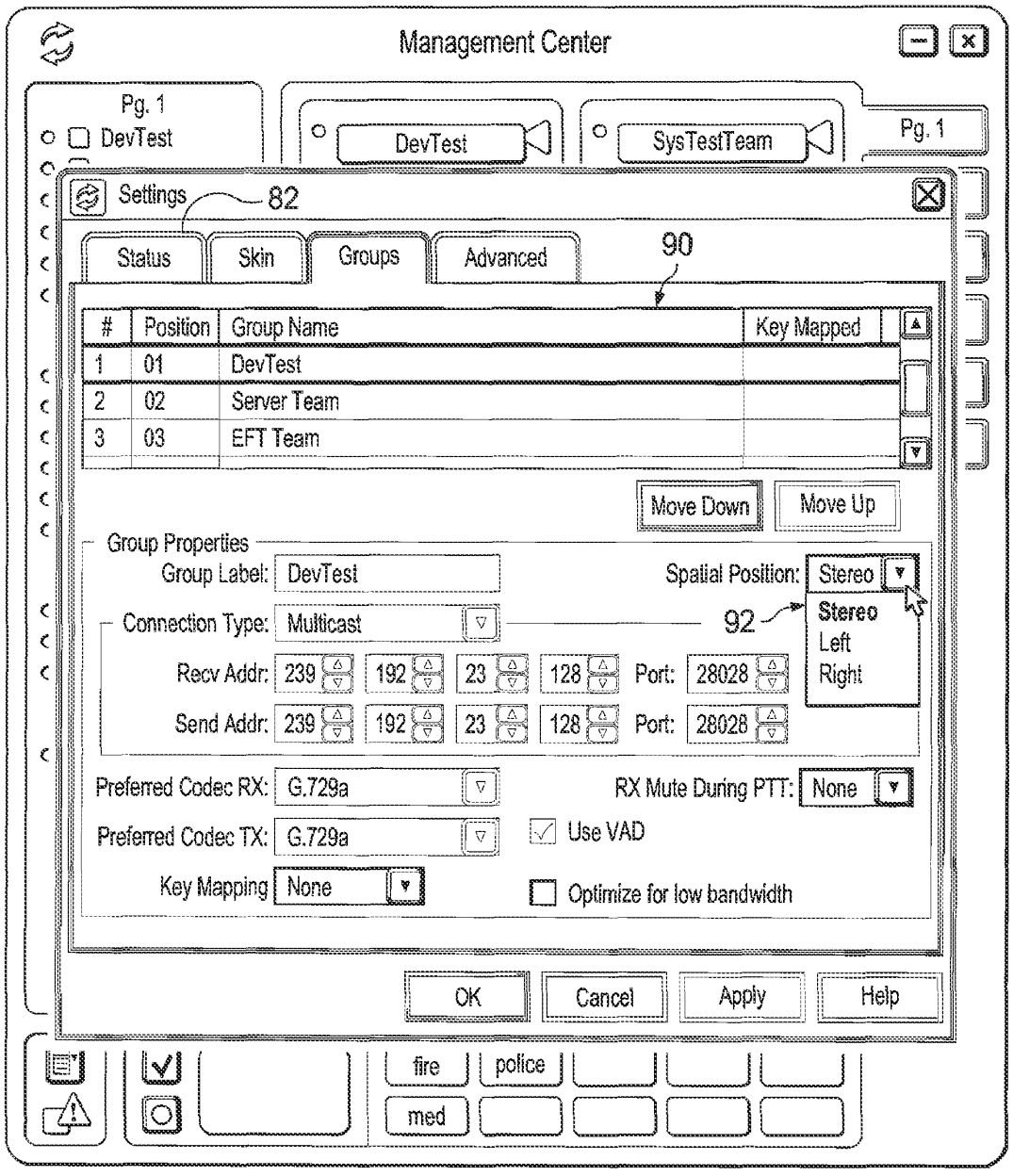

Management Center
Pg. 1
DevTest
DevTest
SysTestTeam
Pg. 1
Settings
82
Status
Skin
Groups
Advanced
90
Position Group Name Key Mapped
1 01 DevTest
2 02 Server Team
3 03 EFT Team
Move Down
Move Up
Group Properties
Group Label: DevTest
Spatial Position: Stereo
Stereo
Left
Right
Connection Type: Multicast
92
Recv Addr: 239 192 23 128 Port: 28028
Send Addr: 239 192 23 128 Port: 28028
Preferred Codec RX: G.729a
RX Mute During PTT: None
Preferred Codec TX: G.729a
Use VAD
Key Mapping None
Optimize for low bandwidth
OK
Cancel
Apply
Help
fire
police
med

FIG. 3

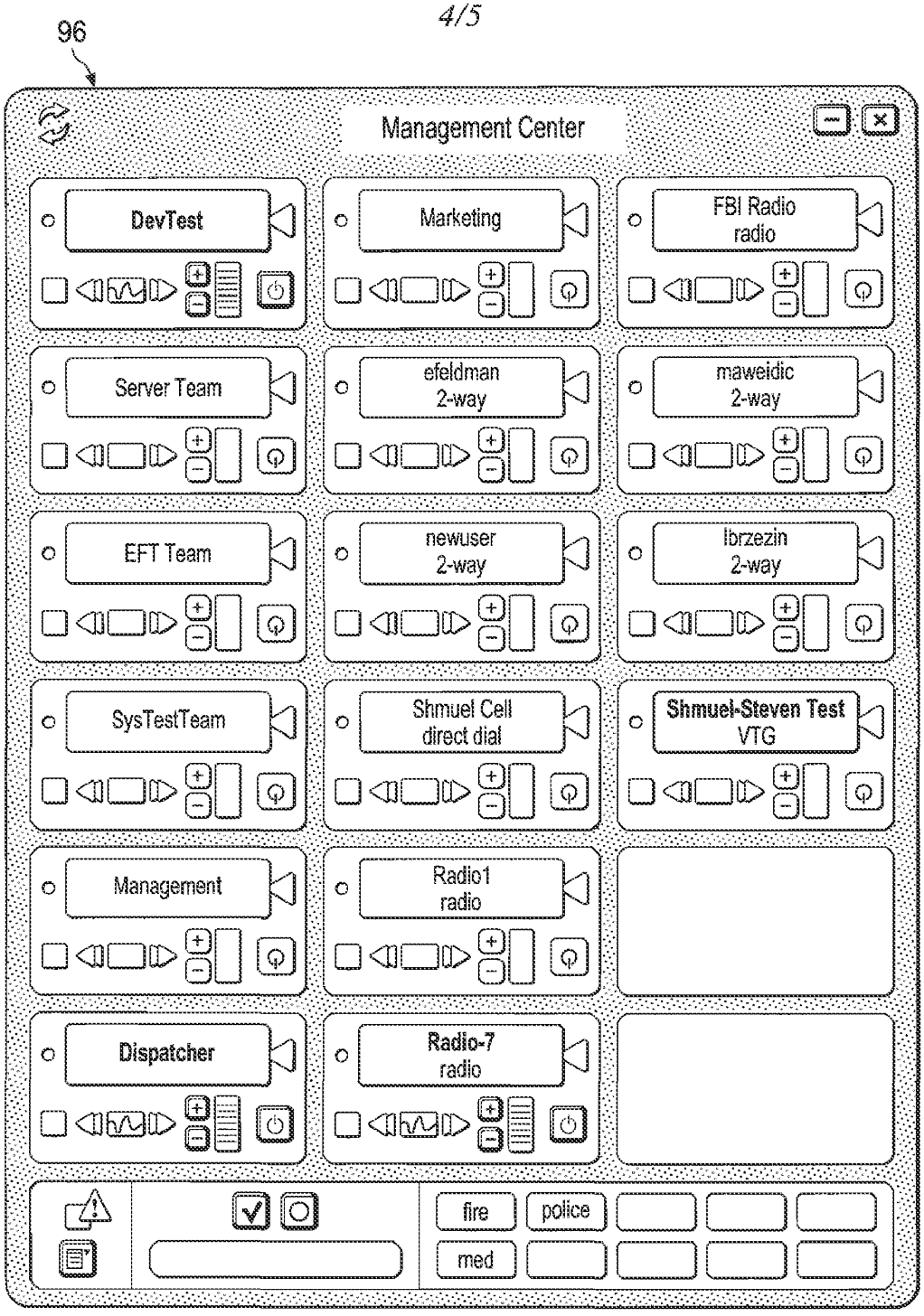

96
Management Center
DevTest
Marketing
FBI Radio
radio
Server Team
efeldman
2-way
maweidic
2-way
EFT Team
newuser
2-way
lbrzezin
2-way
SysTestTeam
Shmuel Cell
direct dial
Shmuel-Steven Test
VTG
Management
Radio1
radio
Dispatcher
Radio-7
radio
fire
police
med

FIG. 4

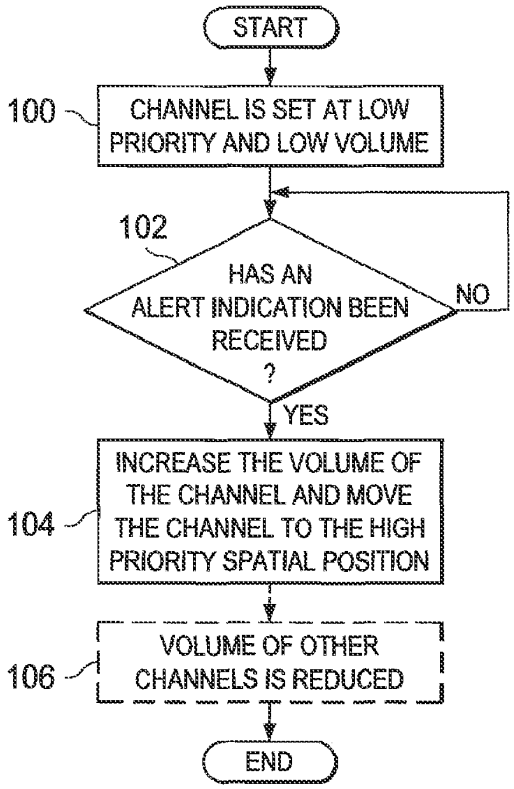

START
100
CHANNEL IS SET AT LOW PRIORITY AND LOW VOLUME
102
HAS AN ALERT INDICATION BEEN RECEIVED ?
NO
YES
104
INCREASE THE VOLUME OF THE CHANNEL AND MOVE THE CHANNEL TO THE HIGH PRIORITY SPATIAL POSITION
106
VOLUME OF OTHER CHANNELS IS REDUCED
END

FIG. 5

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention, design or discovery entitled SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT, the specification of which is attached hereto;

That I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above; that I do not know and do not believe that said invention, design or discovery was ever known or used in the United States of America before my invention or discovery thereof, or patented or described in any printed publication in any country before my invention or discovery thereof, or more than one year prior to this application, or in public use or on sale in the United States of America more than one year prior to this application; that said invention, design or discovery has not been patented or made the subject of an inventor's certificate issued prior to the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns; and that I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Number	Country	Date Filed	Priority Claimed (Yes) (No)
----------NONE----------			

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application(s) in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Serial Number	Date Filed	Status

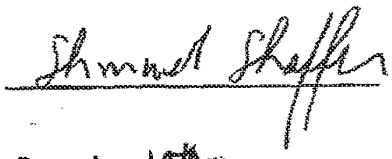
I hereby appoint:

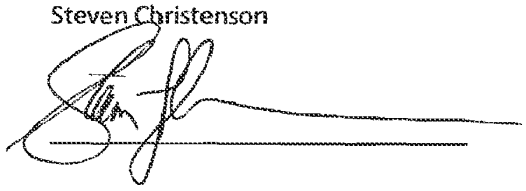
Practitioners at Customer Number 86421

all of the firm of the Patent Capital Group, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith, and to file and prosecute any international patent applications filed thereon before any international authorities.

Send Correspondence To:	Direct Telephone Calls To:
Thomas J. Frame	Thomas J. Frame
The above-mentioned Customer Number	at 214.823.1241

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 issuing thereon.

Full name of inventor:	Shmuel Shaffer
Inventor's signature:	
Date:	December 12th 2008
Residence (Address):	1211 Cowper Street Palo Alto, CA 94301
Citizenship:	United States

Full name of inventor:	Steven Christenson
Inventor's signature:	
Date:	December 17, 2008
Residence (Address):	1162 Bucknam Avenue Campbell, CA 95008
Citizenship:	United States

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Shmuel Shaffer, et al.
Serial No.:	Not Yet Assigned
Filing Date:	August 16, 2011
Confirmation No.:	Not Yet Assigned
Group Art Unit:	Not Yet Assigned
Examiner:	Not Yet Assigned
Title:	*SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT*

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

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as indicated on the following pages.

Amendments to the Specification:

At page 1, please insert the following new paragraph preceding the "TECHNICAL FIELD OF THE INVENTION" paragraph:

--**RELATED APPLICATION**

This Application is a continuation (and claims the benefit of priority under 35 U.S.C. §120) of U.S. Application Serial No. 12/340,417, filed December 19, 2008, entitled "SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT," Inventor(s) Shmuel Shaffer, et al. The disclosure of the prior application is considered part of (and is incorporated by reference in) the disclosure of this application.--

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1 - 24. (Cancelled)

25. (New) A method, comprising:

monitoring media streams associated with channels in a communication environment;

receiving an alert in one of the media streams; and

elevating a priority associated with the media stream receiving the alert.

26. (New) The method of Claim 25, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert.

27. (New) The method of Claim 25, wherein elevating the priority comprises changing a spatial direction for rendering the media stream receiving the alert.

28. (New) The method of Claim 25, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert and changing a spatial direction for rendering the media stream receiving the alert.

29. (New) The method of Claim 25, wherein elevating the priority comprises rendering the media stream receiving the alert to a priority spatial direction.

30. (New) The method of Claim 25, wherein elevating the priority includes identifying a primary channel and rendering the alert message to the primary channel.

31. (New) The method of Claim 25, wherein elevating the priority includes turning a volume down on media streams not receiving the alert.

32. (New) The method of Claim 25, wherein the alert is received in a header of a packet of the media stream.

33. (New) The method of Claim 25, wherein the alert is received in a control packet of the media stream.

34. (New) The method of Claim 25, wherein the alert is duplicated and rendered at a higher volume.

35. (New) Logic encoded in non-transitory media that includes code for execution and when executed by a processor is operable perform operations comprising:

monitoring media streams associated with channels in a communication environment;

receiving an alert in one of the media streams; and

elevating a priority associated with the media stream receiving the alert.

36. (New) The encoded logic of Claim 35, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert.

37. (New) The encoded logic of Claim 35, wherein elevating the priority comprises changing a spatial direction for rendering the media stream receiving the alert.

38. (New) The encoded logic of Claim 35, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert and changing a spatial direction for rendering the media stream receiving the alert.

39. (New) The encoded logic of Claim 35, wherein elevating the priority includes identifying a primary channel and rendering the alert message to the primary channel.

40. (New) An apparatus, comprising:

a memory element;

a processor; and

a management element stored in the memory element and configured to interface with the processor such that the apparatus is configured for:

monitoring media streams associated with channels in a communication environment;

receiving an alert in one of the media streams; and

elevating a priority associated with the media stream receiving the alert.

41. (New) The apparatus of Claim 40, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert.

42. (New) The apparatus of Claim 40, wherein elevating the priority comprises changing a spatial direction for rendering the media stream receiving the alert.

43. (New) The apparatus of Claim 40, wherein elevating the priority comprises increasing the volume of the media stream receiving the alert and changing a spatial direction for rendering the media stream receiving the alert.

44. (New) The apparatus of Claim 40, wherein elevating the priority includes identifying a primary channel and rendering the alert message to the primary channel.

CONCLUSION

Applicant asks that the specification and claims be examined in view of the amendments to the specification and claims.

The large entity filing and excess claim fees in the amount of $1,090 are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account No. 50-4889 authorization. It is believed that no other fee is due at this time. However, if this is incorrect, please apply any other required fees or any credits to Deposit Account No. 50-4889, referencing the attorney docket number shown above.

Respectfully submitted,

Patent Capital Group
Attorneys for Applicant

/Thomas J. Frame/
Thomas J. Frame
Reg. No. 47,232

Date: August 16, 2011

Customer No. 86421

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Filer:	Thomas John Frame
Attorney Docket Number:	03919-0117-CON (976240)

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	330	330
Utility Search Fee	1111	1	540	540
Utility Examination Fee	1311	1	220	220
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1090**

Electronic Acknowledgement Receipt	
EFS ID:	10749319
Application Number:	13210967
International Application Number:	
Confirmation Number:	3197
Title of Invention:	SYSTEM AND METHOD FOR PROVIDING CHANNEL CONFIGURATIONS IN A COMMUNICATIONS ENVIRONMENT
First Named Inventor/Applicant Name:	Shmuel Shaffer
Customer Number:	86421
Filer:	Thomas John Frame
Filer Authorized By:	
Attorney Docket Number:	03919-0117-CON (976240)
Receipt Date:	16-AUG-2011
Filing Date:	
Time Stamp:	16:42:28
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1090
RAM confirmation Number	3540
Deposit Account	504889
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 1.17 (Patent application and reexamination processing fees) Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees)	
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	2011-8-16-CON-TransmittalLetter.pdf	48030 ec00b1ccef5a698cc706b23cb22d073dcf36960a	no	3
Warnings:					
Information:					
2		PARENT-Specification-Claims-Abstract.pdf	835128 85aa061406cd7312dc2affdc1c08e6c13d8d3783	yes	25

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	18
	Claims	19	24
	Abstract	25	25

Warnings:					
Information:					
3	Drawings-only black and white line drawings	2011-8-16-DrawingsForFiling.pdf	5196676 5f07366a2fe8bc17bb34281cc82c8aed965f0d89	no	5
Warnings:					
Information:					
4	Oath or Declaration filed	2011-8-16-DeclarationForFiling.pdf	3404799 a7b545722ab761a393b0d3c1907672acc4281428	no	5
Warnings:					
Information:					
5		2011-8-16-PreliminaryAmendment.pdf	132908 1f29b6a7a3a9afbce9beb7f4ab84117ad3f1fcac	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Specification	2	2

	Claims		3	6	
	Applicant Arguments/Remarks Made in an Amendment		7	7	
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	33140 369ea7dccdbc9627c087b3194272af3147b749a1	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	9650681		

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

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

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

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

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 13/210,967	Filing Date 08/16/2011	☐ To be Mailed

APPLICATION AS FILED – PART I

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

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	08/16/2011	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $ =		OR	X $220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0

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

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

Legal Instrument Examiner:
/ANDREW j. JAMES JR/

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.