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
2:13cv379	5/6/2013	Eastern District of Texas

PLAINTIFF	DEFENDANT
BLACK HILLS MEDIA, LLC	SAMSUNG ELECTRONICS CO. LTD., SAMSUNG ELECTRONICS AMERICA, INC. and SAMSUNG TELECOMMUNICATIONS AMERICA, LLC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,835,689	11/16/2010	BLACK HILLS MEDIA, LLC
2	7,917,082	3/29/2011	BLACK HILLS MEDIA, LLC
3	6,618,593	9/9/2003	BLACK HILLS MEDIA, LLC
4	6,108,686	8/22/2000	BLACK HILLS MEDIA, 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		
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

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

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 Southern 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
4:13-cv-1296	5/6/2013	Southern District of Texas

PLAINTIFF	DEFENDANT
Cricket Communications, Inc.	RM World Inc. D/B/A Call Phone Expert Rahman A. Moton

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	See Complaint		
2	2,359,370		
3	2,363,821		
4	2,359,369		
5	3,325,188		

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

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

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

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
DAVID J. BRADLEY	W. Bostic	5/6/2013

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 NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/566,552	12/04/2006	David Goldberg	1116-076-US3

CONFIRMATION NO. 6195

71739
WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

POA ACCEPTANCE LETTER

OC000000056434935

Date Mailed: 09/10/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/06/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/sharris/

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/566,552	12/04/2006	David Goldberg	1116-076-US3

CONFIRMATION NO. 6195

71739
WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

POWER OF ATTORNEY NOTICE

OC000000056434856

Date Mailed: 09/10/2012

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/06/2012.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/sharris/

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

PTO/SB/80 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

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

I hereby appoint:

☑ Practitioners associated with the Customer Number: 71739

OR

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

Name	Registration Number	Name	Registration Number

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

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

☑ The address associated with Customer Number: 71739

OR

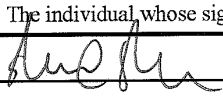
☐ Firm or Individual Name			
Address			
City		State	Zip
Country			
Telephone		Email	

Assignee Name and Address:
Black Hills Media, LLC
1000 North West Street, Suite 1200
Wilmington, DE 19801

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

SIGNATURE of Assignee of Record

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

Signature		Date	7/30/2012
Name	Hugh Svendsen	Telephone	919-433-1845
Title	Member		

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

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

SAMSUNG EX. 1002

PTO/SB/123 (11-08)
Approved for use through 11/30/2011. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

CHANGE OF CORRESPONDENCE ADDRESS
Patent

Address to:
Mail Stop Post Issue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	7,835,689
Issue Date	11/16/2010
Application Number	11/566,552
Filing Date	12/04/2006
First Named Inventor	David A. Goldberg et al.
Attorney Docket Number	1116-076-US3

Please change the Correspondence Address for the above-identified patent to:

☑ The address associated with Customer Number: 71739

OR

☐ **Firm *or* Individual Name**

Address

City | **State** | **ZIP**

Country

Telephone | **Email**

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

This form will not affect any "fee address" provided for the above-identified patent. To change a "fee address" use the "Fee Address Indication Form" (PTO/SB/47).

I am the:

☐ Patentee.

☐ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☑ Attorney or agent of record. Registration Number 51,468.

Signature

Typed or Printed Name R. Chad Bevins

Date September 6, 2012 | Telephone 919-238-2300

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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

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

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: David A. Goldberg et al.

Application No./Patent No.: 7,835,689 Filed/Issue Date: 11/16/2010

Titled: DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

Black Hills Media, LLC, a limited liability corporation

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

states that it is:

1. [X] the assignee of the entire right, title, and interest in;

2. [ ] an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or

3. [ ] the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

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

A. [ ] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

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

1. From: David Goldberg, Martha Goldberg, Miriam Gol[illegible] To: Tribal Technologies LLC

The document was recorded in the United States Patent and Trademark Office at Reel 018931, Frame 0082, or for which a copy thereof is attached.

2. From: Tribal Technologies, LLC To: Syncronation, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel 019866, Frame 0836, or for which a copy thereof is attached.

3. From: Syncronation, Inc. To: Black Hills Media, LLC

The document was recorded in the United States Patent and Trademark Office at Reel 028648, Frame 0307, or for which a copy thereof is attached.

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

[X] As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Signature — September 6, 2012 (Date)

R. Chad Bevins (Printed or Typed Name) — Attorney of Record (Title)

This collection of information is required by 37 CFR 3.73(b). This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Acknowledgement Receipt

EFS ID:	13676281
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-US3
Receipt Date:	06-SEP-2012
Filing Date:	04-DEC-2006
Time Stamp:	16:24:29
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	1116-076-US3_Black_Hills_Media_POA.pdf	139229 a6f3b0960767bdaa6efe38789defe5c0c21bd54d	no	1

Warnings:	
Information:	

SAMSUNG EX. 1002

2	Change of Address	1116-076-US3_Change_Correspondence_9-6-12.pdf	287394 edfb9120b88531e208e622b96ddbe0905e1dcb46	no	1
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73(b).	1116-076-US3_Statement_Under_37CFR3-76b_9-6-12.pdf	332140 dd84da46afd4aaaa5aa10481379e10475a93d72f	no	1
Warnings:					
Information:					
		Total Files Size (in bytes):	758763		

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.

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.
11/566,552	11/16/2010	7835689	1116-076-USD3	6195

71739 7590 10/27/2010

WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

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 465 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):

David Goldberg, Boulder, CO;
Benjamin Goldberg, Boulder, CO;
Martha Goldberg, Boulder, CO;
Miriam Goldberg, Boulder, CO;

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	**Art Unit**
	TU X NGUYEN	2618

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
455	3.06	H	0	4	H	40 / 00 (2008.0)					

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
715	758				

☐ 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	53	12	69												
	54	8	70												
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2	65														
4	66														
6	67														
10	68														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	12	
/TU X NGUYEN/ Primary Examiner.Art Unit 2618	12/02/2009	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20100930

SAMSUNG EX. 1002

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

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

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SAMSUNG EX. 1002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David A. Goldberg et al.
Serial No. 11/566,552
Filed: 12/04/2006
Attorney Docket No. 1116-076-US3
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

Examiner: Tu X. Nguyen
Art Unit: 2618

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESUBMISSION OF DECLARATION

Applicants submit legible text for the names and addresses of the inventors in the original Declaration filed December 4, 2006. Applicants note that the signed Declaration originally submitted on December 4, 2006 is the best available copy of the signed Declaration. As shown in the originally filed Assignment from David Goldberg, Martha Goldberg, Miriam Goldberg, and Benjamin Goldberg, which can be found at reel/frame 018931/0082, which was filed on February 26, 2007, the inventor information in the Declaration is as follows:

1. David A. Goldberg
   Citizenship: US
   Mailing Address: 4055 Pinon Drive
   City: Boulder
   State: CO
   Zip: 80303

2. Martha Goldberg
   Citizenship: US
   Mailing Address: 4055 Pinon Drive
   City: Boulder
   State: CO
   Zip: 80303

3. Miriam Goldberg
   Citizenship: US
   Mailing Address: 4055 Pinon Drive
   City: Boulder
   State: CO
   Zip: 80303

4. Benjamin Goldberg
   Citizenship: US
   Mailing Address: 4055 Pinon Drive
   City: Boulder
   State: CO
   Zip: 80303

If any fees are required in association with this submission, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By:

Jeffrey R. Ambroziak
Registration No. 47,387
100 Regency Forest Drive, Suite 160
Cary, NC 27518
Telephone: (919) 238-2300

Date: September 9, 2010
Attorney Docket: 1116-076-US3

Electronic Acknowledgement Receipt

EFS ID:	8382147
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	Benjamin Withrow/Julie Smith
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	1116-076-USD3
Receipt Date:	09-SEP-2010
Filing Date:	04-DEC-2006
Time Stamp:	12:49:03
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	Post Allowance Communication - Incoming	1116-076-US3_Resubmission_of_Declaration.pdf	52852 e549d687c4ea3b7a51a8fc3b4ebba6966db c01d0	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	52852

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.

[Para 75] Figure 22A is a top-view diagram of an audio unit user interface, demonstrating the use of buttons to create DJ control signals.

[Para 76] Figure 22B is a top-view diagram of a hand-pad for creating DJ control signals.

[Para 77] Figure 22C is a schematic block diagram of a set of drums used for creating DJ control signals.

[Para 78] Figure 23A is a schematic block flow diagram of the synchronized playback of an audio signal file with a DJ control signal file, using transmission of both audio and control signal information.

[Para 79] Figure 24 is a schematic block diagram of a DJ unit with associated input transducers.

[Para 80] Figure 25 is a schematic flow diagram indicating music sharing using audio devices, providing new means of distributing music to customers.

[Para 81] Figure 26 is a schematic diagram of people at a concert, in which DJs conveyed by multiple individuals are commonly controlled.

[Para 82] Figure 27 is a schematic block flow diagram of using a prospective new member's previous associations to determine whether the person should be added to an existing cluster.

[Para 83] Figure 28 is a block flow diagram indicating the steps used to maintain physical proximity between the broadcast unit and the receive unit via feedback to the receive unit user.

[Para 84] Figures 29A is a schematic block diagram of the connection of an Internet-enabled audio unit with an Internet device through the Internet cloud, using an Internet access point.

[Para 85] Figures 29B is a schematic block diagram of the connection of an Internet-enabled audio unit with an Internet device through the Internet cloud, with an audio unit directly connected to the Internet cloud.

[Para 86] Figure 30 comprises tables of ratings of audio unit users.

[Para 87] Figure 31 is tables of DJ, song and transaction information according to the methods of Figure 25.

[Para 88] Figure 32A is a schematic block diagram of maintaining privacy in open transmission communications.

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)

71739 7590 12/07/2009

WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

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.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

TITLE OF INVENTION: DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	03/08/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, TU X	2618	455-003060

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 Withrow & Terranova, PLLC
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: SyncroNation, Inc.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Durham, NC

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

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

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☒ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 50-1732 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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

Authorized Signature _____ Date December 15, 2009

Typed or printed name Jeffrey R. Ambroziak Registration No. 47,387

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

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

Electronic Patent Application Fee Transmittal

Application Number:	11566552
Filing Date:	04-Dec-2006
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Filer:	Benjamin Withrow/Julie Smith
Attorney Docket Number:	1116-076-USD3

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	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300

SAMSUNG EX. 1002

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1810**

SAMSUNG EX. 1002

Electronic Acknowledgement Receipt	
EFS ID:	6634998
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	Benjamin Withrow/Julie Smith
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	1116-076-USD3
Receipt Date:	15-DEC-2009
Filing Date:	04-DEC-2006
Time Stamp:	09:18:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1810
RAM confirmation Number	7502
Deposit Account	501732
Authorized User	AMBROZIAK,JEFFREY R.
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	Issue Fee Payment (PTO-85B)	1116-076-US3_Issue_Fee_Transmittal.pdf	105287 2dfd63cc4c2698af76fb3fecf4ec7d0912a140b7	no	1
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	32226 83d72439bf944539f5c8a143f06c38a1b11946d8	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	137513		

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

71739 7590 12/07/2009

WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

EXAMINER	
NGUYEN, TU X	
ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 12/07/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

TITLE OF INVENTION: DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	03/08/2010

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

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

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

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

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

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

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

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

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

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

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
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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)

71739 7590 12/07/2009

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100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

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.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

TITLE OF INVENTION: DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	03/08/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, TU X	2618	455-003060

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

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

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

2. For printing on the patent front page, list

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

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

1 _____

2 _____

3 _____

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

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

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

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

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

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

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

❑ A check is enclosed.

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

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

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

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

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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

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

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.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

71739 7590 12/07/2009

WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

EXAMINER	
NGUYEN, TU X	
ART UNIT	PAPER NUMBER
2618	

DATE MAILED: 12/07/2009

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

The Patent Term Adjustment to date is 319 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 319 day(s).

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

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

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

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)	
	11/566,552	GOLDBERG ET AL.	
	Examiner	Art Unit	
	TU X. NGUYEN	2618	

-- 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 *10/12/09*.

2. ☒ The allowed claim(s) is/are *53,55,57-60 and 65-70*.

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

   * Certified copies not received: _____.

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

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

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

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

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

Attachment(s)

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

DETAILED ACTION

Allowable Subject Matter

Claims 53, 55, 57-60, and 65-70 are allowed.

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

Regarding claims 53, 55, 57-60, it is allowed for the reasons as stated in applicant's response filed on 10/12/09 pages 7-14.

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

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed Tu Nguyen whose telephone number is 571-272-7883.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899. 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).

/Tu X Nguyen/

Primary Examiner, Art Unit 2618

12/02/09

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	**Art Unit**
	TU X NGUYEN	2618

ORIGINAL		INTERNATIONAL CLASSIFICATION									
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED				
455	3.06	H	0	4	H	40 / 00 (2008.01.01)					

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
715	758				

☐ 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	53		69												
	54	3	70												
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	61														
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	63														
11	64														
2	65														
5	66														
7	67														
9	68														

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	11	
/TU X NGUYEN/ Primary Examiner.Art Unit 2618	12/02/2009	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No. 20091202

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

SEARCHED			
Class	Subclass	Date	Examiner
715	758	12/02/09	TN
455	3.05,3.06	12/02/09	TN

SEARCH NOTES		
Search Notes	Date	Examiner
Search East	12/02/09	TN
Search history	12/02/09	TN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
715	758	12/02/09	TN

/TU X NGUYEN/ Examiner.Art Unit 2618	

PTO/SB/08a (01-09)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11566552
Filing Date	2006-12-04
First Named Inventor	David A. Goldberg et al.
Art Unit	2618
Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/TN/	1	2001-352291	JP		2001-12-21	Sony Corp		☒

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	Attorney Docket Number	1116-076-US3

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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	Attorney Docket Number	1116-076-US3

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/TN/	1	6798765	B2	2004-09-28	Larsson	
/TN/	2	7266836	B2	2007-09-04	Anttila et al.	

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	Examiner Name	Tu X. Nguyen
	Attorney Docket Number	1116-076-US3

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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/TN/	1	20030002395	A1	2003-01-02	Chang et al.	

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4943	((determin$3 jud$6) with (join$3 add$3) with (group $1 team$1 member$1 chat $4 player$1)) and @ad<"20010506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 07:21
L2	5245	((determin$3 jud$6) with (join$3 add$3) with (group $1 team$1 shar$4 member $1 chat$4 player$1)) and @ad<"20010506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 07:21
L3	5394	((determin$3 jud$6 criteria) with (join$3 add $3) with (group$1 team$1 shar$4 member$1 chat$4 player$1)) and @ad<"20010506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 08:10
L4	4610	((determin$3 jud$6 criteria) with (join$3 add $3) with (group$1 team$1 shar$4 member$1 chat$4 player$1)) and @ad<"20000506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 08:10
L5	10703	((determin$3 jud$6 criteria) with (join$3 add $3) with (group$1 team$1 shar$4 member$1 chat$4 player$1)) and @ad>"20000506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 08:38
L6	9919	5 and @ad>"20010506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 08:39
L7	9919	5 and @ad>"20010506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/03 08:47
S1	1	("20020160824").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:19

S2	41897	(permit$4 vot$4 evaluat$4 rat$4 request$3 register $6) with (join$3 add$3) with (group$1 team$1 member$1 player$1)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:32
S3	1	("20030002395").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:36
S4	1	("6798765").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:37
S5	1	("7266836").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:39
S6	12484	S2 and (news media multimedia music song sport$1 nasdag stock$1)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:41
S7	5331	S6 and @ad<"20020506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:42
S8	13221	S2 and (news media multimedia music song sport$1 nasdag stock$1 game$1)	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:42
S9	5712	S8 and @ad<"20020506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:42
S10	418	((permit$4 vot$4 evaluat $4 rat$4 request$3 register $6) with (join$3 add$3) with (group$1 team$1 member$1 shar$4 player $1) with (news media multimedia music song sport$1 nasdag stock$1 game$1)) and @ad<"20020506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 09:50
S11	1	("20020160824").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 14:42

S12	1	("20030002395").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 14:45
S13	1	("6798765").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 14:47
S14	1	("7266836").PN.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 14:47
S15	28954	((permit$4 vot$4 evaluat $4 rat$4 request$3 scor$4 good excellent poor) with (join$3 add$3) with (group $1 team$1 member$1 player$1)) and @ad<"20020506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 15:08
S16	29361	((permit$4 vot$4 evaluat $4 rat$4 request$3 scor$4 good excellent poor parameter critera) with (join$3 add$3) with (group $1 team$1 member$1 player$1)) and @ad<"20020506"	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 15:11
S18	357	S17 and (("463"/$) ("455"/$)).ccls.	US-PGPUB; USPAT; EPO; JPO	OR	OFF	2009/12/02 15:17

12/3/09 9:13:01 AM
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David A. Goldberg et al.
Serial No. 11/566,552
Filed: 12/04/2006
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

Examiner: Tu X. Nguyen
Art Unit: 2618

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE TO THE OFFICE ACTION MAILED AUGUST 3, 2009

In response to the Office Action mailed August 3, 2009 (Paper No./Mail Date 20090720), Applicants offer the following amendments and remarks. If any fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

SAMSUNG EX. 1002

CLAIM AMENDMENTS

The following is a complete listing of all claims that are in the application. A status identifier is provided for every claim and the current text of every claim is presented, unless the claim has been cancelled or withdrawn.

1-52. (Cancelled)

53. (Currently Amended) A method of operating a digital computing device associated with a sharing group comprising a plurality of media player devices, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications ~~for the sharing group~~ between the requesting media player device and at least one of the plurality of media player devices distributed over a public communication channel.

54. (Cancelled)

55. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating.

56. (Cancelled)

57. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device, the information associated with the user of the requesting media player device comprising information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group,

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

comparing the information identifying the user of the requesting media player device and the members of the at least one previous sharing group to a stored list; and

permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the members of the at least one previous sharing group.

58. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device, the information associated with the user of the requesting media player device comprising information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group,

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

59. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group.

60. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group.

61-64. (Cancelled)

65. (Previously Presented) The method of claim 53 wherein the digital computing device is one of at least two media player devices in the sharing group.

66. (Previously Presented) The method of claim 55 wherein the digital computing device is one of at least two media player devices in the sharing group.

67. (Previously Presented) The method of claim 57 wherein the digital computing device is one of at least two media player devices in the sharing group.

68. (Previously Presented) The method of claim 59 wherein the digital computing device is one of at least two media player devices in the sharing group.

69. (Previously Presented) The method of claim 60 wherein the digital computing device is one of at least two media player devices in the sharing group.

70. (Previously Presented) The method of claim 58 wherein the digital computing device is one of at least two media player devices in the sharing group.

REMARKS

- Claims **53, 55, 57-60,** and **65-70** are currently pending;
- Claims **57** and **67** are allowed;
- Claims **53, 55, 58-60, 65, 66,** and **68-70** stand rejected;
- Claim **53** is amended; and
- Claims **53, 55, 57-60,** and **65-70** are in condition for allowance.

1. Allowable Subject Matter

Applicants would like to thank the Examiner for indicating that claims 57 and 67 are allowed.

2. Claim Rejections – Section 103

Claims **53** and **65** were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0160824 A1 to Goto et al. (hereinafter "Goto") in view of U.S. Patent Application Publication No. 2003/0135464 A1 to Mourad et al. (hereinafter "Mourad"). Applicants respectfully traverse. Under § 103, "obviousness requires a suggestion of *all limitations in a claim*." *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (*citing In re Royka*, 490 F.2d 981, 985 (CCPA 1974) (emphasis added)). Thus, in order to reject a claim under § 103, for each limitation of the claim, the Patent Office must show that the limitation is taught or suggested by the cited prior art references or would have otherwise been suggested to one of ordinary skill in the art at the time of the invention.

Applicants respectfully assert that the combination of Goto and Mourad, such a combination neither suggested nor deemed appropriate, does not teach the following limitation of claim **53**:

- *wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications between the requesting media player device and at least one of the plurality of media player devices distributed over a public communication channel.*

Regarding claim **53**, the Examiner allowed that "Goto et al. fail to disclose providing a decryption key to the media player device to be used to decrypt communications for the sharing group distributed over a public communication channel." (Office Action mailed August 3, 2009, page 3). The Examiner further asserted that "Mourad et al. disclose providing a decryption key to the media player device to be used to decrypt communications for the sharing group distributed over a public communication channel (par.020)." (Office Action, page 3).

Applicants note that claim **53** has been amended to more clearly recite that the sharing group comprises *a plurality of media player devices* and that the decryption key is used to *decrypt communications* ***between the requesting media player device and at least one of the plurality of media player devices*** *distributed over a public communication channel.*

At the Examiner's citation to paragraph [0020] of Mourad, the following is disclosed:

> [0020] A method of securely receiving data on a user's system from a web broadcast infrastructure with a plurality of channels. The method comprising the steps of: receiving promotional metadata from a first web broadcast channel, the promotional metadata related to data available for reception; assembling at least part of the promotional metadata into a promotional offering for review by a user; selecting by a user, data to be received related to the promotional metadata; receiving data from a second web broadcast channel, the data selected from the promotional metadata, and wherein the data has been previously encrypted using a first encrypting key; and receiving the first decrypting key via a computer readable medium, the first decrypting key for decrypting at least some of the data received via the second web broadcast channel.

Mourad further discloses, at paragraph [0180], the following:

> [0180] Turning now to FIG. 1, there is shown a block diagram illustrating an overview of a Secure Digital Content Electronic Distribution System 100 according to the present invention. The Secure Digital Content Electronic Distribution System 100 encompasses several business elements that comprise an end-to-end solution, including: Content Provider(s) 101 or the proprietors of the Digital Content, Electronic Digital Content Store(s) 103, Intermediate Market Partners (not shown), ClearingHouse(s) 105, Content Hosting Site 111, Transmission Infrastructures 107, and End-User Device(s) 109. Each of these business elements use various components of the Secure Digital Content Electronic Distribution System 100. A high level description of these business elements and system components, as they pertain specifically to electronic Content 113 distribution, follows.

As is evident from the above, Mourad discloses that Content Providers can provide end-user devices with secure digital content accessible via a received decrypting key. Assuming that

the Examiner is equating the end-user device of Mourad as the recited requesting media player device, Mourad does not disclose any other media player device forming a sharing group, let alone that the decryption key can be used to decrypt communications between the requesting media player device and another media player device. Quite the contrary, as Mourad only discloses communication between the user device and the content provider. As a result, Mourad does not teach or otherwise disclose *providing a decryption key to the requesting media player device to be used to decrypt communications between the requesting media player device and at least one of the plurality of media player devices distributed over a public communication channel* as recited in claim **53**.

As neither Goto nor Mourad, either alone or in combination, teach this element of claim **53**, Applicants respectfully assert that claim **53** is in condition for allowance. As claim **65** depends upon claim **53** and incorporates all of the elements and limitations of claim **53**, claim **65** is likewise in condition for allowance.

3. Claim Rejections – Section 103

Claims **58, 59, 68,** and **70** were rejected under 35 U.S.C. § 103(a) as being unpatentable over Goto in view of U.S. Patent Application Publication No. 2003/0073494 A1 to Kalpakian et al. (hereinafter "Kalpakian"). Applicants respectfully traverse. The standards for obviousness are set forth above.

Applicants respectfully assert that the combination of Goto and Kalpakian, such a combination neither suggested nor deemed appropriate, does not teach the following limitation of claim **58**:

- *wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.*

Regarding claim **58**, the Examiner allowed that:

> Goto et al. fail to disclose making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the

requesting media player device was previously in a sharing group with a trusted user.

Kalpakian et al. disclose making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user (par.071). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Goto et al. with the above teaching of Kapakian [sic] et al. in order to reduce security risk playing a game with sufficient real money (as suggested by Kalpakian et al. (par.083). (Office Action, page 4).

Applicants respectfully note that Kalpakian discloses, at the Examiner's citation to paragraph [0071], the following:

> [0071] Similarly, in the present embodiment the hard disk drive 86 also stores object codes 124 for directing the processor circuit to define various objects in the RAM 88. More particularly, in this embodiment the various routines described herein and the Java Virtual Machine 94 co-operate to direct the processor circuit 52 to define a plurality of Java objects, including a user session object 140 corresponding to each user logged onto the game server 54, a game object 150 corresponding to each game available on the game server, and a waiter object 170 corresponding to each user presently waiting to play a game on the game server. For ease of illustration, only a single example of each such object is shown in FIG. 3, however, in practice it is expected that there will be a plurality of each such type of object.

Applicants respectfully assert that no portion of this citation discloses, either directly or indirectly, in any manner anything related to, as the Examiner asserts, "making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user." (Office Action, page 4). Applicants further assert that Kalpakian does not elsewhere disclose *wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user*. For this reason alone, the combination of Goto and Kalpakian, such a combination neither suggested nor deemed appropriate, fails to teach all of the elements of claim **58** and, as a result, claim **58** is in condition for allowance. As claim **70** depends upon claim **58** and incorporates all of the elements and limitations of claim **58**, claim **70** is likewise in condition for allowance.

With regard to claim **59**, Applicants respectfully assert that the combination of Goto and Kalpakian, such a combination neither suggested nor deemed appropriate, does not teach the following limitation:

- *wherein the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group.*

Regarding claim **59**, the Examiner allowed that:

> Goto et al. fail to disclose information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group.
>
> Kalpakian et al. [sic] information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group (par.083). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Goto et al. with the above teaching of Kapakian [sic] et al. in order to reduce security risk playing a game with sufficient real money. (Office Action, page 5).

Applicants respectfully note that Kalpakian discloses, at the Examiner's citation to paragraph [0083], the following:

> [0083] In the present embodiment the user ID field 202 is used to store a unique identification of the particular user or player to whom the particular user record 200 corresponds, and the password field 204 is used to store a password that the user may enter to gain access to the game server 54. The real money field 206 is used to store a total amount of real money available to the user for use in playing games on the game server 54. In this regard, the user may transfer money into the real money field 206 by invoking conventional on-line payment methods (not part of this invention), such as on-line credit card payment or on-line bank account debiting, for example. Preferably, the game server 54 does not store the user's credit card information, to reduce security risks to the user, but rather, uses a third party secure financial transaction provider for this purpose. Similarly, the play money field 208 is used to store an amount of play money available to the user. In this regard, a proprietor of the game server 54 may choose to operate a number of games with "play" money, and may choose to provide a limited amount of such play money to a user, so that the user can try out a given game before beginning to play a game with real money.

Applicants respectfully assert that no portion of this citation discloses, either directly or indirectly, in any manner anything related to, as the Examiner asserts, "information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group." (Office Action, page 5). Applicants further assert that Kalpakian does not elsewhere disclose *wherein the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group.*

For this reason alone, the combination of Goto and Kalpakian, such a combination neither suggested nor deemed appropriate, fails to teach all of the elements of claim **59** and, as a result, claim **59** is in condition for allowance. As claim **68** depends upon claim **59** and incorporates all of the elements and limitations of claim **59**, claim **68** is likewise in condition for allowance.

4. Claim Rejections – Section 102

Claims **55, 60, 66,** and **69** were rejected under 35 U.S.C. § 102(e) as being anticipated by Goto. Applicants respectfully traverse. As discussed in MPEP § 2131, *"[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).* "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Because the hallmark of anticipation is prior invention, the prior art reference--in order to anticipate under 35 U.S.C. § 102--must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements "arranged as in the claim." *Net Moneyin, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

With regard to claim **55**, Applicants respectfully assert that Goto does not teach the following limitation:

- *wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating.*

The Examiner asserted that Goto discloses the above recited element of claim **55** citing "(par.0135 'low skill level', 'high skill level' corresponds to 'rating')." (Office Action, page 6).

Applicants respectfully assert that the Examiner is in error when interpreting the teachings of Goto. Applicants note that Goto discloses the following at paragraphs [0135]-[0136]:

> [0135] ... Following this deletion processing, a member admission request seeking the admission of a new terminal device as a member of the team to replace the terminal device deleted from the memory is sent by a terminal device belonging to the team to the other terminal devices belonging to the team. Based on the responses of each terminal device to this member admission request, a terminal device that satisfies the admission criteria included in the member admission request is selected from among terminal devices that are not registered in the memory and do not belong to the team, and the identifying information regarding the selected terminal device is stored in the memory as a team member. ... Accordingly, a member having a different game intention or a member with a low skill level can be removed from the team and a new member can be admitted to the team. In this way, the members comprising the team can be replaced, such that the game may be played with members having the same game intentions, making the game more interesting.
>
> [0136] The above described server may further include reference means that enables reference to the game histories of the other terminal devices belonging to the team. According to this construction, players can refer to the game histories of the other members of the team, such as the skill levels assigned to each player on the team. Accordingly to the invention described, because the game histories of other members of the team can be consulted, they can be referred to when deleting players as members.

Applicants assert that assuming, arguendo, the disclosed assigned skill level of Goto to be identical to the claimed rating, there is no disclosure in Goto that such a skill level was assigned

by at least one user, let alone *by at least one member of a previous sharing group of the user* as claimed. In fact, nowhere does Goto disclose any player rating another player. As a result, contrary to the Examiner's assertion, Goto does not disclose *wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating* as claimed. For this reason alone, claim **55** is in condition for allowance.

With regard to claim **60**, Applicants respectfully assert that Goto does not teach the following limitation:

- *making a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group.*

The Examiner asserted that Goto discloses the above recited element of claim **60** citing "(par.074, 0119 'registration' corresponds to 'new members are permitted')." (Office Action, page 7).

Applicants respectfully assert that the Examiner is in error when interpreting the teachings of Goto. Applicants note that Goto discloses the following at paragraph [0074]:

> [0074] FIG. 8 is an example of the personal information input screen displayed when member registration for a player is carried out. When the player accesses the game server 1 from the cellular telephone 2 in order to begin the incoming call tone melody award game, the data for the personal information input screen 400 is read out from the event memory 150 by the personal information registration processor 101 and is then transmitted to and displayed on the cellular telephone 2.

Assuming, arguendo, that the disclosed registration of Goto is identical to the recited *whether new members are permitted*, Applicants respectfully assert that Goto does not disclose, either at the above reproduced citation or at paragraph [0119], that a determination about the registration is *based on permissions set by a user of at least one member media player device in the sharing group* as claimed. As a result, contrary to the Examiner's assertion, Goto does not

disclose *making a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group* as claimed. For this reason alone, claim **60** is in condition for allowance.

Claims **66** and **69** are dependent claims that depend from claims **55** and **60**, respectively. Claims **66** and **69** are therefore allowable for at least the same reasons set forth above with respect to claims **55** and **60**. However, Applicants reserve the right to further address the rejection of claims **66** and **69** in the future, if needed.

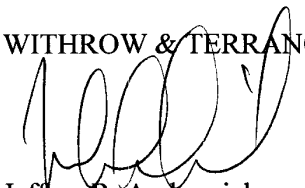
Conclusion

At least for the foregoing reasons, it is submitted that all claims are now in condition for allowance, or in better form for appeal, and the Examiner's early re-examination and reconsideration are respectfully requested.

Alternatively, if there remain any questions regarding the present application or the cited reference, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is cordially requested to contact Jeffrey R. Ambroziak at telephone number 919-238-2300 ext. 2335 or via electronic mail at JAmbroziak@withrowterranova.com, at the Examiner's convenience.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: 

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Date: October 12, 2009
Attorney Docket: 1116-076-US3

Electronic Acknowledgement Receipt

EFS ID:	6243641
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	Benjamin Withrow/Julie Smith
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	1116-076-USD3
Receipt Date:	12-OCT-2009
Filing Date:	04-DEC-2006
Time Stamp:	14:29:05
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		1116-076-US3_Response_to_OA_mailed_8-3-09.pdf	739399 27a0fd86881e66165ed5dee877502af2a5d96d0d	yes	14

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	5
	Applicant Arguments/Remarks Made in an Amendment	6	14
Warnings:			
Information:			
	Total Files Size (in bytes):	739399	

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

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)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/566,552	12/04/2006	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/12/2009	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 12	Minus	** 36	= 0	X $ =		OR	X $52=	0
	Independent (37 CFR 1.16(h))	* 6	Minus	***8	= 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

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

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

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

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

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

Legal Instrument Examiner:
/DANTE r. SMITH/

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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11566552
Filing Date	2006-12-04
First Named Inventor	David A. Goldberg et al.
Art Unit	2618
Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20030002395	A1	2003-01-02	Chang et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	11566552
	Filing Date	2006-12-04
	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	Tu X. Nguyen
	Attorney Docket Number	1116-076-US3

	1		☐

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	11566552
	Filing Date	2006-12-04
	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	Tu X. Nguyen
	Attorney Docket Number	1116-076-US3

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/R. Chad Bevins/	Date (YYYY-MM-DD)	2009-10-08
Name/Print	R. Chad Bevins	Registration Number	51,468

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	6227386
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-USD3
Receipt Date:	08-OCT-2009
Filing Date:	04-DEC-2006
Time Stamp:	14:49:37
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	Information Disclosure Statement (IDS) Filed (SB/08)	1116-076-US3_IDS_8.PDF	763334 0254833d33b79908b8ae67fe94f9d1a250168c7c	no	4

Warnings:	
Information:	

Total Files Size (in bytes):	763334

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New Applications Under 35 U.S.C. 111
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PTO/SB/08a (01-09)
Approved for use through 02/28/2009. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	11566552
Filing Date	2006-12-04
First Named Inventor	David A. Goldberg et al.
Art Unit	2618
Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	1					

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2001-352291	JP		2001-12-21	Sony Corp		☒

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]

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	Filing Date	2006-12-04
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	Attorney Docket Number	1116-076-US3

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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	Attorney Docket Number	1116-076-US3

CERTIFICATION STATEMENT

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☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/R. Chad Bevins/	Date (YYYY-MM-DD)	2009-09-29
Name/Print	R. Chad Bevins	Registration Number	51,468

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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

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Filing Date	2006-12-04
First Named Inventor	David A. Goldberg et al.
Art Unit	2618
Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6798765	B2	2004-09-28	Larsson	
	2	7266836	B2	2007-09-04	Anttila et al.	

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

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Electronic Acknowledgement Receipt

EFS ID:	6167084
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-USD3
Receipt Date:	29-SEP-2009
Filing Date:	04-DEC-2006
Time Stamp:	15:24:37
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	Information Disclosure Statement (IDS) Filed (SB/08)	1116-076-US3_IDS_6.PDF	763244 84ef7b628ec1bed218fcdaf147653bfb625207d8	no	4

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A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.

2	Foreign Reference	JP2001-352291.pdf	33692 55b60dc2ffa9d8fbfcef12c56ff4390c4d6a0366	no	1
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Filed (SB/08)	1116-076-US3_IDS_7.PDF	771068 ffac562a4a1c0a241e7002462d15794e976d9833	no	4
Warnings:					
Information:					
		Total Files Size (in bytes):	1568004		

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

71739 7590 08/03/2009

WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

EXAMINER	
NGUYEN, TU X	
ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
08/03/2009	PAPER

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.

Office Action Summary	Application No.	Applicant(s)	
	11/566,552	GOLDBERG ET AL.	
	Examiner	Art Unit	
	TU X. NGUYEN	2618	

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *16 June 2009*.

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

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *55,57-60 and 65-70* is/are pending in the application.

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

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *55,58-60,65,66 and 68-70* is/are rejected.

7)☒ Claim(s) *57 and 67* is/are objected to.

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

Application Papers

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

10)☒ The drawing(s) filed on *04 December 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's arguments with respect to claims 53, 55-55, 57-60, and 65-70, have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 53 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. (US Pub. 20020160824) (IDS file dated 6/16/09) in view of Mourad et al. (US Pub. 20030135464).

Regarding claim 53, Goto et al. disclose method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device (par.074, “registration” corresponds to “request to join”);

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device (par.0119); and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group (par.0119).

Goto et al. fail to disclose providing a decryption key to the media player device to be used to decrypt communications for the sharing group distributed over a public communication channel.

In the same field of endeavors, information and data in multimedia and games (par.0164) over global communications networks (par.0165), Mourad et al. disclose providing a decryption key to the media player device to be used to decrypt communications for the sharing group distributed over a public communication channel (par.020). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Goto et al. with the above teaching of Mourad et al. in order to provide decrypting key for decrypting at least some of the data received via the broadcast channel.

Regarding claim 65, the modified Goto et al. disclose the digital computing device is one of at least two media player devices in the sharing group (Goto et al., fig.1 elements 2, 2').

Claims 58-59, 68 and 70, are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. (US Pub. 20020160824) in view of Kalpakian et al. (US Pub. 20030073494).

Regarding claim 58, Goto et al. disclose a method of operating a digital computing device associated with a sharing group, comprising: receiving a request to join the sharing group from a requesting media player device; making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated

with a user of the requesting media player device, the information associated with the user of the requesting media player device comprising information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device; and adding the requesting media player device to the sharing group if the determination in made to permit the requesting media player device to join the sharing group (par.074, 0119),

Goto et al. fail to disclose making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

Kalpakian et al. disclose making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user (par.071). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Goto et al. with the above teaching of Kapakian et al. in order to reduce security risk playing a game with sufficient real money (as suggested by Kalpakian et al. (par.083).

Regarding claim 59, Goto et al. disclose a method of operating a digital computing device associated with a sharing group, comprising: receiving a request to join the sharing group from a requesting media player device; making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and adding the requesting media player

device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group (par.074, 0119);

Goto et al. fail to disclose information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group.

Kalpakian et al. information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group (par.083). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Goto et al. with the above teaching of Kapakian et al. in order to reduce security risk playing a game with sufficient real money.

Regarding claims 68 and 70, the modified Goto et al. disclose the digital computing device is one of at least two media player devices in the sharing group (Goto et al., fig.1 elements 2, 2').

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 55, 60, 66 and 69, are rejected under 35 U.S.C. 102(e) as being anticipated by Goto et al. (US Pub. 20020160824).

Regarding claim 55, Goto et al. disclose a method of operating a digital computing device associated with a sharing group, comprising: receiving a request to join the sharing group from a requesting media player device; making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group (par.074, 0119);

wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating (par.0135 “low skill level”, “high skill level” corresponds to “rating”).

Regarding claim 60, Goto et al. disclose a method of operating a digital computing device associated with a sharing group, comprising: receiving a request to join the sharing group from a requesting media player device; making a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group; making a determination as to whether to permit the requesting media player device to join the sharing group based on information

associated with a user of the requesting media player device; and adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group (par.074, 0119 “registration” corresponds to “new members are permitted”).

Regarding claims 66 and 69, Goto et al. disclose the digital computing device is one of at least two media player devices in the sharing group (Goto et al., fig.1 elements 2, 2’).

Allowable Subject Matter

Claims 57 and 67 are allowed.

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

Regarding claim 57, the prior art fails to teach “comparing the information identifying the user of the requesting media player device and the members of the at least one previous sharing group to a stored list; and permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the members of the at least one previous sharing group”, as cited in the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed Tu Nguyen whose telephone number is 571-272-7883.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899. 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).

/Tu X Nguyen/

Primary Examiner, Art Unit 2618

7/21/09

Notice of References Cited	Application/Control No. 11/566,552	Applicant(s)/Patent Under Reexamination GOLDBERG ET AL.	
	Examiner TU X. NGUYEN	Art Unit 2618	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0135464	07-2003	Mourad et al.	705/50
*	B	US-2003/0073494	04-2003	Kalpakian et al.	463/42
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
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	M	US-			

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*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.

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

✓	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	12/09/2008	04/10/2009	07/21/2009						
	37	v								
	38	v								
	39	v								
	40	v	v							
	41	v	v							
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	55	O		v						
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	57	o	o	v						
	58	o	o	v						
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	69		v	v						
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

SEARCHED			
Class	Subclass	Date	Examiner
715	758	7/21/09	TN
455	3.05,3.06	7/21/09	TN

SEARCH NOTES		
Search Notes	Date	Examiner
Search East	7/21/09	TN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/TU X NGUYEN/ Examiner.Art Unit 2618	

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

Application Number	11566552
Filing Date	2006-12-04
First Named Inventor	David A. Goldberg et al.
Art Unit	2618
Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/TN/	1	5652766		1997-07-29	Matsumura et al.	
/TN/	2	6559682	B1	2003-05-06	Kyles et al.	
/TN/	3	6662022	B1	2003-12-09	Kanamori et al.	
/TN/	4	6898759	B1	2005-05-24	Terada et al.	
/TN/	5	6912501	B2	2005-06-28	Vaudrey et al.	

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/TN/	1	20010037234	A1	2001-11-01	Parmasad et al.	

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/TN/	2	20020037735	A1	2002-03-28	Maggenti et al.	
/TN/	3	20020080719	A1	2002-06-27	Parkvall et al.	
/TN/	4	20020160824	A1	2002-10-31	Goto et al.	
/TN/	5	20030126211	A1	2003-07-03	Anttila et al.	
/TN/	6	20040203698	A1	2004-10-14	Comp	
/TN/	7	20010041588	A1	2001-11-15	Hollstrom et al.	

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/TN/	1	1104968	EP	B1	2007-02-14	Telefonaktiebolaget LM Ericsson	Abstract, Paras. [0001]-[0011]	☐
/TN/	2	01/97488	WO	A2	2001-12-20	Koninklijke Philips Electronics N.V.	Abstract	☐

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/TN/	1	Supplemental European Search Report for EP 03741778.9, mailed January 9, 2009, 5 pages.	☐

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/TN/	1	20010021663	A1	2001-09-13	Sawada et al.	

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David A. Goldberg et al.
Serial No. 11/566,552
Filed: 12/04/2006
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

U.S. Patent and Trademark Office
P.O. Box 371611
Pittsburgh, PA 15250-1611

Sir:

REVOCATION OF SMALL ENTITY STATUS

Pursuant to MPEP § 509.03 and 37 C.F.R. § 1.27(g)(2), Applicant herein informs the Patent Office that the above-referenced application has been assigned to an Applicant that cannot claim small entity status. Applicant requests that the Patent Office treat this paper act as the specific written assertion of the notification of loss of entitlement to small entity status as set forth in MPEP § 509.03(VII).

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: 

R. Chad Bevins
Registration No. 51,468
100 Regency Forest Drive, Suite 160
Cary, NC 27518
Telephone: (919) 238-2300

Date: July 20, 2009
Attorney Docket: 1116-076-US3

Electronic Acknowledgement Receipt

EFS ID:	5728816
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-USD3
Receipt Date:	20-JUL-2009
Filing Date:	04-DEC-2006
Time Stamp:	09:19:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	1116-076-US3_Revocation_of_Small_Entity.pdf	30988 d1da3add24f74c35fd0eedea90eb08b7c97aa518	no	1

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

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

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

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Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

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	Examiner Name	Tu X. Nguyen
	Attorney Docket Number	1116-076-US3

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/R. Chad Bevins/	Date (YYYY-MM-DD)	2009-06-29
Name/Print	R. Chad Bevins	Registration Number	51,468

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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:

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	5602918
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-USD3
Receipt Date:	29-JUN-2009
Filing Date:	04-DEC-2006
Time Stamp:	12:34:37
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	Information Disclosure Statement (IDS) Filed (SB/08)	IDS_5.PDF	763303 f8b81fc07deba17d4cd0008a977f7ed78c44eb8d	no	4

Warnings:	
Information:	

Total Files Size (in bytes):	763303

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

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

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

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (03/08)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

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

Application Number	11/566,552	Filing Date	2006-12-04	Docket Number (if applicable)	1116-076-US3	Art Unit	2618
First Named Inventor	David A. Goldberg et al.			Examiner Name	Tu X. Nguyen		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

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

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

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

☒ Enclosed

- ☒ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

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

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 501732

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

☐ Applicant Signature

PTO/SB/30EFS (03/08)
Approved for use through 07/31/2008. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Signature of Registered U.S. Patent Practitioner			
Signature	/R. Chad Bevins/	Date (YYYY-MM-DD)	2009-06-16
Name	R. Chad Bevins	Registration Number	51468

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David A. Goldberg et al.
Serial No. 11/566,552
Filed: 12/04/2006
Examiner: Tu X. Nguyen
Art Unit: 2618
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE TO THE FINAL OFFICE ACTION MAILED APRIL 14, 2009

In response to the Final Office Action mailed April 14, 2009, Applicants offer the following amendments and remarks along with a concurrently filed Request for Continued Examination. Applicants enclose a payment in the amount of $810.00 to cover the fee associated with filing a Request for Continued Examination. If any additional fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

In the Claims:

1-52. (Cancelled)

53. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications for the sharing group distributed over a public communication channel.

54. (Cancelled)

55. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as

to whether to permit the requesting media player device to join the sharing group based on the rating.

56. (Cancelled)

57. (Currently Amended) ~~The method of claim 56~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device, the information associated with the user of the requesting media player device comprising information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group,

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

comparing the information identifying the user of the requesting media player device and the members of the at least one previous sharing group to a stored list; and

permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the members of the at least one previous sharing group.

58. (Currently Amended) ~~The method of claim 56~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device, the information associated with the user of the requesting media player device comprising information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group,

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

59. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group.

60. (Previously Presented) A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group.

61-64. (Cancelled)

65. (Previously Presented) The method of claim 53 wherein the digital computing device is one of at least two media player devices in the sharing group.

66. (Previously Presented) The method of claim 55 wherein the digital computing device is one of at least two media player devices in the sharing group.

67. (Currently Amended) The method of ~~claim 56~~ claim 57 wherein the digital computing device is one of at least two media player devices in the sharing group.

68. (Previously Presented) The method of claim 59 wherein the digital computing device is one of at least two media player devices in the sharing group.

69. (Previously Presented) The method of claim 60 wherein the digital computing device is one of at least two media player devices in the sharing group.

70. (New) The method of claim 58 wherein the digital computing device is one of at least two media player devices in the sharing group.

REMARKS

Applicants have carefully reviewed the Final Office Action mailed April 14, 2009 and offer the following remarks to accompany the above amendments.

Status of the Claims

Claims 40-42, 53, 55-60, and 62-69 were previously pending. Claims 1-39, 43-52, 54, and 61 were previously cancelled. Applicants have cancelled claims 1-52, 54, 56, and 61-64 herein. Claims 57 and 58 have been rewritten in independent format. Claim 67 has been amended to depend from claim 57, rather than claim 56 which has been cancelled. Claim 70 has been added to depend from claim 58 and includes the subject matter of claim 67. Accordingly, claims 53, 55, 57-60, and 65-70 are currently pending.

Allowable Subject Matter

Applicants would like to thank the Examiner for indicating that claims 53, 55, 59, and 60 have been allowed. Also, Applicants would like to thank the Examiner for indicating that claims 57 and 58 would be allowable if rewritten in independent form. Applicants have rewritten claims 57 and 58 in independent format. As such, claims 57 and 58 are now allowable.

Claims 65, 66, 67, 68, 69, and 70 depend from claims 53, 55, 57, 59, 60, and 58, respectively. As such, for at least the same reasons that claims 53, 55, 57, 59, 60, and 58 are allowable, claims 65-70 are also allowable.

Conclusion

In light of the discussion above, claims 53, 55, 57-60, and 65-70 are allowable. Reconsideration is respectfully requested. If any issues remain, the Examiner is encouraged to contact Applicants' representative in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: 

R. Chad Bevins
Registration No. 51,468
100 Regency Forest Drive, Suite 160
Cary, NC 27518
Telephone: (919) 238-2300

Date: June 16, 2009
Attorney Docket: 1116-076-US3

PTO/SB/08a (01-09)
Approved for use through 02/28/2009. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

Application Number	11566552
Filing Date	2006-12-04
First Named Inventor	David A. Goldberg et al.
Art Unit	2618
Examiner Name	Tu X. Nguyen
Attorney Docket Number	1116-076-US3

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5652766		1997-07-29	Matsumura et al.	
	2	6559682	B1	2003-05-06	Kyles et al.	
	3	6662022	B1	2003-12-09	Kanamori et al.	
	4	6898759	B1	2005-05-24	Terada et al.	
	5	6912501	B2	2005-06-28	Vaudrey et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20010037234	A1	2001-11-01	Parmasad et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	Tu X. Nguyen
	Attorney Docket Number	1116-076-US3

	2	20020037735	A1	2002-03-28	Maggenti et al.	
	3	20020080719	A1	2002-06-27	Parkvall et al.	
	4	20020160824	A1	2002-10-31	Goto et al.	
	5	20030126211	A1	2003-07-03	Anttila et al.	
	6	20040203698	A1	2004-10-14	Comp	
	7	20010041588	A1	2001-11-15	Hollstrom et al.	

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	1	1104968	EP	B1	2007-02-14	Telefonaktiebolaget LM Ericsson	Abstract, Paras. [0001]-[0011]	☐
	2	01/97488	WO	A2	2001-12-20	Koninklijke Philips Electronics N.V.	Abstract	☐

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	Examiner Name	Tu X. Nguyen
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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Supplemental European Search Report for EP 03741778.9, mailed January 9, 2009, 5 pages.	☐

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Examiner Signature		Date Considered	

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	11566552
	Filing Date	2006-12-04
	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	Tu X. Nguyen
	Attorney Docket Number	1116-076-US3

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/R. Chad Bevins/	Date (YYYY-MM-DD)	2009-06-16
Name/Print	R. Chad Bevins	Registration Number	51468

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

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

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal	
Application Number:	11566552
Filing Date:	04-Dec-2006
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Filer:	R. Chad Bevins/Julie Smith
Attorney Docket Number:	1116-076-USD3
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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	1801	1	810	810
		Total in USD ($)		**810**

Electronic Acknowledgement Receipt	
EFS ID:	5521413
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-USD3
Receipt Date:	16-JUN-2009
Filing Date:	04-DEC-2006
Time Stamp:	09:36:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$810
RAM confirmation Number	6666
Deposit Account	501732
Authorized User	BEVINS,R. CHAD
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	Request for Continued Examination (RCE)	1116-076-US3_RCE.pdf	781607 10177b506540f517cbad16b3e93f095722159864	no	3
Warnings:					
Information:					
2		1116-076-US3_Response_to_OAF_mailed_4-14-09.pdf	254678 6bf912f765235eaee84dcfa5f4af48e7eb0a5b9e	yes	7

Multipart Description/PDF files in .zip description

Document Description	Start	End
Amendment Submitted/Entered with Filing of CPA/RCE	1	1
Claims	2	5
Applicant Arguments/Remarks Made in an Amendment	6	7

Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Filed (SB/08)	1116-076-US3_IDS_4.pdf	870494 a5b7f96c008eca380ed08a242426bc2d13d949b0	no	5
Warnings:					
Information:					
4	Foreign Reference	EP1104968.pdf	725468 4735071de1a68cac90b88a6524966b158d864bfb	no	14
Warnings:					
Information:					
5	Foreign Reference	WO01097488.pdf	349141 f6c6a1dfda1ab882528b303bdf69279014a667c6	no	9
Warnings:					
Information:					
6	NPL Documents	EP03741778-9_Supp_Search_Report.pdf	154635 1b0997c7587a8a7cbb0b674518a6c2b793187cab	no	5
Warnings:					
Information:					
7	Fee Worksheet (PTO-875)	fee-info.pdf	30682 4d0f03218ea30ae10347ec77697104da3f094bd3	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	3166705

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	Filing Date	☐ To be Mailed
11/566,552	12/04/2006	

APPLICATION AS FILED – PART I

(Column 1) (Column 2) SMALL ENTITY ☒ OR OTHER THAN SMALL ENTITY

FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1) (Column 2) (Column 3) SMALL ENTITY OR OTHER THAN SMALL ENTITY

AMENDMENT	06/16/2009	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 12	Minus	** 36	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 6	Minus	***8	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

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

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

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

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

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

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

Legal Instrument Examiner:
/TRACIE ROBERTSON/

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

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

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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

71739 7590 04/14/2009

WITHROW & TERRANOVA CT
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

EXAMINER	
NGUYEN, TU X	
ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
04/14/2009	PAPER

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.

Office Action Summary	Application No.	Applicant(s)	
	11/566,552	GOLDBERG ET AL.	
	Examiner	Art Unit	
	TU X. NGUYEN	2618	

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *05 March 2009*.

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

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-42,53,55-60 and 62-69* is/are pending in the application.

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

5)☒ Claim(s) *53,55,59 and 60* is/are allowed.

6)☒ Claim(s) *40-42,56 and 62-69* is/are rejected.

7)☒ Claim(s) *57 and 58* is/are objected to.

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

Application Papers

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

10)☒ The drawing(s) filed on *12/04/06* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's arguments filed 3/5/09 have been fully considered but they are not persuasive.

In response to Applicants argue “characteristic of a user of a member media player device must be different than a corresponding characteristic of a user of a requesting media player device. As such, claim 40 is allowable”, the Examiner disagrees, “nine-out-of-ten match between song lists” reads on “different than a corresponding characteristic”.

In response to Applicants argue “Regarding claim 42, Chang fails to disclose prohibited user characteristic”, the Examiner disagrees, Chang discloses “user decides to reject” reads on “prohibited”.

In response to Applicants argue “Regarding claim 56, the Patent Office relied on paragraph [0023] of Chang. However, nothing in paragraph [0023] of Chang discloses information associated with a requesting media player device that includes information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device.”, the Examiner disagrees, Chang discloses “when two or more devices is referred as the playback group” in par.026 and therefore, there is no need to mention again in par.023.

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 40-42, 56 and 62-69, are rejected under 35 U.S.C. 102(e) as being anticipated by Chang (US Pub. 2002/0168938).

Regarding claim 40, Chang discloses a method comprising:

receiving a request to join a sharing group from a requesting media player device (par.010, sending a first message);

making a determination as to whether to permit (par.021) the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device (par.010, performing matching evaluation); and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group (par.010, synchronizing playing song in the apparatuses, par.027);

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises: identifying at least one characteristic of a user of a member media player device that is a member of the sharing group and at least one characteristic of the user of the requesting media player device; and comparing the at

least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device to determine whether a relationship between the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device satisfies at least one criterion comprising a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be different than a corresponding characteristic from the at least one characteristic of the user of the requesting media player device (par.021, “nine-out-of-ten match between song lists”).

Regarding claim 41, Chang discloses everything as claim 40 above; more specifically, Change discloses permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one required user characteristic (par.021, music preference).

Regarding claim 42, Chang discloses everything as claim 40 above; more specifically, Change discloses permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one required user characteristic (par.021, music preference).

Regarding claim 56, Chang discloses everything as claim 40 above; more specifically, Chang discloses wherein the information associated with the user of the requesting media player device comprises information identifying the user of the requesting media player device and at least one previous sharing group (par.027) of the user of the requesting media player device (par.023).

Regarding claims 62-69, Chang discloses the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group (par.027).

Allowable Subject Matter

Claims 53, 55 and 59-60 are allowed.

Claims 57-58, objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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

Regarding claim 53, the prior art fails to teach wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications for the sharing group distributed over a public communication channel, as cited in the claim.

Regarding claim 55, the prior art fails to teach wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by

at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating, as cited in the claim.

Regarding claim 57, the prior art fails to teach comparing the information identifying the user of the requesting media player device and the members of the at least one previous sharing group to a stored list; and permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the members of the at least one previous sharing group.

Regarding claim 58, the prior art fails to teach wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

Regarding claim 59, the prior art fails to teach the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group, as cited in the claim.

Regarding claim 60, the prior art fails to teach adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the

determination is made to permit the requesting media player device to join the sharing group, as cited in the claim.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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

Any inquiry concerning this communication or earlier communications from the examiner should be directed Tu Nguyen whose telephone number is 571-272-7883.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899. 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).

/Tu X Nguyen/

Primary Examiner, Art Unit 2618

4/10/09

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

✓	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	12/09/2008	04/10/2009							
	37	v								
	38	v								
	39	v								
	40	v	v							
	41	v	v							
	42	v	v							
	43	v								
	44	v								
	45	v								
	46	v								
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	48	v								
	49	v								
	50	v								
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	53	o								
	54	v								
	55	O								
	56	v	v							
	57	o	o							
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	67		v							
	68		v							
	69		v							
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	72									

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	Examiner	Art Unit
	TU X NGUYEN	2618

✓	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	12/09/2008	04/10/2009							
	73									
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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

SEARCHED			
Class	Subclass	Date	Examiner
715	758	4/10/09	TN
455	3.05,3.06	4/10/09	TN

SEARCH NOTES		
Search Notes	Date	Examiner
Search East	4/10/09	TN

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/TU X NGUYEN/ Examiner.Art Unit 2618	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David A. Goldberg et al. Examiner: Tu X. Nguyen
Serial No. 11/566,552 Art Unit: 2618
Filed: 12/04/2006
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

RESPONSE TO THE OFFICE ACTION MAILED DECEMBER 19, 2008

In response to the Office Action mailed December 19, 2008, Applicants offer the following amendments and remarks. If any fees are required in association with this response, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

In the Claims:

1-39. (Cancelled)

40. (Currently Amended) ~~The method of claim 38~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of a user of a member media player device that is a member of the sharing group and at least one characteristic of the user of the requesting media player device; and

comparing the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device to determine whether a relationship between the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device satisfies at least one criterion comprising ~~wherein the at least one criterion is at least one criterion selected from a group consisting of: a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must match a corresponding characteristic from the at least one characteristic of the user of the requesting media player device, a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be similar to a corresponding characteristic from the at least one characteristic of the user of the requesting media player device, and~~ a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be different than a corresponding characteristic from the at least one characteristic of the user of the requesting media player device.

41. (Currently Amended) ~~The method of claim 37~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of the user of the requesting media player device; and

permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one required user characteristic.

42. (Currently Amended) ~~The method of claim 37~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of the user of the requesting media player device; and

denying the requesting media player device permission to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one prohibited user characteristic.

43-52. (Cancelled)

53. (Currently Amended) ~~The method of claim 37~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications for the sharing group distributed over a public communication channel.

54. (Cancelled)

55. (Currently Amended) ~~The method of claim 37~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of

the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating.

56. (Currently Amended) ~~The method of claim 37~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device.

57. (Currently Amended) The method of claim 56 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

comparing the information identifying the user of the requesting media player device and the members of the at least one previous sharing group to a stored list; and

permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the members of the at least one previous sharing group.

58. (Currently Amended) The method of claim 56 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

59. (Currently Amended) ~~The method of claim 37~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group;

wherein the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group ~~made available by a trusted user~~.

60. (Currently Amended) ~~The method of claim 37 further comprising:~~ A method of operating a digital computing device associated with a sharing group, comprising:

receiving a request to join the sharing group from a requesting media player device;

making [[the]] a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

~~wherein adding the requesting media player device to the sharing group comprises~~ adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group.

61. (Cancelled)

62. (New) The method of claim 40 wherein the digital computing device is one of at least two media player devices in the sharing group.

63. (New) The method of claim 41 wherein the digital computing device is one of at least two media player devices in the sharing group.

64. (New) The method of claim 42 wherein the digital computing device is one of at least two media player devices in the sharing group.

65. (New) The method of claim 53 wherein the digital computing device is one of at least two media player devices in the sharing group.

66. (New) The method of claim 55 wherein the digital computing device is one of at least two media player devices in the sharing group.

67. (New) The method of claim 56 wherein the digital computing device is one of at least two media player devices in the sharing group.

68. (New) The method of claim 59 wherein the digital computing device is one of at least two media player devices in the sharing group.

69. (New) The method of claim 60 wherein the digital computing device is one of at least two media player devices in the sharing group.

REMARKS

Applicants have carefully reviewed the Office Action mailed December 19, 2008 and offer the following remarks to accompany the above amendments.

Status of the Claims

Claims 37-61 were previously pending. Applicant has cancelled claims 37-39, 43-52, 54, and 61. Claims 62-69 have been added. Claims 40-42, 53, 55, 56, 59, and 60 have been rewritten in independent form. Further, claim 40 has been amended to focus on one of the many types of criteria in original claim 40. Claims 56 and 57 have been amended to correct minor errors. Accordingly, claims 40-42, 53, 55-60, and 62-69 are currently pending.

Allowable Subject Matter

Applicants would like to thank the Examiner for indicating that claims 53, 55, 57, and 58 would be allowable if rewritten in independent form. Applicants have rewritten claims 53 and 55 in independent form. As such, claims 53 and 55 are allowable. Applicants reserve the right to rewrite claims 57 and 58 in independent form at a later time, if necessary.

Rejection Under 35 U.S.C. § 102(e) – Chang

Claims 37-52, 54, 56, and 61 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2002/0168938 A1 to Chang (hereinafter "Chang"). Applicants respectfully traverse. For the Patent Office to prove anticipation, the Patent Office must show where each and every element of the claim is taught in the reference. Further, the elements of the reference must be arranged as claimed. MPEP § 2131. Applicants have cancelled claims 37-39, 43-52, 54, and 61.

Regarding claim 40, Chang fails to disclose a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be different than a corresponding characteristic from the at least one characteristic of the user of the requesting media player device. In order to reject claim 40, the Patent Office relied on paragraph [0021] of Chang.[1] However, paragraph [0021] of Chang fails to disclose a criterion stating that a

[1] Office Action mailed December 19, 2008, p. 3.

characteristic of a user of a member media player device must be different than a corresponding characteristic of a user of a requesting media player device. As such, claim 40 is allowable.

Regarding claim 41, Chang fails to disclose the claimed feature of permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one required user characteristic. In order to reject claim 41, the Patent Office again relied on paragraph [0021] of Chang.[2] However, paragraph [0021] of Chang fails to teach at least one required user characteristic that must be a characteristic of the user of the requesting media player device before the requesting media player device is permitted to join the sharing group. As such, claim 41 is allowable.

Regarding claim 42, Chang fails to disclose the claimed feature of denying the requesting media player device permission to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one prohibited user characteristic. In order to reject claim 42, the Patent Office again relied on paragraph [0021] of Chang.[3] However, paragraph [0021] of Chang fails to teach at least one prohibited user characteristic that, if included as a characteristic of the user of the requesting media player device, prohibits the requesting media player device from joining the sharing group. As such, claim 42 is allowable.

Regarding claim 56, Chang fails to disclose the claimed feature of wherein the information associated with the user of the requesting media player device comprises information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device. In order to reject claim 56, the Patent Office relied on paragraph [0023] of Chang.[4] However, nothing in paragraph [0023] of Chang discloses information associated with a requesting media player device that includes information identifying the user of the requesting media player device and members of at least one previous sharing group of the user of the requesting media player device. As such, claim 56 is allowable.

Rejection Under 35 U.S.C. § 103(a) – Chang and Iyer

Claims 59 and 60 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Chang in view of U.S. Patent Application Publication No. 2001/0037367 A1 to Iyer (hereinafter

[2] *Id.* at p. 4.
[3] *Ibid.*
[4] *Id.* at p. 7.

"Iyer"). Applicants respectfully traverse. Under § 103, "obviousness requires a suggestion of *all limitations in a claim.*" *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (*citing In re Royka*, 490 F.2d 981, 985 (CCPA 1974) (emphasis added)). Thus, in order to reject a claim under § 103, for each limitation of the claim, the Patent Office must show that the limitation is taught or suggested by the cited prior art references or would otherwise be suggested to one of ordinary skill in the art at the time of the invention.

Claim 59 has been amended to rearrange the wording to avoid any potential confusion. However, the scope of claim 59 has not been changed. Regarding claim 59, the combination of Chang and Iyer fails to teach or suggest the claimed feature of wherein the information associated with the user of the requesting media player device comprises information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group. In the rejection of claim 59, the Patent Office admitted that Chang fails to teach or suggest this claimed feature and therefore relied on paragraph [0025] of Iyer.[5] Iyer teaches a system and method for sharing information via a virtual shared area. Paragraph [0025] of Iyer teaches that the system includes a server (18) that includes an authentication and management area (20) that manages ownership and access to a shared area (SA) (16). More specifically, as discussed in lines 3-6 of paragraph [0036] of Iyer, an authentication mechanism, such as a password, may be used to authenticate a visitor before allowing access to the SA (16). However, Iyer fails to teach or suggest information, made available by a trusted user, regarding a desirability of the user of the requesting media player device as a member of the sharing group. In Iyer, even if the password supplied by the visitor is attempted to be read as the claimed information, the password in Iyer is supplied by the visitor (i.e., the user of the requesting device) rather than a trusted user. Chang fails to correct this deficiency. As such, the combination of Chang and Iyer fails to teach or suggest all of the features of claim 59. Further, the Patent Office has failed to show how the features of claim 59 that are not taught or suggested by the combination of Chang and Iyer would have otherwise been obvious to one of ordinary skill in the art at the time of the invention. As such, claim 59 is allowable.

Regarding claim 60, the combination of Chang and Iyer fails to teach or suggest the claimed features of making a determination as to whether new members are permitted for the

[5] *Id.* at p. 8.

sharing group based on permissions set by a user of at least one member media player device in the sharing group and adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group. In the rejection of claim 60, the Patent Office admitted that Chang fails to teach or suggest this claimed feature and therefore relied on paragraph [0025] of Iyer.[6] As discussed above, Iyer teaches a system and method for sharing information via a virtual shared area. Paragraph [0025] of Iyer teaches that the system includes a server (18) that includes an authentication and management area (20) that manages ownership and access to a shared area (SA) (16). More specifically, as discussed in lines 3-6 of paragraph [0036] of Iyer, an authentication mechanism such as a password may be used to authenticate a visitor before allowing access to the shared area (SA) (16). However, nothing in Iyer teaches or suggests making a determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group and adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group. Chang fails to correct this deficiency. As such, the combination of Chang and Iyer fails to teach or suggest all of the features of claim 60. Further, the Patent Office has failed to show how the features of claim 60 that are not taught or suggested by the combination of Chang and Iyer would have otherwise been obvious to one of ordinary skill in the art at the time of the invention. As such, claim 60 is allowable.

New Claims 62-69

Claims 62-69 have been added. Support for new claims 62-69 can be found in, for example, Figures 1 and 6 and the corresponding description. Claims 62-69 are allowable for at least the same reasons that the independent claims from which they depend are allowable.

Conclusion

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicants' representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

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[6] *Ibid.*

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

By: 

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Date: March 5, 2009
Attorney Docket: 1116-076-US3

Electronic Acknowledgement Receipt

EFS ID:	4907361
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	R. Chad Bevins/Julie Smith
Filer Authorized By:	R. Chad Bevins
Attorney Docket Number:	1116-076-USD3
Receipt Date:	05-MAR-2009
Filing Date:	04-DEC-2006
Time Stamp:	09:43:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		1116-076-US3_Response_to_OA_mailed_12-19-08.pdf	548527 f411a6d4ada61e89b0dc4ef5a6864b9b4da8c769	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	12
Warnings:			
Information:			
	Total Files Size (in bytes):	548527	

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	Filing Date	☐ To be Mailed
11/566,552	12/04/2006	

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	
	03/05/2009	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 18	Minus	** 36	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 8	Minus	***8	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		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:
/WANDA LAWSON/

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

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

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/566,552	12/04/2006	David Goldberg	1116-076-USD3	6195

71739 7590 12/19/2008

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EXAMINER	
NGUYEN, TU X	
ART UNIT	PAPER NUMBER
2618	
MAIL DATE	DELIVERY MODE
12/19/2008	PAPER

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.

Office Action Summary	Application No.	Applicant(s)	
	11/566,552	GOLDBERG ET AL.	
	Examiner	Art Unit	
	TU X. NGUYEN	2618	

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

Period for Reply

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

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

Status

1)☒ Responsive to communication(s) filed on *21 January 2008*.

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

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *37-61* is/are pending in the application.

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

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *37-52,54,56 and 59-61* is/are rejected.

7)☒ Claim(s) *53,55,57 and 58* is/are objected to.

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

Application Papers

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

10)☒ The drawing(s) filed on *04 December 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

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

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 37-52, 54, 56 and 61, are rejected under 35 U.S.C. 102(e) as being anticipated by Chang (US Pub. 2002/0168938).

Regarding claim 37, Chang discloses a method comprising:

receiving a request to join a sharing group from a requesting media player device (par.010, sending a first message);

making a determination as to whether to permit (par.021) the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device (par.010, performing matching evaluation); and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group (par.010, synchronizing playing song in the apparatuses, par.021).

Regarding claim 38, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group comprises: identifying at least one characteristic of a user of a member media player device that is a member of the sharing

group and at least one characteristic of the user of the requesting media player device; and comparing the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device to determine whether a relationship between the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device satisfies at least one criterion (par.010, performing matching evaluation between the first profile and a second profile based on a specific criterion).

Regarding claim 39, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group further comprises: permitting the requesting media player device to join the sharing group if the relationship between the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device satisfies the at least one criterion (par.021, the user can set up a criterion, music style, release dates, singer, conductor and song writers, etc., to decide whether the degree of matching is appropriate).

Regarding claim 40, Chang discloses at least one criterion is at least one criterion selected from a group consisting of: a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must match a corresponding characteristic from the at least one characteristic of the user of the requesting media player device (par.021), a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be similar to a corresponding characteristic from the at least one characteristic of the user of the requesting media player device, and a criterion stating that a characteristic from the at least one

characteristic of the user of the member media player device must be different than a corresponding characteristic from the at least one characteristic of the user of the requesting media player device.

Regarding claim 41, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group comprises: identifying at least one characteristic of the user of the requesting media player device; and permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one required user characteristic (par.021).

Regarding claim 42, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group comprises: identifying at least one characteristic of the user of the requesting media player device; and denying the requesting media player device permission to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one prohibited user characteristic (par.021).

Regarding claim 43, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group comprises: identifying at least one preference of a user of a member media player device that is a member of the sharing group and at least one characteristic of the user of the requesting media player device; and comparing the at least one preference of the user of the member media player device and the at least one characteristic of the user of the requesting media player device to determine whether the at least one characteristic of the user of the requesting media player device

sufficiently matches the at least one preference of the user of the member media player device (par.021).

Regarding claim 44, Chang discloses at least one characteristic of the user of the requesting media player device sufficiently matches the at least one preference of the user of the member media player device if a relationship between the at least one characteristic of the user of the requesting media player device and the at least one preference of the user of the member media player device satisfies at least one criterion (par.021).

Regarding claim 45, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group further comprises: permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device sufficiently matches the at least one preference of the user of the member media player device (par.021).

Regarding claim 46, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group comprises: identifying at least one characteristic of a user of a member media player device that is a member of the sharing group and at least one preference of the user of the requesting media player device; and comparing the at least one preference of the user of the requesting media player device and the at least one characteristic of the user of the member media player device to determine whether the at least one characteristic of the user of the member media player device sufficiently matches the at least one preference of the user of the requesting media player device (par.021).

Regarding claim 47, Chang discloses at least one preference of the user of the requesting media player device sufficiently matches the at least one characteristic of the user of the member media player device if a relationship between the at least one preference of the user of the requesting media player device and the at least one characteristic of the user of the member media player device satisfies at least one criterion (par.021).

Regarding claim 48, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group further comprises: permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the member media player device sufficiently matches the at least one preference of the user of the requesting media player device (par.021).

Regarding claim 49, Chang discloses making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on at least one of a group consisting of: at least one characteristic of a user of a member media player device that is a member of the sharing group, at least one characteristic of the user of the requesting media player device, at least one preference of the user of the member media player device (par.021), and at least one preference of the user of the requesting media player device.

Regarding claim 50, Chang discloses the determination as to whether the requesting media player device desires to join the sharing group is made by the requesting media player device, and adding the requesting media player device to the sharing group comprises adding the requesting media player device to the sharing group if the requesting media player device

desires to join the sharing group and the requesting media player device is permitted to join the sharing group (par.021).

Regarding claim 51, Chang discloses adding the requesting media player device to the sharing group comprises storing information identifying the user of the requesting media player device as a member of the sharing group (fig.2, element 208).

Regarding claim 52, Chang discloses adding the requesting media player device to the sharing group further comprises providing the information identifying the user of the requesting media player device to at least one additional media player device in the sharing group (par.027).

Regarding claim 54, Chang discloses adding the requesting media player device to the sharing group comprises providing information to the requesting media player device enabling the requesting media player device to access a private communication channel for the sharing group (par.010).

Regarding claim 56, Chang discloses teach wherein the information associated with the user of the requesting media player device comprises information identifying the user of the requesting media player device and at least one previous sharing group of the user of the requesting media player device (par.023).

Regarding claim 61, Chang discloses a media player device comprising: a communication interface communicatively coupling the media player device to a network; and a control unit associated with the communication interface and adapted to: receive, from a requesting media player device, a request to join a sharing group of which the media player device is a member; make a determination as to whether to permit the requesting media

player device to join the sharing group based on information associated with a user of the requesting media player device; and add the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group (par.010, 021).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 59-60, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US Pub. 2002/0168938) in view of Iyer (US Pub. 2001/0037367).

Regarding claim 59-60, Chang fails to disclose a trusted user.

Iyer discloses a trusted user (par.025). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Change with the above teaching of Iyer in order to provide management ownership to a subscriber unit.

Allowable Subject Matter

Claims 53 and 55, 57-58, objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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

Regarding claim 53, the prior art fails to teach wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications for the sharing group distributed over a public communication channel.

Regarding claim 55, the prior art fails to teach wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating.

Regarding claim 57, the prior art fails to teach wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises: comparing the information identifying the user of the requesting media player device and the at least one previous sharing group to a stored list; and permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the at least one previous sharing group.

Regarding claim 58, the prior art fails to teach wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises

permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed Tu Nguyen whose telephone number is 571-272-7883.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899. 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).

/Tu X Nguyen/

Examiner, Art Unit 2618

12/09/08

Notice of References Cited	Application/Control No. 11/566,552	Applicant(s)/Patent Under Reexamination GOLDBERG ET AL.	
	Examiner TU X. NGUYEN	Art Unit 2618	Page 1 of 1

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	E	US-			
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	H	US-			
	I	US-			
	J	US-			
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SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/566,552	12/04/2006 RULE	381	2618	1116-076-USD3

APPLICANTS

David Goldberg, Boulder, CO;
Benjamin Goldberg, Boulder, CO;
Martha Goldberg, Boulder, CO;
Miriam Goldberg, Boulder, CO;

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

This application is a DIV of 10/513,702 11/08/2004
which is a 371 of PCT/US03/14154 05/06/2003
which claims benefit of 60/378,415 05/06/2002
and claims benefit of 60/388,887 06/14/2002
and claims benefit of 60/452,230 03/04/2003

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

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Foreign Priority claimed	35 USC 119(a-d) conditions met	Verified and Acknowledged	Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
☐ Yes ☑ No	☐ Yes ☑ No	/TU X NGUYEN/ Examiner's Signature	☐ TN Initials	CO	34	36	8

ADDRESS

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100 REGENCY FOREST DRIVE , SUITE 160
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UNITED STATES

TITLE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	11566552
	Filing Date	2006-12-04
	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11566552	GOLDBERG ET AL.
	Examiner	Art Unit
	TU X NGUYEN	2618

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	12/09/2008								
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SEARCHED			
Class	Subclass	Date	Examiner
715	758	12/9/08	TN
455	3.05,3.06	12/9/08	TN

SEARCH NOTES		
Search Notes	Date	Examiner
Search East	12/09/08	TN

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	Examiner Name	TBA
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David A. Goldberg et al. Examiner: TBA
Serial No. 11/566,552 Art Unit: 2618
Filed: 12/04/2006
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Sir:

PRELIMINARY AMENDMENT

The following is a Preliminary Amendment for the above-referenced application. If any fees are required in association with this Preliminary Amendment, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

In the Claims:

1-36. (Cancelled)

37. (New) A method comprising:

receiving a request to join a sharing group from a requesting media player device;

making a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

adding the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group.

38. (New) The method of claim 37 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of a user of a member media player device that is a member of the sharing group and at least one characteristic of the user of the requesting media player device; and

comparing the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device to determine whether a relationship between the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device satisfies at least one criterion.

39. (New) The method of claim 38 wherein making the determination as to whether to permit the requesting media player device to join the sharing group further comprises:

permitting the requesting media player device to join the sharing group if the relationship between the at least one characteristic of the user of the member media player device and the at least one characteristic of the user of the requesting media player device satisfies the at least one criterion.

40. (New) The method of claim 38 wherein the at least one criterion is at least one criterion selected from a group consisting of: a criterion stating that a characteristic from the at least one

characteristic of the user of the member media player device must match a corresponding characteristic from the at least one characteristic of the user of the requesting media player device, a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be similar to a corresponding characteristic from the at least one characteristic of the user of the requesting media player device, and a criterion stating that a characteristic from the at least one characteristic of the user of the member media player device must be different than a corresponding characteristic from the at least one characteristic of the user of the requesting media player device.

41. (New) The method of claim 37 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of the user of the requesting media player device; and

permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one required user characteristic.

42. (New) The method of claim 37 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of the user of the requesting media player device; and

denying the requesting media player device permission to join the sharing group if the at least one characteristic of the user of the requesting media player device includes at least one prohibited user characteristic.

43. (New) The method of claim 37 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one preference of a user of a member media player device that is a member of the sharing group and at least one characteristic of the user of the requesting media player device; and

comparing the at least one preference of the user of the member media player device and the at least one characteristic of the user of the requesting media player device to determine whether the at least one characteristic of the user of the requesting media player device sufficiently matches the at least one preference of the user of the member media player device.

44. (New) The method of claim 43 wherein the at least one characteristic of the user of the requesting media player device sufficiently matches the at least one preference of the user of the member media player device if a relationship between the at least one characteristic of the user of the requesting media player device and the at least one preference of the user of the member media player device satisfies at least one criterion.

45. (New) The method of claim 43 wherein making the determination as to whether to permit the requesting media player device to join the sharing group further comprises:

permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the requesting media player device sufficiently matches the at least one preference of the user of the member media player device.

46. (New) The method of claim 37 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

identifying at least one characteristic of a user of a member media player device that is a member of the sharing group and at least one preference of the user of the requesting media player device; and

comparing the at least one preference of the user of the requesting media player device and the at least one characteristic of the user of the member media player device to determine whether the at least one characteristic of the user of the member media player device sufficiently matches the at least one preference of the user of the requesting media player device.

47. (New) The method of claim 46 wherein the at least one preference of the user of the requesting media player device sufficiently matches the at least one characteristic of the user of the member media player device if a relationship between the at least one preference of the user

of the requesting media player device and the at least one characteristic of the user of the member media player device satisfies at least one criterion.

48. (New) The method of claim 46 wherein making the determination as to whether to permit the requesting media player device to join the sharing group further comprises:

permitting the requesting media player device to join the sharing group if the at least one characteristic of the user of the member media player device sufficiently matches the at least one preference of the user of the requesting media player device.

49. (New) The method of claim 37 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on at least one of a group consisting of: at least one characteristic of a user of a member media player device that is a member of the sharing group, at least one characteristic of the user of the requesting media player device, at least one preference of the user of the member media player device, and at least one preference of the user of the requesting media player device.

50. (New) The method of claim 37 wherein the determination as to whether the requesting media player device desires to join the sharing group is made by the requesting media player device, and

adding the requesting media player device to the sharing group comprises adding the requesting media player device to the sharing group if the requesting media player device desires to join the sharing group and the requesting media player device is permitted to join the sharing group.

51. (New) The method of claim 37 wherein adding the requesting media player device to the sharing group comprises storing information identifying the user of the requesting media player device as a member of the sharing group.

52. (New) The method of claim 51 wherein adding the requesting media player device to the sharing group further comprises providing the information identifying the user of the requesting media player device to at least one additional media player device in the sharing group.

53. (New) The method of claim 37 wherein adding the requesting media player device to the sharing group comprises providing a decryption key to the requesting media player device to be used to decrypt communications for the sharing group distributed over a public communication channel.

54. (New) The method of claim 37 wherein adding the requesting media player device to the sharing group comprises providing information to the requesting media player device enabling the requesting media player device to access a private communication channel for the sharing group.

55. (New) The method of claim 37 wherein the information associated with the user of the requesting media player device comprises a rating of the user of the requesting media player device assigned to the user of the requesting media player device by at least one member of a previous sharing group of the user of the requesting media player device, and making the determination as to whether to permit the requesting media player device to join the sharing group comprises making the determination as to whether to permit the requesting media player device to join the sharing group based on the rating.

56. (New) The method of claim 37 wherein the information associated with the user of the requesting media player device comprises information identifying the user of the requesting media player device and at least one previous sharing group of the user of the requesting media player device.

57. (New) The method of claim 56 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises:

comparing the information identifying the user of the requesting media player device and the at least one previous sharing group to a stored list; and

permitting the requesting media player device to join the sharing group if there is a sufficient number of matches between the stored list and the information identifying the user of the requesting media player device and the at least one previous sharing group.

58. (New) The method of claim 56 wherein making the determination as to whether to permit the requesting media player device to join the sharing group comprises permitting the requesting media player device to join the sharing group if the user of the requesting media player device was previously in a sharing group with a trusted user.

59. (New) The method of claim 37 wherein the information associated with the user of the requesting media player device comprises information regarding a desirability of the user of the requesting media player device as a member of the sharing group made available by a trusted user.

60. (New) The method of claim 37 further comprising:

making the determination as to whether new members are permitted for the sharing group based on permissions set by a user of at least one member media player device in the sharing group;

wherein adding the requesting media player device to the sharing group comprises adding the requesting media player device to the sharing group if new members are permitted for the sharing group and the determination is made to permit the requesting media player device to join the sharing group.

61. (New) A media player device comprising:

a communication interface communicatively coupling the media player device to a network; and

a control unit associated with the communication interface and adapted to:

receive, from a requesting media player device, a request to join a sharing group of which the media player device is a member;

make a determination as to whether to permit the requesting media player device to join the sharing group based on information associated with a user of the requesting media player device; and

add the requesting media player device to the sharing group if the determination is made to permit the requesting media player device to join the sharing group.

REMARKS

Applicant requests cancellation of claims 1-36 without prejudice. Applicant adds new claims 37-61. This amendment is not made for any reasons relating to patentability and does not constitute any disclaimer in any manner whatsoever.

Respectfully submitted,

WITHROW & TERRANOVA, P.L.L.C.

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Date: January 21, 2008
Attorney Docket: 1116-076-USD3

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EFS ID:	2743402
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	Benjamin Withrow/Julie Smith
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	1116-076-USD3
Receipt Date:	21-JAN-2008
Filing Date:	04-DEC-2006
Time Stamp:	13:32:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		1116-076-USD3_Preliminary_Amendment.pdf	340490 032f4d4e7403f83733c0349a4269c2250e675b8f	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Preliminary Amendment	1	1
	Claims	2	8
	Applicant Arguments/Remarks Made in an Amendment	9	9
Warnings:			
Information:			
	Total Files Size (in bytes):	340490	

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

New International Application Filed with the USPTO as a Receiving Office
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PATENT APPLICATION FEE DETERMINATION RECORD

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Application or Docket Number	Filing Date	☐ To be Mailed
11/566,552	12/04/2006	

APPLICATION AS FILED – PART I

(Column 1) (Column 2) SMALL ENTITY ☒ OR OTHER THAN SMALL ENTITY

FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

(Column 1) (Column 2) (Column 3) SMALL ENTITY OR OTHER THAN SMALL ENTITY

AMENDMENT	01/21/2008	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 36	= 0	X $25 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 2	Minus	***8	= 0	X $105 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

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

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

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

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

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

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

Legal Instrument Examiner:
dorretta brooks

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11/566,552	12/04/2006	

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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	
	01/21/2008	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 25	Minus	** 36	= 0	X $25 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 2	Minus	***8	= 0	X $105 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

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

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

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

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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	11566552
	Filing Date	2006-12-04
	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20020049628	A1	2002-04-25	West et al.	
	2	20020052885	A1	2002-05-02	Levy	
	3	20020062310	A1	2002-05-23	Marmor et al.	
	4	20020078054	A1	2002-06-20	Kudo et al.	
	5	20020087887	A1	2002-07-04	Busam et al.	

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	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

	6	20020143415	A1	2002-10-03	Buehler et al.	
	7	20020165793	A1	2002-11-07	Brand et al.	
	8	20020168938	A1	2002-11-14	Chang	
	9	20020184310	A1	2002-12-05	Traversat et al.	
	10	20020193066	A1	2002-12-19	Connelly	
	11	20020194601	A1	2002-12-16	Perkes et al.	
	12	20030002521	A1	2003-01-02	Traversat et al.	
	13	20030037124	A1	2003-02-20	Yamaura et al.	
	14	20030046399	A1	2003-04-06	Boulter et al.	
	15	20030056220	A1	2003-04-20	Thornton et al.	
	16	20030088571	A1	2003-05-08	Ekkel	

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	Attorney Docket Number	1116-076-USD3

	17	20030093790	A1	2003-05-15	Logan et al.	
	18	20030112947	A1	2003-06-19	Cohen	
	19	20030135605	A1	2003-07-17	Pendakur	
	20	20030195851	A1	2003-10-16	Ong	
	21	20030217139	A1	2003-11-20	Burbeck et al.	
	22	20030225834	A1	2003-12-04	Lee et al.	
	23	20040002920	A1	2004-01-01	Prohel et al.	
	24	20040003090	A1	2004-01-01	Deeds	
	25	20040041836	A1	2004-03-04	Zaner et al.	
	26	20040044776	A1	2004-03-04	Larkin	
	27	20040069122	A1	2004-04-15	Wilson	

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	Attorney Docket Number	1116-076-USD3

	28	20040087326	A1	2004-05-06	Dunko et al.	
	29	20040098370	A1	2004-05-20	Garland et al.	
	30	20040107242	A1	2004-06-03	Vert et al.	
	31	20040138943	A1	2004-07-15	Silvernail	
	32	20040148333	A1	2004-07-29	Manion et al.	
	33	20040162871	A1	2004-08-19	Pabla et al.	
	34	20040166798	A1	2004-08-26	Shusman	
	35	20040176025	A1	2004-09-09	Holm et al.	
	36	20040205091	A1	2004-10-14	Mulcahy et al.	
	37	20040224638	A1	2004-11-11	Fadell et al.	
	38	20040230511	A1	2004-11-18	Kannan et al.	

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	39	20050004837	A1	2005-01-06	Sweeney et al.	
	40	20050054286	A1	2005-03-10	Kanjilal et al.	
	41	20050064852	A1	2005-03-24	Baldursson	
	42	20050125222	A1	2005-06-09	Brown et al.	
	43	20050138119	A1	2005-06-23	Saridakis	
	44	20050153725	A1	2005-07-14	Naghian et al.	
	45	20050172001	A1	2005-08-04	Zaner et al.	
	46	20050175315	A1	2005-08-11	Ewing	
	47	20050198317	A1	2005-09-08	Byers	
	48	20050200487	A1	2005-09-15	O'Donnell et al.	
	49	20050216942	A1	2005-09-29	Barton	

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	50	20050238180	A1	2005-10-27	Chen	

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	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Richard Chad Bevins/	Date (YYYY-MM-DD)	2008-01-02
Name/Print	Richard Chad Bevins	Registration Number	51,468

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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	1	5398278		1995-03-14	Brotz	
	2	5508731		1996-04-16	Kohorn	
	3	6075442		2000-06-13	Welch	
	4	6112186		2000-08-29	Bergh et al.	
	5	6192340	B1	2001-02-20	Abecassis	
	6	6266649	B1	2001-07-24	Linden et al.	
	7	6438579	B1	2002-08-20	Hosken	
	8	6526287	B1	2003-02-25	Lee	

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	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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	Application Number	11566552
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	First Named Inventor	David A. Goldberg et al.
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	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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	Filing Date	2006-12-04
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	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Richard Chad Bevins/	Date (YYYY-MM-DD)	2008-01-02
Name/Print	Richard Chad Bevins	Registration Number	51,468

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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SYSTEM AND METHOD FOR MUSIC BROADCASTING LINKED WITH STREAMING MUSIC SERVICE

Publication number: KR20030004156
Publication date: 2003-01-14
Inventor: KIM JUNG HUN (KR)
Applicant: KIM JUNG HUN (KR)
Classification:
- International: ***G06F17/00;*** **G06F17/00;** (IPC1-7): G06F17/00
- European:
Application number: KR20020058600 20020927
Priority number(s): KR20020058600 20020927

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Abstract of **KR20030004156**

PURPOSE: A system and a method for the music broadcasting linked with a streaming music service are provided to solve the music CONSTITUTION: A music broadcaster requests the music file transfer to a web server providing the streaming music service. The web server transfers the requested streaming music to the music broadcaster. The music broadcaster instantly relays and transfers a received streaming music file to the upper audiences. The upper audiences receiving the streaming music file also relay and transfer the streaming music file to the last audiences. If a new audience wants to listen to the broadcasting, the music broadcaster makes the new audience connect to the lower part of the last audience.

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(19) 대한민국특허청(KR)
(12) 공개특허공보(A)

(51) 。Int. Cl. [7]
G06F 17/00

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심사청구 : 있음

(54) 스트리밍 음악 서비스를 연계한 음악 방송 시스템 및 방법

요약

본 발명은 스트리밍 음악 서비스를 음악 방송과 연계함으로써 방송시 음악파일 저작권 문제를 해결하고 음악 방송자들이 쉽게 원하는 음악을 찾고 청취자들에게 음악을 들려줌으로써 방송자의 편의을 높여줄 수 있는 시스템에 관한 것이다.

이 시스템은 스트리밍 음악을 제공하는 웹서버와; 상기 웹서버에 접속을 하여 음악을 찾아서 청취자들에게 방송을 할수 있게 하는 방송 시스템을 포함하는 것이 특징이다.

대표도

도 1

색인어
스트리밍, 연계,음악방송

명세서

도면의 간단한 설명

도1은 클라이언트 대역폭을 활용하여 스트리밍 음악 서비스와 연계하는 시스템 도면을 나타내는 도면

도2는 일반적인 서버를 사용한 스트리밍 음악 서비스를 연계하는 시스템을 나타내는 도면

도3은 음악 방송자가 웹서버에 접속해서 연결하는 순서도

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 스트리밍 음악 서비스를 연계하여 음악 방송을 할수있는 시스템에 관한것으로 방송시 음악파일 저작권 문제를 해결하고 음악 방송자들이 음반 구매없이도 쉽게 원하는 음악을 찾고 청취자들에게 음악을 들려줌으로써 방송자의 편의를 높여줄 수 있는 시스템에 관한 것이다.

인터넷 음악방송은 초고속 전용선이 널리 보급됨에 따라 개인의 개성을 표출하기 위해 이용되고 있다. 최근에는 음악방송자 수가 60만명 이상으로 늘어남으로써 인터넷 사용자의 커다란 커뮤니티를 형성하고 있다.

일반적으로 개인이 음악방송을 하고자 할때 자신이 방송하고자 하는 음악을 가지고 있어야 한다. 즉 자신의 컴퓨터에 방송하고자하는 음악이 있어야 하므로 음반 구입 비용이 많이 든다. 큰 대형 인터넷 음악 방송국을 제외하고는 자신이 방송하고자하는 음악을 모두 구비하고 있을 수 있는 여건이 되지 않는다. 그리고 소리바다등 mp3 음악 파일을 다운받아서 방송을 하면 음반 저작권 문제 등 법적으로 조치를 받게 되어었다. 무료로 다운 받는것 마저도 음반 제작사들의 저작권 법정 소송으로 중단되었다.

따라서 음악 방송자들은 자신만의 방송을 하기 위해서는 음악을 보유하기 위해 시간과 많은 음반 비용이 들고 무료 mp3 음악 파일을 다운받기에는 법(음반 저작권)을 위반한다는 단점이 있다.

발명이 이루고자 하는 기술적 과제

상기와 같은 문제를 해결하기 위해서 본 발명은 스트리밍 음악 서비스를 연계한 음악방송 시스템을 사용함으로써 음악파일에 대한 법적인 음반 저작권 문제를 해결하고 음반 구입비용이 필요없이도 음악 방송자들이 자신이 원하는 음악을 쉽게 찾고 청취자들에게 음악을 들려줌으로써 방송자의 편의를 도모하고 청취자들에게 양질의 방송을 들을수 있게 한다.

발명의 구성 및 작용

상기 본 발명의 목적을 달성하기 위한 스트리밍 음악 서비스를 연계한 음악 방송 시스템은 스트리밍 음악 서비스를 제공하는 웹서버와 상기 웹서버에 접속하여 청취자들에게 음악 방송을 하는 방송 시스템을 포함하는 것을 특징으로 한다.

상기 스트리밍 음악 서비스를 제공하는 웹서버는 데이터 베이스에 수많은 종류의 음악 파일을 저장시키고 서비스 받는 회원들의 정보를 가지고 있도록 한다. 차후 서비스를 받는 회원 중 한사람인 임의의 방송자가 웹서버에 자신이 원하는 음악을 요청할 경우 회원에게 요청한 스트리밍 음악을 전송한다.

상기 청취자들에게 음악 방송을 하는 방송 시스템은 접속한 청취자들의 주소를 가지고 있어 상기 스트리밍 음악 서비스를 제공하는 웹서버에서 전송하는 음악을 청취자들이 전송 받을 수 있게 한다.

이하 본 발명에 따른 스트리밍 음악 서비스를 연계한 음악 방송 시스템에 대하여 첨부된 도면을 참조하여 상세히 설명하고자 한다.

스트리밍 음악 서비스를 연계한 음악 방송 시스템을 구현하는데 있어 2가지 방법이 있는데 도1과 도2를 통해 2가지 방법에 대해서 설명한다.

도1은 클라이언트의 대역폭을 활용하여 스트리밍 음악 서비스와 연계하는 시스템 도면을 나타내는 도면이다. 음악 방송자는 스트리밍 음악 서비스를 제공하는 웹서버에 자신이 원하는 음악 파일 전송을 요청하면 웹서버는 음악 방송자에게 요청한 스트리밍 음악을 전송한다. 이때 음악 방송자는 자신이 받은 스트리밍 음악 파일을 즉시 청취자1,청취자2에게 릴레이 전송을 한다.이렇게 스트리밍 음악 파일을 받은 상위 청취자들(청취자 1,2)도 하위 청취자(청취자 3,4,5,6)들에게 릴레이 전송을 함으로써 마지막 청취자들에게 도달할수 있게 한다. 이때 새로운 청취자7이 방송 듣기를 원한다면 음악 방송자는 청취자 7을 청취자 6 하위에 접속하게 만든다.

도2는 일반적인 서버를 사용한 스트리밍 서비스를 연계하는 시스템을 나타내는 도면이다. 음악 방송자 서버가 스트리밍 음악 서비스를 제공하는 웹서버에 자신이 원하는 음악파일 전송을 요청하면 웹서버는 방송자에게 용청한 스트리밍 음악을 전송한다. 이때 음악 방송자는 자신이 받은 스트리밍 음악 파일을 자신의 방송을 듣고 있는 모든 청취자 들에게 브로드 캐스팅 방법으로 한꺼번에 전송을 한다.

도3은 음악 방송자가 웹서버에 접속해서 연결하는 순서도이다. 우선 음악 방송자가 스트리밍 음악 서비스를 제공하는 웹서버에 접속해서 음악 서비스를 요청하면(S303), 스트리밍 음악 서비스를 제공하는 웹서버는 음악 서비스 요청자가 회원으로 가입되어 있나 판단이후(S305), 가입되어 있다면 음악 방송자에게 스트리밍 음악을 전송하고(S307) 만약 가입이 되어있지 않다면 서비스에 가입하고 사용하라는 메세지를 보낸다.(S306)

발명의 효과

이상에서 상세히 설명한 바와 같이 본 발명에 따른 스트리밍 음악 서비스를 연계한 음악 방송 시스템은 웹서버에서 원하는 스트리밍 음악 파일 서비스를 받아서 청취자들에게 방송함으로써 음악 방송자들이 청취자들에게 음악을 들려주기 위해서 구입해야할 음반구매 비용을 절감할수 있게 되고 또한 자신이 원하는 음악을 웹서버에 요청하면 손쉽게 찾아서 청취자들에게 들려줄수 있으므로 방송자가 자신이 원하는 음악을 구하기 위해 투자하는 시간을 절약할수 있게 되고 방송자의 편의를 제공 할수 있는 효과도 갖는다.

(57) 청구의 범위

청구항 1.

도1과 같이 클라이언트 대역폭을 활용하여 스트리밍 음악 서비스와 연계하는 형태로 되어있는 시스템

청구항 2.

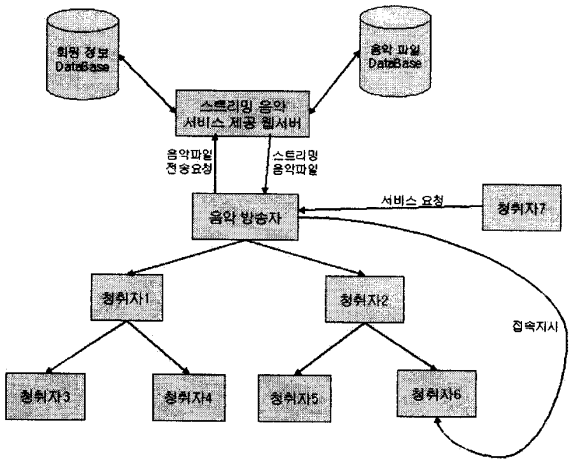
도2와 같이 일반적 서버를 사용한 스트리밍 음악 서비스를 연계하는 형태로 되어있는 시스템

청구항 3.

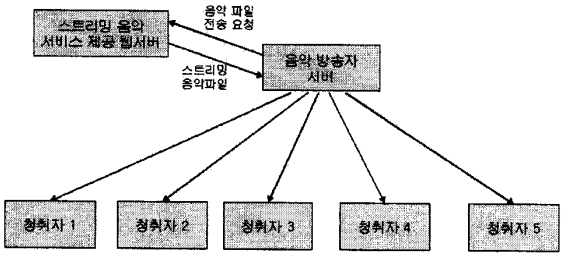
클라이언트에 음악 방송 프로그램을 두고 스트리밍 음악 서비스(음악, 뮤직 비디오 등)를 제공하는 웹서버에 연결하여 청취자들에게 연계시켜 방송하는 시스템

도면

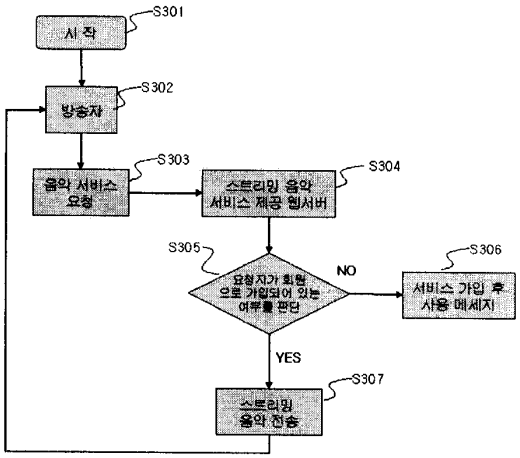
도면 1


회원 정보 DataBase
음악 파일 DataBase
스트리밍 음악 서비스 제공 웹서버
음악파일 전송요청
스트리밍 음악파일
서비스 요청
청취자7
음악 방송자
청취자1
청취자2
접속지시
청취자3
청취자4
청취자5
청취자6

도면 2


스트리밍 음악
서비스 제공 웹서버
음악 파일
전송 요청
스트리밍
음악파일
음악 방송자
서버
청취자 1
청취자 2
청취자 3
청취자 4
청취자 5

도면 3


S301
시 작
S302
방송자
S303
음악 서비스 요청
S304
스트리밍 음악 서비스 제공 웹서버
S305
요청자가 회원으로 가입되어 있는 여부를 판단
NO
S306
서비스 가입 후 사용 메세지
YES
S307
스트리밍 음악 전송

PTO/SB/08a (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	11566552
	Filing Date	2006-12-04
	First Named Inventor	David A. Goldberg et al.
	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	5461188		1995-10-24	Drago et al.	
	2	6311155	B1	2001-10-30	Vaudrey et al.	
	3	6372974	B1	2002-04-16	Gross et al.	
	4	6633747	B1	2003-10-14	Reiss	
	5	6664891	B2	2003-12-16	Davies et al.	
	6	6757517	B2	2004-06-29	Chang	
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	1	20050286546	A1	2005-12-29	Bassoli et al.	
	2	20060046709	A1	2006-03-02	Krumm et al.	
	3	20060052057	A1	2006-03-09	Persson et al.	
	4	20060053080	A1	2006-03-09	Edmonson et al.	
	5	20060146765	A1	2006-07-06	Van De Sluis et al.	
	6	20060179160	A1	2006-08-10	Uehara et al.	
	7	20060184960	A1	2006-08-17	Horton et al.	
	8	20060190827	A1	2006-08-24	Zaner et al.	
	9	20060190828	A1	2006-08-24	Zaner et al.	
	10	20060190829	A1	2006-08-24	Zaner et al.	
	11	20060190968	A1	2006-08-24	Jung et al.	

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	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

	12	20060221788	A1	2006-10-05	Lindahl et al.	
	13	20060233203	A1	2006-10-19	Iwamura	
	14	20060242234	A1	2006-10-26	Counts et al.	
	15	20060261939	A1	2006-11-23	Blakeway	
	16	20060270395	A1	2006-11-30	Dhawan et al.	
	17	20070010195	A1	2007-01-11	Brown et al.	
	18	20070016654	A1	2007-01-18	Bowles et al.	
	19	20070021142	A1	2007-01-24	Byeon et al.	
	20	20070030974	A1	2007-02-08	Ishibashi et al.	
	21	20070042762	A1	2007-02-22	Guccione	
	22	20070065794	A1	2007-03-22	Mangum	

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	Attorney Docket Number	1116-076-USD3

	23	20070087686	A1	2007-04-19	Holm et al.	
	24	20070098202	A1	2007-05-03	Viranyi et al.	
	25	20070136466	A1	2007-06-14	Rezvani et al.	
	26	20070142090	A1	2007-06-21	Rydenhag et al.	
	27	20010004397	A1	2001-06-21	Kita et al.	
	28	20020059614	A1	2002-05-16	Lipsanen et al.	
	29	20020080288	A1	2002-06-27	Davies	
	30	20020081972	A1	2002-06-27	Rankin	
	31	20020174243	A1	2002-11-21	Spurgat et al.	
	32	20030005138	A1	2003-01-02	Giffin et al.	
	33	20030182003	A1	2003-09-25	Takashima	

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	Art Unit	2618
	Examiner Name	TBA
	Attorney Docket Number	1116-076-USD3

	34	20030200001	A1	2003-10-23	Goddard	
	35	20040248601	A1	2004-12-09	Chang	

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	Application Number	11566552
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	Attorney Docket Number	1116-076-USD3

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Richard Chad Bevins/	Date (YYYY-MM-DD)	2008-01-02
Name/Print	Richard Chad Bevins	Registration Number	51,468

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Electronic Acknowledgement Receipt

EFS ID:	2660840
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	71739
Filer:	Benjamin Withrow/Julie Smith
Filer Authorized By:	Benjamin Withrow
Attorney Docket Number:	1116-076-USD3
Receipt Date:	02-JAN-2008
Filing Date:	04-DEC-2006
Time Stamp:	15:51:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

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Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed	1116-076-USD3_IDS.PDF	1360821 155e7f5c2fe6452db88b5894dcc44c8d98d7b118	no	11
Warnings:					
Information:					

2	Foreign Reference	EP1427170.pdf	136385 c9d61e86e4cb8a33902da7cb380b98b458bf660d	no	14
Warnings:					
Information:					
3	Foreign Reference	EP1526471.pdf	440983 7aef3f232f2ef06224d99c3bbbf78da3c5f4cac1	no	34
Warnings:					
Information:					
4	Foreign Reference	EP1643716.pdf	725182 f964e596414904099ecfd517df656bb867c08484	no	34
Warnings:					
Information:					
5	Foreign Reference	GB2371895.pdf	806121 6d631e33e7fa2fe632de84c92de5a1edacec23b5	no	18
Warnings:					
Information:					
6	Foreign Reference	JP2002-073049.pdf	998067 4ab7b244fca378538a95b3f0a8a21d90b0b98847	no	22
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11	Foreign Reference	WO0201799.pdf	1322099 95d47b527557055f5442e93be75ce492004ea6d4	no	28
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13	Foreign Reference	WO05093453.pdf	1405006 cc40c6f13e6e369b8447f07d29a6086399a8f861	no	33
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14	Foreign Reference	WO06049398.pdf	1276071 995a9b509923bb9f016412500fbe1959a6f00e11	no	28
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15	Foreign Reference	WO06067059.pdf	1185877 5abd4fb54680ee96f4cf0dae9e530bcec8b2716b	no	28
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17	NPL Documents	Aberer_Overview.pdf	504027 729b030ab91a5afe120cf6221c5775f7b98854a9	no	14
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18	NPL Documents	Brown_Use_Of_Conventional.pdf	467218 164c99214030fb40199a926d78536701a0ab15c9	no	9
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Information:					

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26	NPL Documents	Model_1089_UserManual.pdf	1274396 7349f5ecbeee0ca500b413b1f45d6c7659f08ad5	no	7
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27	NPL Documents	Ren_Explore.pdf	681589 dc94d1b2e1942cd90f6b49ace797589e3af9cc66	no	8
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28	NPL Documents	Sony_mylo.pdf	294292 0e5fc048a507f63cd7b8a4ed95d40b253510ed8c	no	1
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Information:					

29	NPL Documents	Yang_Comparing_Hybrid.pdf	1694039 88b9a518f4dde4ca21aec71c21c763cc51afbca8	no	25
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30	NPL Documents	Young_Wireless_Music.pdf	102453 55a201955fe8d2d0352fa95aeaf165e1edd38388	no	2
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31	NPL Documents	Avvenu.pdf	145082 316b3bb09a0b311328 4e62c3d33b8233806b01d8	no	1
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Information:					
32	Information Disclosure Statement (IDS) Filed	1116-076-USD3_IDS2.PDF	1096944 99fc85f6a4c94cbedbd35eb940aaa899c5715786	no	8
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Warnings:					
Information:					
		Total Files Size (in bytes):	33568213		

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

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/566,552	12/04/2006	David Goldberg	1116-076-USD3

CONFIRMATION NO. 6195

71739
CONCERT TECHNOLOGY AND WITHROW & TERRANOVA
100 REGENCY FOREST DRIVE , SUITE 160
CARY, NC 27518

OC000000026188310

Date Mailed: 10/05/2007

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/28/2007.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199
OFFICE COPY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: David A. Goldberg et al. Examiner: TBA
Serial Number: 11/566,552 Art Unit: 2615
Filed: 12/04/2006
For: **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

POWER OF ATTORNEY

Sir:

The undersigned, assignee of the entire interest in and to an application of David A. Goldberg et al. for U.S. Letters Patent for **DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK**, filed December 4, 2006, Application Serial Number 11/566,552 by an assignment document recorded with the United States Patent and Trademark Office at Reel/Frame 019866/0836, hereby appoints the firm of Withrow & Terranova, P.L.L.C., Customer No. 71739, comprising Benjamin S. Withrow, Reg. No. 40,876, Steven N. Terranova, Reg. No. 43,185, John R. Witcher, III, Reg. No. 39,877, Richard C. Bevins, Reg. No. 51,468, John H. Vynalek, Reg. No. 37,254, and Eric P. Jensen of Concert Technology Corporation, Reg. No. 37,647, as my attorneys and/or agents with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith.

SAMSUNG EX. 1002

Furthermore, in accordance with 37 CFR §3.73(b), the undersigned hereby states that the documentary evidence of a chain of title from the original owner to the assignee, i.e. assignment document referenced above, has been reviewed and the undersigned certifies that, to the best of assignee's knowledge and belief, title is in assignee who seeks to prosecute this application.

PLEASE ADDRESS ALL COMMUNICATIONS AND TELEPHONE CALLS TO: WITHROW & TERRANOVA, P.L.L.C., 100 REGENCY FOREST DRIVE, SUITE 160, CARY, NORTH CAROLINA 27518, (919) 238-2300.

SYNCRONATION, INC.

BY: _____

Eric P. Jensen
Vice President IP Services

Date: 27 Sept 07

File No.: 1116-076-USD3

Attachment A

WHEREAS, Tribal Technologies, LLC, a Colorado corporation located at 12635 East Montview Blvd, Suite 370, Aurora, CO 80045 (referred to hereinafter in this Attachment A as "ASSIGNOR"), is the owner of record of the entire and full right, title, and interest to certain new and useful improvements in the following United States Patents and Patent Applications for Letters Patents in the United States (hereinafter the "Patents"):

Patent/App. No.	Publication No.	Filing Date	Status	Title
10/513,702	20050160270	11/8/2004	Pending	Localized audio networks and associated digital accessories
PCT/US03/14154	WO/2003/093950	5/6/2003	----------	Localized audio networks and associated digital accessories
EP20030741778 20030506	EP1510031	12/3/2004	Pending	Localized audio networks and associated digital accessories
CA20032485100 20030506	CA2485100	11/2/2004	Pending	Localized audio networks and associated digital accessories
AU20030266002 20030506	AU2003266002	11/2/2004	Lapsed	Localized audio networks and associated digital accessories
JP20040502107T 20030506	JP2005528029T	11/5/2004	Pending	Localized audio networks and associated digital accessories
11/566,537	----------	12/4/2006	Pending	Audio player device for synchronous playback of audio signals with a compatible device
11/566,546	20070129004	12/4/2006	Pending	Music distribution system for mobile audio player devices
11/566,552	----------	12/4/2006	Pending	Distribution of music between members of a cluster of mobile audio devices and a WAN
11/566,563	20070129005	12/4/2006	Pending	Method and apparatus for creating and managing clusters of mobile audio devices
11/566,574	20070129006	12/4/2006	Pending	A method and apparatus for communicating within a wireless music sharing cluster
11/566,580	20070136769	12/4/2006	Pending	Apparatus for playing of synchronized video between wireless devices
11/566,588	20070116316	12/4/2006	Pending	Music headphones for manual control of ambient sound
11/566,599	----------	12/4/2006	Pending	A modular interunit transmitter-receiver for a portable audio device
11/566,604	20070133764	12/4/2006	Pending	Telephone for music sharing
60/452,230	----------	3/4/2003	Expired	Localized audio networks and associated digital accessories
60/388,887	----------	6/14/2002	Expired	Localized audio networks and associated digital accessories
60/378,415	----------	5/6/2002	Expired	Localized audio networks and associated digital accessories

WHEREAS, SyncroNation, Inc., a Delaware corporation (hereinafter "ASSIGNEE"), having offices at 7011 Fayetteville Road, Suite 210, Durham, NC 27713, has acquired ASSIGNOR'S entire and full right, title, and interest in and to the inventions disclosed in the Patents;

NOW, THEREFORE, in consideration of sums paid by ASSIGNEE to ASSIGNOR, and for other good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR hereby further acknowledges that it has sold, assigned, and transferred, and by these presents, does hereby sell, assign, and transfer, unto ASSIGNEE, its successors, legal representatives, and assigns, the entire and full right, title, and interest throughout the world in, to, and under the said improvements, and the said Patents and all Patents that may be granted thereon, and all provisional applications relating thereto, and all divisions, continuations, reissues, reexaminations, renewals, and extensions thereof, and all rights of priority under International Conventions and applications for Letters Patent that may hereafter be filed for said improvements or for the said Patents in any country or countries foreign to the United States; and ASSIGNOR hereby authorizes and requests the Commissioner of Patents of the United States, and any Official of any country foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements and all Letters Patent resulting from the Patents to ASSIGNEE, its successors, legal representatives, and assigns, in accordance with the terms of this Agreement. ASSIGNOR does hereby sell, assign, transfer, and convey to ASSIGNEE, its successors, legal representatives, and assigns all claims for damages and all remedies arising out of any violation of the rights assigned hereby that may have accrued prior to the date of assignment to ASSIGNEE, or may accrue hereafter, including, but not limited to, the right to sue for, collect, and retain damages for past infringements of the said issued Patents before or after issuance. ASSIGNOR will, at the reasonable request of ASSIGNEE and without demanding any further consideration therefore, do all things necessary, proper, or advisable, including without limitation, the execution, acknowledgment, and recordation of specific assignments, oaths, declarations, and other documents on a country-by-country basis, to assist ASSIGNEE in obtaining, perfecting, sustaining, and/or enforcing the Patent Rights. Such assistance will include providing, and obtaining from the respective inventors, prompt production of pertinent facts and documents, giving of testimony, execution of petitions, oaths, powers of attorney, specifications, declarations or other papers, and other assistance reasonably necessary for filing patent applications, complying with any duty of disclosure, and conducting prosecution, reexamination, reissue, interference or other priority proceedings, opposition proceedings, cancellation proceedings, public use proceedings, infringement or other court actions and the like with respect to the Patent Rights.

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 23 day of July, 2007.

Tribal Technologies, LLC

Michael D. McIntosh

By: _____

Date: July 23, 2007

State of _____

County of _____

On July ____, 2007, before me appeared, personally, Michael D. McIntosh, CEO of Tribal Technologies, a Colorado corporation located at 12635 East Montview Blvd, Suite 370, Aurora, CO 80045, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity(ies), and that

by his signature(s) on the instrument the person, or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

SEE ATTACHED CA COMPLIANT ACK.

Signature _____ (Seal)

State of California)

County of ORANGE)

CALIFORNIA ALL-PURPOSE CERTIFICATE OF ACKNOWLEDGMENT

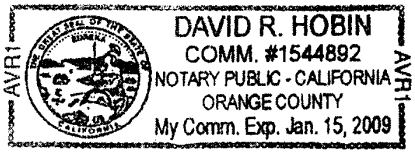
On 23 JULY 2007 before me, David R. Hobin, Notary Public
(here insert name and title of the officer),

personally appeared MICHAEL D. MCINTOSH

,

~~personally known to me~~ (or proved to me on the basis of satisfactory evidence) to be the person~~(s)~~ whose name~~(s)~~ is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she/they~~ executed the same in his/~~her/their~~ authorized capacity~~(ies)~~, and that by his/~~her/their~~ signature~~(s)~~ on the instrument the person~~(s)~~, or the entity upon behalf of which the person~~(s)~~ acted, executed the instrument.

WITNESS my hand and official seal.



Signature _____ (Seal)

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Although the information in this section is not required by law, it could prevent fraudulent removal and reattachment of this acknowledgment to an unauthorized document and may prove useful to persons relying on the attached document.

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The preceding Certificate of Acknowledgment is attached to a document titled/for the purpose of ASSIGNMENT OF PATENT

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- ☐ Partner - Limited/General
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representing: _____ Name(s) of Person(s) or Entity(ies) Signer is Representing

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Additional Information

Method of Signer Identification

- ☐ Personally known to me
- ☑ Proved to me on the basis of satisfactory evidence:
  - (2 form(s) of identification ○ credible witness(es)

Identification is detailed in notary journal on:

Page # 83-84 Entry # 2

Notary contact: _____

Other

- ☐ Additional Signer(s)
- ☐ Signer(s) Thumbprint(s)
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Application Number	11/566,552
Filing Date	12/04/2006
First Named Inventor	David A. Goldberg et al.
Art Unit	2615
Examiner Name	TBA
Attorney Docket Number	1116-076-USD3

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☐ Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).

☒ Attorney or agent of record. Registration Number 43,185.

☐ Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number_____.

Signature	
Typed or Printed Name	Steven N. Terranova
Date September 28, 2007	Telephone 919-238-2300

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

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

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Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	35846
Filer:	Steven Terranova/Julie Smith
Filer Authorized By:	Steven Terranova
Attorney Docket Number:	TRIB001-3
Receipt Date:	28-SEP-2007
Filing Date:	04-DEC-2006
Time Stamp:	16:18:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

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1	Power of Attorney	1116-076-USD3_POA.pdf	320633 ccab2f1ffa30e7b5fde66e82bf9861e5f1738ac5	no	6
Warnings:					

Information:					
2	Change of Address	1116-076-USD3_Change_Corresp.pdf	188231 ce21f26b211c3f70ddc0a1093d3d543c304b6ca6	no	2
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APPLICATION NUMBER	FILING OR 371(c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/566,552	12/04/2006	David Goldberg	TRIB001-3

CONFIRMATION NO. 6195

35846
THE MCINTOSH GROUP
12635 E. Montview Blvd.,
SUITE 370
AURORA, CO80010

Title: DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

Publication No. US-2007-0155312-A1
Publication Date: 07/05/2007

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Pre-Grant Publication Division, 703-605-4283

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
11/566,552	12/04/2006	2615	1390	TRIB001-3	36	8

CONFIRMATION NO. 6195

UPDATED FILING RECEIPT

35846
THE MCINTOSH GROUP
12635 E. Montview Blvd.,
SUITE 370
AURORA, CO80010

Date Mailed: 03/27/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. 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 mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. 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 (if appropriate).**

Applicant(s)

David Goldberg, Boulder, CO;
Benjamin Goldberg, Boulder, CO;
Martha Goldberg, Boulder, CO;
Miriam Goldberg, Boulder, CO;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a DIV of 10/513,702 11/08/2004
which is a 371 of PCT/US03/14154 05/06/2003
which claims benefit of 60/378,415 05/06/2002
and claims benefit of 60/388,887 06/14/2002
and claims benefit of 60/452,230 03/04/2003

Foreign Applications

If Required, Foreign Filing License Granted: 01/24/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US11/566,552**

Projected Publication Date: 07/05/2007

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

Preliminary Class

381

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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OIPE 4975
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

REGARDING THE APPLICATION OF:

APPLICANT: GOLDBERG, DAVID
SERIAL NO.: 11/566,552
REFERENCE NO.: TRIB001-3
ENTITLED: "DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK"

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

RESPONSE TO NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

In response to the Notice to File Missing Parts of Nonprovisional Application dated 01/25/2007, Applicant hereby submits a substitute specification in compliance with 37 CFR 1.52, 1.21(b)(3), and 1.125.

Applicant certifies that the substitute specification transmitted herewith contains no new matter pursuant to 37 CFR 1.125.

Filing fees in the amount of $1,390.00 were submitted on January 31, 2007, the receipt of which has been confirmed by the USPTO date stamp of the same date and Express Mail Receipt #ED 714323654.

Applicant believes it has sufficiently responded to all of the items required in the Notice to File Missing Parts of Nonprovisional Application.

Respectfully submitted,

Michael D. McIntosh
Attorney for Applicant
Reg. No. 26,305

The McIntosh Group
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03/13/07

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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/566,552	12/04/2006	David Goldberg	Trib001-3

CONFIRMATION NO. 6195

35846
THE MCINTOSH GROUP
12635 E. Montview Blvd.,
SUITE 370
AURORA, CO 80010

FORMALITIES LETTER

Date Mailed: 01/25/2007

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
  Applicant must submit $ **75** *to complete the basic filing fee for a small entity.*

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be accompanied by a marked up copy as set forth in 37 CFR 1.125(c) and a statement that the specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The line spacing on the specification, claims, or abstract is not 1½ or double spaced (see 37 CFR 1.52(b)).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of **$900** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **$1390** for a small entity

- **$75** Statutory basic filing fee.
- **$65** Surcharge.

- The application search fee has not been paid. Applicant must submit **$250** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit **$100** to complete the examination fee for a small entity in compliance with 37 CFR 1.27.

- Total additional claim fee(s) for this application is **$900**
  - **$500** for **5** independent claims over 3.
  - **$400** for **16** total claims over 20.

Replies should be mailed to: Mail Stop Missing Parts
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Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199, or 1-800-972-6382
PART 2 - COPY TO BE RETURNED WITH RESPONSE

Revised Power of Attorney Practice - 37 CFR 1.32
(Applies to powers of attorney filed on or after June 25, 2004)

As a result of a revision of the patent rules relating to powers of attorney, a power of attorney filed on or after June 25, 2004 must either appoint:

a) One or more joint inventors; OR
b) Those registered practitioners associated with a Customer Number; OR
c) Ten or fewer patent practitioners, either in the power of attorney itself, or by a listing in a separate paper accompanying the power of attorney, as explained below.



See (newly established) 37 CFR 1.32(b) and (c), the text of which is as follows:

(b) A power of attorney must:
(1) Be in writing;
(2) Name one or more representatives in compliance with (c) of this section;
(3) Give the representative power to act on behalf of the principal; and
(4) Be signed by the applicant for patent (§ 1.41(b)) or the assignee of the entire interest of the applicant.

(c) A power of attorney may only name as representative:
(1) One or more joint inventors (§ 1.45);
(2) Those registered patent practitioners associated with a Customer Number;
(3) Ten or fewer registered patent attorneys or registered patent agents (see § 10.6 of this subchapter) (patent practitioners). Except as provided in paragraph (c)(1) or (c)(2) of this section, the Office will not recognize more than ten patent practitioners as being of record in an application or patent. If a power of attorney names more than ten patent practitioners, such power of attorney must be accompanied by a separate paper indicating which ten patent practitioners named in the power of attorney are to be recognized by the Office as being of record in application or patent to which the power of attorney is directed.

The filing receipt reflects the power of attorney that has been entered for the application. If the power of attorney appointed more than ten patent practitioners, without reference to a Customer Number and without a separate paper indicating which ten patent practitioners named in the power of attorney are to be recognized, then no patent practitioner has been made of record.

How to take corrective action: Resubmit a copy of the power of attorney along with a separate paper indicating which (up to ten) patent practitioners named in the power of attorney are to be recognized by the Office as being of record in the application or patent to which the power of attorney is directed, or file a newly executed power of attorney in compliance with 37 CFR 1.32.

After receipt of such a submission, the patent practitioners listed on the separate paper or new power of attorney in compliance with 37 CFR 1.32 will be recognized as being of record. For additional information regarding this change in practice, see Revision of Power of Attorney and Assignment Practice, 69 Fed. Reg. 29865 (May 26, 2004); 1283 Off. Gaz. 148 (Jun. 22, 2004) and http://www.uspto.gov/web/offices/pac/dapp/poafaqs.htm.

August 11, 2004

MAR 12 2007
PATENT & TRADEMARK OFFICE

DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

Cross Reference To Related Patent Applications

[Para 1] This application is a divisional application of and claims priority to pending U.S. Patent Application No. 10/513,702 entitled, "Localized Audio Networks and Associated Digital Accessories" based on PCT Application No. PCT/US03/14154 having the same title claiming priority from Provisional Patent Application No. 60/378,415, filed May 6, 2002, titled "Localized Audio Networks and Associated Digital Accessories," and from Provisional Patent Application No. 60/388,887, filed June 14, 2002, titled " Localized Audio Networks and Associated Digital Accessories," and from Provisional Patent Application No. 60/452,230, filed March 4, 2003, titled " Localized Audio Networks and Associated Digital Accessories," the contents of each of which are incorporated herein by reference.

Technical Field

[Para 2] The present invention relates to localized wireless audio networks for shared listening of recorded music, and wearable digital accessories for public music-related display, which can be used in conjunction with one another.

Background

[Para 3] Portable audio players are popular consumer electronic products, and come in a variety of device formats, from cassette tape "boom boxes" to portable CD players to digital flash-memory and hard-disk MP3 players. While boom boxes are meant to make music to be shared among people, most of the portable audio players are designed for single person use. While some of this orientation to personal music listening is due to personal preference, other important considerations are the technical difficulties of reproducing music for open area listening with small, portable devices, as well as the social imposition of listening to music in public places with other people who do not wish to listen to the same music, or who are listening to different music that would interfere with one's own music.

[Para 4] There are numerous audio devices that are designed to allow the transfer of music from one portable audio device to another, especially through those that store music in the MP3 audio format. These devices suffer from two main difficulties: firstly, listeners still do not hear the music simultaneously, which is the optical manner to share music, and secondly, there are serious copyright issues associated with the transfer of music files. Thus, it would be preferable for the transfer of the music for simultaneous enjoyment, and which did not result in a permanent transfer of the music files between the devices, so as not to infringe on the intellectual property rights of the music owners.

[Para 5] Given the sharing of music, listeners will on occasion want to purchase the music for themselves. In such case, it would be beneficial for the user to have a way to obtain the music with minimal effort. It would further be desirable for there to be a way to keep track of the person from whom the listener heard the music, so that the person could be in some way encouraged or compensated.

[Para 6] The earphones associated with a portable music player admit a relatively constant fraction of ambient sound. If listening to music with a shared portable music device, however, one might at times want to talk with a friend, and at times listen to music without outside audible distraction. In such case, it would be desirable to have an earphone for which the amount of external ambient sound could be manually set.

[Para 7] Furthermore, many people like to show their individual preferences, to exhibit themselves, and to demonstrate their group membership. Furthermore, music preferences and listening to music together are among the more important means by which individuals express their individual and group identities. It would be beneficial for there to be a way for individuals to express themselves through their music, and for groups of individuals listening to music together, to be able to demonstrate their group enjoyment of the music.

[Para 8] One means for a person to express their identity through motion would be through having wearable transducers wherein the transduction signal is related to the music. If the transducer were a light transducer, this would result in a display of light related to the music that was being listened to. It would be further beneficial if there were means by which a person could generate control signals for the transducer so that instead of a wholly artificial response to the music, the transducer showed a humanly interpreted display. It would be preferable if these

signals could be shared between people along with music files, so that others could entertain or appreciate the light display so produced.

[Para 9] At popular music concerts, there is often a "light show" that pulsates in rough relation to the music. In contrast to the generally vigorous light show, the patrons at the concerts often have light bracelets or other such static displays which are used to join with the displays on the stage. It would be beneficial for there to be a way in which patrons could participate in the light show in order to enhance their enjoyment of the concert.

[Para 10] It is to the solution of these and other problems that the present invention is directed.

Summary of the Invention

[Para 11] It is an object of the present invention to provide users a means of listening to music together using mobile devices.

[Para 12] It is also an object of the present invention to provide users a means of choosing with whom to listen to music.

[Para 13] It is additionally an object of the present invention to provide users the ability to monitor the people that are listening together.

[Para 14] It is furthermore an object of the present invention to provide users a means of expressing their enjoyment of the music they are listening to through visual displays of wearable accessories.

[Para 15] It is yet another object of the present invention to provide users a means of demonstrating their identity with other people they are listening to music with.

[Para 16] It is still further an object of the present invention to provide users to provide users with means to choreograph the visual displays.

[Para 17] Additional objects, advantages and novel features of this invention shall be set forth in part in the description that follows, and will become apparent to those skilled in the art upon examination of the following specification or may be learned through the practice of the invention. The objects and advantages of the invention may be realized and attained by means of the instrumentalities, combinations, and methods particularly pointed out in the appended claims.

[Para 18] To achieve the foregoing and other objects and in accordance with the purposes of the present invention, as embodied and broadly described therein, the present invention is directed to a method for sharing music from stored musical signals between a first user with a first music player device and at least one second user with at least one second music player device. The method includes the step of playing the musical signals for the first user on the first music player device while essentially simultaneously wirelessly transmitting the musical signals from the first music player device to the at least one second music player device. The method additionally includes receiving the musical signals by the at least one second player device, such that the musical signals can be played on the at least one second player device essentially simultaneously with the playing of the musical signals on the first music player device. In this method, the first and the at least one second users are mobile and maintain less than a predetermined distance.

[Para 19] The present invention is also related to a system of music sharing for a plurality of users. The system includes a first sharing device and at least one second sharing device, each comprising a musical signal store, a musical signal transmitter, a musical signal receiver, and a musical signal player. Furthermore, the system comprises a broadcast user operating the first sharing device and at least one member user operating the at least one second sharing device. The broadcast user plays the musical signal for his own enjoyment on the first sharing device and simultaneously transmits the musical signal to the receiver of the at least one second sharing device of the at least one member user, on which the musical signal is played for the at least one member user. The broadcast user and the at least one member user hear the musical signal substantially simultaneously.

[Para 20] The present invention yet further is related to a wireless communications system for sharing audio entertainment between a first mobile device and a second mobile device in the presence of a non-participating third mobile device. The system includes an announcement signal transmitted by the first mobile device for which the second mobile device and the third mobile device are receptive. In addition, the system includes a response signal transmitted by the second mobile device in response to the announcement signal for which the first mobile device is receptive and for which the third mobile device is not receptive. Also, the system includes an identifier signal transmitted by the first mobile device to the second mobile device in response to the response signal, and which is not receptive to the third mobile device. Finally,

the system includes a broadcast signal comprising audio entertainment that is transmitted by the first mobile device, and which is receptive by the second mobile device on the basis of the reception of the identifier signal.

[Para 21] The present invention additionally is related to an audio entertainment device. The device includes a signal store that stores an audio entertainment signal, a transmitter that can transmit the stored audio entertainment signal, a receiver that can receive the transmitted audio entertainment signal from a transmitter of another such device, and a player that can play audio entertainment from a member selected from the group of stored audio entertainment signals or audio entertainment signals transmitted from the transmitter of another such device.

[Para 22] The present invention yet still is related to a system for identifying a first device that introduces a music selection to a second device. The system includes a mobile music transmitter operated by the first device and a mobile music receiver operated by the second device. In addition, the system includes a music signal comprising the music selection transmitted by the transmitter and received by the receiver, an individual musical identifier that is associated with the music selection, and an individual transmitter identifier that identifies the transmitter. The transmitter identifier and the individual music identifier are stored in association with each other in the receiver.

[Para 23] The present invention is still further related to an audio entertainment device. The device includes a wireless transmitter for the transmission of audio entertainment signals and a wireless receiver for the reception of the transmitted audio entertainment signals from a transmitter of audio entertainment signals. A first manually-separable connector for electrically connecting with an audio player allows transfer of audio entertainment signals from the player to the device. The device also includes a second connector for connecting with a speaker and a control to manually switch between at least three states. In the first state the speaker plays audio entertainment signals from the audio player and the transmitter does not transmit the audio entertainment signals. In the second state the speaker plays audio entertainment signals from the audio player and the transmitter essentially simultaneously transmits the audio entertainment signals. In the third state the speaker plays audio entertainment signals received by the receiver.

[Para 24] The present invention also still is related to a system for the sharing of stored music between a first user and a second user. The system includes a first device for playing music to the first user, comprising a store of musical signals. A first controller prepares musical

signals from the first store for transmission and playing, and a first player takes musical signals from the first controller and plays the signals for the first user. A transmitter is capable of taking the musical signals from the controller and transmitting the musical signals via wireless broadcast. A second device for playing music to the second user comprises a receiver receptive of the transmissions from the transmitter of the first device, a second controller that prepares musical signals from the receiver for playing, and a second player that takes musical signal from the second controller and plays the signals for the second user. The first user and the second user hear the musical signals at substantially the same time.

[Para 25] The present invention also is related to an earphone for listening to audio entertainment allowing for the controlled reception of ambient sound by a user. The earphone includes a speaker that is oriented towards the user's ear and an enclosure that reduces the amount of ambient noise perceptive to the user. In addition, a manually-adjustable characteristic of the enclosure adjusts the amount of ambient sound perceptive to the user.

[Para 26] The present invention is further related to a mobile device for the transmission of audio entertainment signals. The mobile device includes an audio signal store for the storage of the audio entertainment signals, and an audio signal player for the playing of the audio entertainment signals. The device also includes a wireless transmitter for the transmission of the audio entertainment signals and a transmitter control to manually switch between two states consisting of the operation and the non-operation of the audio transmitter.

[Para 27] The present invention yet still is related to a mobile device for the reception of digital audio entertainment signals. The mobile device includes an audio signal store for the storage of the digital audio entertainment signals and an audio receiver for the reception of external digital audio entertainment signals from a mobile audio signal transmitter located within a predetermined distance of the audio receiver. The device also includes a receiver control with at least a first state and a second state. An audio signal player plays digital audio entertainment signals from the audio signal store when the receiver control is in the first state, and plays digital audio entertainment signals from the audio receiver when the receiver control is in the second state.

[Para 28] The present invention furthermore relates to a method for the shared enjoyment of music from stored musical signals between a first user with a first music player device and at least one second user with at least one second music player device. The method includes the step

of playing the musical signals for the first user on the first music player device while essentially simultaneously wirelessly transmitting synchronization signals from the first music player device to the at least one second music player device. The method also includes receiving the synchronization signals by the at least one second player device. The synchronization signals allow the musical signals on the at least one second player device to be played essentially simultaneously with the playing of the musical signals on the first music player device. The first and the at least one second users are mobile.

[Para 29] The present invention yet furthermore relates to a wireless communications system for sharing audio entertainment between a first mobile device and a second mobile device. The system includes a broadcast identifier signal transmitted by the first mobile device to the second mobile device. A personal identifier signal is transmitted by the second mobile device to the first mobile device. A broadcast signal comprising audio entertainment is transmitted by the first mobile device of which the second device is receptive. The first mobile device and the second mobile device have displays which can display the identifier signal that they receive and the second mobile device can play the audio entertainment from the broadcast signal that it receives.

[Para 30] The present invention also relates to a method for enhancing enjoyment of a musical selection. The method includes the steps of obtaining control signals related to the musical selection, transmitting the control signals wirelessly, receiving the control signals, and converting the control signals to a humanly-perceptible form.

[Para 31] The present invention further yet relates to a method for generating and storing control signals corresponding to musical signals. The method includes the steps of playing musical signals for a user and receiving manual input signals from the user that are produced substantially in synchrony with the music. The method also includes the steps of generating control signals from the input signals, and storing the control signals so that they can be retrieved with the musical signals.

[Para 32] The present invention still additionally relates to a wearable personal accessory. The accessory includes an input transducer taken from the group consisting of a microphone and an accelerometer. The transducer generates a time-varying input transduction signal. The accessory also includes a controller that accepts the input transduction signal, and generates an output transducer signal whose signal varies in amplitude with time. An output transducer

receptive of the output transducer signal provides a humanly-perceptible signal. An energy source powers the input transducer, controller and output transducer.

[Para 33] The present invention also still relates to a wearable personal accessory controlled via wireless communications. The accessory includes a wireless communications receiver that is receptive of an external control signal. The accessory also includes a controller that accepts the external control signal and that generates a time-varying visual output transducer signal. A visual output transducer is receptive of the output transducer signal, and provides a humanly-perceptible visual signal. An energy store powers the receiver, controller and output transducer. The visual output transducer generates visually-perceptive output.

[Para 34] The present invention still further relates to a device for converting user tactile responses to stored music into a stored control signal. The device includes a player that plays stored music audible to the user and a manually-operated transducer that outputs an electrical signal. The transducer is actuated by the user in response to the music. A controller receives the electrical signal and outputs a control signal and a store receives the control signal and stores it.

[Para 35] The present invention furthermore relates to a music player that wirelessly transmits control signals related to the music, wherein the control signals control a wearable electronic accessory. The music player includes a store of music signal files and a controller that reads a musical signal file from the store and generates audio signals. The controller further generates the control signals. A transducer converts the audio signals into sound audible to the user and a wireless transmitter transmits the control signal to the wearable electronic accessory.

[Para 36] The present invention yet relates to a music player that wirelessly transmits control signals related to the music, wherein the control signals control a wearable electronic accessory. The music player includes a store of music signal files and a second store of control signal files associated with the music signal files. A controller reads a musical signal file from the store and generates audio signals. The controller further reads an associated control signal file. A transducer converts the audio signals into sound audible to the user, and a wireless transmitter transmits the control signals from the associated control signal file to the wearable electronic accessory.

[Para 37] The present invention also relates to a system for exhibition of music enjoyment. The system includes a source of music signals, a controller that generates control signals from the music signals, and a transmitter of the control signals. The transmission of the control

signals is synchronized with the playing of the music signals. In addition, the system includes a receiver of the control signals and a transducer that responds to the control signals.

[Para 38] The present invention further relates to a method for transferring a wearable-accessory control file stored on a first device to a second device in which an associated music file is stored. The method includes the steps of storing on the first device the name of the music file in conjunction with the control file with which it is associated and requesting by the second device of the first device for a control file stored in conjunction with the name of the music file. In addition, the method includes the step of transferring the control file from the first device to the second device. The control file is stored on the second device in conjunction with the name of the associated music file.

[Para 39] The present invention also relates to a device for transmitting control signals to a wearable accessory receptive of such control signals. The device includes a manually-separable input connector for connecting to an output port of an audio player. Audio signals are conveyed from the audio player to the device across the connector. The device also includes a controller for generating control signals from the audio signals and a transmitter for transmitting the control signals.

Brief Description Of The Drawings

[Para 40] Figure 1 is a schematic block diagram of a local audio network comprised of two linked audio units operated by two persons, and associated digital jewelry conveyed by the two persons.

[Para 41] Figure 2A is a schematic block diagram of a DJ with multiple independently controlled LED arrays.

[Para 42] Figure 2B is a schematic block diagram of a DJ with an LED array with independently controlled LEDs.

[Para 43] Figures 3A-C are schematic block diagrams of unit elements used in inter-unit communications.

[Para 44] Figure 4 is a schematic flow diagram of DJ entraining.

[Para 45] Figures 5A-B are schematic block diagrams of DJs associated with multiple people bound to the same master unit.

[Para 46] Figure 6 is a schematic block diagram of a cluster comprising a broadcast unit and multiple receive units, with an external search unit.

[Para 47] Figure 7 is a schematic diagram of a broadcast unit transmission.

[Para 48] Figure 8A is a schematic block diagram of audio units with self-broadcast so that audio output is highly synchronized.

[Para 49] Figure 8B is a schematic flow diagram for synchronous audio playing with multiple rebroadcast.

[Para 50] Figures 9A and 9B are schematic block diagrams of hierarchically-related clusters.

[Para 51] Figure 10 is a top perspective view of an earphone with manually adjustable external sound ports.

[Para 52] Figures 11 A and B are cross-sectional diagrams of a earpiece with an extender to admit additional ambient sound.

[Para 53] Figure 12A is a schematic diagram of a modular audio unit.

[Para 54] Figure 12B is a schematic diagram of modular digital jewelry.

[Para 55] Figure 12C is a schematic block diagram of a modular transmitter that generates and transmits control signals for digital jewelry from an audio player.

[Para 56] Figure 13A is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via visible or infrared LED emission in search transmission mode.

[Para 57] Figure 13B is a schematic cross-section through a search unit and a broadcast unit n which communications are provided via a visible or infrared laser in search transmission mode.

[Para 58] Figure 13C is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via visible or infrared emission from a digital jewelry element in broadcast transmission mode.

[Para 59] Figure 13D is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via contact in mutual transmission mode.

[Para 60] Figure 13E is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via sonic transmissions in broadcast transmission mode.

[Para 61] Figure 13F is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via radio frequency transmissions in broadcast transmission mode.

[Para 62] Figure 14A is a schematic block diagram of the socket configurations on the broadcast unit and the receive unit.

[Para 63] Figure 14B is a schematic block flow diagram of using IP sockets for establishing and maintaining communications between a broadcast unit and the receive unit, according to the socket diagram of Figure 14A.

[Para 64] Figure 15 is a schematic block diagram of the IP socket organization used with clusters comprising multiple members.

[Para 65] Figure 16 is a schematic block flow diagram of transfer of control between the broadcast unit and the first receive unit.

[Para 66] Figure 17 is a matrix of DJ and searcher preferences and characteristics, illustrating the matching of DJ and searcher in admitting a search to a cluster.

[Para 67] Figure 18A is a screenshot of an LCD display of a unit, taken during normal operation.

[Para 68] Figure 18B is a screenshot of an LCD display of a unit, taken during voting for a new member.

[Para 69] Figure 19 is a table of voting schemes for the acceptance of new members into a cluster.

[Para 70] Figure 20 is a time-amplitude trace of an audio signal automatically separated into beats.

[Para 71] Figure 21A is a block flow diagram of a neural network method of creating DJ transducer control signals from an audio signal as shown in Figure 20.

[Para 72] Figure 21B is a block flow diagram of a deterministic signal analysis method of creating DJ transducer control signals from an audio signal as shown in Figure 20.

[Para 73] Figure 21C is a schematic flow diagram of a method to extract fundamental musical patterns from an audio signal to create DJ control signals.

[Para 74] Figure 21D is a schematic flow diagram of an algorithm to identify a music model resulting in a time signature.

[Para 75] Figure 22A is a top-view diagram of an audio unit user interface, demonstrating the use of buttons to create DJ control signals.

[Para 76] Figure 22B is a top-view diagram of a hand-pad for creating DJ control signals.

[Para 77] Figure 22C is a schematic block diagram of a set of drums used for creating DJ control signals.

[Para 78] Figure 23A is a schematic block flow diagram of the synchronized playback of an audio signal file with a DJ control signal file, using transmission of both audio and control signal information.

[Para 79] Figure 24 is a schematic block diagram of a DJ unit with associated input transducers.

[Para 80] Figure 25 is a schematic flow diagram indicating music sharing using audio devices, providing new means of distributing music to customers.

[Para 81] Figure 26 is a schematic diagram of people at a concert, in which DJs conveyed by multiple individuals are commonly controlled.

[Para 82] Figure 27 is a schematic block flow diagram of using a prospective new member's previous associations to determine whether the person should be added to an existing cluster.

[Para 83] Figure 28 is a block flow diagram indicating the steps used to maintain physical proximity between the broadcast unit and the receive unit via feedback to the receive unit user.

[Para 84] Figures 29A is a schematic block diagram of the connection of an Internet-enabled audio unit with an Internet device through the Internet cloud, using an Internet access point.

[Para 85] Figures 29B is a schematic block diagram of the connection of an Internet-enabled audio unit with an Internet device through the Internet cloud, with an audio unit directly connected to the Internet cloud.

[Para 86] Figure 30 comprises tables of ratings of audio unit users.

[Para 87] Figure 31 is tables of DJ, song and transaction information according to the methods of Figure 25.

[Para 88] Figure 32A is a schematic block diagram of maintaining privacy in open transmission communications.

[Para 89] Figure 32B is a schematic block diagram of maintaining privacy in closed transmission communication.

[Para 90] Figure 33 is a schematic block diagram of a hierarchical cluster, as in Figure 9A, in which communications between different units is cryptographically or otherwise restricted to a subset of the cluster members.

[Para 91] Figure 34A is a schematic block flow diagram of the synchronization of music playing from music files present on the units 100.

[Para 92] Figure 34B is a schematic layout of a synchronization record according to Figure 34A.

[Para 93] Figure 35 is a schematic block diagram of DJ switch control for both entraining and wide-area broadcast.

[Para 94] Figure 36 is a schematic block diagram of mode switching between peer-to-peer and infrastructure modes.

Best Mode for Carrying-Out the Invention

Overview

[Para 95] Figure 1 is a schematic block diagram of a local audio network comprised of two linked audio units 100 operated by two persons, and associated digital jewelry 200 conveyed by the two persons. The persons are designated Person A and Person B, their audio units 100 are respectively Unit A and Unit B, and their digital jewelry 200 are denoted respectively DJ A and DJ B. In this patent specification, "DJ" is used to denote either the singular "digital jewel" or the plural "digital jewelry".

[Para 96] Each unit 100 is comprised of an audio player 130, and an inter-unit transmitter/receiver 110. In addition, each unit 100 comprises a means of communication with the digital jewelry, which can be either a separate DJ transmitter 120 (Unit A), or which can be part of the inter-unit transmitter/receiver 110 (Unit B). Furthermore, unit 100 can optionally comprise a DJ directional identifier 122, whose operation will be described below. Also, unit 100 will generally comprise a unit controller 101, which performs various operational and executive functions of intra-unit coordination, computation, and data transfers. The many

functions of the controller 101 will not be discussed separately below, but will be described with respect to the general functioning of the unit 100.

[Para 97] In operation, Unit A audio player 130 is playing recorded music under the control of a person to be designated User A. This music can derive from a variety of different sources and storage types, including tape cassettes, CDs, DVDs, magneto-optical disks, flash memory, removable disks, hard-disk drives or other hard storage media. Alternatively, the audio signals can be received from broadcasts using analog (e.g. AM or FM) or digital radio receivers. Unit A is additionally broadcasting a signal through DJ transmitter 120, which is received by DJ 200 through a DJ receiver 220 that is worn or otherwise conveyed by User A.

[Para 98] It should be noted that the audio signals can be of any sound type, and can include spoken text, symphonic music, popular music or other art forms. In this specification, the terms audio signal and music will be used interchangeably.

[Para 99] The DJ 200 transduces the signal received by the DJ receiver 220 to a form perceptible to the User A or other people near to him. This transduced form can include audio, visual or tactile elements, which are converted to their perceptible forms via a light transducer 240, and optionally a tactile transducer 250 or an audio transducer 260. The transducers 240, 250 and 260 can either directly generate the perceptible forms directly from the signals received by the DJ receiver 220, or can alternatively incorporate elements to filter or modify the signals prior to their use by the transducers.

[Para 100] When a second individual, User B, perceives the transduced forms produced by User A DJ 200, he can then share the audio signal generated by the audio player 130 of Unit A, by use of the inter-unit transmitter/receiver 110 of Unit A and a compatible receiver 110 of Unit B. Audio signals received by Unit B from Unit A are played using the Unit B audio player 130, so that User A and User B hear the audio signals roughly simultaneously. There are a variety of means by which the Unit B can select the signal of Unit A, but a preferred method is for there to be a DJ directional identifier 122 in Unit B, which can be pointed at the DJ of User A and which receives information needed to select the Unit A signal from the User A DJ, whose transduced signal is perceptible to User B.

[Para 101] Given the audio signal now being exchanged between Unit A and Unit B, User A and User B can experience the same audio signal roughly simultaneously. Within the spirit of the present invention, it is preferable for the two users to hear the audio signals within 1 second

of one another, and more preferable for the users to hear the audio signals within 200 milliseconds of one another, and most preferable for the users to hear the audio signals within 50 milliseconds of one another. Furthermore, DJs 200 being worn by User A and User B can receive signals from their respective units, each emitting perceptible forms of their signals. Preferably, the transduced forms expressed by the DJs 200 are such as to enhance the personal or social experience of the audio being played.

Unit 100 Structure

[Para 102] Units 100 comprise a device, preferably of a size and weight that is suited for personal wearing or transport, which is preferably of a size and format similar to that of a conventional portable MP3 player. The unit can be designed on a "base" of consumer electronics products such as cell phones, portable MP3 players, or personal digital assistants (PDAs), and indeed can be configured as an add-on module to any of these devices.

[Para 103] In general, the unit 100 will comprise, in addition to those elements described in Figure 1, other elements such as a user interface (e.g. an LCD or OLED screen, which can be combined with a touch-sensitive screen, keypad and/or keyboard), communications interfaces (e.g. Firewire, USB, or other serial communications ports), permanent or removable digital storage, and other components.

[Para 104] The audio player 130 can comprise one or more modes of audio storage, which can include CDs, tape, DVDs, removable or fixed magnetic drives, flash memory, or other means. Alternatively, the audio can be configured for wireless transmission, including AM/FM radio, digital radio, or other such means. Output of the audio signal so generated can comprise wireless or wired headphones or wired or wireless external speakers.

[Para 105] It is also within the spirit of the present invention that the unit 100 can have only receive capabilities, without having separate audio information storage or broadcast capabilities. In concept, such a device can have as little user interface as an on/off button, a button to cause the unit 100 to receive signals from a new "host", and a volume control. Such devices can be very small and be built very inexpensively.

Unit 100 Audio Output

[Para 106] One of the goals of the present invention is to assist communications between groups of people. In general, with mobile audio devices, the music is listened to through headphones. Many headphones are designed so as to reduce to the extent possible the amount of sound which is heard from outside of the headphones. This, however, will have the general effect of reducing the verbal communications between individuals.

[Para 107] In order to avoid this potential problem, it is within the teachings of the present invention that headphones or earphones be provided that allow ambient sound, including a friend's voice, to be easily perceptible to the wearer of the headphones, and that such headphones can be provided that variably allow such sound to be accessible for the headphone's wearer. Such arrangement of the headphones can be obtained either through physical or electronic means. If through electronic means, the headphones can have a microphone associated with them, through which signals received are played back in proportion through the headphone speakers, said proportion being adjustable from substantially all sound being from the microphone to substantially no sound being from the microphone. This microphone can also be a part of a noise cancellation system, such that the phase of the playback is adjustable – if the phase is inverted relative to the ambient sound signal, then the external noise is reduced, whereas if the phase is coincident with the ambient sound signal, then the ambient sounds are enhanced.

[Para 108] Figure 10 is a top perspective view of an earphone 900 with adjustable external sound ports. A speaker element 940 is centrally located, and the outside circumferential surface is a rotatable sound shield 910 in which sound ports 930 are placed. The sound ports 930 are open holes to admit sound. Beneath the sound shield 930 is a non-rotatable sound shield in which fixed sound ports 920 are placed in a similar arrangement. As the sound shield 910 is rotated manually by the user, the sound ports 930 and the fixed sound ports 920 come into registration, so that open ports between sources of ambient noise and the outer ear chamber is created, increasing the amount of ambient sound that the user perceives.

[Para 109] Figures 11 A and B are cross-sectional diagrams of an earpiece with an extender 980 that admits additional ambient sound. In Figure 11A, the face of a speaker 960 with a cord 970 is covered with a porous foam block 950 that fits snugly into the ear. While some ambient sound is accessible to the ear through the foam block 950, the majority of the sound is input is impeded. In Figure 11B, the foam extender 980 is placed over the foam block 950 so that a

formed shape at the distal end of the extender 980 fits snugly into the ear. A hollow cavity 982 can be allowed in the extender 980 so as to reduce the sound impedance from the speaker 960 to the ear. Ambient sound is allowed into the space between the speaker 960 and the distal end of the extender 980 (shown by the arrows).

[Para 110] Many other arrangements are allowed within the spirit of the present invention to allow ambient sound to more easily access the user's ear, including adjustable headphones or earplugs as in Figure 10, or accessories that can modify the structure of existing earphones and headphones, as in Figure 11B. Such effects can include increasing the number of apertures admitting ambient sound, increasing the size of an aperture (e.g. by adjusting the overlap between two larger apertures), changing the thickness or number of layers in the enclosure, or by placing a manually detachable cup that covers the earphone and ear channel so as to reduce ambient sound.

DJ 200 Transducers

[Para 111] DJs 200 will have a number of common elements, including communications elements, energy storage elements, and control elements (e.g. a manual ON/OFF switch or a switch to signal DJ entraining, as will be described below). In this section, the structure and function of transducers will be described.

Light Transducers 240

[Para 112] The DJ 200 transducers are used to create perceptible forms of the signals received by the receiver 220. Light transduction can include the use of one or more light-emitting devices, which can conveniently be colored LEDs, OLEDs, LCDs, or electroluminescent displays, which can be supplemented with optical elements, including mirrors, lenses, gratings, and optical fibers. Additionally, motors, electrostatic elements or other mechanical actuators can be used to mechanically alter the directionality or other properties of the light transducers 240. There can be either a single device or an array of devices, and if more than a single device, can display in synchrony, or can be "choreographed" to display in a temporal and/or spatial pattern.

[Para 113] Figure 2A is a schematic block diagram of a DJ 200 with multiple independently controlled LED arrays, wherein the number of LED arrays is preferably between 2 and 8, and is

even more preferably between 2 and 4. The signal received from unit 100 via the DJ receiver 220 is passed to a multi-port controller 242 with two ports 294 and 296 connected respectively with two separate arrays 290 and 292 of LEDs 246. These arrays 290 and 292 can be distinguished by spatial placement, color of emitted light, or the temporal pattern of LED illumination. The signal is converted via analog or digital conversion into control signals for the two arrays 290 and 292, which are illuminated in distinct temporal patterns.

[Para 114] It should be noted that the signal received by receiver 220 from the unit 100 can comprise either a signal already in the form required to specify the array and temporal pattern of LED 246 activity, or it can alternatively be converted from a differently formatted signal into temporal pattern signals. For example, the unit 100 can transmit a modulated signal whose amplitude specifies the intensity of LED light amplitude. For multiple LED arrays, signals for the different arrays can be sent together and decoded by the DJ receiver 220, such as through using time multiplexing, or transmission on different frequencies.

[Para 115] Alternatively, the signal could be not directly related to the transduction intensity, such as in the direct transmission of the audio signal being played by the unit 100. In such case, the controller 242 can modify the signal so as to generate appropriate light transduction signals. For example, low frequency bandpass filters could provide the signals for the first array 290, whereas high-frequency bandpass filters could provide the signals for the second array 292. Such filtering could be accomplished by either analog circuitry or digital software within a microprocessor in the controller 242. It is also within the spirit of the present invention for the different arrays to respond differently to the amplitude of the signal within a frequency band or the total signal.

[Para 116] An alternative control of LED arrays is presented in Figure 2B, a schematic block diagram of a DJ 200 with an LED array with independently controlled LEDs. In this case, the control signal received by the receiver 200 is passed through a single-port, multiple ID controller 243 to a single array of LEDs, each responsive only to signals with a particular characteristic or identifier. One or more of the LEDs 246 can have the same identifier or be responsive to the same characteristic so as to constitute a virtual array of LEDs.

[Para 117] As mentioned above, the transduced light signal can alternatively or additionally comprise multi-element arrays, such as an LED screen. In such case, the signal received by the receiver 220 can be either a specification of image elements to be displayed on the LED screen,

or can be as before, a signal unrelated to the light transduction output. For example, many audio players on computers (e.g. Windows Media player) come with pattern generators that are responsive to the frequency and amplitude of the audio signal. Such pattern generators could be incorporated into the controllers 242 or 243.

[Para 118] Alternatively, the light transducer 240 can be a single color illuminated panel, whose temporal pattern of illumination was similar to that of the LEDs of Figures 2A and 2B. In such case, users can partially cover the panel with opaque or translucent patterns, such as a dog or a skull or a representation of a favorite entertainer.

[Para 119] Whereas the receiver 220 and the light controllers 242 or 243 can be hidden from view, either behind the light transducers or separated from the transducers by a wire, for example, the light transducers are meant to be perceptible to other people. For this purpose, the light transducers can be fashioned into fashion accoutrements such as bracelets, brooches, necklaces, pendants, earrings, rings, hair clips (e.g. barrettes), ornamental pins, netting to be worn over clothing, belts, belt buckles, straps, watches, masks, or other objects. Additionally, the light transducers can be fashioned into clothing, such as arrays of lighting elements sewn onto the outside of articles of clothing such as backpacks, wallets, purses, hats, or shoes. For those articles of clothing that are normally washed, however, the lighting transducers and associated electronics will preferably be able to withstand cleaning agents (e.g. water or dry cleaning chemicals), or will be used in clothing such as scarves and hats that do not need to be washable.

[Para 120] It is also convenient for there to be modular lighting arrangements in which the configuration can easily changed by a user. One example of such a modular arrangement is a light pipe made of a flexible plastic cable or rod, at one or both ends of which is positioned a light source that directs light into the rod. At predetermined locations along the rod, the rod surface can be roughened so as to allow a certain amount of light to escape, on which transparent glass or plastic pieces can be clipped, and that are lighted when the pipe is lighted. Alternatively, the light can be uniformly smooth, and transparent pieces of roughly index of refraction matching material can be clipped onto the rod, allowing some fraction of the light to be diverted from the rod into the pieces. The light sources and associated energy sources used in such an arrangement can be relatively bulky and be carried in a backpack, pouch or other carrying case, and can brightly illuminate a number of separate items.

[Para 121] It should be noted that the transducers require an energy store 270, which is conveniently in the form of a battery. The size of the battery will be highly dependent on the transduction requirements, but can conveniently be a small "watch battery". It is also convenient for the energy store 270 to be rechargeable. Indeed, all of the electric devices of the present invention will need energy stores or generators of some sort, which can comprise non-rechargeable batteries, rechargeable batteries, motion generators that can convert energy from the motion of the user into electrical energy that can be used or stored, fuel cells or other such energy stores or converters as are convenient.

Sound Transducers 260

[Para 122] Sound transducers 260 can supplement or be the primary output of the audio player of the unit 100. For example, the unit 100 can wirelessly transmit the audio signal to DJ 200 comprising a wireless headphone sound transducer. This would allow a user to listen to the audio from the audio player without the need for wires connecting the headphones to the unit 100. Such sound transducers can comprise, for example, electromagnetic or piezoelectric elements.

[Para 123] Alternative to headphone or earphone audio production, external speakers, which can be associated with light transducers 240 or tactile transducers 250, can be used to enhance audio reproduction from external speakers associated with the unit 100. In addition or alternative to simple reproduction of the audio signal output by the audio player 130, the sound transducers 260 can play modified or accompanying signals. For example, frequency filters can be used to select various frequency elements from the music (for low bass), so as to emphasize certain aspects of the music. Alternatively, musical elements not directly output from the audio player 130 can be output to complete all instrumental channels of a piece of music, for example.

Tactile Transducers 250

[Para 124] DJs 200 can be configured with tactile transducers, which can provide vibrational, rubbing, or pressure sensation. As before, signals of a format that control these transducers can be sent directly from the DJ transmitter 120, or can be filtered, modified or generated from signals of an unrelated format that are sent from the transmitter 120. As before, the signal can be the audio signal from the audio player 130, which can, for example, be frequency filtered and

possibly frequency converted so that the frequency of tactile stimulation is compatible with the tactile transducer. Alternatively, signals that are of the sort meant for light transduction can be modified so as to be appropriate for tactile transduction. For example, signals for light of a particular color can be used to provide vibrational transduction of a particular frequency, or light amplitudes can be converted into pressure values.

[Para 125] The tactile transducer can comprise a pressure cuff encircling a finger, wrist, ankle, arm, leg, throat, forehead, torso, or other body part. The tactile transducer can alternatively comprise a rubbing device, with an actuator that propels a tactile element tangentially across the skin. The tactile transducer can also alternatively comprise a vibrational device, with an actuator that drives an element normally to the skin. The tactile transducer can further alternatively comprise elements that are held fixed in relation to the skin, and which comprise moving internal elements that cause the skin to vibrate or flex in response to the movement of the internal element.

[Para 126] The tactile transducer can lack any moveable element, and can confer tactile sensation through direct electrical stimulation. Such tactile elements are best used where skin conductivity is high, which can include areas with mucus membranes.

[Para 127] Tactile transduction can take place on any part of the body surface with tactile sensation. In addition, tactile transduction elements can be held against the skin overlying bony structures (skull, backbone, hips, knees, wrists), or swallowed and conveyed through the digestive tract, where they can be perceived by the user.

Input Transducers

[Para 128] It should also be understood that the DJ 200 can comprise input transducers in order to create control signals from information or stimuli in the local environment. Figure 24 is a schematic block diagram of a DJ unit 200 with associated input transducers. The input-enabled DJ 1320 comprises energy storage 270, a controller 1322, output transducers 1324, a DJ receiver 220 and input transducers 1326. The input transducers 1326 can comprise one or more of a microphone 1328 and an accelerometer 1330.

[Para 129] In operation, the energy storage 270 provides energy for all other functions in the DJ 1320. The controller 1322 provides control signals for the output transducers 1324, which can comprise tactile transducers 250, sound transducers 260, and/or light transducers 240. Input

to the controller can be provided via the input transducers 1326, optionally along with input from the DJ receiver 220.

[Para 130] For example, on a dance floor, the microphone 1328 can provide electrical signals corresponding to the ambient music. These signals can be converted into transducer 1324 control signals in a manner similar to that described below for the automatic generation of control signals according to Figures 21 A-C, as will be described below. This allows the use of the DJ functionality in the absence of an accompanying audio unit 100, expanding the applications of the DJ 200. An automatic gain filter can be applied so as to compensate for the average volume level – because the user can be close or far from the sources of ambient music and the music can vary in volume, the strength of the DJ 200 transduction can be normalized. In addition, it can also be preferable for there to be a manual amplitude control 1323, such as a dial or two position rocker switch, by which the average intensity of the DJ 200 control signals can be varied to suit the taste of the user. The amplitude control 1323 can operate through modulating the input transducer 1326 output or as an input to the controller 1322 as it generates the signals for the output transducers 1324.

[Para 131] Alternatively, the accelerometer 1330 can track the movement of the person wearing the DJ 100, such that a signal indicating acceleration in one direction can be converted by the controller 1322 into signals for a channel of output transducers 1324. The accelerometer 1330 can be outfitted with sensors for monitoring only a single axis of motion, or alternatively for up to three independent directions of acceleration. Thus, the controller 1322 can convert sensed acceleration in each direction into a separate channel, horizontal axes of acceleration could be combined into a single channel and the vertical axis into a second channel, or other such linear or non-linear combination of sensed acceleration can be combined in aesthetic fashion.

[Para 132] It is also within the spirit of the present invention that multiple input signals be combined by the controller 1322 to create control signals for aesthetic output from the output transducers 1324. For example, one channel can be reserved for control signals generated from accelerometer signals, another channel for control signals generated from microphone signals, and yet a third channel from control signals generated from DJ receiver 220 input. In general, the information from the DJ receiver 220 and from the microphone 1328 will be of the same type (i.e. generated from audio signals), so that the most common configurations will be control

signals from a combination of the microphone 1328 and accelerometer 1330, and signals from a combination of the DJ receiver 220 and the accelerometer 1330.

[Para 133] The input transducers 1326 can further comprise a light sensor, such that the DJ would mimic light displays in its environment, making it appear that the DJ is part of the activity that surrounds it. In this case, the controller 1322 would preferably generate control signals based on rapid changes in the ambient lighting, since it would be less aesthetic to have the DJ transducers provide constant illumination. Furthermore, slowly changing light (on the order of tens or hundreds of milliseconds) will be created naturally by the movement of the user, whereas changes in the lighting (e.g. strobes, laser lights, disco balls) will be of much faster change (on the order of milliseconds). Thus, to match the ambient dance lighting, it is aesthetic for the DJ 200 to respond most actively to ambient light that is changing in intensity a predetermined percentage in a predetermined time, wherein the predetermined percentage is at least 20% and the predetermined time is 20 milliseconds or less, and even more preferably for the predetermined percentage to be at least 40% and the predetermined time is 5 milliseconds or less.

Unit to Unit Communication

[Para 134] Units 100 transfer audio signals from the audio player in one unit 100 to the audio player 130 of another unit 100. Figures 3A-C are schematic block diagrams of unit 100 elements used in inter-unit communications. Each diagram presents communications between a Unit A and a Unit B, with Unit A transmitting audio signals to Unit B. Dashed connectors and elements indicate elements or transfers that are not being utilized in that unit 100, but are placed to indicate the equivalence of the transmitting and receiving units 100.

[Para 135] In Figure 3A, compressed audio signals (e.g. in MP3 format or MPEG4 format for video transfers, as described below) stored in a compressed audio storage 310 are transferred to a signal decompressor 302, where the compressed audio signal is converted into an uncompressed form suitable for audio output. In Unit A, this decompressed signal is passed both to the local speaker 300, as well as to the inter-unit transmitter/receiver 110. The Unit B inter-unit transmitter-receiver 110 receives the uncompressed audio signal, which is sent to its local speaker for output. Thus, both Unit A and Unit B play the same audio from the Unit A storage, in which uncompressed audio is transferred between the two units 100.

[Para 136] In Figure 3B, compressed audio signals from the Unit A compressed audio storage 310 are sent both to the local signal decompressor 302 and to the inter-unit transmitter/receiver 110. The Unit A decompressor 302 conditions the audio signal so that it is suitable for output through the Unit A speaker 300. The compressed audio signal is sent via Unit A transmitter-receiver 110 to the Unit B transmitter/receiver 110, where it is passed to the Unit B decompressor 302 and thence to the Unit B speaker 300. In this embodiment, because compressed audio signals are transmitted between the units 100 transmitter/receivers 302, lower bandwidth communications means can be used in comparison with the embodiment of Figure 3A.

[Para 137] In Figure 3C, compressed audio signals from the Unit A compressed audio storage 310 are sent to the Unit A signal decompressor 302. These decompressed signals are sent to both the local speaker 300 as well as to a local compressor 330, which recompresses the audio signal to a custom format. In addition to decompressed audio signal input, the compressor also optionally utilizes information from a DJ signal generator 320, which generates signals to control DJ transducers 240, 250 and 260, which can be sent in conjunction with the audio signal. The signal generator 320 can include analog and/or digital filtering or other algorithms that analyze or modify the audio signals, or can alternatively take manually input transducer control signals input as described below. The custom compression can include multiplexing of the audio signals with the transducer control signals.

[Para 138] The custom compressed audio signals, are then passed to the Unit A inter-unit transmitter/receiver 110, which are then transferred to the Unit B inter-unit transmitter/receiver 110, and thence to the Unit B signal decompressor 302 and speaker 300.

[Para 139] Given the time delays in signal transfer between the units 100, custom compression that takes place in the sending unit, and any subsequent decompression that takes place in the receiving unit 100, it can be convenient to place a delay on the local (i.e. Unit A) speaker output of tens of milliseconds, so that both units 100 play the audio through their speakers at roughly the same time. This delay can include limited local digital storage between the local signal decompression and speaker 300 output.

[Para 140] Various hardware communications protocols will be discussed below with respect to unit-to-unit communications, but in general it is required that the distance between the units that must be maintained be preferably at least 40 feet, and more preferably at least 100 feet, and

most preferably 500 feet, in order to allow units 100 sharing music to be able to move reasonably with respect to one another (e.g. for a user to go to the bathroom without losing contact), or to find each other in a large venue such as a shopping mall.

Communications Protocols

[Para 141] Communication between the inter-unit transmitter/receivers 110 can involve a variety of protocols within the teachings of the present invention, and can include IP protocol-based transmissions mediated by such physical link layers as 802.11a, b or g, WDCT, HiperLAN, ultra-wideband, 2.5 or 3G wireless telephony communications, custom digital protocols such as Bluetooth or Millennial Net i-Beans. Indeed, it is not even necessary for the transmissions to be based on Internet protocol, and conventional analog radio-frequency or non-IP infrared transmissions are also within the spirit of the present invention. Each unit 100 will generally have both transmission and reception capabilities, though it is possible for a unit to have only reception capabilities. While the bandwidth of the broadcast is dependent on the compression of the audio signal, it is preferable for the transmission bandwidth to be larger than 100 kb/sec, and even more preferable for the transmission bandwidth to be greater than 250 kb/sec.

[Para 142] While the distance of transmission/reception is not bounded within the teachings of the present invention, it will generally be less than a few hundred meters, and often less than 50 meters. The distance of communication is limited in general by the amount of power required to support the transmission, the size of antennae supported by portable devices, and the amount of power allowed by national regulators of broadcast frequencies. Preferably, however, the range of transmission will be at least 10 meters, and even more preferably at least 30 meters, in order to allow people sharing communications to move some distance from one another without communications being lost.

[Para 143] The unit 100 is characterized generally by four sets of roughly independent characteristics: playing audio or not playing audio, transmitting or not transmitting, receiving or not receiving, searching or not searching.

[Para 144] Units 100 will often function in conditions with large numbers of other units 100 within the communications range. For example, in a subway car, a classroom, bicycling, or at a party, a unit 100 can potentially be within range of dozens of other units. A unit 100 that is

playing audio from local compressed audio storage 310 can, at the user's prerogative, choose to broadcast this audio to other units 100. A unit 100 that is currently "listening" to a broadcast or is searching for a broadcast to "listen" to will require a specific identifier roughly unique to a broadcaster in order to select that broadcaster signal from among the other possible broadcasters. Some of the communications protocols listed above, such as those based on IP protocols, 2.5G or 3G wireless, or Bluetooth communications, have such identifiers as part of the protocols. Custom radio frequency based protocols will require protocols to allow signals to be tagged with specific identifiers.

[Para 145] A unit 100 that is transmitting signals can, within the spirit of the present invention, be prevented from simultaneously receiving signals. Preferably, however, units 100 can both transmit and receive simultaneously. One example of the use of simultaneous transmission and reception is for a unit 100 that is receiving a signal to send a signal indicating its reception to the transmitting unit 100. This allows the transmitting unit to determine the number of units 100 that are currently receiving its broadcast. In return, this information could be sent, along with the audio signal, so that all of the users with units 100 receiving the broadcast can know the size of the current reception group. Alternatively, a user with a unit 100 that is currently broadcasting can be searching for other broadcasting units, so that the user can decide whether to continue broadcasting or whether to listen to the broadcast of another unit.

Unit to DJ Communication

[Para 146] Communication between the unit 100 and the DJ 200 can be either through the inter-unit transmitter/receiver 110, or through a separate system. In general, the requirement of the DJ 200 is for reception only, although it is permissible for the DJ 200 to include transmission capabilities (e.g. to indicate to the unit 100 when the DJ 200 energy storage 270 is near depletion).

[Para 147] The signals for which the DJ 200 is receptive is dependent on how the transduction control signals are generated. For example, for a controller 242 that incorporates a filter or modifier that takes the audio signal as its input, the DJ receiver 220 would receive all or a large fraction of the audio signal. In this case, the communication between the unit 100 and the DJ 200 would require a bandwidth comparable to that of inter-unit communication, as described above.

[Para 148] However, if the signals are either generated in the unit 100, or pre-stored along with the stored compressed audio signal, then the communications bandwidth can be quite modest. Consider a DJ 200 with 2 arrays 290 and 292 of LEDs 246, which flash with a frequency of no more than 10 Hertz, and that the LEDs are in either an ON or an OFF state, without intermediate amplitudes. In such case, the maximum bandwidth required would be only 20 bits/second, in addition to the DJ control signals.

[Para 149] The range of unit to DJ communications need not be far. In general, the unit 100 and the DJ 200 will be carried by the same user, so communications ranges of 10 feet can be adequate for many applications. Some applications (see below) can require, however, somewhat larger ranges. On the other hand, longer communications ranges will tend to confer the possibility of overlap and interference between two different units 100 to their respective DJs 200. In general, for the application of unit to DJ communications, it is preferable for the minimum range of communications to be at least 1 foot, and more preferably for the minimum range of communications to be at least 10 feet, and most preferably for the minimum range of communications to be at least 20 feet. Also, for the application of unit to DJ communications, it is preferable for the maximum range of communications to be no more than 500 feet, and more preferably for the maximum range of communications to be no more than 100 feet, and most preferably for the maximum range of communications to be no more than 40 feet. It should be noted that these communications ranges refer primarily to the transmission distance of the units 100, especially with regard to the maximum transmission distance.

[Para 150] Because there can be multiple unit 100/DJ 200 ensembles within a relatively short distance, communications between a unit 100 and a DJ 200 preferably comprise both a control signal as well as a unit identification signal, so that each DJ 200 receives its control signals from the correct unit 100. Because the unit 100 and the DJ 200 will not, in general, be purchased together, or that a user can buy a new unit 100 to be compatible with already owned DJs 200, it is highly useful to have a means of "entraining" a DJ 200 to a particular unit 100, called its "master unit", and a DJ 200 entrained to a master unit is "bound" to that unit.

[Para 151] Figure 4 is a schematic flow diagram of DJ entraining. To entrain a DJ 200, the DJ is set into entraining mode, preferably by a physical switch on the DJ 200. The master unit 100 to which the DJ 200 is to be entrained is then placed within communications range, and the unit 100 transmits through the DJ transmitter 120 an entraining signal that includes the master

unit 100 identifier. Even should there be other units 100 transmitting in the vicinity, it is unlikely that they would be transmitting the entraining signal, so that entraining can often take place in a location with other active units 100. Verification that the entraining took place can involve a characteristic sequence of light output (for light transduction), audio output (for sound transduction) or motion (for tactile transduction). After verification, the DJ 100 is reset to its normal mode of operation, and will respond only to control signals accompanied by the identifier of its master unit 200.

[Para 152] It should be noted that there can be multiple DJ's 200 bound to the same master unit 100. Thus, a single person can have multiple light transducing DJs 200, or DJs 200 of various modes (light, sound, tactile) transduction.

[Para 153] While DJs 200 will generally be bound to a master unit associated with the same person, this is not a requirement of the present invention. Figures 5A-B are schematic block diagrams of DJs 200 associated with multiple people bound to the same master unit. In Figure 5A, DJ A 200and DJ B 200 are both bound to the same DJ transmitter 120, even though DJ A 200 and DJ B 200 are carried by different persons. This is particularly useful if the control signals are choreographed manually or through custom means by one person, so that multiple people can then share the same control signals. Such a means of synchronization is less necessary if the DJ 200 control signals are transmitted between units 100 through the inter-unit transmitter/receiver 110 along with the audio signals. Furthermore, in this case, it is better for the range of unit-to-DJ communication to be in the range of the inter-unit communication described above.

[Para 154] In the case of sound transducers 260, the DJ B 200 can comprise a wireless audio earpiece, allowing users to share music, played on a single unit 100, privately. Consider Figure 5A, configured with sound transducers 260 (see, for example, Figure 1) in DJ A 200 and DJ B 200. Signals from the audio player 130 are transmitted by the DJ transmitter 120, where they are received by DJs 200 – DJ A and DJ B – that are carried by Person A and Person B, respectively. In this case, both persons can listen to the same music.

[Para 155] Figure 5B shows the operation of a wide-area broadcast unit 360, which is used primarily to synchronize control of a large number of DJs 200, such as might happen at a concert, party or rave. In this case, the audio player 130 is used to play audio to a large audience, many of whom are wearing DJs 200. In order to synchronize the DJ output, a relatively high-

power broadcast transmitter 125 broadcasts control signals to a number of different DJs 200 carried by Person A, Person B and other undesignated persons. The entraining signal can be automatically sent on a regular basis (e.g. whenever music is not being played, such as between songs, or interspersed within compressed or decompressed songs) so that patrons or partygoers could entrain their DJs 200 to the broadcast unit 360. The broadcast unit 360 can also transmit inter-unit audio signals, or can only play the audio through some public output speaker that both Person A and Person B can enjoy.

[Para 156] Figure 26 is a schematic diagram of people at a concert, in which DJs 200 conveyed by multiple individuals are commonly controlled. At a concert venue 1370, music is produced on a stage 1372, and concert patrons 1376 are located on the floor of the venue. Many of the patrons have DJs 200 which are receptive to signals generated by a broadcast DJ controller 1374. The broadcast DJ controller creates signals as described below, in which the music is automatically converted into beats, where microphones are used to pick up percussive instruments, and/or where individuals use a hand-pad to tap out control signals. These control signals are either broadcast directly from the area of the broadcast DJ controller 1374, or alternatively are broadcast from a plurality of transmitters 1380 placed around the venue 1370, and which are connected by wires 1378 to the controller 1374 (although the connection can also be wireless within the spirit of the present invention). It should be understood that the protocol for transmitting DJ control signals can be limited either by hardware requirements or by regulatory standards to a certain distance of reception. Thus, to cover a sufficiently large venue, multiple transmitters can be necessary to provide complete coverage over the venue 1370. In general, it is preferable for the maximum transmission distance of transmission from the transmitters to be at least 100 feet, and more preferably at least 200 feet, and most preferably at least 500 feet, so as to be able to cover a reasonable venue 1370 size without needing too many transmitters 1380.

[Para 157] An alternative embodiment of unit 100 to DJ 200 communications is the use of radio frequency transmitters and receivers, such as those used in model airplane control, which comprise multi-channel FM or AM transmitters and receivers. These components can be very small (e.g. the RX72 receivers from Sky Hooks and Riggings, Oakville, Ontario, Canada), and are defined by the crystal oscillators that determine the frequency of RF communications. Each channel can serve for a separate channel of DJ control signals. In such cases, an individual can

place a specific crystal in their audio unit 100, and entraining the DJ 200 is then carried out through the use of the same crystal in the DJ 200. Because of the large number of crystals that are available (e.g. comprising approximately 50 channels in the model aircraft FM control band), interference with other audio units 100 can be minimized. Furthermore, control of many DJs 200 within a venue, as described above, can take place by simultaneously transmitting over a large number of frequencies.

[Para 158] As described above, the wide-area broadcast transmitter 125 can transmit entriaing signals to which the DJs 200 can be set to respond. However, there are a number of other preferred means by which DJs 200 can be used to respond to control signals to which they have not been entrained. For example, the DJs 200 can be set to respond to controls signals to which they have not been entrained should there be no entrained control signals present (e.g. the corresponding unit 100 is not turned on).

[Para 159] Figure 35 is a schematic block diagram of DJ 200 switch control for both entraining and wide-area broadcast. The DJ 200 comprises a three-way switch 1920. In a first state 1922, the DJ 200 is entrained to the current control signal as described above. Thereafter, in a second state 1924, the DJ 200 responds to control signals corresponding to the entraining signal encountered in the step 1922. In a third state 1926, the DJ 200 responds to any control signal for which its receiver is receptive, and can therefore respond to a wide-area broadcast, thereby providing the user with manual control over the operational state of the DJ 200. It should be noted that the switch 1920 can be any physical switch with at least three discreet positions, or can alternatively be any manual mechanism by which the user can specify at least three states, including a button presses that have a visible user interface or a voice menu.

[Para 160] Figure 12B is a schematic drawing of modular digital jewelry 201. The modular jewelry 201 is comprised of two components: an electronics module 1934 and a display module 1932. These modules 1934 and 1932 can be electrically joined or separated through an electronics module connector 1936 and a display module connector 1938. The value of the modular arrangement is that the electronics module 1934 comprises, in general, relatively expensive components, whose combined price can be many-fold that of the display module 1932. Thus, if a user wants to change the appearance of the jewelry 201 without having to incur the cost of additional electronics components such as the energy storage 270, receiver 220 or controller 1322, they can simply replace the display module 1932 with its arrangement of output

transducers 1324 with an alternative display module 1933 with a different arrangement of output transducers 1325.

[Para 161] The transmitter for DJ 200 control signals has been previously discussed primarily in terms of its incorporation within a unit 100. It should be understood, however, that the transmitter can be used in conjunction with a standard audio player unrelated to unit-to-unit communications. Figure 12C is a schematic block diagram of a modular digital jewelry transmitter 143 that generates and transmits control signals from an audio player 131. The modular transmitter 143 is connected to the audio player 131 via audio output port 136 through the cable 134 to the audio input port 138 of the modular transmitter 143. The modular transmitter 143 comprises the the DJ transmitter 120, which can send unit-to-DJ communications. The output audio port 142 is connected to the earphone 901 via cable 146. The earphone 901 can also be a wireless earphone, perhaps connected via the DJ transmitter 120.

[Para 162] The audio output from the player 131 is split both to the earphone 901 and to the controller 241 (except, perhaps where the DJ transmitter transmits to a wireless earphone). The controller 241 automatically generates control signals for the DJ 200 in a manner to be described in detail below. These signals are then conveyed to the DJ transmitter 120. It should be understood that this arrangement has the advantage that the digital jewelry functionality can be obtained without the const of the components for the audio player 131, and in addition, that the modular transmitter 143 can then be used in conjunction with multiple audio players 131 (either of different types or as the audio players are lost or broken).

Inter-unit Audio Sharing

Overview

[Para 163] Inter-unit communication involves the interactions of multiple users, who may or may not be acquaintances of each other. That is, the users can be friends who specifically decide to listen to music together, or it can be strangers who share a transient experience on a subway train. The present invention supports both types of social interaction.

[Para 164] An important aspect of the present invention is the means by which groups of individuals join together. Figure 6 is a schematic block diagram of a cluster 700 of units 100, indicating the nomenclature to be used. The cluster 700 is comprised of a single broadcast unit

710, and its associated broadcast DJ 720, as well as one or more receive units 730 and their associated DJs 740. The broadcast unit 710 transmits music, while the receive unit 730 receives the broadcasted music. A search unit 750 and its associated search DJ 760 are not part of the cluster 700, and comprise a unit 100 that is searching for a broadcast unit 710 to listen to or a cluster 700 to become associated with.

[Para 165] It should be noted that many communications systems can be operated alternatively in two modes: one that supports peer-to-peer communications and one that requires a fixed infrastructure such as an access point. Figure 35 is a schematic block diagram of mode switching between peer-to-peer and infrastructure modes. A mode switch 1950 is made by the user, either manually, or automatically – for example, that the user chooses between different functions (listening or broadcasting, file transfers, browsing the Internet) and the system determine the optimal mode to use. A peer-to-peer mode 1952 is well configured for mutual communications between mobile units 100 that are within a predetermined distance, and is well-suited for short-range wireless communications and audio data streaming 1954. Alternatively, the mode switch 1950 enables an infrastructure mode 1956, which is of particular usefulness in gaining access to a wide area network such as the Internet, through which remote file transfer 1958 (e.g. downloading and uploading) and remote communications such as Internet browsing can be made through access points to the fixed network.local wireless audio streaming.

[Para 166] It should be noted, however, that certain communications systems, such as many modes of telephony, do not distinguish between mobile communications and communications through fixed access points, and that both file transfer 1958 and audio streaming 1954 can be available through the same mode. Even in those cases, however, it can be convenient to have two modes in order to make optimal use of the advantages of the different modes. In such cases, however, the two modes can alternatively be supported by multiple hardware and software systems within the same device – for example, for remote communications to be made through a telephony system (e.g. GSM or CDMA), while the local audio streaming 1954 can be made through a parallel communications system (e.g. Bluetooth or 802.11) – indeed, the two systems can operate simultaneously with one another.

Inter-unit Transmission Segmentation

[Para 167] Preferably, the broadcast unit 710 and the receive units 730 exchange information in addition to the audio signal. For example, each user preferably has indications as to the number of total units (broadcast units 710 and receive units 730) within a cluster, since the knowledge of cluster 700 sizes is an important aspect of the social bond between the users. This also will help search units 750 that are not part of the cluster determine which of the clusters 700 that might be within their range are the most popular.

[Para 168] The additional information shared between members of a cluster 700 would include personal characteristics that a person might allow to be shared (images, names, addresses, other contact information, or nicknames). For example, the broadcast unit 710 will preferably, along with the music, transmit their nickname, so that other users will be able to identify the broadcast unit 710 for subsequent interactions, and a nickname is significantly easier to remember than a numerical identifier (however, such numerical identifier can be stored in the unit 100 for subsequent searching).

[Para 169] Such additional information can be multiplexed along with the audio signal. For example, if the audio signal is transferred as an MP3 file, assuming that there is additional bandwidth beyond that of the MP3 file itself, the file can be broken into pieces, and can be interspersed with other information. Figure 7 is a schematic diagram of a broadcast unit 710 transmission 820. The transmission is comprised of separate blocks of information, each represented in the figure as a separate line. In the first line, a block code 800 is transmitted, which is a distinctive digital code indicating the beginning of a block, so that a search unit 750 receiving from the broadcast unit 710 for the first time can effectively synchronize itself to the beginning of a digital block. Following the block code 800 is a MP3 block header 802, which indicates that the next signal to be sent will be from a music file (in this case an MP3 file). The MP3 block header 802 includes such information as is needed to interpret the following block of MP3 file block 804, including such information as the length of the MP3 block 804, and characteristics of the music (e.g. compression, song ID, song length, etc.) that are normally located at the beginning of a MP3 file. By interspersing this file header information at regular intervals, a user can properly handle music files that are first received in the middle of the transmission of an MP3 file. Next, the MP3 block 804 containing a segment of a compressed music file is received.

[Para 170] Dependent on the amount of music compression and the bandwidth of the inter-unit communications, other information can be sent, such as user contact information, images (e.g. of the user), and personal information that can be used to determine the "social compatibility" of the user with the broadcast unit 710 and the receive unit 730. This information can be sent between segments of MP3 files or during "idle" time, and is generally preceded by a block code 800, that is used to synchronize transmission and reception. Next, a header file is transmitted, which indicates the type of information to follow, as well as characteristics that will aid in its interpretation. Such characteristics could include the length of information, descriptions of the data, parsing information, etc. In Figure 7, an ID header 806 is followed by an ID block 808, which includes nicknames, contact information, favorite recording artists, etc. Later, an image header 810 can be followed by an image block with an image of the user. The image header 810 includes the number of rows and columns for the image, as well as the form of image compression.

[Para 171] It should be understood that the communications format described in Figure 7 is only illustrative of a single format, and that a large number of different formats are possible within the present invention. Also, the use of MP3 encoding is just an example, and other forms of digital music encoding are within the spirit of the present invention, and can alternatively comprise streaming audio formats such as Real Audio, Windows Media Audio, Shockwave streaming audio, QuickTime audio or even streaming MP3 and others. Furthermore, these streaming audio formats can be modified so as to incorporate means for transmitting DJ 200 control signals and other information.

Transmitting Dynamic Data and Control Information

[Para 172] As described above, there are benefits to two-way communications between the broadcast unit 710 and the receive unit 730. There are many methods of carrying out this communication, even if the inter-unit transmitter/receiver 110 does not permit simultaneous transmission and reception. For example, additional transmission and reception hardware could be included in each unit 100. Alternatively, in the transmission 820 above, specific synchronization signals such as the block code 800 can be followed by specific intervals during which the inter-unit transmitter/receiver 110 that is transmitting switches into receive mode, while the inter-unit transmitter/receiver 110 that was receiving switches to transmit mode. This

switch in communications direction can be for a specific interval, or can be mediated through conventional handshake methods of prior art communications protocols.

[Para 173] It should be noted that in addition to transfer of static information (e.g. identifiers, contact information, or images), dynamic information and control information can also be transferred. For example, the user at the receive unit 730 can be presented with a set of positive and negative comments (e.g. "Cool!" "This is awful!") that can be passed back to the broadcast unit 710 with the press of a button. Such information can be presented to the user of the broadcast unit 710 either by visual icon on, for example, an LCD screen, by a text message on this screen, or by artificial voice synthesis generated by the broadcast unit 710 and presented to the user in conjunction with the music.

[Para 174] Alternatively, the user of the receive unit 730 can speak into a microphone that is integrated into the receive unit 730, and the user voice can be sent back to the broadcast unit 710. Indeed, the inter-unit communications can serve as a two-way or multi-way communications method between all units 100 within range of one another. This two-way or multi-way voice communication can be coincident with that of the playing of the audio entertainment, and as such, it is convenient for there to be separate amplitude control over the audio entertainment and the voice communication. This can be implemented either as two separate amplitude controls, or alternatively as an overall amplitude control, with a second control that sets the voice communications amplitude as a ratio to that of the audio entertainment. In this latter mode, the overall level of audio output by the unit is relatively constant, and the user then selects only the ability to hear the voice communication over the audio entertainment.

[Para 175] In order to express their feelings and appreciation about the music they are hearing, users within a cluster 700 can also press buttons on their units 100 that will interrupt or supplement the control signals being sent to their respective DJs 200, providing light shows that can be made to reflect their feelings. For example, it can be that all lights flashing together (and not in synchrony with the music) can express dislike for music, whereas intricate light displays could indicate pleasure.

[Para 176] It is also possible to send control requests between units 710. For example, a receive unit 730 can make song requests (e.g. "play again", "another by this artist") that can show on the broadcast unit 710 user interface. Alternatively, the user of a receive unit 730 can request that control be switched, so that the receive unit 730 becomes the broadcast unit 710, and

the broadcast unit 710 becomes a receive unit 730. Such requests, if accepted by the initial broadcast unit 710 user, will result in the memory storage of the identifier of the broadcast unit 710 being set in all units in the cluster 700 to that of the new broadcast unit 730. Descriptions of the communications resulting in such a transfer of control will be provided below.

[Para 177] Additionally, it is also possible for users of units 100 to privately "chat" with other users while they are concurrently receiving their audio broadcasts. Such chat can be comprised of input methods including keyboard typing, stylus free-form writing/sketching, and quickly selectable icons.

[Para 178] It should be understood that within the spirit of the present invention that the functional configuration can be supported by the extension of certain existing devices. For example, the addition of certain wireless transmitter and receiver, as well as various control and possibly display functionality to a portable audio player would satisfy some embodiments of the present invention. Alternatively, by the addition of music storage and some wireless transmitter and receiver functionality, a mobile telephone would also allow certain embodiments of the present invention. In such case, the normal telephony communications, perhaps supported by expanded 3G telephony capabilities, could serve to replace aspects of the IP communications described elsewhere in this specification.

IP Socket Communication Embodiments

[Para 179] A standard set of protocols for inter-unit communications is provided through IP socket communications, which is widely supported by available wireless communications hardware, including 820.11a, b and g (Wi-Fi). An embodiment of inter-unit communications is provided in Figures 14A-B. Figure 14A is a schematic block diagram of the socket configurations on the broadcast unit 710 and the receive unit 730.

[Para 180] In the discussion below, transfer of the different messages and audio information are provided, generally but not always, through an Internet protocol. At the transport layer of such protocols, there will generally be used either a connectionless protocol or a connection-oriented protocol. Among the most common of these protocols are respectively the User Datagram Protocol (UDP) and the Transmission Control Protocol (TCP), and wherever these protocols are used below, it should be noted that any like protocol (connectionless or connection-oriented), or the entire class of protocol can generally be substituted in the discussion.

[Para 181] The broadcast unit 710, prior to the membership of the receive unit 730, broadcasts the availability of the broadcast on a broadcast 1050, which is generally a TCP socket. The annunciator 1050 broadcasts on a broadcast address with a predetermined IP address and port. The receive unit 730 has a client message handler 1060 that is also a TCP socket that is looking for broadcasts on the predetermined IP address and port. When it receives the broadcast, a handshake creates a private server message handler 1070 on a socket with a new address and port on the broadcast unit 710. The broadcast unit 710 and the receive unit 730 can now exchange a variety of different messages using the TCP protocol between the server message handler 1070 and the client message handler 1060. This information can comprise personal information about the users of the broadcaster unit 710 and the receive unit 730. Alternatively or additionally, the broadcast unit 710 can transfer a section of the audio signal that is currently being played, so that the user of the receive unit 730 can "sample" the music that is being played on the broadcast unit 710. It should be noted that, in general, the broadcast unit 710 continues its broadcast on the broadcast annunciator 1050 for other new members.

[Para 182] Once it is established that the broadcast unit 710 and the receiver unit 730 are mutually desirous of providing and receiving an audio broadcast, respectively, sockets optimized for broadcast audio are created both on the broadcast unit 710 and the receiver unit 730. These sockets will often be UDP sockets – on the broadcast unit 710, a multicast out socket 1080 and on the receiver unit 730, a multicast in socket 1090.

[Para 183] Figure 14B is a schematic block flow diagram of using IP sockets for establishing and maintaining communications between a broadcast unit 710 and the receive unit 730, according to the socket diagram of Figure 14A. In a step 1100, the broadcast annunciator 1050 broadcasts the availability of audio signals. In a step 1102, the receiver unit 730 searches for a broadcast annunciator 1050 on the client message handler 1060 socket. Once a connection is initiated in a step 1104, the broadcast unit 710 creates the message handler socket 1070 in a step 1106, and the receiver unit 730 retasks the message handler socket 1060 for messaging with the broadcast unit 730. The broadcast annunciator 1050 continues to broadcast availability through the step 1100.

[Para 184] In a step 1110, the broadcast unit 710 and the receiver unit 730 exchange TCP messages in order to establish the mutual interest in audio broadcasting and reception. Should there not be mutual acceptance, then the system returns to the original state in which the

broadcast unit 710 is transmitting the broadcast annunciation in the step 1100, and the receive unit 730 searches for broadcasts in the step 1102. Given that the receive unit 730 and the broadcast unit 710 will be within communications distance, and that the broadcast unit 710 is transmitting an annunciation for which the receive unit 730 is receptive, the broadcast unit 710 will be set into a state where it will not establish communications with the receive unit 730 in the step 1106. This can occur either by not creating the message socket in the step 1106 when connection is made with the receiver unit 730, or that the annunciator 1050 remains silent for a predetermined period, perhaps for a period of seconds.

[Para 185] If the broadcast unit 710 and the receiver unit 730 do mutually accept a multicasting relationship, the broadcast unit 710 creates the multicast out UDP socket 1080 in a step 1112 and the receiver unit 730 creates the multicast in UDP socket 1090 in the step 1114, and multicast audio transmission and reception is initiated in a step 1116. It should be noted that should the broadcast unit 710 already be multicasting audio to a receiver unit 730 prior to the step 1112, the multicast out socket 1080 is not created, but that the address of this existing socket 1080 is communicated to the new cluster member.

[Para 186] Given that a cluster can comprise many members, the system of Figures 14A-B must be able to expand to include multiple members. Figure 15 is a schematic block diagram of the IP socket organization used with clusters comprising multiple members. The broadcast unit 710 includes a broadcast annunciator 1050 indicating broadcast availability for new members. For each member in the cluster, the broadcast unit further comprises a message handler 1070 dedicated to the specific member, whose receive unit 730 in turn comprises a message handler 1060, generally in a one-to-one relationship. The broadcast unit comprises N messaging sockets 1070 for the N receive units of the cluster, while each member has only a single socket 1060 connected to the broadcast unit. Thus, when a member wishes to send a message to the other members of the cluster, the message is sent via the receive unit message handler 1060 to the broadcast unit message handler 1070, and which is then multiply sent to the other receive unit message handlers 1060. It is also within the teachings of the present invention for each member of the cluster to have direct messaging capabilities with each other member, assisted in the creation of the communications by the broadcast unit 710, which can share the socket addresses of each member of the cluster, such that each member can assure that it is making connections with other members of the cluster rather than units of non-members. The broadcast unit 710 also

comprises a multicast out socket 1080 which transfers audio to individual receiver sockets 1090 on each of the members of the cluster.

[Para 187] Members of the cluster may come and go, especially since members will frequently move physically outside of the transmission range of the broadcast unit 710. In order for the broadcast unit 710 to determine the current number of members of its cluster, it is within the teachings of the present invention for the broadcast unit 710 to use the messaging sockets 1060 and 1070 to "ping" the receive units 730 from time to time, or otherwise attempt to establish contact with each member of the cluster 700. Such communications attempts will generally be done at a predetermined rate, which will generally be more frequent than once every ten seconds. Information about the number of members of a cluster can be sent by the broadcast unit 710 to the other members of the cluster, so that the users can know how many members there are. Such information is conveniently placed on a display on the unit (see, for example, Figures 18A-B).

Music Synchronization

[Para 188] It will be generally desirable that the synchronicity of the audio playback on the broadcast unit 710 and the receive units 730 be highly synchronized, preferably within 1 second (i.e. this provides a low level functionality of listening to music together), more preferably within 100 milliseconds (i.e. near-simultaneous sharing of music, but an observer would be able to hear – or see through DJ 200 visible cues – the non-synchronicity), and most preferably within 20 milliseconds of one another. In a simple embodiment of the present invention, all members of a cluster 700 must communicate directly with the broadcast unit 710, without any rebroadcast. In such cases, making playback on the two units 710 and 730 as similar as possible will tend to synchronize their audio production.

[Para 189] Figure 8A is a schematic block diagram of audio units 100 with self-broadcast so that audio output is highly synchronized. Two audio units 100 are depicted, including a broadcast unit 710 and a receive unit 730. The organization of audio unit 100 elements is chosen to highlight the self-broadcast architecture. The audio media 1500, which can be compressed audio storage 310, stores the audio signals for broadcast. The output port 1502, which can comprise the inter-unit transmitter/receiver 110, transmits a broadcast audio signal, provided by the audio media 1500. The audio media comprise a variety of different storage protocols and

media, including mp3 files, .wav files, or .au files which are either compressed or uncompressed, monoaural or stereo, 8-bit, 16-bit or 24-bit, and stored on tapes, magnetic disks, or flash media. It should be understood that the spirit of the present invention is applicable to a wide variety of different audio formats, characteristics, and media, of which the ones listed above are given only by way of example. This broadcast audio signal transmitted from the output port 1502 is received at the input port 1504, which can also comprise aspects of the inter-unit transmitter/receiver 110. The signal so received is then played to the associated user via the audio output 1508.

[Para 190] It should be noted that the audio output is normally connected to the audio media 1500 for audio playing when the unit 710 is not broadcasting to a receive unit 730. In such case, there is no need for the audio signals to go to the output port 1502 and thence to the input port 1504. Indeed, even when broadcasting, the audio signal within the broadcast unit 710 can go both directly to the audio output 1508 as well as to be broadcast from the output port 1502.

[Para 191] However, in order to assure the synchronicity of the audio output on the broadcast unit 710 and the receive unit 730, the broadcast unit 710 can present all audio signal from the audio media 1500 for output on the output port 1502. The signal will be received not only on the receiver 730 input port 1504, but also on the input port 1504 of the broadcast unit 710. This can take place either through the physical reception of the broadcast audio signal on a radio frequency receiver, or through local feedback loops within the audio unit 100 (e.g. through employment of IP loopback addresses).

[Para 192] In the receive unit 730, the audio signal received at the input port 1504 goes directly to the audio output 1508, and the other elements of the unit 100 depicted are not active. In the broadcast unit 710, however, if means are used to transfer audio signal between the output port 1502 and the input port 1504 are utilized, and if such transfer means requires less time than that taken for transmitting signal from the output port 1502 of the broadcast unit 710 to the input port 1504 of the receive unit 730, then a delay means 1506 is introduced to provide a constant delay between the input port 1504 and the audio output 1508. This delay can comprise a digital buffer if the signal is digitally encoded, or an analog delay circuit if the signal is analog. Generally, the delay introduced into the audio playback will be a predetermined amount based on the characteristics of the unit hardware and software.

[Para 193] Alternatively, in the case of a digital signal, the delay can be variably set according to the characteristics of the communications system. For example, if there are IP-based communications between the units, the units can "ping" one another in order to establish the time needed for a "round-trip" communications between the systems. Alternatively, each receive unit 730 of a cluster 700 can transmit to the broadcast unit 710 a known latency of the unit based on its hardware and transmission characteristics. It should be noted that in order to handle different delays between multiple members of a cluster, a delay can be introduced into both the broadcast unit 710 and the receive unit 730, should a new member to the cluster have a very long latency in communications.

[Para 194] Note that the delay 1506 can serve a second purpose, which is to buffer the music should there be natural interruptions in the connections between the members of the cluster 700 (for example, should the receive units 730 move temporarily outside of the range of the broadcaster unit 710). In such case, should enough audio signal be buffered in the delay 1506, there would not be interruption of audio signal in the receive unit 730. Even in such cases, however, in order to accommodate the differences in time to play audio between units and within a unit, the delays in the broadcast unit 710 can be larger than those in the receive unit 730.

[Para 195] If the music compression and the bandwidth of the inter-unit communications are large enough, it can be that the broadcast unit 710 will broadcast less than half of the time. This will generally allow the receive unit 730 to rebroadcast the information from an internal memory store, allowing the effective range of the broadcast signal to potentially double. This can allow, through multiple rebroadcasts, for a very large range even if each individual unit 100 has a small range, and therefore for a potentially large number of users to listen to the same music.

[Para 196] In order to synchronize those that listen to the music through first, second and Nth rebroadcast, a scheme for multi-broadcast synchronization is presented in Figure 8B, a schematic flow diagram for synchronous audio playing with multiple rebroadcast. In such a case, the cluster 700 is considered to be all units 100 that synchronize their music, whether from an original broadcast or through multiple rebroadcasts. In a first step 780, a unit 100 receives a music broadcast along with two additional data. The first data is the current "N", or "hop" of the broadcast it receives, where "N" represents the number of rebroadcasts from the original broadcast unit 710. Thus, a unit 100 receiving music from the original broadcast unit 710 would have an "N" of "1" (i.e. 1 hop), while a unit 100 that received from that receiving unit 100 would

have an "N" of "2" (2 hops), and so on. A second piece of information would be the "largest N" that was known to a unit 100. That is, a unit 100 is in contact generally with all units 100 with which it either receives or transmits music, and each send the "largest N" with which it has been in contact.

[Para 197] In a second step 782, the unit 100 determines the duration between signals in the broadcasts it is receiving. Then, two actions are taken. In a step 786, the unit 100 rebroadcasts the music it has received, marking the music with both its "N" and the largest "N" it knows of (either from the unit from which it received its broadcast or from a unit to which it has broadcast).

[Para 198] Also, in a step 784, the music that has been received is played after a time equal to the duration between signals and the "largest N" minus the unit's "N". This will allow for all units 100 to play the music simultaneously. Consider, for example the original broadcast unit 710. It's "N" is "0", and its "largest N" is the maximum number of rebroadcasts in the network. It will store music for a period of "largest N" (equals "largest N" minus "0") times the duration of a rebroadcast cycle, and then play it. For a unit 100 at the furthest rebroadcast, it's "N" and "largest N" will be equal to one another, so that it will store music for no time (i.e. "largest N" minus "N" = 0), but will play it immediately. This will allow all units 100 in the cluster to play music simultaneously. The limitation, however, is that there is memory in each unit 100 to store the music for a sufficient period of time. The units 100 on the system, however, can transfer the amount of storage that is available with the other information, and the number of rebroadcasts can be limited to the amount of memory available within the units 100 that comprise the cluster 700.

[Para 199] As the size of this multi-broadcast cluster 700 changes, the "largest N" can vary, and it will take generally on the order of "largest N" steps for the system to register "largest N". In such cases, there can be temporary gaps in the music on the order of the duration between signals, which will generally be on the order of tens of milliseconds, but which can be longer.

[Para 200] It should be noted that the synchronization of music does not need to accompany the transfer of an actual music signal. Figure 34A is a schematic block flow diagram of the synchronization of music playing from music files present on the units 100. In this embodiment, in a step 1900, the broadcast unit establishes the presence or absence of the music file comprising the music signals to be played on the receive unit. The music file can be referenced

either with respect to the name of the file (e.g. "Ooops.mp3"), or a digital identifier that is associated with the music file.

[Para 201] If the music file is not present, then transfer of the music file from the broadcast unit to the receive units can automatically proceed through a file transfer mechanism such as peer-to-peer transfer in a step 1904. If the file was already present, or if the file has been transferred, or alternatively, if the file transfer has begun and enough of the file is present to allow the simultaneous playing of music between the two units 100, transmission of synchronization signals between the two units 100 can commence in a step 1902.

[Para 202] These synchronization signals can comprise many different forms. For example, the synchronization signal can be the time stamp from the beginning of the music file to the current position of the music file being played on the broadcast unit. Alternatively, the broadcast unit can send the sample number that is currently being played on the broadcast unit 100. In order to allow receiving units to begin synchronous playing in the middle of a transmission from a broadcast unit, the synchronization signals will preferably include information about the song being played, such as the name of the file or the digital identifier associated with the file.

[Para 203] Transmission of this synchronization signal continues until the termination of the song, or until a manual termination (e.g. by actuating a Pause or Stop key) is caused (the frequency of transmission of the synchronization signal will be discussed below). At this point, the broadcast unit can send a termination, pause or other signal in a step 1906. Note that this method of synchronization can operate when the receiving unit establishes connection with the broadcast unit even in the middle of a song.

[Para 204] Figure 34B is a schematic layout of a synchronization signal record 1910 according to Figure 34A. The order and composition of the fields can vary according to the types of music files used, the means of establishing position, the use of digital jewelry, the desire for privacy, and more.

[Para 205] The position field 1912 (SAMPLE#) which contains an indicator of position in a music file – in this case the sample number within the file. The music file identifier field 1914 (SONGID) comprises a textual or numerical identifier of the song being played. The third field is the sample rate field 1916 (SAMPLERATE), and is primarily relevant if the position field 1912 is given in samples, which allows a conversion into time. Given that the same audio entertainment can be recorded or saved at different sample rates, this allows the conversion from

a potentially relative position key (samples) to one independent of sample rate (time). The jewelry signal field 1918 (JEWELSIGNAL) is used to encode a digital jewelry 200 control signal for controlling the output of the digital jewelry 200, should the receiver unit be associated with jewelry 200. The order and composition of the fields can vary according to the types of music files used, the means of establishing position, the use of digital jewelry, the desire for privacy, and more.

[Para 206] The frequency with which the record 1910 is broadcast can vary. The time of reception of the record 1910 sets a current time within the song that can adjust the position of the music playing on the receiver unit. It is possible for the record to be broadcast only once, at the beginning of the song, to establish synchronization. This, however, will not allow others to join in the middle of the music file. Furthermore, if the record 1910 is received or processed at different times for the single record, the music can be poorly synchronized. With multiple synchronization signals, the timing can be adjusted to account for the most advanced reception of the signal – that is, the music playing will be adjusted forward for the most advanced signal, but not be adjusted back for a more laggard signal.

[Para 207] If the record further contains a jewelry signal field 1918, the frequency with which the record 1910 should be sent should be comparable or faster than the rate with which these signals change, and should be preferably at least 6 times a second, and even more preferably at least 12 times a second. If less frequent record 1910 transmission is desired, then multiple jewel signal fields 1918 can be included in a single record 1910.

[Para 208] It should be noted that given units 100 of different design or manufacture, there can be different intrinsic delays between reception of music and/or synchronization signals and the playing of the music. Such delays can result from different speeds of MP3 decompression, different sizes of delay buffers (such as delay 1506), different speeds of handling wireless transmission, differing modes of handling music (e.g. directly from audio media 1500 to audio output 1508 on the broadcast unit, but requiring transmission through an output port 1502 and input port 1504 for the receiver unit), and more. In such cases, it is preferable for receiver units to further comprise a manual delay switch that can adjust the amount of delay on the receiver unit. This switch will generally have two settings: to increase the delay and to decrease the delay, and can conveniently be structured as two independent switches, a rocker switch, a dial switch or equivalent. It is useful for the increments of delay determined by the switch be

adjustable so as to allow users to sense the music from the broadcast unit and the receiver unit as being synchronous, and it is preferable for the increments of delay to be less than 50 milliseconds, and even more preferable for the increments of delay to be less than 20 milliseconds, and most preferable for the units of delay to be less than 5 milliseconds.

Creation and Maintenance of Clusters

[Para 209] Search units 750 can be playing music themselves, or can be scanning for broadcast units 710. Indeed, search units 750 can be members of another cluster 700, either as broadcast unit 710 or receive unit 730. To detect a different cluster 700 in which it might desire membership, the search unit 750 can either play the music of the broadcast unit 710 to the search unit 750 user, or it can scan for personal characteristics of the broadcast unit 710 user that are transmitted in the ID block 808. For example, a user can establish personal characteristic search criteria, comprising such criteria as age, favorite recording artists, and interest in skateboarding, and respond when someone who satisfies these criteria approaches.

[Para 210] Alternatively, the search unit 750 user can also identify a person whose cluster he wishes to join through visual contact (e.g. through perceiving the output of the person's light transducer 240).

[Para 211] Before a search unit 750 user can establish contact, it is preferable for a broadcast unit 710 user, or a receive unit 730 user, to provide permissions for others to join the cluster. For example, each unit 100 will generally be able to changeably set whether no one can join with their unit 100, whether anyone can join with their unit 100, or whether permission is manually granted for each user who wishes to join with their unit into a cluster. For a cluster 700, membership in the cluster can be provided either if any one member of the cluster 700 permits a search unit 750 user to join, or it can be set that all members of a cluster 700 need to permit other users to join, or through a variety of voting schemes. The permissions desired by each member will generally be sent between units 100 in a cluster as part of the ID block 808 or other inter-unit communications. Furthermore, these permissions can be used to establish the degree to which others can eavesdrop on a unit 100 transmission. This can be enforced either through the use of cryptography, which can only provide decryption keys as part of becoming a cluster 700 member, through provision of a private IP socket address or password, through standards agreed

by manufacturers of unit 100 hardware and software, or by unit 100 users limiting the information that is sent through the ID block 808 through software control.

[Para 212] The search unit 750 user can then establish membership in the group in a variety of ways. For example, if the search unit 750 is scanning music or personal characteristics of the unit 100 user, it can alert the search unit 750 user about the presence of the unit 100. The search unit 750 user can then interact with the search unit 750 interface to send the unit 100 user a message requesting membership in the cluster 700, which can be granted or not. This type of request to join a cluster 700 does not require visual contact, and can be done even if the search unit 750 and cluster are separated by walls, floors, or ceilings.

[Para 213] Another method of establishing contact between a search unit 750 user and a cluster 700 member is for the search unit 750 user to make visual contact with the cluster 700 member. In such case that physical contact or physical proximity is easily made between the unit 100 of the cluster member and the search unit 750, digital exchange can be easily made either through direct unit 100 contact through electrical conductors, or through directional signals through infra-red LEDs, for example. For example, the search unit 750 user can point his unit 100 at the cluster 700 member unit, and then if the cluster member wishes the search unit 750 user to join the cluster, could point his unit 100 at the search unit 100, and with both pressing buttons, effect the transfer of IDs, cryptography keys, IP socket addresses or other information that allows the search unit 750 user to join the cluster 700.

[Para 214] Alternatively, the broadcast DJ 720 (or the receive DJ 740) can present digital signals through the light transducer. For example, most DJ 720 light transduction will be modulated at frequencies of 1-10 Hz, with human vision not being able to distinguish modulation at 50 Hz or faster. This means that digital signals can be displayed through the light transducer 240 at much higher frequencies (kHz) that will not perceived by the human eye, even while lower frequency signals are being displayed for human appreciation. Thus, the broadcast DJ 720 can receive a signal from the broadcast unit 710 DJ transmitter 120 containing information needed for a search unit 750 to connect to the broadcast unit's cluster 700. This information will be expressed by the light transducer 240 of the broadcast DJ 720 in digital format. The search unit 750 can have an optical sensor, preferably with significant directionality, that will detect the signal from the light transducer 240, so that the search unit 750 is pointed in the direction of the broadcast DJ 720, and the identifier information required for search unit 750 to become a

member of cluster 700. This optical sensor serves as the DJ directional identifier 122 of Figure 1. At this point, if desired, the broadcast unit 710 user can determine if they want the search unit 750 user to join the cluster 700.

[Para 215] A summary of means to effect joining of a cluster is provided in Figures 13A through E, which display means for a search unit 750 to exchange information prior to joining a cluster 700 via a broadcast unit 710. It is also within the teachings of the present invention for the search unit 750 to institute communications with a receive unit 730 for the purposes of joining a cluster in a similar fashion, particularly since it may be difficult for a person outside of the cluster 700 to determine which of the cluster 700 members is the broadcast unit 710, and which is a receiver unit 730.

[Para 216] If should be noted in the Figures 13A-G that limited range and directionality are preferred. That is, there can be a number of broadcast units 710 within an area, and being able to select that one broadcast unit 710 whose cluster one wishes to join requires some means to allow the search unit 750 user to select a single broadcast unit 710 among many. This functionality is generally provided either by making a very directional communication between the two devices, or by depending on the physical proximity of the search unit 750 and the desired broadcast unit 710 (i.e. in a greatly restricted range, there will be fewer competing broadcast units 710). In the following description, the "broadcaster" denotes the user using the broadcast unit 710, and the "searcher" denotes the user using the search unit 750.

[Para 217] In the Figures 13A-G, the selection of the cluster by the searcher occurs in three ways, that will referred to as "search transmission mode", "broadcast transmission mode", and "mutual transmission mode", according to the entity that is conveying information. In search transmission mode, the searcher sends an ID via the search unit 750 to the broadcast unit 710. This ID can comprise a unique identifier, or specific means of communication (e.g. an IP address and port for IP-based communication). With this ID, the broadcast unit can either request the searcher to join, or can be receptive to the searcher when the searcher makes an undifferentiated request to join local units within its wireless range. In broadcast transmission mode, the broadcaster sends an ID via the broadcast unit 710 to the search unit 750. With this ID, the searcher unit can then make an attempt to connect with the broadcast unit 710 (e.g. if the ID is an IP address and port), or the search unit can respond positively to a broadcast from the broadcast unit 710 (e.g. from a broadcast annunciator 1050), wherein the ID is passed and checked between

the units early in the communications process. Mutual transmission mode comprises a combination of broadcast transmission mode and search transmission mode, in that information and communication is two way between the broadcaster and the searcher.

[Para 218] Figure 13A is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via visible or infrared LED emission in search transmission mode. On the right of the figure, a LED 1044 with an associated lens 1046 (the two of which can be integrated) transmits a directional signal from the unit case 1000. This light can optionally pass thorough a window 1048 that is transparent to the light. On the left of the figure, a lens element 1040 collects light through a broad solid angle and directs it onto a light sensing element 1042, which is conveniently a light-sensing diode or resistor. The directionality of the communication is conferred by the transmitting lens 1046 and the collecting lens 1040.

[Para 219] Alternatively, the LED 1044 can be replaced by a visible laser. Figure 13B is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via a visible or infrared laser in search transmission mode. The search unit 750 comprises a diode laser 1041 that is conditioned by a lens 1043 to form a beam that is sensed by the light sensing element 1042 on the broadcast unit 710. Because a collimated laser beam can be difficult to aim with precision at a photosensing element carried by a person, the optics can comprise a two focus lens 1043 that has a portion that produces a collimated beam 1045, and a second portion that produces a diverging beam 1047. The collimated beam is used by the user of the search unit 750 as a guide beam to direct the pointing of the unit 750, while the divergent beam provides a spread of beam so that the human pointing accuracy can be relatively low. The means for creating the two focus lens 1043 can include the use of a lens with two different patterns of curvature across its surface, or the use of an initial diverging lens whose output intersects a converging lens across only a part of its diameter, where the light that encounters the second lens is collimated, and the light that does not encounter the second lens remains diverging. It is also within the teachings of the present invention for the lens to be slowly diverging without a collimating portion, such that the user does not get visible feedback of their pointing accuracy. In such case, the laser can emit infrared rather than visible wavelengths.

[Para 220] Figure 13C is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via visible or infrared emission from a digital

jewelry element 200 in broadcast transmission mode. The digital jewelry 200 is carried by the broadcaster on a chain 1033, with the digital jewelry 200 visible. The digital jewelry is emitting through a light transducer 1031 a high frequency signal multiplexed within the visible low frequency signal. The search unit 750 is pointed in the direction of the digital jewelry 200, and receives a signal through the light-sensing element 1042. This manner of communication is convenient because the searcher knows, via the presence of the visible signal on the digital jewelry 200, that the broadcaster is receptive to cluster formation.

[Para 221] Figure 13D is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via contact in mutual transmission mode. In this case, the broadcast unit 710 and the search unit 750 both comprise a contact transmission terminus 1030, and electronic means by which contact transmission is performed. This means can operate either inductively (via an alternative current circuit), through direct electrical contact with alternating or direct current means, or other such means that involves a direct physical contact (indicated by the movement of the search unit 750 to the position of the unit depicted in dotted lines). The search unit 750 or the broadcast unit 710 can, via automatic sensing of the contact or manual control, initiate communications transfer. Given the mutuality of contact as well as the physical equivalence of the two units 710 and 750, information transfer is possible in both directions. It should be noted that in the case of direct current connection, the termini 1030 will comprise two contact points, both of which must make electrical contact in order for communications to occur.

[Para 222] Figure 13E is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via sonic transmissions in broadcast transmission mode. The broadcaster (or receivers) will be listening to the audio information generally through headphones 1020 or earphones, all of which comprise speakers 1022 that, to one extent or another, leak sonic energy. The use of audio output devices as depicted in Figure 10 and Figures 11A and 11B that admit external sound, will also increase the amount of sound energy lost. This sound energy can be detected by the searcher via a directional speaker comprising a sound collector 1024 and a microphone 1026. This system requires that the sound output of the broadcast unit 710 and the receiver unit 750 also output an ID encoded in the sound. Such sound can be conveniently output at inaudible frequencies, such as 3000-5000 Hz, which carry sufficient bandwidth to encode short messages or identifiers (e.g. an IP address and

port number can be carried in 5 bytes). Sound energy, especially at higher frequencies, can be quite directional, depending on the shape of the collector 1024 and the structure of the microphone 1024, allowing good directional selection by the searcher.

[Para 223] Figure 13F is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via radio frequency transmissions in broadcast transmission mode. The radio frequency transmissions are not strongly directional (and for the purposes of the broadcast of audio information, are designed to be as directionless as possible). In order to distinguish a desired cluster 700 to join and an undesired cluster 700, a number of strategies can be employed. For example, the strengths of the various signals can be measured and the strongest chosen for connection. Alternatively, if there are multiple broadcast connections available, the search unit 750 can sequentially attempt a connection with each broadcast unit 710. When the attempt is made, the broadcast unit 710 can, prior to alerting the broadcaster of the attempted joining by a new member, cause the digital jewelry 200 associated with the broadcast unit 710 to visibly flash a characteristic signal. The searcher can then verify by pressing the appropriate button on the search unit 750 his desire to join the cluster 700 of the broadcast digital jewelry 200 that had just flashed. If the searcher decided not to join that cluster 700, the search unit 750 could search for yet another unit broadcast unit 750 within range, and attempt to join.

[Para 224] At any time, the members of a cluster 700 can share personal characteristics (nickname, real name, address, contact information, face or tattoo images, favorite recording artists, etc.) through selection of choices of the unit 100 interface, with all such characteristics or a subset thereof to be stored on the units 100. In order to assist cluster 700 members in determining whether or not to accept a person into their cluster 700, a search unit 750 member can display either the total number of people with whom he has shared personal characteristics, or he can alternatively allow the cluster members to probe his store of persons with whom personal characteristics have been stored to see whether a particular trusted person or group of common acquaintances are present therein. It is also within the spirit of the present invention for individuals to rate other individual members of their cluster, and such ratings can be collated and passed from person to person or cluster to cluster, and can be used for a cluster 700 to determine whether a search unit 750 person should be added to the cluster 700.

[Para 225] Figure 17 is a matrix of broadcaster and searcher preferences and characteristics, illustrating the matching of broadcaster and searcher in admitting a searcher to a cluster. A broadcaster preference table 1160 includes those characteristics that the broadcaster wishes to see in a new member of a cluster. These characteristics can include gender, age, musical "likes" and "dislikes", the school attended, and more. The searcher similarly has a preference table 1166. The searcher preference table 1166 and broadcaster preference table 1160 are not different in form, as the searcher will at another time function as the broadcaster for another group, and his preference table 1166 will then serve as the broadcaster preference table.

[Para 226] The broadcaster preference table 1160 can be automatically matched with a searcher characteristics table 1162. This table 1162 comprises characteristics of the searcher, wherein there will be characteristics that overlap in type (e.g. age, gender, etc.) which can then be compared with the parameters in the broadcaster preference table. This matching occurs during the period when the searcher is interrogating the cluster with interest in joining. Similarly, there is a broadcaster characteristics table 1164 indicating the characteristics of the broadcaster, which can be matched against the searcher preferences tale 1166.

[Para 227] The algorithm used in approving or disapproving of an accord between a preference table and a characteristics table can be varied and set by the user – whether by the broadcaster to accept new members into a cluster, or by a searcher to join a new cluster. For example, the user could require that the gender be an exact match, the age within a year, and the musical preferences might not matter. The user can additionally specify that an accord is acceptable if any one parameter matches, specify that an accord be unacceptable if any one parameter does not match, specify an accord be acceptable based on the overlap of a majority of the individual matches, or other such specification.

[Para 228] It should be noted that the broadcaster preferences table 1160 and the broadcaster characteristics table 1164 (and likewise with the searcher tables 1162 and 1166) can be a single table, according to the notion that a person will prefer people who are like themselves. Each user could then express the acceptable range of characteristics of people with which to join as a difference from their own values. For example, the parameter "same" could mean that the person needs to match closely, whereas "similar" could indicate a range (e.g. within a year) and "different" could mean anyone. In this way, there would not be the burden on the user to define the preference table 1160 or 1166 in a very detailed manner.

[Para 229] In the case of a cluster, the transfer of information between the searcher and the cluster can, as mentioned above, involve not only the broadcaster, but also other members of the cluster (especially since the searcher may not know the identity of a cluster's broadcaster from external observation). The cluster can also make communal decisions about accepting a new member. That is, if there are 4 members of a cluster, and a searcher indicates an interest in joining the cluster, there can be voting among the members of a cluster regarding the acceptance of the new member. The procedure of voting will normally be done by messaging among the members, which can be assisted by structured information transfer as will be described below.

[Para 230] A number of such voting schemes are described in Figure 19, a table of voting schemes for the acceptance of new members into a cluster. The first column is the name of the rule, and the second column describes the algorithm for evaluation according to the rule. In the "BROADCASTER" rule, the broadcaster decides whether or not the new member will be accepted. The new member is accepted when the broadcaster indicates "yes" and is otherwise rejected.

[Para 231] In the "Majority" rule, the members are polled, and whenever a majority of the members vote either acceptance or rejection, the new member is accordingly accepted or rejected. It should be noted that this rule (as well as the rules to follow) depends on the broadcaster or other member of the cluster having knowledge of the number of members in the cluster, which will generally be the case (e.g. in an IP socket based system, the broadcaster can simply count the number of socket connections). Thus, if the number of members in a cluster is given as N_{mem}, as soon as $(N_{mem}/2) + 1$ members have indicated the same result, that result is then communicated to the broadcaster, the members and the prospective new member. If the number of members is even, and there is a split vote, the result goes according to the broadcaster's vote.

[Para 232] According to the "Unanimous" rule, a new member is accepted only on unanimous decision of the members. Thus, the prospective new member is rejected as soon as the first "no" vote is received, and is accepted only when the votes of all members of the cluster are received, and all of the votes are positive.

[Para 233] The "Timed Majority" rule is similar to that of the "Majority" rule, except that a timer is started when the vote is announced, the timer being of a predetermined duration, and in a preferred embodiment, is indicated as a count down timer on the unit 100 of each member of the

cluster 700. The vote is completed when $(N_{mem}/2)+1$ members vote with the same indication ("yes" or "no") if the timer has not completed its predetermined duration. If all of the members have voted, and the vote is a tie, the result goes in accordance with that of the broadcaster. If the timer has expired, and the vote has not been decided, the number of members that have voted is considered a quorum of number Q. If (Q/2)+1 members have voted in some fashion, that is the result of the vote. Otherwise, in the case of a tie, the result goes according to the vote of the broadcaster. If the broadcaster has not voted, the vote goes according to the first vote received.

[Para 234] The "Synchronized Majority" rule is similar to the Timed Majority rule, but instead of initiating the vote, and then waiting a predetermined period for members to vote, the vote is announced, and then there is a predetermined countdown period to the beginning of voting. The voting itself is very limited in time, generally for less than 10 seconds, and preferably for less than 3 seconds. Counting votes is performed only for the quorum of members that vote, and is performed according to the rules for the Timed Majority.

[Para 235] There are many different voting schemes consistent with creating, growing and maintaining clusters within the spirit of the present invention. For instance, in cases where there are close votes, the voting can be reopened for individuals to change their vote. In cases, members can request a new round of voting. Furthermore, the voting can be closed ballot, in which the votes of individuals are not known to the other members, or open voting, in which the identity of each member's vote is publicly displayed on each unit 100.

[Para 236] In addition, the voting can be supported and enhanced by information made available to each member through displays on the units 100. Figure 18A is a screenshot of an LCD display 1170 of a unit 100, taken during normal operation. The display 1170 is comprised of two different areas, an audio area 1172 and a broadcaster area 1174. The audio area 1172 includes information about the status of the audio output and the unit 100 operation, which can include battery status, the name of the performer, the title of the piece of music, the time the audio has been playing, the track number and more. The broadcaster area 1174 comprises information about the status of the cluster 700. In the example given, the broadcaster area includes the number "5", which represents the number of people current in the cluster, the text "DJ", which indicates that the unit 100 on which the display 1170 is shown is currently the broadcaster of the cluster 700, and the text "OPEN", which indicates that the cluster is open for

new members to join (the text "CLOSED" would indicate that no new members are being solicited or allowed).

[Para 237] Figure 18B is a screenshot of an LCD display 1170 of a unit 100, taken during voting for a new member. The audio area 1172 is replaced by a new member characteristics area 1176, in which characteristics of the prospective new member are displayed. Such characteristics can include the name (or nickname) of the prospective new member, their age, and their likes (hearts) and dislikes (bolts). In the broadcaster area 1174, the digit "3" indicates that there are three current members of the cluster 700, and an ear icon indicates that the current unit 100 is being used to receive from the broadcaster rather than being a broadcaster, and the name [ALI] indicates the name of the current broadcaster. The text "VOTE-MAJ" indicates that the current vote is being done according to the Majority rule. The broadcaster area 1174 and the new member characteristics areas 1176 provide the information needed by the existing member to make a decision about whether to allow the prospective new member to join.

[Para 238] The displays 1170 of Figures 18A-B are indicative only of the types of information that can be placed on a display 1170, but it should be appreciated that there are many pieces of information that can be placed onto the displays 1170 and that the format of the display can be very widely varied. Furthermore, there need not be distinct audio areas 1172 and broadcaster areas 1174, but the information can be mixed together. Alternatively, especially with very small displays 1170, the display 1170 can be made to cycle between different types of information.

[Para 239] It is also within the spirit of the present invention for individuals to rate other individual members of their cluster, and such ratings can be collated and passed from person to person or cluster to cluster, and can be used for a cluster 700 to determine whether a search unit 750 person should be added to the cluster 700. Figure 27 is a schematic block flow diagram of using a prospective new member's previous associations to determine whether the person should be added to an existing cluster.

[Para 240] In a step 1400, from a search unit 750, the prospective new member places an external communication request with an operational broadcast annunciator 1050 by a broadcast unit 710. In a step 1402, a temporary message connection is established through which information can be passed mutually between the search unit 750 and the broadcast unit 710. The broadcast unit 710 requests personal and cluster ID's from the search unit 750. The personal ID

is a unique identifier that can be optionally provided to every audio unit 100, and which can further be optionally hard-encoded into the hardware of the unit 100. The cluster IDs represent the personal ID's of other units 100 with which the search unit 750 has been previously associated in a cluster. In a step 1406, the broadcast unit 710 matches the incoming personal IDs and cluster IDs with personal ID's and cluster IDs that are stored in the memory of the broadcast unit 710. If there exist a sufficient number of matches, which can be computed as a minimum number or as a minimum fraction of the IDs stored in the broadcast unit 710, the new member of the search unit 750 can be accepted into the cluster. In a step 1412, the search unit 750 can then store the ID of the broadcast unit 710 and the other members of the existing cluster 700 into his cluster IDs, and the broadcast unit 750 and the other receive units 730 of the cluster can then store the personal ID of the search unit 750 into their cluster IDs. If there does not exist a sufficient number or quality of matches, the broadcast unit 710 will reject the prospective new member, optionally send a message of rejection, and then close the socket connection (or other connection that had been created) between the broadcast unit 710 and the search unit 750. No new IDs are stored on either unit 710 or 750.

[Para 241] It is also within the spirit of the present invention for other information associated with the personal and cluster IDs to be shared and used in the algorithm for determining whether to accept or reject a prospective new member into a cluster 700. This information can include rating information, the duration of association with another cluster 700 (i.e. the longer the association, the more suitable the social connection of that person with the cluster 700 would have been), the size of the cluster 700 when the searcher was a member of a particular cluster 700, the popularity of a cluster 700 (measured by the number of cluster IDs carried by the broadcast unit 710), and more. The matching program, likewise, would weight the existence of a match by some of these quality factors in order to determine the suitability of the searcher to join the cluster.

[Para 242] While the comparisons can be made between a search unit 750 personal and cluster IDs and those from the broadcast unit 710, representing the personal experience of the owners of the respective units, it is also possible that the reputation or desirability of individuals with a given personal ID can be posted to or retrieved from trusted people. For example, two friends can swap the information of which IDs are to be trusted or not between two units 100, or alternatively, can be posted onto or retrieved from the Internet. For example, after a bad

personal experience with a unit 100 with a personal ID of 524329102, a person could post that ID on the Internet to share with friends, so that the friends could avoid allowing that person to join, or avoid joining a cluster with that person.

[Para 243] It should be noted that publishing a list of personal IDs allows people to establish the breadth of their contacts. By posting their contacts on web sites, people can demonstrate their activity and popularity. This also encourages people to join clusters, in order to expand the number of people with whom they have been associated. Furthermore, the personal ID serves as a "handle" by which people can further communicate with one another. For example, on the Internet, a person can divulge a limited amount of information (e.g. an email address) that would allow other people with whom they have been in a cluster together to contact them.

[Para 244] It should be noted that the formation and maintenance of a cluster 700 requires the initial and continued physical proximity of the broadcast unit 710 and the receive unit 730. In order to help maintain such physical proximity conducive to cluster maintenance, feedback mechanisms can be used to alert the users to help them maintain the required physical proximity, as will be discussed below.

[Para 245] Figure 28 is a block flow diagram indicating the steps used to maintain physical proximity between the broadcast unit 710 and the receive unit 730 via feedback to the receive unit user. In a step 1530, the wireless connection between the broadcast unit 710 and the receive unit 730 is established. In a step 1532, the connection between the two units 710 and 730 is tested. There are a number of different means by which this testing can take place. For example, in IP-based communications, the receive unit 730 can from time to time – though generally less than every 10 seconds, and even more preferably less than every 1 second – use the "ping" function to test the presence and speed of connection with the broadcast unit 710. Alternatively, the receive unit 730 will be receiving audio signals wirelessly almost continuously from the broadcast unit 710, and a callback alert function can be instituted such that loss of this signal determined at a predetermined repeat time – which is conveniently less than 5 seconds, and even more preferably less than every 1 second – and which is then reported to the system.

[Para 246] While the methods above determine the absolute loss of a signal, they do not anticipate loss of signal. A method that does anticipate signal issues prior to loss is the measurement of signal strength. This can be done directly in the signal reception hardware by measuring the wireless signal induced current or voltage.

[Para 247] In a step 1534, the results of the connection testing performed in the step 1532 is analyzed in order to determine whether the signal is adequate. It should be noted that a temporary loss of signal, lasting even seconds, may or may not be of importance. For example, the broadcast unit 710 user and receive unit 730 users could walk on opposite sides of a metallic structure, enter a building at different times, change their body posture such that the antennae are not optimally situated with respect to one another, etc. Thus, an algorithm is generally used to time average the results of the step 1532, with the results conveniently time averaged over a matter of seconds.

[Para 248] Whatever the results of the signal test of the step 1534, the step 1532 is continuously repeated as long as the connection between the broadcast unit 710 and the receive unit 730 is present. If the signal is deemed inadequate, however, feedback to that effect is provided to the receive unit 730 user in a step 1536. The user feedback can occur through a variety of mechanisms, including visual (flashing lights) and tactile (vibration) transducers, emanating either from the audio unit 100 or the digital jewelry 200. For example, the receiver unit 730 can send a signal to the associated digital jewelry 200 to effect a special sequence of light transducer output.

[Para 249] It is most convenient, however, for the audio output of the receiver unit 730 as heard by the user to be interrupted or overlain with an audio signal to alert the user to the imminent or possible loss of audio signal. This audio signal can include clicks, beeps, animal sounds, closed doors, or other predetermined or user selected signals heard over silence or the pre-existing signal, with the signal possibly being somewhat reduced in volume such that the combination of the pre-existing signal and the feedback signal is not unpleasantly loud.

[Para 250] It should be noted that the flow diagram of Figure 28 refers specifically to alerting the receive unit 730 user of potential communications issues. Such alerting can also be usefully transferred to or used by the broadcast unit 710. For example, with knowledge of the communications issues, the broadcast unit 710 user can move more slowly, make sure that the unit is not heavily shielding, that any changes in posture that could relate to the problems are reversed, etc. The broadcast unit 710 can perform communications tests (as in the step 1532) or analyze the tests to determine if the communications are adequate (as in the step 1534) – particularly through use of the messaging TCP channels. Given that there can be multiple receive units 730 connected to s single broadcast unit 710, it is generally preferable for the tests

to be performed on the receive units 730, and problems to be communicated to the broadcast unit 710 – provided, however, that communications still exist for such communication.

[Para 251] In order to overcome this deficiency, it is possible for the receiver unit 730 to communicate potential problems in communications to the broadcast unit 710 at an early indication. The broadcast unit 710 then starts a timer of predetermined length. If the broadcast unit 710 does not receive a "release" from the receive unit 730 before the timer has completed its countdown, it can then assume that communications with the receive unit 730 have been terminated, and it can then send feedback to the broadcast unit 710 user.

[Para 252] It is also within the teachings of the present invention for both the broadcast unit 710 and the receive unit 730 to independently monitor the connections with each other, and alert their respective users of communications problems.

[Para 253] It should be noted that the use of audio alerts can be used more generally within the user interface of the audio units 100. Thus, audio alerts can be conveniently used to inform the user of the joining of new members to the cluster 700, the initiation of communications with search units 750 outside of the group, the leaving of the group by existing cluster 700 members, the request by a receive unit 730 to become the broadcast unit 710, the transfer of cluster control from a broadcast unit 710 to a receive unit 730, and more. These alerts can be either predetermined by the hardware (e.g. stored on ROM), or can be specified by the user. Furthermore, it can be convenient for the broadcast unit 710 to temporarily transfer to new members of the cluster custom alerts, so that the alerts are part of the experience that the broadcast unit 710 user shares with the other members of the cluster. Such alerts would be active only as long as the receive units were members of the cluster 700, and then would revert back to the alerts present before becoming cluster members.

Cluster Hierarchy

[Para 254] A receive unit 730 can also be the broadcast unit 710 of a separate cluster 700 from the cluster 700 of which it is a member. This receive unit is called a broadcasting receiver 770. In such case, it is convenient for the receive units 730 that are associated with the broadcasting receiver 770 to become associated with the cluster 700 of which the broadcasting receiver 770 is a member. This can conveniently be accomplished in two different ways. In a first manner, the receive units 730 that are associated with the broadcasting receiver 770 can

become directly associated with the broadcast unit 710, so that they are members only of the cluster 700, and are no longer associated with the broadcasting receiver 770. In a second manner, the receive units 730 associated with the broadcasting receiver 770 can remain primarily associated with the broadcasting receiver 770, as shown in Figures 9A and 9B, which are schematic block diagrams of hierarchically-related clusters. In Figure 9A, the receive units 730 that are members of a sub-cluster 701 of which the broadcast unit is a broadcast receive unit 770, can receive music directly from the broadcast receive unit 710, while retaining their identification with the broadcasting receiver 770, such that if the broadcasting receiver 770 removes itself or is removed from the cluster 700, these receive units 730 similarly are removed from the cluster 700. In order to provide this form of hierarchical control, the sub-cluster 701 receive units 730 can obtain an identifier, which can be an IP socket address, from the broadcast receive unit 770, indicating the desired link to the broadcast unit 710. The sub-cluster receive units 730, however, maintain direct communications with the broadcast receive unit 770, such that on directive from the unit 770, they break their communications with the unit 710, and reestablish normal inter-unit audio signal communications with the broadcast receive unit 770. In an embodiment using IP addressing and communications, this can involve the maintenance of TCP messaging communications between the sub-cluster 701 receive units 730 with the broadcast receive unit 770, during the time that the sub-cluster 701 is associated with the cluster 700.

[Para 255] In Figure 9B, the receive units 730 of the sub-cluster 701 receive music directly from the broadcasting receiver 770, which itself receives the music from the broadcast unit 710. In such case, as the broadcasting receiver 770 is removed from the cluster 700, the receive units 730 of the sub-cluster 701 would also not be able to hear music from the cluster 700.

[Para 256] It would be apparent that such an arrangement can be hierarchically arranged, such that the receive unit 730 of the sub-cluster 701 can itself be the broadcast receiver 770 of another sub-cluster 701, and so forth. The advantage of this arrangement is that people that are associated with one another, forming a cluster 700, can move as a group from cluster to cluster, maintaining a separate identity.

[Para 257] It should be also noted that the configuration of communications between members of a hierarchical cluster can be variously arranged, not only as shown in Figures 9A and 9B. For example, every member of the cluster 700 can have a direct link between every

other member of the cluster 700, such that no re-broadcast of messages needs to take place. Furthermore, given that there are different inter-unit communications (for example, messaging versus audio broadcast), it is within the teachings of the present invention that the configuration for the different modes of communication can be different – for example direct communications between the broadcast unit 710 for audio broadcast, but peer-to-peer communications between individual units for messaging.

Maintaining Private Communications

[Para 258] In order to restrict membership in a cluster 700, either the information transfer must be restricted, such as by keeping private the socket IP addresses or passwords or other information that is required for a member to receive the signal, or the signal can be transmitted openly in encrypted form, such that only those members having been provided with the encryption key can properly decode the signal so sent. Both of these mechanisms are taught within the present invention, and are described at various points within this specification.

[Para 259] Figure 32A is a schematic block diagram of maintaining privacy in open transmission communications. In this case, the transmission is freely available to search units 750 in a step 1830, such as would occur with a digital RF broadcast, or through a multicast with open a fixed, public socket IP address available in certain transmission protocols. In this case, the broadcast audio signal or information signal is made in encrypted form, and membership in the cluster is granted through transfer of a decoding key in a step 1832.

[Para 260] Figure 32B is a schematic block diagram of maintaining privacy in closed transmission communication. In a step 1834, the broadcast unit 710 makes a closed transmission broadcast, such as through a socket IP address, that is not publicly available. In a step 1836, the broadcast unit 710 provides the private address to the search unit 750, which can now hear the closed transmission from the step 1834, which is not encrypted. Alternatively, or in addition to the provision of the private address in the step 1836, the establishment of the connection through the private, closed transmission is effected via a password provided in a step 1838. This password can, for example, be used in the step 1110 (e.g. see Figure 14B) to determine whether the broadcast unit 710 accepts the search unit 750 for audio multicasting.

[Para 261] In this section, the encryption of the musical signal and/or associated information about personal characteristics of members of the cluster 700 is described. The custom

compressor 330 of the unit 100 can perform the encryption. In such a case, before joining a cluster, the search unit 750 can only receive some limited information, such as characteristics of the music being heard or some limited characteristics of the users in the cluster 700. If the search unit 750 user requests permission to join the cluster 700 and it is granted, the broadcast unit 710 can then provide a decryption key to the search unit 750 that can be used to decrypt the music or provide a private IP address for multicasting, as well as supply additional information about the current members of cluster 700.

[Para 262] It should be noted that in certain cases, it can be useful to have multiple forms of privacy protection. For example, a broadcast unit 710 can provide a search unit 750 access to audio signals and information for the cluster 700, but can reserve certain information based on encryption to only some members of the cluster 700. For example, if a group of friends comprise a cluster 700, and accept some new members into the cluster 700, access to more private information about the friends, or communications between friends, can be restricted on the basis of shared decryption keys.

[Para 263] Figure 33 is a schematic block diagram of a hierarchical cluster, as in Figure 9A, in which communications between different units is cryptographically or otherwise restricted to a subset of the cluster members. Thus, there are three types of communication that are used in the communication: channel A, which takes place between the members of the original cluster; channel B, which takes place between the members of the original cluster (mediated through the broadcast unit 710) and members of the sub-cluster 701; and channel C, which takes place between the members of the sub-cluster 701. Thus, a communications originating from the broadcast unit 710 can be directed either through channel A or channel B, and likewise, a communications originating from the broadcast receive unit 770 can be directed either at members only of the sub-cluster 701 through channel C, or to all members of the cluster 700 through both channels C and B, which is then communicated trough channel A.

[Para 264] A number of means can be used to maintain such independent channels. For example, separate socket communications can be established, and the originators of the communications can determine that information which is carried on each separate channel. For example, given an open transmission scheme such as digital RF signal, the information can be encoded with separate keys for the different channels of communication – thus, the cryptographic encoding determines each channel. A given unit 100 can respond to more than

one encoding. Indeed, a channel identifier can be sent with each piece of information indicating the ID of the decoding key. If a unit 100 does not have the appropriate decoding key, then it is not privy to that channel communications.

[Para 265] Alternatively, if the communications is IP socket based, then each channel is determined by IP socket addresses. Furthermore, access to those addresses can be, for example, password controlled. Also, the socket communications can be broadcast so that any unit 100 can receive such broadcast, but that decoding of the broadcast can be mediated through cryptographic decoding keys.

[Para 266] It should be noted that there can be multiple forms of communication, which can comprise messaging communications using the TCP/IP protocols, versus multicasting using UDP protocols, and also DJ 200 control signals using yet another protocol. The access to each of these communications can be controlled via different privacy hierarchies and techniques. For example, the audio multicasting will be available to all members within a cluster, while the messaging may retain different groupings of privacy (e.g. hierarchical), while the DJ control signals will generally be limited to communications between a given unit 100 and its corresponding DJs 200.

Broadcast Control Transfer

[Para 267] The dynamics of cluster 700 can be such that it will be desirable for a receive unit 730 to become the broadcast unit for the cluster. Such a transfer of broadcast control will generally require the acquiescence of the broadcast unit 710 user. To effect such a transfer, the user of the receiver unit 730 desiring such control will send a signal to the broadcast unit 710 expressing such intention. If the user of the broadcast unit 710 agrees, a signal is sent to all of the members of the cluster indicating the transfer of broadcast control, and providing the identifier associated with the receive unit 730 that is to become the broadcast unit 710. The broadcast unit 710 that is relinquishing broadcast control now becomes a receive unit 730 of the cluster 700.

[Para 268] It should be noted that the transfer of control as described above requires the manual transfer of control, such as actuation of a DJ switch. This switch can be limited to this function, or can be part of a menu system, in which the switch is shared between different functions. It is also within the spirit of the present invention that there be voice-activated control

of the unit 100, in which the unit 100 further comprises a microphone for input of voice signals to a suitable controller within the unit 100, wherein the controller has voice-recognition capabilities.

[Para 269] In the case of a cluster 700 whose broadcast unit 710 is no longer broadcasting (e.g. it is out of range of the receive units 730, or it is turned off), the cluster can maintain its remaining membership by selecting one of the receive units 730 to become the new broadcast unit 710. Such a choice can happen automatically, for example by random choice, by a voting scheme, or by choosing the first receive unit 730 to have become associated with the broadcast unit 710. If the users of the cluster-associated units deem this choice to be wrong, then they can change the broadcast unit 710 manually as described above.

[Para 270] The receive unit 730 that is chosen to become the broadcast unit 710 of the cluster 700 will generally prompt its user of the new status, so that the newly designated broadcast unit 710 can make certain that it is playing music to the rest of the cluster 700. It can be further arranged so that a newly-designated broadcast unit 710 will play music at random, from the beginning, or a designated musical piece in such case.

[Para 271] An embodiment of a transfer of broadcast control using IP socket communications protocols is described here. Figure 16 is a schematic block flow diagram of transfer of control between the broadcast unit 710 and the first receive unit 730. In a step 1130, the receive unit 730 requests broadcast control (designated here as "DJ" control). In a step 1132, the user of the broadcast unit 710 decides whether control will be transferred. The decision is then transferred back to the first receive unit 730 via the TCP messaging socket. If the decision is affirmative, the first receive unit 730 severs its UDP connection to the broadcast unit 710 multicast. The reason for this is to allow the receive unit 730 opportunity to prepare the beginning of its broadcast, if such time is required, and the user cannot both listen to the multicast as well as prepare its own audio selections, which occurs in a step 1136. In a step 1138, the receive unit 730 creates a multicast UDP socket with which it will later broadcast audio to other members of the cluster, while in a step 1140, the receive unit 730 creates a broadcast annunciator TCP socket with which to announce availability of the cluster, as well as to accept transfers of members from the broadcast unit 710 to itself as the new broadcast unit.

[Para 272] When the two new sockets (multicast and annunciator) are created, the receive unit 730 transmits the new socket addresses to the broadcast unit 710 in a step 1142. Since the

other members of the cluster are guaranteed to be in contact with the broadcast unit, they can get addresses of the new, soon-to-be broadcast unit from the existing broadcast unit. In a step 1144, the original broadcast unit 710 transmits to the other cluster members (receive units 730 numbers 2-N) the addresses of the sockets on the receive 1 unit 730 that is now the new broadcast unit 710, and terminates its own multicast. The termination is performed here because the other receive units will be transferring to the new multicast, and because the original broadcast unit 710 is now becoming a receive unit 730 in the reconstituted cluster. In the step 1148, multicast of audio is now provided by the receive 1 unit 730 that has now become the new broadcast unit 710), and the original broadcast unit is listening to audio provided not by itself, but rather by the new broadcast unit.

[Para 273] In a step 1146, performed roughly synchronously with the step 1144, the original broadcast unit 710 transmits the socket addresses of the message handler TCP sockets of the other members of the cluster 700 (i.e. the receive units 730 numbers 2-N). In the subsequent step 1150, the original broadcast unit 710 and the receive units 730 numbers 2-N establish new messaging connections with the receive 1 unit 730 that is now the new broadcast unit 710. While there can be a set of criteria for the acceptance of a new member to a cluster, because the receive 1 unit 730 has received the message socket addresses of the other members of the cluster in the step 1144, the receive 1 unit 730 accepts new members with the socket addresses received. It should be noted that instead of socket addresses being the identifiers passed, the identifiers can also be unique machine IDs, random numbers, cryptograpically encoded numbers, or other such identifiers that can be transmitted from one member of the cluster to another.

[Para 274] It should be noted in certain embodiments, that there can be insufficient time for the new broadcast unit 710 to determine a set of music to broadcast to the members of its cluster. It is within the spirit of the present invention for a user to set a default collection of music that is broadcast when no other music has been chosen. This set of music can comprise one or more discrete audio files.

Audio and DJ Choreography

[Para 275] One of the attractions of the present invention is that it allows users to express themselves and share their expressions with others in public or semi-public fashion. Thus, it is

highly desirable for users to be able to personalize aspects of both the audio programming as well as the displays of their DJs 200.

Audio

[Para 276] Audio personalization comprises the creation of temporally linked collections of separate musical elements in "sets." These sets can be called up by name or other identifier, and can comprise overlapping selections of music, and can be created either on the unit 100 through a visual or audio interface, or can be created on a computer or other music-enabled device for downloading to the unit 100.

[Para 277] In addition, the unit 100 or other device from which sets are downloaded can comprise a microphone and audio recording software whereby commentary, personal music, accompaniment, or other audio recordings can be recorded, stored, and interspersed between commercial or pre-recorded audio signals, much in the manner that a radio show host or "disc jockey" might alter or supplement music. Such downloads can be accessible from a variety of sources including Internet web sites and private personal computers.

Automatic Generation of DJ 200 Control Signals

[Para 278] In this section, we will describe the automatic and manual generation of control signals for the DJ 200 transducers. The control signals are generally made to correspond to audio signals played on the units 100, although it is within the spirit of the present invention for such control signals to be made separate from audio signals, and to be displayed on the digital jewelry independently of audio signals played on the unit 100. Figure 20 is a time-amplitude trace of an audio signal automatically separated into beats. Beats 1180, 1182 and 1183 are denoted by vertical dashed and dotted lines and, as described below, are placed at locations on the basis of their rapid rise in low-frequency amplitude relative to the rest of the trace. As can be seen, the beats 1180 are generally of higher amplitude than the other beats 1182 and 1183, and represent the primary beats of a 4/4 time signature. The beat 1183 is of intermediate nature between the characteristics of the beats 1180 and 1182. It represents the third beat of the second measure. Overall, the audio signal thus displayed can be orally represented as ONE-two-Three-four-ONE-two-Three-four ("one" is heavily accented, and the "three" is more lightly accented), which is common in the 4/4 time signature.

[Para 279] Processing of this data can proceed via a number of different methods. Figure 21A is a block flow diagram of a neural network method of creating DJ 200 transducer control signals from an audio signal as shown in Figure 20. In a step 1200, audio data is received either at the unit 100 or the DJ 200. It should be noted that the creation of control signals from audio signals can, within the present invention, take place at either the unit 100 or the DJ 200, or even at a device or system not part of or connected to the unit 100 or DJ 200 (as will be described in more detail below). In an optional step 1202, the data is low pass filtered and/or decimated so that the amount of data is reduced for computational purposes. Furthermore, the data can be processed for automatic gain to normalize the data for recording volume differences. Furthermore, the automatic gain filtering can provide control signals of significant or comparable magnitude throughout the audio data.

[Para 280] In general, the creation of the audio signal depends on audio representing a period of time, which can be tens of milliseconds to tens of seconds, depending on the method. Thus, the audio data from the step 1202 is stored in a prior data array 1204 for use in subsequent processing and analysis. At the same time, the current average amplitude, computed over an interval of preferably less than 50 milliseconds, is computed in a step 1208. In broad outline, the analysis of the signal compares the current average amplitude against the amplitude history stored in the prior data analysis. In the embodiment of Figure 21A, the comparison takes places through neural network processing in a step 1206, preferably with a cascading time back propagation network which takes into account a slowly varying time signal (that is, the data in the prior data array changes only fractionally at each computation, with most of the data remaining the same). The use of prior steps of neural network processing in the current step of neural network processing is indicated by the looped arrow in the step 1206. The output of the neural network is a determination whether the current time sample is a primary or a secondary beat. The neural network is trained on a large number of different music samples, wherein the training output is identified manually as to the presence of a beat.

[Para 281] The output of the neural network is then converted into a digital jewelry signal in a step 1210, in which the presence of a primary or secondary beat determines whether a particular light color, tactile response, etc., is activated. This conversion can be according to either fixed, predetermined rules, or can be determined by rules and algorithms that are externally specified. Such rules can be according to the aesthetics of the user, or can

alternatively be determined by the specific characteristics of the transducer. For example, some transducers can have only a single channel or two or three channels. While light transducers will generally work well with high frequency signals, other transducers, such as tactile transducers, will want signals that are much more slowly varying. Thus, there can be algorithm parameters, specified for instance in configuration files that accompany DJ 200 transducers, that assist in the conversion of beats to transducer control signals that are appropriate for the specific transducer.

[Para 282] Figure 21B is a block flow diagram of a deterministic signal analysis method of creating DJ 200 transducer control signals from an audio signal as shown in Figure 20. The data is received in the step 1200. In this case, a running average over a time sufficient to remove high frequencies, and preferably less than 50 milliseconds, is performed in a step 1212. Alternatively, a low pass filter and/or data decimation as in the step 1202 can be performed.

[Para 283] In a step 1214, the system determines whether there has been a rise of X-fold in average amplitude over the last Y milliseconds, where X and Y are predetermined values. The value of X is preferably greater than two-fold and is even more preferably three-fold, while the value of Y is preferably less than 100 milliseconds and is even more preferably less than 50 milliseconds. This rise relates to the sharp rises in amplitude found in the signal at the onset of a beat, as shown in Figure 20 by the beat demarcations 1180, 1182, and 1183. If there has not been a rise meeting the criteria, the system returns to the step 1200 for more audio input.

[Para 284] If the signal does meet the criteria, it is checked to ensure that the rise in amplitude is not the "tail end" of a previously identified beat. For this, in a step 1216, the system determines whether there has been a previous beat in the past Z milliseconds, where Z is a predetermined value preferably less than 100 milliseconds, and even more preferably less than 50 milliseconds. If there has been a recent beat, the system returns to the step 1200 for more audio input. If there has not been a recent beat, then a digital jewelry signal is used to activate a transducer. The level of transduction can be modified according to the current average amplitude which is determined in a step 1208 from, in this case, the running average computed in the step 1212.

[Para 285] The embodiment of Figure 21B provides transducer activation signals at each rapid rise in amplitude, with the activation signal modulated according to the strength of the amplitude. This will capture much of the superficial musical quality of the audio signal, but will not capture or express more fundamental patterns within the audio signal.

[Para 286] Figure 21C is a schematic flow diagram of a method to extract fundamental musical patterns from an audio signal to create DJ 200 control signals. In the step 1200, the audio data is received into a buffer for calculations. In a step 1220, a low pass filter is applied to remove high frequency signal. Such high frequency signals can alternatively be removed via decimation, running averages, and other means as set forth in the embodiments of Figures 21A and B. As in the embodiment of Figure 21B, beat onsets are extracted from the audio signal in the steps 1214 and 1216, and a current average amplitude is computed in a step 1208.

[Para 287] The amplitudes and times of the onsets of beats are placed into an array in a step 1222. From this array, a musical model is created in a step 1224. This model is based on the regularity of beats and beat emphasis – as seen in the amplitudes – that is independent of the beats and amplitudes in any one short section of music (corresponding, for instance, to a measure of music).

[Para 288] In general, music is organized into repeating patterns, as represented in a time signature such as 3/4, 4/4, 6/8 and the like. Within each time signature, there are primary and secondary beats. In general, the downbeat to a measure is the first beat, representing the beginning of the measure. The downbeat is generally the strongest beat within a measure, but in any given measure, another beat may be given more emphasis. Indeed, there will be high amplitude beats that may not be within the time signature whatsoever (such as an eighth note in ¾ time that is not on one of the beats). Thus, by correlating the beats to standard amplitude patterns, the output to the music model identifies the primary (down) beats, secondary beats (e.g. the third beat in 4/4 time) and the tertiary beats (e.g. the second and fourth beats in 4/4/ time).

[Para 289] Figure 21D is a schematic flow diagram of an algorithm to identify a music model, resulting in a time signature. In a step 1600, the minimum repeated time interval is determined, using the array of beat amplitude and onset 1222. This is, over a period of time, the shortest interval for a quarter note equivalent is determined, wherein the time signature beat frequency (i.e. the note value of the denominator of the time signature, such as 8 in 6/8) is preferably limited to between 4 per second and one every two seconds, and even more preferably limited to between 3 per second and 1.25 per second. This is considered the beat time.

[Para 290] From the array of beat amplitudes and onsets 1222, the average and maximum amplitudes over a time period of preferably 3-10 seconds is computed in a step 1604. For the beginning of the audio signal, shorter periods of time can be used, though they will tend to give

less reliable DJ 200 control signals. Indeed, in this embodiment, the initial times of an audio signal will tend to follow audio signal amplitude and changes in amplitude more than fundamental musical patterns until the patterns are elicited.

[Para 291] In a step 1606, the amplitude of a beat is compared with the maximum amplitude determined in the step 1604. If the beat is within a percentage threshold of the maximum amplitude, wherein the threshold is preferably 50% and more preferably 30% of the maximum amplitude, the beat is designated a primary beat in a step 1612. In a step 1608, the amplitude of non-primary beats is compared with the maximum amplitude determined in the step 1604. If the beat is within a percentage threshold of the maximum amplitude, wherein the threshold is preferably 75% and more preferably 50% of the maximum amplitude, and the beat is greater than a predetermined fraction of the average amplitude, wherein the fraction is preferably greater than 40% and even more preferably greater than 70% of the average beat amplitude, the beat is designated a secondary beat in a step 1614. The remaining beats are denoted tertiary beats in the step 1610.

[Para 292] In a step 1616, the sequence of the three types of beats is compared with that of established time signatures, such as 4/4, 3/4, 6/8, 2/4 and others, each with their own preferred sequence of primary, secondary and tertiary beats, in order to determine the best fit. This best fit is identified as the time signature in a step 1618.

[Para 293] Returning to Figure 21C, the channels of the DJ are pre-assigned to four different beats in a step 1225. Thus, if there are four channels, each channel is given a separate assignment. With a smaller number of channels, a single channel is assigned multiple beats. Some beats can also be unassigned, thus not being represented in a DJ 200 transducer output. Thus, a high jewelry signal, medium jewelry signal, low jewelry signal and an amplitude dependent signal are each assigned to a channel for DJ 200 transduction.

[Para 294] In a step 1226, a beat determined to be a primary/down beat is assigned to a high jewelry signal 1228. In a step 1230, a beat determined to be a secondary beat is assigned to a medium jewelry signal 1232. In a step 1234, a beat determined to be a tertiary beat is assigned to a low jewelry signal 1236. Beats which are then unassigned, and which will generally be beats that occur not within the music model of the step 1224 (e.g. rapid beats not falling on beats of the time signature) are then assigned in a step 1238 to an amplitude dependent (and not music model dependent) signal 1240.

[Para 295] It should be noted that the computations performed in the flow methods of Figures 21A-C may take time on the order of milliseconds, such that if the computations are made in real time during the playing of music, the activation of the transducers in the DJ 200 are "behind" in time relative to the audio playing of the corresponding music in the audio unit 100. This can be compensated for by carrying out the computations while the audio signal is still in buffers prior to being played in the unit 100, as is described above for numerous embodiments of the present invention. Thus, signals to the DJ 200 can then be made simultaneously with respect to the audio signal to which it corresponds.

[Para 296] It should be noted that many of the parameters described above can conveniently be affected by manual controls either on the DJ 200 or the unit 100 that transmits signals to the DJ 200. For example, if can be convenient for the user to be able to set, for a given DJ 200 response amplitude, the threshold audio amplitude level at which the output transducer (e.g. light transducer 240) responds, or to set the output transducer amplitude corresponding to a maximum audio amplitude, or to set the frequency bands for which different DJ 200 channels respond, or to set other similar parameters. The manual controls for such parameters can comprise dials, rocker switches, up/down button, voice or display menu choices, or other such controls as are convenient for users. Alternatively, these choices can be set on a computer or other user input device, for download onto the unit 100 or DJ 200.

[Para 297] A preferable means of setting the parameters is for the parameters to be stored in a configuration file that can be altered either on the unit 100, the DJ 200 or a computer, so that the same DJ 200 can take on different characteristics dependent on the configuration settings within the file. The configuration settings can then be optimized for a particular situation, or set to individual preference, and be traded or sold between friends or as commercial transactions, for instance over the Internet. For a most preferable use of these configuration files, each file with its set of configurations can be considered to represent a "mode" of operation, and multiple configuration files can be set on the DJ 200 or the unit 100, depending on where the automatic generation of control signals is performed. The user can then select from the resident configuration files, appearing to the user as different modes, for use of his system, and can change the mode at will. This can be arranged as a series of choices on a voice or display menuing system, as a list toggled through by pressing a single button, or through other convenient user interfaces.

Manual Generation of DJ 200 Control Signals

[Para 298] In the description above, the use of filtering and digital modification of audio signals can be used to create control signals for DJ 200 transducers 240, 250, and 260. In addition, manual choreography of DJ 200 signals can be accomplished. For example, buttons or other interface features (e.g. areas on a touch-screen) on the unit 100 can correspond to different arrays of transducers, such as the LED arrays 290 and 292 of Figure 2A. While playing the audio signal, the user can press the buttons, where pressing of the buttons can correspond to a control signal for a transducer being ON, and otherwise the signal can be off. To aid in choreography where rapid changes in transducers are desired, the audio can be played at less than normal speed.

[Para 299] Figure 22A is a top-view diagram of an audio unit 100 user interface 1250, demonstrating the use of buttons to create DJ 200 control signals. The interface 1250 comprises a display screen (e.g. LCD or oLED), which can display information to the user, such as shown in Figures 18 A-B. Standard music control buttons 1254 for playing, stopping, pausing, and rewinding allow the user to control the audio signal musical output. Buttons 1252 further control aspects of the music output, such as volume control, musical tracks, and downloading and uploading of music. The number of buttons 1252 is conveniently three as shown, but can be more or less than three.

[Para 300] In addition, buttons are provided to allow the user to input DJ 200 control signals, comprising a record button 1256, a first channel button 1258, a second channel button 1260 and a third channel button 1262. The channel buttons 1258, 1260 and 1262 are prominent and accessible, since the user will want to easily depress the buttons. A record button 1256 allows the user to activate the channel buttons 1258, 1260 and 1262, and has a low profile (even below the nominal surface of the interface 1250) so that it is not accidentally activated. The record button can serve various purposes, including recording into a permanent storage file the sequence of DJ control signals relative to music being played, or controlling the DJ transducers in realtime, synchronously with music being played on the audio unit 100.

[Para 301] Pressing the buttons 1258, 1260 and 1262 create DJ control signals for the corresponding channels. The number of buttons is conveniently three as shown, but can also be two or four or more buttons. If a telephone is being used as the unit 100, keys on the telephone keypad can alternatively be used. The channel buttons will generally be used with thumbs, and

the buttons are spaced so that two of the buttons can be depressed with a single thumb, so that all three buttons can be activated with only two fingers. In is also convenient for the two secondary buttons 1260 and 1262 to be spaced more closely together, as it will be a preferred mode of operation that the secondary buttons be operated together from time to time.

[Para 302] To further aid in the choreography of the DJs 200, a separate "keyboard" with the number of keys related to the number of possible arrays can be used. The amplitude of the corresponding transducer signal can be modified either according to the pressure on the keys, according to the length of time that a key is depressed, or according to a foot pedal. Figure 22B is a top-view diagram of a hand-pad 1270 for creating DJ control signals. The hand-pad 1270 comprises a platform 1271, a primary transducer 1272, a secondary transducer 1274 and a tertiary transducer 1276. The platform 1271 has a generally flat top and bottom, and can conveniently be placed on a table, or held in the user's lap. The size of the platform is such that two hands are conveniently placed across it, being preferably more than 6 inches across, and even more preferably more than 9 inches across. The pressure transducers 1272, 1274 and 1276 respond to pressure by creating a control signal, with said control signal preferably capturing both the time and amplitude of the pressure applied to the corresponding transducer. The primary transducer 1272 creates a primary control signal, the secondary transducer 1274 creates a secondary control signal and the tertiary transducer 1276 creates a tertiary control signal. The sizes and placements of the transducers can be varied within the spirit of the present invention, but it is convenient for the primary transducer 1272 to be larger and somewhat separate from that of the other transducers 1274 and 1276. In one more method of user interaction, both hands can be rapidly and alternately used to make closely spaced control signals on the primary transducer 1272. In addition, it can be convenient on occasion for the user to activate both the secondary transducer 1274 and the tertiary transducer 1276 with different fingers on one hand, and thus these can be conveniently placed relatively near to one another. In general, while a single transducer will provide minimal function, it is preferable for there to be at least two transducers, and even more preferable that there be three transducers.

[Para 303] The control signals can be transferred to the audio unit 100 for playing and/or storage, or to the DJ 200 unit directly for playing, either wirelessly, or through wired communication. In addition, the hand-pad can also be configured to create percussive or other sounds, either directly through the incorporation of hollow chambers in the manner of a drum, or

preferably by the synthesis of audio waveform signals that can be played through the audio unit 100 (and other audio units 100 participating in a cluster 700), or directly through speakers within the hand-pad 1270 or attached to the hand-pad 1270 through wired or wireless communications. Such audible, percussive feedback can aid the user in the aesthetic creation of control signals.

[Para 304] It is within the spirit of the present invention for the hand-pad to take on various sizes and configurations. For instance, it is also convenient for the hand-pad 1270 to be configured for the use of index and middle fingers, being of dimensions as small as two by four inches or less. Such a hand-pad is highly portable, and can be battery powered.

[Para 305] Additionally, DJ 200 control signals can also be manually generated live, during broadcast at a party, for example, by a percussionist playing a set of digital drums. Figure 22C is a schematic block diagram of a set of drums used for creating DJ control signals. The set of drums comprises four percussive instruments 1280, 1282, 1284 and 1286, which can include snare drums, foot drums, cymbals, foot cymbals and other percussive musical instruments, such as might be found with a contemporary musical "band". Microphones 1290 are positioned so as to receive audio input primarily from instruments to which they are associated. One microphone can furthermore be associated with multiple instruments, as with the drums 1282 and 1284. The microphones 1290 are connected with a controller 1292 that takes the input and creates DJ control signals therefrom. For example, the drums 1282 and 1284 can be associated with the primary channel, the drum 1280 can be associated with the secondary channel, and the drum 1286 can be associated with the tertiary channel. The association of the microphone input with the channel can be determined in many ways. For example, the jack in the controller 1292 to which each microphone 1290 attaches can correspond to a given channel. Alternatively, the user can associate the jacks in the controller to different channels, with such control being manual through a control panel with buttons or touch control displays, or even through prearranged "sets". That is, a set is a pre-arranged configuration of associations of microphones to channels, and thus a set can be chosen with a single choice that instantiates a group of microphone-channel associations.

[Para 306] In general, the inputs from the microphones 1290 will be filtered in frequency and also to enhance audio contrast. For instance, control signals can be arranged to be the highest when the low-frequency envelope is rising the quickest (i.e. the beat or sound onset). The

algorithms for conversion of audio signal to DJ control signal can be pre-configured in the controller 1292, or can be user selectable.

[Para 307] It should be noted that the methods and systems of Figures 22 A-C need to synchronize the control signals so generated with the audio files to which they correspond. This can be accomplished in many ways. For example, the first control signal can be understood to correspond to the first beat within the audio file. Alternatively, the audio unit 100 or other device that is playing the audio signal to which the control signal is to correspond can send a signal to the device that is creating the control signals indicating the onset of playing of the audio file. The control signal can then be related to the time from the onset of the audio file. In addition, with regards to this synchronization, the user manually inputting the control signals will always be listening to the music during the control signal input. If the device on which control signals are being input is the same as the device that is playing the music, a control signal input cam be easily related to the sound that is currently being played by the audio output – many such devices allow information to within less than a millisecond of what sample or time within the audio files is currently being output by the audio device. With the arrangement of the control signal input device being also an audio player, close calibration of the control signals and the audio output is easily accomplished.

DJ 200 Control Signal Files

[Para 308] The control signals can be in a variety of formats within the spirit of the present invention. Such formats include pairs of locations within the associated music file and the corresponding amplitudes of the various DJ channels, and pairs of locations and the amplitudes of those DJ channels which are different from before. The locations can be either time from the start of the song (e.g. in milliseconds) or in terms of sample number. If the location is given in terms of sample number, the sample rate of the music will generally also be provided, since the same song can be recorded at different sample rates, and the invariant in terms of location will generally be time from onset of the music.

[Para 309] Other formats include an amplitude stream, corresponding to each DJ channel, provided in a constant stream with a fixed sample rate, which may be equal to or different from that of the corresponding music file. This format can be stored, for example, as additional channels into the music file, such that one channel corresponds to monoaural sound, two

channels correspond to stereo sound, three channels correspond to stereo sound and one channel of control signals, and additional channels correspond to stereo sound plus additional channels of DJ control signals. Another arrangement is to allow for only a small number of states of the transduction in the control signal, so that multiple channels of control signal can be multiplexed into a single transmitted channel for storage and transmission with the audio signal. For example, if the audio is stored as a 16-bit signal, 3 channels of 5 bit DJ 200 control signal could be stored in a single channel along side the one or two audio channels normally used.

[Para 310] It should be appreciated that these different control signal storage formats are largely interchangeable. For instance, as described above, control signals can be stored as if they are additional audio channels within a music file, but then be extracted from the file for separate transfer (e.g. over the Internet), and then be reintegrated into an audio file at the destination location.

[Para 311] It should be appreciated that there are a number of means by which DJ 200 control signals can be generated, either automatically or manually, and can include the use of devices other than the unit 100 that can have sophisticated digital or analog filtering and modification hardware and software. The control signals so created can be stored in files that are associated with the music files (e.g. MP3) that the control signals are meant to accompany. To aid in their distribution, particularly in reference to limitations on the commercial and private distribution of the corresponding music files, the signal files will generally be separate from the music files, and transferable between units 100 either through inter-unit communication mediated by the inter-unit transmitter/receiver 110, or alternatively through computers or computer networks to which the unit 100 can be connected.

[Para 312] The audio signals and the DJ control signals should also be well synchronized during playback. Figure 23 is a schematic block flow diagram of the synchronized playback of an audio signal file with a DJ control signal file, using transmission of both audio and control signal information. For purposes of convenience in discussion, the audio signal file will be called a "song file" and the "control signal file" will be called a "dance file." In a step 1300, the user is provided a list of song files for display, preferably on the display 1170. In a step 1302, the user then selects a song from the display to play. In a step 1304, the dance files that are associated with the selected song file from the step 1302 are displayed for the user. These song files can be either locally resident on the unit 100, or can alternatively be present on other audio

units 100 to which the audio unit 100 is connected, as in a cluster, or can alternatively be on the Internet, if the audio unit 100 is connected to the Internet. If there is a dance file that has been previously preferred in association with the song file, this file can be more prominently displayed than other associated dance files.

[Para 313] In a step 1306, the user selects the dance file to play along with the song file. This association is stored in a local database of song file/dance file associations in a step 1307, to be later used in a subsequent step 1304, should such an association not have been previously made, or if the preferred association is different from the previously preferred association. If the dance file is not locally resident, it can be copied to the audio unit 100 to ensure that the dance file is available throughout the duration of the song file playback.

[Para 314] In a step 1308, a timer is initialized at the beginning of the song file playback. In the step 1310, the song file is played on the local unit 100, and is also streamed to the other units 100 within the cluster 700. The corresponding DJ control signal accompanies the streaming song, either multiplexed within the song file audio signal, on another streaming socket, or through other communications (e.g. a TCP socket) channels between the two units. In a step 1312, the time advances along with the playback of the music. In a step 1314, this timer information is used to obtain current control signals from the dance file – that is, the dance file is arranged so that at each moment, the status of the different transducer channels can be determined. The control signals to be streamed along with the song file information can be either the current status of each transducer, or alternatively, can only send changes from the current transducer state.

[Para 315] The matching of the files in the database of song file and dance file associations of the step 1307 can be performed both within a machine, but also over a local or wide area network. In such cases, the association can either be external to the file – that is, using the name of the file, that is available the normal system file routines – or can use information internal to one or both files. For example, the dance file can have stored within it a reference to the song to which it is associated, either as the name of the song file, the name and/or other characteristics of the song (such as the recording artist, year of publication, music publisher) or alternatively as a numerical or alphanumerical identifier associated with the song. Then, given a song file, the relationship of the dance file with the song file can be easily determined.

[Para 316] For ease in creating an association, it is convenient for the names of the song files and the associated dance files to have a relationship with one another that is easily understood by casual users. For example, given a song file with the name "oops.mp3", it is convenient for an associated dance file to share the same root (in this case "oops") with a different extension, creating for example the dance file name "oops.dnc". Because of the multiplicity of dance files that will often be associated with a particular song file, the root itself can be extended to allow for either a numerical or descriptive filename, which can be preferably done in conjunction with a known punctuation mark to separate the song file root from the dance file description, such as the file names "oops.david2.dnc" or "oops$wild.dnc". It is preferable to use a punctuation mark that is allowed within a range of different operating systems.

[Para 317] Dance files can be stored on the Internet or other wide area network in a store for access by users who want dance files associated with a particular song file. In such case, if the storage is through the root of the filename, the user, requesting dance files corresponding to "oops.mps" would then be returned the names of related files such as "oops$wild.dnc". If the dance file internally carries the relationship with "oops.mps" as described above, either through the name or other characteristics, or alternatively, through a numerical or alphanumerical identifier, it is preferable to store the information in a database on the storage computer or unit 100, so that it is not necessary to open the file each time for perusal of the dance file information. Thus, if the music file has a substantially unique identifier associated with it internally, it is also useful for the dance file to also have the same identifier associated internally as well. In such case, the identifier is conveniently used to reference both files within a database.

[Para 318] In operation, a remote user would request a dance file for a particular song file by providing the name of the song file, along possibly with other information about the song file, which could include the name of the choreographer, the number of channels of DJ 200 transduction, the specific brand or type of DJ 200, or other information. The database would then return a listing of the various dance file that met the criteria requested. The remote user would then choose one or more of the files to download to the remote computer, and then the database would retrieve the dance files from storage and then transmits the dance file over the wide area network. On the remote computer or unit 100, the dance file would become associated with the corresponding song file through means such as naming the dance file appropriately or making an association between the song file and the dance file in a database or indexing file.

Alternatively, the dance file can be integrated into the song file as mentioned elsewhere within this specification.

[Para 319] It can be useful to preview a dance file for its desirability or suitability. Since the dance files can be retrieved from a wide area network such as the Internet, it is convenient for such an emulator to operate on a computer that may not be portable or have the proper transmitter that allows communications with a DJ 200. In such case, it is preferable to have an emulator which places an image or drawing of a DJ 200 on the screen, and which is provided the name of a song file and a dance file, and which then plays the song file through the audio of the computer and displays appropriate images or drawings of transducers being activated within the emulator image or drawing. The characteristics of the DJ 200 being emulated (e.g. colors of lights, frequency responses, levels of illumination, arrangement of lights, response to amplitude, etc.) can be simulated by a number of means. For example, the user can move slider controls, set checkboxes and radio boxes, enter numerical values, click-and-drag icons and use other standard user interface controls to make the DJ 200 operate as desired. Alternatively, manufacturers of DJ 200s can create configuration files (including, for example, bitmaps of photos of the actual DJ 200) that can be downloaded for this purpose (and which can also be used by prospective purchasers to view the "virtual" operation of the DJ 200 prior to purchase, for example, through an Internet merchant). The configuration files would contain the information necessary for the emulator to properly display the operation of the specific DJ.

[Para 320] Alternatively, as described above, the dance file information can be stored within the song file as, for example, another channel in place of an audio channel, or alternatively within MP3 header or other file information. In such case, the step 1307 would have the alternative function of looking through song files to find the song file with the particular desired embedded dance file within.

[Para 321] In addition to sending dance files from computers to units 100 or between units 100, the dance files can be streamed from unit 100 to unit 100 through the normal unit-to-unit communications, in the manners described above for audio communications. This is particularly convenient given that DJ 200 displays can be used to show group identification, and such displays can be more effective if the DJs for each user are nearly identical (which might not be the case if the users were using, for example, different dance files). The dance file control signal information can be transmitted in a variety of ways, including multiplexing the control signals

into the same packets as the audio information as if it were a different audio channel, alternating packets of control signals with packets of the audio information, or broadcasting control signals on a different UDP socket as the audio. Alternatively, if the receiving unit has a copy of the dance file corresponding to the song file being transferred by unit-to-unit communication, the receiving unit can determine the current time being played, and to extract from the local dance file the control signals for the receiving unit DJ 200.

[Para 322] It should be known that most streaming protocols have relatively small data packets that are communicated, due to the fact that reception at the source is not guaranteed and it is not desirable to lose a large amount of information in any one stream. Thus, it is possible with smaller transmission buffers and higher data rates to send a single DJ control signal in each transmission. For example, with a buffer size of 600 bytes, and an audio rate of 22,050 Hz with two single byte channels, each transmission covers only about 12 milliseconds, and any signal would therefore be at most 13 milliseconds from its correct time. Alternatively, each control signal can be accompanied by an offset in time from the beginning of the transmitted audio signal. Also, the time or packet number of each transmission buffer can be sent, as well as the time or packet number of the DJ audio signals, so that the audio unit 100 can compute the proper offset.

Stationary Transducers

[Para 323] DJs 200 that have been previously described are portable devices, usually associated with a particular user and unit 100. Figures 5A and 5B indicate the ways in which DJs 200 associated with multiple users can be controlled by a single unit 100.

[Para 324] It is also convenient for transducers to be non-portable and stationary. Consider, for example, a user who is at home listening to music. Instead of a DJ 200 worn by the user, the user can alternatively have a bank of lights or other transducers in fixed locations through the room that operate under the same or similar control signals as to which DJs respond. Such fixed transducers can operate at far higher power than portable DJs 200, and can each incorporate a large number of separate transducers.

[Para 325] Furthermore, in a party, concert or other large social gathering, the effects of portable DJs worn by guests can be supplemented by large transducers that are generally perceptible by most guests. For example, such transducers can include spark or smoke

generators, strobe lights, laser painters, arrays of lights similar to Christmas light strings, or mechanical devices with visible (e.g. a flag waving device) or tactile effects (e.g. a machine that pounds the floor). In general, transducers for large gatherings will not communicate with a unit 100, but will be directed by a wide-area broadcast unit 360, as in Figure 5B.

[Para 326] Because of the large area over which such stationary transducers can operate, the communications between the unit 100 and the stationary transducers can be through wired rather than wireless transmission. Furthermore, there can be mixed communication, such as wireless transmission of control signals from a portable unit 100 to a stationary receiver, and thence wired transmission to one or multiple transducers.

Modular Configurations

[Para 327] In the embodiments above, the audio player 130 is directly integrated with the inter-unit and unit-to-DJ communications. This requires both a re-engineering of existing audio players (e.g. CD, MP3, MO and cassette players), and furthermore does not allow the communications functionality to be reused between players.

[Para 328] An alternative embodiment of the present invention is to place the communications functions external to the audio playing functions, and to adjustably connect the two via the audio output port of the audio player. Figure 12A is a schematic diagram of a modular audio unit 132. Audio player 131 is a conventional audio player (e.g. CD or MP3 player) without the functionality of the present invention. Analog audio output is sent via audio output port 136 through the cable 134 to the audio input port 138 of the modular audio unit 132. The modular audio unit 132 comprises the inter-unit transmitter/receiver 110 and the DJ transmitter 120, which can send and receive inter-unit and unit-to-DJ communications in a manner similar to an audio unit 100. A switch 144 chooses between audio signals from the audio player 131 and from the inter-unit transmitter/receiver 110 for output to the output audio port 142 to the earphone 901 via cable 146 (the earphone 901 can also be a wireless earphone, wherein the output port 142 can be a wireless transmitter, which can also be a DJ transmitter 120). A convenient configuration for the switch 144 is a three way switch. In an intermediate position, the unit 132 acts simply as a pass-through, in which output from the audio player 131 is conveyed directly to the earphone 901, and the transmitter/receiver functions of the unit 132 do

not operate. In another position, the unit 132 operates as a receiver, and audio from the inter-unit transmitter/receiver 110 is conveyed to the earphone 901.

[Para 329] When the combined system operates as a broadcast unit 710, audio input from the audio unit 131 is directed to the inter-unit transmitter/receiver 110 for transmission to receive units 730, as well as for output to the earphone 901 (which can be direct to the earphone 901 through the switch, or indirectly through the inter-unit transmitter/receiver 110).

[Para 330] When the combined system operates as a conventional audio player, the switch directs audio signals from the input port 138 directly through to the output port 142. In this mode of operation, it can be arranged for the audio output to traverse the modular audio unit 132 without the unit being powered up. In case there is a transmission delay to the receive unit 730 such that audio played locally through the earphone 901 and audio played remotely on the receive unit 730 are not in synchrony, the system can incorporate a time delay in the output port 142 such that the local and remote audio output play with a common time delay, and are thus in synchrony.

[Para 331] When the combined system operates as a receiver unit 730, audio input from the input port 138 is ignored, and signals to the audio output port are delivered solely through the inter-unit transmitter/receiver 110.

[Para 332] It is convenient for the modular audio unit 132 to be able to operate independently of the associated audio player 131. In such a case, the unit 132 must have an independent energy store, such as one or more batteries, which can be rechargeable. In that case, the unit 132 has no audio signals locally to listen to through the earphone 901 or to transmit over the transmitter/receiver 110. However, the unit 132 can in that case receive external audio signals sent by other units 132 or units 100 for listening.

[Para 333] The audio player 131 can be placed in a backpack, purse, or other relatively inaccessible storage location, while the modular audio unit is, like a "remote control", accessible for interaction with other users.

Video

[Para 334] While the units 100 described above have comprised audio players 130, within the spirit of the present invention, such units can also comprise video or audio/visual players (both of which are referred to below as video players). Such video players would be used

generally for different entertainment and educational purposes, not limited to films, television, industrial training and music videos. Such video enabled units can operate similarly to audio units, including the capability of sharing video signals, synchronously played, with nearby units through inter-unit communication, as well as the use of DJ's that can produce human-perceptible signals (such as light transduction for accompaniment of audio signals in music videos). It should be noted, however, that there is a larger bandwidth requirement for the inter-unit transmitter/receiver 110 for the communication of video signals as compared with audio signals. In the case of shared video, wire connections (e.g. FireWire) between two units can allow simultaneous viewing of a single video signal.

[Para 335] In addition, text, including language-selectable closed caption and video subtitling, can accompany such video, as well as chat or dubbing to allow the superposition of audio over the audio normally accompanying such video.

Music Distribution Using Audio Units

[Para 336] The music industry is suffering from reduced sales due to the advent of Internet-based music file sharing; in addition, the manufacturers of personal audio devices are bringing to market audio devices that can wirelessly transfer music files between the devices. Such sharing-enabled devices could significantly reduce the sales of music. Audio units of the present invention, however, can be used to provide new means of music distribution and thereby increase the sales of music.

[Para 337] Figure 25 is a schematic flow diagram indicating music sharing using audio devices, providing new means of distributing music to customers. Three entities are involved in the transactions – the DJ (operating a broadcast unit 710), the cluster member (operating a receive unit 730), and the music distributor, and their actions are tracked in separate columns. In this case, the term DJ is used to indicate the person operating a broadcast unit 710, and has no meaning with respect to a DJ unit 200. Indeed, the DJ unit 200 is a part of the system only inasmuch as it provides for heightened pleasure of the DJ and the member in enhancing their experience of the music. For the rest of this section, DJ will refer specifically to the person operating the broadcast unit 710.

[Para 338] In a first step 1340, the DJ registers with the distributor, who places information about the DJ into a database in a step 1342. Part of this information is a DJ identifier (the DJ

ID), which is unique to the DJ, and which DJ ID is provided to the DJ as part of the registration process. This ID is stored in the unit 100 for later retrieval. The DJ at some later time broadcasts music of the type distributed by the distributor, in a step 1344. The broadcast of the music by the DJ can be adventitious (that is, without respect to the prior registration of the DJ with the distributor), or the distributor can provide the music to the DJ either free of charge, at a reduced charge, or free of charge for a limited period of time.

[Para 339] In a step 1346, the member becomes a part of the cluster 700 of which the DJ is the broadcaster broadcasting the distributor's music, and has thereby an opportunity to listen to the music. Along with the transfer of the audio signal of the music, in a step 1348, the DJ can send information about the song, which can include a numerical identifier of the music or album from which the music is derived. Furthermore, the DJ ID is provided to the member, and is associated with the music ID and stored in a database on the member unit 100 in a step 1350. In order to prevent this database from becoming too sizable, music IDs and DJ IDs can be purged from it on a regular basis (for example, IDs which are older than 60 or 120 days can be removed).

[Para 340] If the member requests purchase of the music from the distributor in a step 1352, in a step 1354, the distributor stores the member information, the music ID, and the DJ ID associated with the music (i.e. the person who introduced the member to the music). The distributor then completes the transaction with the member, providing a copy of the music in exchange for money, in a step 1356. As the member receives the music copy, he also becomes registered as a DJ as well in a step 1358. Thus, if the member now becomes the DJ of his own cluster, and introduces people to this music, he will also be known to the distributor as an introducer of the music.

[Para 341] In a step 1360, the distributor provides points to the DJ who introduced the member to the music and facilitated the sale of the music. In a step 1362, the DJ accumulates points related to the sale of the music to the member, as well as points related to the sale of other music to other members. These points can at that point or later be redeemed for money, discounted music, free music, gifts, access to restricted activities (e.g. seats at a concert) or other such real or virtual objects of value to the DJ.

[Para 342] In a step 1364, the DJ is optionally further linked to the music and member for whom he has received points. If this member introduces the music to yet other members, who

are induced to buy the music from the distributor, the DJ is further awarded points in a step 1366, given that the "chain" of members introduced directly or indirectly to the music includes the original DJ.

[Para 343] This set of interactions does not decrease music sales as does file sharing, but rather increases sales of music, as the DJ has incentives to encourage others to buy the music, and the offering of the music by the DJ through his broadcasts introduces music to people who may not have already had the opportunity to hear the music.

[Para 344] Figure 31 contains tables of DJ, song and transaction information according to the methods of Figure 25. A USER table 1810 comprises information about the USER, which can include the name of the person (Alfred Newman), their nickname/handle ("WhatMeWorry"), their email address (AEN@mad.com), and the machine ID of their unit 100 (B1B25C0). This information is permanently stored in the audio unit 100. A second set of information relates to music that the USER has heard while in other clusters 700 that the USER liked, and which is indicated as the USER's "wish list". This set of information includes a unique ID associated with the song (or other music or audio signal), which is transmitted by the broadcast unit 710 of the cluster 700. This information can alternatively or additionally include other information about the music, such as an album name, an artist name, a track number, or other such information that can uniquely identify the music of interest.

[Para 345] Along with each song ID is a DJ identifier, indicating the unique ID associated with the DJ who introduced the desired music to the USER. Additionally or alternatively, the information can comprise the DJ's email address, personal nickname/handle, name, or other uniquely identifying information.

[Para 346] The Wish List can either be permanent, or it can be that each song entry is dated, and that after a predetermined amount of time, which can be set by the user, the songs that are still on the Wish List are removed. It is also convenient that songs that are purchased according to the methods of the present invention, such as Figure 25, are also removed from the list automatically.

[Para 347] A DISTRIBUTOR table 1812 comprises information about purchases made by USERS with the DISTRIBUTOR. The table 1812 has numerous records keyed according to unique USER identifiers, which in this case is the MAC ID of the unit 100. A single record from

the table is provided, of which there can be hundreds of thousands or millions of such records stored.

[Para 348] The record can include contact information about the USER, including name, email address, or other business related information such as credit card number. In addition, each record comprises a list of all of the songs known to have been purchased through the DISTRIBUTOR, as identified by a unique song ID. In addition, the DJ associated with the purchase of the given song by the USER is also noted. This information was previously transmitted from the USER table 1810, which includes the associated DJ identifier along with the song identifier, at the time of purchase of the song. This association allows the DISTRIBUTOR to compensate the DJ for his part in introducing the USER to the song.

[Para 349] It should also be noted that such an arrangement of information allows the compensation, if desired, of the individual who introduced the DJ to the song, prior to the DJ introducing the USER to the song. For example, when the user purchased the song with song ID 230871C40, points were credited with the DJ whose ID is 42897DD. Looking in the record for the DJ 42897DD, one can determine whether there is another individual (DJ) associated with the purchase of the song 230871C40 by the DJ. If so, that individual can also receive compensation for the purchase of the song by the USER.

Use of Internet Connections

[Para 350] It is within the teachings of the present invention to allow normal Internet connections of the audio unit 100 with non-mobile devices connected with the Internet. Figure 29A is a schematic block diagram of the connection of an Internet-enabled audio unit 100 with an Internet device through the Internet cloud 1708, using an Internet access point 1704. An Internet-enabled audio unit 1700, unit A, is wirelessly connected to an audio unit 100, denoted unit B, as members in a cluster 700. The dashed line connecting the two units A and B indicates that the connection is wireless, whereas the solid connecting lines indicate wired connections. The unit A is connected to a wireless access point 1704, such as an 802.11 access point, which is connected to an Internet device 1706 via wired connections through the Internet cloud 1708.

[Para 351] Figure 29B is a schematic block diagram of the connection of an Internet-enabled audio unit 1702 with an Internet device through the Internet cloud, with an audio unit 1702 directly connected to the Internet cloud 1708. In this case the audio unit 1702 is capable of

directly connecting to the Internet cloud 1708, and thence to the Internet device 1706, through a wired connection. This could be through a high speed connection (such as a twisted wire Ethernet connection) or through a lower speed connection (e.g. a serial port connection, or a dial-up modem).

[Para 352] The connection of the unit 1700 or unit 1702 is illustrated in Figure 30, tables of ratings of audio unit 100 users. As described above, members of a cluster can decide whether or not to admit a new member to the cluster using a variety of automatic or manual methods. One method of determining the suitability of a user to become a member of the cluster 700 is to determine the user's ratings by members of other clusters to which the user has previously been a member. In this case, the Internet device 1706 is a computer hosting a database, which can be queried and to which information can be supplied by the unit A (either 1700 or 1702). On the Internet device 1706 are stored ratings of units 100, as indicated by the table 1802. The left hand column is the primary key of the database, and is a unique identifier associated with each unit 100. This ID can be a numerical MAC ID, associated with the hardware and software of each unit 100, a unique nickname or word handle (e.g. "Jen412smash") associated with each audio unit user, or other such unique identifier.

[Para 353] The second and third columns, indicated as numbers with dollar signs, are the total summed positive ratings (column two) and the negative ratings (column three) registered with each user by another member of a cluster 700 with which the user has been associated, and in which the user was operating the broadcast unit 710. This rating can, for example, reflect the perceived quality of music provided by the user. The fourth and fifth columns are the total, summed ratings of the user by other members of clusters 700 with which the user has been associated, in which the user was the operator of a receive unit 730. This rating can, for example, indicate the good spirits, friendliness, dress or other characteristics of the user as perceived by other members of the cluster. The sixth column indicates the largest cluster 700 for which the user has been the broadcaster. This is a good indicator of a broadcaster's popularity, since a poor or unpopular broadcaster would not be able to attract a large group of members for a cluster.

[Para 354] There are many other characteristics that can be stored in such a database, and can also include IDs of other members of groups with which the user has been associated (so that members can accept new members who have been associated with friends of those in the

cluster), specific music that the user has played (in order to determine musical compatibility), information on the individuals making each rating (in order to determine rating reliability), and gradations of ratings (rather than simply a positive or negative response).

[Para 355] The cluster members can access the ratings of the user requesting membership in the cluster 700 in order to determine their desirability and suitability. This would require a connection with the Internet device 1706 at the time that the user was requesting to join, and would preferably involve a wireless connection through an access point, as in Figure 29A. The information from the database on the device 1706 can either be displayed to the members of the cluster 700, or can be used by an automatic algorithm to determine whether the person can join.

[Para 356] The table 1800 represents the ratings of a cluster 700 of 5 total members (comprising a broadcaster with ID 12089AD, and four additional members with IDs E1239AC, F105AA3, B1B25C0, and ED5491B). The ratings are supplied by ED5491B (whose ID is preceded by a zero), and then specific ratings of each member are made. The DJ is indicated by a dollar sign preceding his ID. These ratings can be made by putting the nicknames/handles of the cluster members on a screen, and allowing the member to indicate positive or negative ratings by pressing one of two buttons. A plus in the first column indicates a positive response, and a minus sign indicates a negative response. These ratings can then be sent during either wired communications directly to the Internet device 1706 or via the access point 1704. It should be noted that the ratings, once made, can be stored on the unit 1700 or 1702 indefinitely, until connection with the Internet cloud 1708 can be made. As indicated by the arrow, the information for B1B25C0 can be added to the table 1802 – in this case, by incrementing the value in the fourth column (a positive rating for a user who is not the broadcaster).

[Para 357] Other applications of connections to Internet devices 1706 include exchanging (via uploading and downloading) dance files with distant individuals, and obtaining music via downloading , which can include transactions with distributors similar to that seen in Figure 25. Such connections also allow the integration of other connectivity, such as telephone and messaging capabilities, expanding the usefulness and attractiveness of audio units 100.

Many Embodiments Within the Spirit of the Present Invention

[Para 358] It should be apparent to one skilled in the art that the above-mentioned embodiments are merely illustrations of a few of the many possible specific embodiments of the

present invention. For example, the elements of a unit 100, including the inter-unit transmitter/receiver 110 protocol and hardware, the DJ transmitter 120 and the audio player 130 can be chosen from a range of available technologies, and can be combined with user interface elements (keyboards, keypads, touch screens, and cursor buttons, without significantly affecting the operation of the unit 100. Furthermore, many different transducers can be combined into DJs 200, which can further comprise many decorative and functional pieces (e.g. belt clasps, functional watches, microphones, or wedding rings) within the spirit of the present invention. Indeed, the unit 100, itself, can comprise transducers 240, 250 or 260.

[Para 359] It should also be appreciated that communications protocols provide a nearly uncountable number of arrangements of communications links between units in a cluster, that the links can be of mixed software protocols (e.g. comprising both TCP and UDP protocols, and even non-IP protocols) over a variety of hardware formats, including DECT, Bluetooth, 802.11 a, b, and g, Ultra-Wideband, 3G/GPRS, and i-Beans, and that communications can include not only digital but also analog communications modes. Furthermore, communications between audio units and digital jewelry can further comprise analog and digital communications, and a variety of protocols (both customized as well as well-established IP protocols).

[Para 360] It is important, as well, to note that the inter-unit communication and the unit-to-DJ communication can operate and provide significant benefits independently of one another. For example, members listening to music together gain the benefits of music sharing, even without the use of DJs 200. Alternatively, an individual's appreciation of music and personal expression can be augmented through use of a DJ 200, even in the absence of music sharing. However, the combination of music sharing along with enhanced personal expression through a DJ 200 provides a synergistic benefit to all members sharing the music.

[Para 361] Numerous and varied other arrangements can be readily devised by those skilled in the art without departing from the spirit and scope of the invention. Moreover, all statements herein reciting principles, aspects and embodiments of the present invention, as well as specific examples thereof, are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future, i.e. any elements developed that perform the same function, regardless of structure.

[Para 362] In the specification hereof any element expressed as a means for performing a specified function is intended to encompass any way of performing that function. The invention as defined by such specification resides in the fact that the functionalities provided by the various recited means are combined and brought together in the manner which the specification calls for. Applicant thus regards any means which can provide those functionalities as equivalent as those shown herein.



02-01-07

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

REGARDING THE APPLICATION OF:

APPLICANT: GOLDBERG, DAVID
SERIAL NO.: 11/566,552
REFERENCE NO.: TRIB001-3
ENTITLED: "DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK"

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

PAYMENT OF FILING FEES

Applicant respectfully submits a check in the amount of $1,390.00 for application filing fees, including $75 statutory basic filing fee, $65 surcharge, $250 search fee, $100 examination fee for small entity, and $900 total additional claim fees.

Very truly yours,
The McIntosh Group

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01 FC:4011	5	75.00 OP
02 FC:2051		65.00 OP
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04 FC:2311		100.00 OP
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
11/566,552	12/04/2006	2615	0.00	Trib001-3	34	36	8

CONFIRMATION NO. 6195

35846
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FILING RECEIPT

Date Mailed: 01/25/2007

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. 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 mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. 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 (if appropriate).**

Applicant(s)

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Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a DIV of 10/513,702 11/08/2004
which is a 371 of PCT/US03/14154 05/06/2003
which claims benefit of 60/378,415 05/06/2002
and claims benefit of 60/388,887 06/14/2002
and claims benefit of 60/452,230 03/04/2003

Foreign Applications

If Required, Foreign Filing License Granted: 01/24/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US11/566,552**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

Preliminary Class

381

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

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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.

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/566,552	12/04/2006	David Goldberg	Trib001-3

CONFIRMATION NO. 6195

35846
THE MCINTOSH GROUP
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AURORA, CO 80010

FORMALITIES LETTER

Date Mailed: 01/25/2007

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing.
  *Applicant must submit $ **75** to complete the basic filing fee for a small entity.*

The application is informal since it does not comply with the regulations for the reason(s) indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. The substitute specification must be accompanied by a marked up copy as set forth in 37 CFR 1.125(c) and a statement that the specification contains no new matter (see 37 CFR 1.125(b)). The specification, claims, or abstract page(s) submitted is not acceptable and cannot be scanned or properly stored because:
  - The line spacing on the specification, claims, or abstract is not 1½ or double spaced (see 37 CFR 1.52(b)).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- Additional claim fees of **$900** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **$1390** for a small entity

- **$75** Statutory basic filing fee.
- **$65** Surcharge.

- The application search fee has not been paid. Applicant must submit **$250** to complete the search fee.
- The application examination fee has not been paid. Applicant must submit **$100** to complete the examination fee for a small entity in compliance with 37 CFR 1.27.

- Total additional claim fee(s) for this application is **$900**

  - **$500** for **5** independent claims over 3.
  - **$400** for **16** total claims over 20.

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PART 3 - OFFICE COPY

DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK

Cross Reference To Related Patent Applications

[Para 1] This application is a divisional application of and claims priority to pending U.S. Patent Application No. 10/513,702 entitled, "Localized Audio Networks and Associated Digital Accessories" based on PCT Application No. PCT/US03/14154 having the same title claiming priority from Provisional Patent Application No. 60/378,415, filed May 6, 2002, titled "Localized Audio Networks and Associated Digital Accessories," and from Provisional Patent Application No. 60/388,887, filed June 14, 2002, titled " Localized Audio Networks and Associated Digital Accessories," and from Provisional Patent Application No. 60/452,230, filed March 4, 2003, titled " Localized Audio Networks and Associated Digital Accessories," the contents of each of which are incorporated herein by reference.

Technical Field

[Para 2] The present invention relates to localized wireless audio networks for shared listening of recorded music, and wearable digital accessories for public music-related display, which can be used in conjunction with one another.

Background

[Para 3] Portable audio players are popular consumer electronic products, and come in a variety of device formats, from cassette tape "boom boxes" to portable CD players to digital flash-memory and hard-disk MP3 players. While boom boxes are meant to make music to be shared among people, most of the portable audio players are designed for single person use. While some of this orientation to personal music listening is due to personal preference, other important considerations are the technical difficulties of reproducing music for open area listening with small, portable devices, as well as the social imposition of listening to music in public places with other people who do not wish to listen to the same music, or who are listening to different music that would interfere with one's own music.

[Para 4] There are numerous audio devices that are designed to allow the transfer of music from one portable audio device to another, especially through those that store music in the MP3 audio format. These devices suffer from two main difficulties: firstly, listeners still do not hear the music simultaneously, which is the optical manner to share music, and secondly, there are serious copyright issues associated with the transfer of music files. Thus, it would be preferable for the transfer of the music for simultaneous enjoyment, and which did not result in a permanent transfer of the music files between the devices, so as not to infringe on the intellectual property rights of the music owners.

[Para 5] Given the sharing of music, listeners will on occasion want to purchase the music for themselves. In such case, it would be beneficial for the user to have a way to obtain the music with minimal effort. It would further be desirable for there to be a way to keep track of the person from whom the listener heard the music, so that the person could be in some way encouraged or compensated.

[Para 6] The earphones associated with a portable music player admit a relatively constant fraction of ambient sound. If listening to music with a shared portable music device, however, one might at times want to talk with a friend, and at times listen to music without outside audible distraction. In such case, it would be desirable to have an earphone for which the amount of external ambient sound could be manually set.

[Para 7] Furthermore, many people like to show their individual preferences, to exhibit themselves, and to demonstrate their group membership. Furthermore, music preferences and listening to music together are among the more important means by which individuals express their individual and group identities. It would be beneficial for there to be a way for individuals to express themselves through their music, and for groups of individuals listening to music together, to be able to demonstrate their group enjoyment of the music.

[Para 8] One means for a person to express their identity through motion would be through having wearable transducers wherein the transduction signal is related to the music. If the transducer were a light transducer, this would result in a display of light related to the music that was being listened to. It would be further beneficial if there were means by which a person could generate control signals for the transducer so that instead of a wholly artificial response to the music, the transducer showed a humanly interpreted display. It would be preferable if these

signals could be shared between people along with music files, so that others could entertain or appreciate the light display so produced.

[Para 9] At popular music concerts, there is often a "light show" that pulsates in rough relation to the music. In contrast to the generally vigorous light show, the patrons at the concerts often have light bracelets or other such static displays which are used to join with the displays on the stage. It would be beneficial for there to be a way in which patrons could participate in the light show in order to enhance their enjoyment of the concert.

[Para 10] It is to the solution of these and other problems that the present invention is directed.

Summary of the Invention

[Para 11] It is an object of the present invention to provide users a means of listening to music together using mobile devices.

[Para 12] It is also an object of the present invention to provide users a means of choosing with whom to listen to music.

[Para 13] It is additionally an object of the present invention to provide users the ability to monitor the people that are listening together.

[Para 14] It is furthermore an object of the present invention to provide users a means of expressing their enjoyment of the music they are listening to through visual displays of wearable accessories.

[Para 15] It is yet another object of the present invention to provide users a means of demonstrating their identity with other people they are listening to music with.

[Para 16] It is still further an object of the present invention to provide users to provide users with means to choreograph the visual displays.

[Para 17] Additional objects, advantages and novel features of this invention shall be set forth in part in the description that follows, and will become apparent to those skilled in the art upon examination of the following specification or may be learned through the practice of the invention. The objects and advantages of the invention may be realized and attained by means of the instrumentalities, combinations, and methods particularly pointed out in the appended claims.

[Para 18] To achieve the foregoing and other objects and in accordance with the purposes of the present invention, as embodied and broadly described therein, the present invention is directed to a method for sharing music from stored musical signals between a first user with a first music player device and at least one second user with at least one second music player device. The method includes the step of playing the musical signals for the first user on the first music player device while essentially simultaneously wirelessly transmitting the musical signals from the first music player device to the at least one second music player device. The method additionally includes receiving the musical signals by the at least one second player device, such that the musical signals can be played on the at least one second player device essentially simultaneously with the playing of the musical signals on the first music player device. In this method, the first and the at least one second users are mobile and maintain less than a predetermined distance.

[Para 19] The present invention is also related to a system of music sharing for a plurality of users. The system includes a first sharing device and at least one second sharing device, each comprising a musical signal store, a musical signal transmitter, a musical signal receiver, and a musical signal player. Furthermore, the system comprises a broadcast user operating the first sharing device and at least one member user operating the at least one second sharing device. The broadcast user plays the musical signal for his own enjoyment on the first sharing device and simultaneously transmits the musical signal to the receiver of the at least one second sharing device of the at least one member user, on which the musical signal is played for the at least one member user. The broadcast user and the at least one member user hear the musical signal substantially simultaneously.

[Para 20] The present invention yet further is related to a wireless communications system for sharing audio entertainment between a first mobile device and a second mobile device in the presence of a non-participating third mobile device. The system includes an announcement signal transmitted by the first mobile device for which the second mobile device and the third mobile device are receptive. In addition, the system includes a response signal transmitted by the second mobile device in response to the announcement signal for which the first mobile device is receptive and for which the third mobile device is not receptive. Also, the system includes an identifier signal transmitted by the first mobile device to the second mobile device in response to the response signal, and which is not receptive to the third mobile device. Finally,

the system includes a broadcast signal comprising audio entertainment that is transmitted by the first mobile device, and which is receptive by the second mobile device on the basis of the reception of the identifier signal.

[Para 21] The present invention additionally is related to an audio entertainment device. The device includes a signal store that stores an audio entertainment signal, a transmitter that can transmit the stored audio entertainment signal, a receiver that can receive the transmitted audio entertainment signal from a transmitter of another such device, and a player that can play audio entertainment from a member selected from the group of stored audio entertainment signals or audio entertainment signals transmitted from the transmitter of another such device.

[Para 22] The present invention yet still is related to a system for identifying a first device that introduces a music selection to a second device. The system includes a mobile music transmitter operated by the first device and a mobile music receiver operated by the second device. In addition, the system includes a music signal comprising the music selection transmitted by the transmitter and received by the receiver, an individual musical identifier that is associated with the music selection, and an individual transmitter identifier that identifies the transmitter. The transmitter identifier and the individual music identifier are stored in association with each other in the receiver.

[Para 23] The present invention is still further related to an audio entertainment device. The device includes a wireless transmitter for the transmission of audio entertainment signals and a wireless receiver for the reception of the transmitted audio entertainment signals from a transmitter of audio entertainment signals. A first manually-separable connector for electrically connecting with an audio player allows transfer of audio entertainment signals from the player to the device. The device also includes a second connector for connecting with a speaker and a control to manually switch between at least three states. In the first state the speaker plays audio entertainment signals from the audio player and the transmitter does not transmit the audio entertainment signals. In the second state the speaker plays audio entertainment signals from the audio player and the transmitter essentially simultaneously transmits the audio entertainment signals. In the third state the speaker plays audio entertainment signals received by the receiver.

[Para 24] The present invention also still is related to a system for the sharing of stored music between a first user and a second user. The system includes a first device for playing music to the first user, comprising a store of musical signals. A first controller prepares musical

signals from the first store for transmission and playing, and a first player takes musical signals from the first controller and plays the signals for the first user. A transmitter is capable of taking the musical signals from the controller and transmitting the musical signals via wireless broadcast. A second device for playing music to the second user comprises a receiver receptive of the transmissions from the transmitter of the first device, a second controller that prepares musical signals from the receiver for playing, and a second player that takes musical signal from the second controller and plays the signals for the second user. The first user and the second user hear the musical signals at substantially the same time.

[Para 25] The present invention also is related to an earphone for listening to audio entertainment allowing for the controlled reception of ambient sound by a user. The earphone includes a speaker that is oriented towards the user's ear and an enclosure that reduces the amount of ambient noise perceptive to the user. In addition, a manually-adjustable characteristic of the enclosure adjusts the amount of ambient sound perceptive to the user.

[Para 26] The present invention is further related to a mobile device for the transmission of audio entertainment signals. The mobile device includes an audio signal store for the storage of the audio entertainment signals, and an audio signal player for the playing of the audio entertainment signals. The device also includes a wireless transmitter for the transmission of the audio entertainment signals and a transmitter control to manually switch between two states consisting of the operation and the non-operation of the audio transmitter.

[Para 27] The present invention yet still is related to a mobile device for the reception of digital audio entertainment signals. The mobile device includes an audio signal store for the storage of the digital audio entertainment signals and an audio receiver for the reception of external digital audio entertainment signals from a mobile audio signal transmitter located within a predetermined distance of the audio receiver. The device also includes a receiver control with at least a first state and a second state. An audio signal player plays digital audio entertainment signals from the audio signal store when the receiver control is in the first state, and plays digital audio entertainment signals from the audio receiver when the receiver control is in the second state.

[Para 28] The present invention furthermore relates to a method for the shared enjoyment of music from stored musical signals between a first user with a first music player device and at least one second user with at least one second music player device. The method includes the step

of playing the musical signals for the first user on the first music player device while essentially simultaneously wirelessly transmitting synchronization signals from the first music player device to the at least one second music player device. The method also includes receiving the synchronization signals by the at least one second player device. The synchronization signals allow the musical signals on the at least one second player device to be played essentially simultaneously with the playing of the musical signals on the first music player device. The first and the at least one second users are mobile.

[Para 29] The present invention yet furthermore relates to a wireless communications system for sharing audio entertainment between a first mobile device and a second mobile device. The system includes a broadcast identifier signal transmitted by the first mobile device to the second mobile device. A personal identifier signal is transmitted by the second mobile device to the first mobile device. A broadcast signal comprising audio entertainment is transmitted by the first mobile device of which the second device is receptive. The first mobile device and the second mobile device have displays which can display the identifier signal that they receive and the second mobile device can play the audio entertainment from the broadcast signal that it receives.

[Para 30] The present invention also relates to a method for enhancing enjoyment of a musical selection. The method includes the steps of obtaining control signals related to the musical selection, transmitting the control signals wirelessly, receiving the control signals, and converting the control signals to a humanly-perceptible form.

[Para 31] The present invention further yet relates to a method for generating and storing control signals corresponding to musical signals. The method includes the steps of playing musical signals for a user and receiving manual input signals from the user that are produced substantially in synchrony with the music. The method also includes the steps of generating control signals from the input signals, and storing the control signals so that they can be retrieved with the musical signals.

[Para 32] The present invention still additionally relates to a wearable personal accessory. The accessory includes an input transducer taken from the group consisting of a microphone and an accelerometer. The transducer generates a time-varying input transduction signal. The accessory also includes a controller that accepts the input transduction signal, and generates an output transducer signal whose signal varies in amplitude with time. An output transducer

receptive of the output transducer signal provides a humanly-perceptible signal. An energy source powers the input transducer, controller and output transducer.

[Para 33] The present invention also still relates to a wearable personal accessory controlled via wireless communications. The accessory includes a wireless communications receiver that is receptive of an external control signal. The accessory also includes a controller that accepts the external control signal and that generates a time-varying visual output transducer signal. A visual output transducer is receptive of the output transducer signal, and provides a humanly-perceptible visual signal. An energy store powers the receiver, controller and output transducer. The visual output transducer generates visually-perceptive output.

[Para 34] The present invention still further relates to a device for converting user tactile responses to stored music into a stored control signal. The device includes a player that plays stored music audible to the user and a manually-operated transducer that outputs an electrical signal. The transducer is actuated by the user in response to the music. A controller receives the electrical signal and outputs a control signal and a store receives the control signal and stores it.

[Para 35] The present invention furthermore relates to a music player that wirelessly transmits control signals related to the music, wherein the control signals control a wearable electronic accessory. The music player includes a store of music signal files and a controller that reads a musical signal file from the store and generates audio signals. The controller further generates the control signals. A transducer converts the audio signals into sound audible to the user and a wireless transmitter transmits the control signal to the wearable electronic accessory.

[Para 36] The present invention yet relates to a music player that wirelessly transmits control signals related to the music, wherein the control signals control a wearable electronic accessory. The music player includes a store of music signal files and a second store of control signal files associated with the music signal files. A controller reads a musical signal file from the store and generates audio signals. The controller further reads an associated control signal file. A transducer converts the audio signals into sound audible to the user, and a wireless transmitter transmits the control signals from the associated control signal file to the wearable electronic accessory.

[Para 37] The present invention also relates to a system for exhibition of music enjoyment. The system includes a source of music signals, a controller that generates control signals from the music signals, and a transmitter of the control signals. The transmission of the control

signals is synchronized with the playing of the music signals. In addition, the system includes a receiver of the control signals and a transducer that responds to the control signals.

[Para 38] The present invention further relates to a method for transferring a wearable-accessory control file stored on a first device to a second device in which an associated music file is stored. The method includes the steps of storing on the first device the name of the music file in conjunction with the control file with which it is associated and requesting by the second device of the first device for a control file stored in conjunction with the name of the music file. In addition, the method includes the step of transferring the control file from the first device to the second device. The control file is stored on the second device in conjunction with the name of the associated music file.

[Para 39] The present invention also relates to a device for transmitting control signals to a wearable accessory receptive of such control signals. The device includes a manually-separable input connector for connecting to an output port of an audio player. Audio signals are conveyed from the audio player to the device across the connector. The device also includes a controller for generating control signals from the audio signals and a transmitter for transmitting the control signals.

Brief Description Of The Drawings

[Para 40] Figure 1 is a schematic block diagram of a local audio network comprised of two linked audio units operated by two persons, and associated digital jewelry conveyed by the two persons.

[Para 41] Figure 2A is a schematic block diagram of a DJ with multiple independently controlled LED arrays.

[Para 42] Figure 2B is a schematic block diagram of a DJ with an LED array with independently controlled LEDs.

[Para 43] Figures 3A-C are schematic block diagrams of unit elements used in inter-unit communications.

[Para 44] Figure 4 is a schematic flow diagram of DJ entraining.

[Para 45] Figures 5A-B are schematic block diagrams of DJs associated with multiple people bound to the same master unit.

[Para 46] Figure 6 is a schematic block diagram of a cluster comprising a broadcast unit and multiple receive units, with an external search unit.

[Para 47] Figure 7 is a schematic diagram of a broadcast unit transmission.

[Para 48] Figure 8A is a schematic block diagram of audio units with self-broadcast so that audio output is highly synchronized.

[Para 49] Figure 8B is a schematic flow diagram for synchronous audio playing with multiple rebroadcast.

[Para 50] Figures 9A and 9B are schematic block diagrams of hierarchically-related clusters.

[Para 51] Figure 10 is a top perspective view of an earphone with manually adjustable external sound ports.

[Para 52] Figures 11 A and B are cross-sectional diagrams of a earpiece with an extender to admit additional ambient sound.

[Para 53] Figure 12A is a schematic diagram of a modular audio unit.

[Para 54] Figure 12B is a schematic diagram of modular digital jewelry.

[Para 55] Figure 12C is a schematic block diagram of a modular transmitter that generates and transmits control signals for digital jewelry from an audio player.

[Para 56] Figure 13A is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via visible or infrared LED emission in search transmission mode.

[Para 57] Figure 13B is a schematic cross-section through a search unit and a broadcast unit n which communications are provided via a visible or infrared laser in search transmission mode.

[Para 58] Figure 13C is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via visible or infrared emission from a digital jewelry element in broadcast transmission mode.

[Para 59] Figure 13D is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via contact in mutual transmission mode.

[Para 60] Figure 13E is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via sonic transmissions in broadcast transmission mode.

[Para 61] Figure 13F is a schematic cross-section through a search unit and a broadcast unit in which communications are provided via radio frequency transmissions in broadcast transmission mode.

[Para 62] Figure 14A is a schematic block diagram of the socket configurations on the broadcast unit and the receive unit.

[Para 63] Figure 14B is a schematic block flow diagram of using IP sockets for establishing and maintaining communications between a broadcast unit and the receive unit, according to the socket diagram of Figure 14A.

[Para 64] Figure 15 is a schematic block diagram of the IP socket organization used with clusters comprising multiple members.

[Para 65] Figure 16 is a schematic block flow diagram of transfer of control between the broadcast unit and the first receive unit.

[Para 66] Figure 17 is a matrix of DJ and searcher preferences and characteristics, illustrating the matching of DJ and searcher in admitting a search to a cluster.

[Para 67] Figure 18A is a screenshot of an LCD display of a unit, taken during normal operation.

[Para 68] Figure 18B is a screenshot of an LCD display of a unit, taken during voting for a new member.

[Para 69] Figure 19 is a table of voting schemes for the acceptance of new members into a cluster.

[Para 70] Figure 20 is a time-amplitude trace of an audio signal automatically separated into beats.

[Para 71] Figure 21A is a block flow diagram of a neural network method of creating DJ transducer control signals from an audio signal as shown in Figure 20.

[Para 72] Figure 21B is a block flow diagram of a deterministic signal analysis method of creating DJ transducer control signals from an audio signal as shown in Figure 20.

[Para 73] Figure 21C is a schematic flow diagram of a method to extract fundamental musical patterns from an audio signal to create DJ control signals.

[Para 74] Figure 21D is a schematic flow diagram of an algorithm to identify a music model resulting in a time signature.

[Para 75] Figure 22A is a top-view diagram of an audio unit user interface, demonstrating the use of buttons to create DJ control signals.

[Para 76] Figure 22B is a top-view diagram of a hand-pad for creating DJ control signals.

[Para 77] Figure 22C is a schematic block diagram of a set of drums used for creating DJ control signals.

[Para 78] Figure 23A is a schematic block flow diagram of the synchronized playback of an audio signal file with a DJ control signal file, using transmission of both audio and control signal information.

[Para 79] Figure 24 is a schematic block diagram of a DJ unit with associated input transducers.

[Para 80] Figure 25 is a schematic flow diagram indicating music sharing using audio devices, providing new means of distributing music to customers.

[Para 81] Figure 26 is a schematic diagram of people at a concert, in which DJs conveyed by multiple individuals are commonly controlled.

[Para 82] Figure 27 is a schematic block flow diagram of using a prospective new member's previous associations to determine whether the person should be added to an existing cluster.

[Para 83] Figure 28 is a block flow diagram indicating the steps used to maintain physical proximity between the broadcast unit and the receive unit via feedback to the receive unit user.

[Para 84] Figures 29A is a schematic block diagram of the connection of an Internet-enabled audio unit with an Internet device through the Internet cloud, using an Internet access point.

[Para 85] Figures 29B is a schematic block diagram of the connection of an Internet-enabled audio unit with an Internet device through the Internet cloud, with an audio unit directly connected to the Internet cloud.

[Para 86] Figure 30 comprises tables of ratings of audio unit users.

[Para 87] Figure 31 is tables of DJ, song and transaction information according to the methods of Figure 25.

[Para 88] Figure 32A is a schematic block diagram of maintaining privacy in open transmission communications.

[Para 89] Figure 32B is a schematic block diagram of maintaining privacy in closed transmission communication.

[Para 90] Figure 33 is a schematic block diagram of a hierarchical cluster, as in Figure 9A, in which communications between different units is cryptographically or otherwise restricted to a subset of the cluster members.

[Para 91] Figure 34A is a schematic block flow diagram of the synchronization of music playing from music files present on the units 100.

[Para 92] Figure 34B is a schematic layout of a synchronization record according to Figure 34A.

[Para 93] Figure 35 is a schematic block diagram of DJ switch control for both entraining and wide-area broadcast.

[Para 94] Figure 36 is a schematic block diagram of mode switching between peer-to-peer and infrastructure modes.

Best Mode for Carrying-Out the Invention

Overview

[Para 95] Figure 1 is a schematic block diagram of a local audio network comprised of two linked audio units 100 operated by two persons, and associated digital jewelry 200 conveyed by the two persons. The persons are designated Person A and Person B, their audio units 100 are respectively Unit A and Unit B, and their digital jewelry 200 are denoted respectively DJ A and DJ B. In this patent specification, "DJ" is used to denote either the singular "digital jewel" or the plural "digital jewelry".

[Para 96] Each unit 100 is comprised of an audio player 130, and an inter-unit transmitter/receiver 110. In addition, each unit 100 comprises a means of communication with the digital jewelry, which can be either a separate DJ transmitter 120 (Unit A), or which can be part of the inter-unit transmitter/receiver 110 (Unit B). Furthermore, unit 100 can optionally comprise a DJ directional identifier 122, whose operation will be described below. Also, unit 100 will generally comprise a unit controller 101, which performs various operational and executive functions of intra-unit coordination, computation, and data transfers. The many

functions of the controller 101 will not be discussed separately below, but will be described with respect to the general functioning of the unit 100.

[Para 97] In operation, Unit A audio player 130 is playing recorded music under the control of a person to be designated User A. This music can derive from a variety of different sources and storage types, including tape cassettes, CDs, DVDs, magneto-optical disks, flash memory, removable disks, hard-disk drives or other hard storage media. Alternatively, the audio signals can be received from broadcasts using analog (e.g. AM or FM) or digital radio receivers. Unit A is additionally broadcasting a signal through DJ transmitter 120, which is received by DJ 200 through a DJ receiver 220 that is worn or otherwise conveyed by User A.

[Para 98] It should be noted that the audio signals can be of any sound type, and can include spoken text, symphonic music, popular music or other art forms. In this specification, the terms audio signal and music will be used interchangeably.

[Para 99] The DJ 200 transduces the signal received by the DJ receiver 220 to a form perceptible to the User A or other people near to him. This transduced form can include audio, visual or tactile elements, which are converted to their perceptible forms via a light transducer 240, and optionally a tactile transducer 250 or an audio transducer 260. The transducers 240, 250 and 260 can either directly generate the perceptible forms directly from the signals received by the DJ receiver 220, or can alternatively incorporate elements to filter or modify the signals prior to their use by the transducers.

[Para 100] When a second individual, User B, perceives the transduced forms produced by User A DJ 200, he can then share the audio signal generated by the audio player 130 of Unit A, by use of the inter-unit transmitter/receiver 110 of Unit A and a compatible receiver 110 of Unit B. Audio signals received by Unit B from Unit A are played using the Unit B audio player 130, so that User A and User B hear the audio signals roughly simultaneously. There are a variety of means by which the Unit B can select the signal of Unit A, but a preferred method is for there to be a DJ directional identifier 122 in Unit B, which can be pointed at the DJ of User A and which receives information needed to select the Unit A signal from the User A DJ, whose transduced signal is perceptible to User B.

[Para 101] Given the audio signal now being exchanged between Unit A and Unit B, User A and User B can experience the same audio signal roughly simultaneously. Within the spirit of the present invention, it is preferable for the two users to hear the audio signals within 1 second

of one another, and more preferable for the users to hear the audio signals within 200 milliseconds of one another, and most preferable for the users to hear the audio signals within 50 milliseconds of one another. Furthermore, DJs 200 being worn by User A and User B can receive signals from their respective units, each emitting perceptible forms of their signals. Preferably, the transduced forms expressed by the DJs 200 are such as to enhance the personal or social experience of the audio being played.

Unit 100 Structure

[Para 102] Units 100 comprise a device, preferably of a size and weight that is suited for personal wearing or transport, which is preferably of a size and format similar to that of a conventional portable MP3 player. The unit can be designed on a "base" of consumer electronics products such as cell phones, portable MP3 players, or personal digital assistants (PDAs), and indeed can be configured as an add-on module to any of these devices.

[Para 103] In general, the unit 100 will comprise, in addition to those elements described in Figure 1, other elements such as a user interface (e.g. an LCD or OLED screen, which can be combined with a touch-sensitive screen, keypad and/or keyboard), communications interfaces (e.g. Firewire, USB, or other serial communications ports), permanent or removable digital storage, and other components.

[Para 104] The audio player 130 can comprise one or more modes of audio storage, which can include CDs, tape, DVDs, removable or fixed magnetic drives, flash memory, or other means. Alternatively, the audio can be configured for wireless transmission, including AM/FM radio, digital radio, or other such means. Output of the audio signal so generated can comprise wireless or wired headphones or wired or wireless external speakers.

[Para 105] It is also within the spirit of the present invention that the unit 100 can have only receive capabilities, without having separate audio information storage or broadcast capabilities. In concept, such a device can have as little user interface as an on/off button, a button to cause the unit 100 to receive signals from a new "host", and a volume control. Such devices can be very small and be built very inexpensively.

Unit 100 Audio Output

[Para 106] One of the goals of the present invention is to assist communications between groups of people. In general, with mobile audio devices, the music is listened to through headphones. Many headphones are designed so as to reduce to the extent possible the amount of sound which is heard from outside of the headphones. This, however, will have the general effect of reducing the verbal communications between individuals.

[Para 107] In order to avoid this potential problem, it is within the teachings of the present invention that headphones or earphones be provided that allow ambient sound, including a friend's voice, to be easily perceptible to the wearer of the headphones, and that such headphones can be provided that variably allow such sound to be accessible for the headphone's wearer. Such arrangement of the headphones can be obtained either through physical or electronic means. If through electronic means, the headphones can have a microphone associated with them, through which signals received are played back in proportion through the headphone speakers, said proportion being adjustable from substantially all sound being from the microphone to substantially no sound being from the microphone. This microphone can also be a part of a noise cancellation system, such that the phase of the playback is adjustable – if the phase is inverted relative to the ambient sound signal, then the external noise is reduced, whereas if the phase is coincident with the ambient sound signal, then the ambient sounds are enhanced.

[Para 108] Figure 10 is a top perspective view of an earphone 900 with adjustable external sound ports. A speaker element 940 is centrally located, and the outside circumferential surface is a rotatable sound shield 910 in which sound ports 930 are placed. The sound ports 930 are open holes to admit sound. Beneath the sound shield 930 is a non-rotatable sound shield in which fixed sound ports 920 are placed in a similar arrangement. As the sound shield 910 is rotated manually by the user, the sound ports 930 and the fixed sound ports 920 come into registration, so that open ports between sources of ambient noise and the outer ear chamber is created, increasing the amount of ambient sound that the user perceives.

[Para 109] Figures 11 A and B are cross-sectional diagrams of an earpiece with an extender 980 that admits additional ambient sound. In Figure 11A, the face of a speaker 960 with a cord 970 is covered with a porous foam block 950 that fits snugly into the ear. While some ambient sound is accessible to the ear through the foam block 950, the majority of the sound is input is impeded. In Figure 11B, the foam extender 980 is placed over the foam block 950 so that a

formed shape at the distal end of the extender 980 fits snugly into the ear. A hollow cavity 982 can be allowed in the extender 980 so as to reduce the sound impedance from the speaker 960 to the ear. Ambient sound is allowed into the space between the speaker 960 and the distal end of the extender 980 (shown by the arrows).

[Para 110] Many other arrangements are allowed within the spirit of the present invention to allow ambient sound to more easily access the user's ear, including adjustable headphones or earplugs as in Figure 10, or accessories that can modify the structure of existing earphones and headphones, as in Figure 11B. Such effects can include increasing the number of apertures admitting ambient sound, increasing the size of an aperture (e.g. by adjusting the overlap between two larger apertures), changing the thickness or number of layers in the enclosure, or by placing a manually detachable cup that covers the earphone and ear channel so as to reduce ambient sound.

DJ 200 Transducers

[Para 111] DJs 200 will have a number of common elements, including communications elements, energy storage elements, and control elements (e.g. a manual ON/OFF switch or a switch to signal DJ entraining, as will be described below). In this section, the structure and function of transducers will be described.

Light Transducers 240

[Para 112] The DJ 200 transducers are used to create perceptible forms of the signals received by the receiver 220. Light transduction can include the use of one or more light-emitting devices, which can conveniently be colored LEDs, OLEDs, LCDs, or electroluminescent displays, which can be supplemented with optical elements, including mirrors, lenses, gratings, and optical fibers. Additionally, motors, electrostatic elements or other mechanical actuators can be used to mechanically alter the directionality or other properties of the light transducers 240. There can be either a single device or an array of devices, and if more than a single device, can display in synchrony, or can be "choreographed" to display in a temporal and/or spatial pattern.

[Para 113] Figure 2A is a schematic block diagram of a DJ 200 with multiple independently controlled LED arrays, wherein the number of LED arrays is preferably between 2 and 8, and is

even more preferably between 2 and 4. The signal received from unit 100 via the DJ receiver 220 is passed to a multi-port controller 242 with two ports 294 and 296 connected respectively with two separate arrays 290 and 292 of LEDs 246. These arrays 290 and 292 can be distinguished by spatial placement, color of emitted light, or the temporal pattern of LED illumination. The signal is converted via analog or digital conversion into control signals for the two arrays 290 and 292, which are illuminated in distinct temporal patterns.

[Para 114] It should be noted that the signal received by receiver 220 from the unit 100 can comprise either a signal already in the form required to specify the array and temporal pattern of LED 246 activity, or it can alternatively be converted from a differently formatted signal into temporal pattern signals. For example, the unit 100 can transmit a modulated signal whose amplitude specifies the intensity of LED light amplitude. For multiple LED arrays, signals for the different arrays can be sent together and decoded by the DJ receiver 220, such as through using time multiplexing, or transmission on different frequencies.

[Para 115] Alternatively, the signal could be not directly related to the transduction intensity, such as in the direct transmission of the audio signal being played by the unit 100. In such case, the controller 242 can modify the signal so as to generate appropriate light transduction signals. For example, low frequency bandpass filters could provide the signals for the first array 290, whereas high-frequency bandpass filters could provide the signals for the second array 292. Such filtering could be accomplished by either analog circuitry or digital software within a microprocessor in the controller 242. It is also within the spirit of the present invention for the different arrays to respond differently to the amplitude of the signal within a frequency band or the total signal.

[Para 116] An alternative control of LED arrays is presented in Figure 2B, a schematic block diagram of a DJ 200 with an LED array with independently controlled LEDs. In this case, the control signal received by the receiver 200 is passed through a single-port, multiple ID controller 243 to a single array of LEDs, each responsive only to signals with a particular characteristic or identifier. One or more of the LEDs 246 can have the same identifier or be responsive to the same characteristic so as to constitute a virtual array of LEDs.

[Para 117] As mentioned above, the transduced light signal can alternatively or additionally comprise multi-element arrays, such as an LED screen. In such case, the signal received by the receiver 220 can be either a specification of image elements to be displayed on the LED screen,

or can be as before, a signal unrelated to the light transduction output. For example, many audio players on computers (e.g. Windows Media player) come with pattern generators that are responsive to the frequency and amplitude of the audio signal. Such pattern generators could be incorporated into the controllers 242 or 243.

[Para 118] Alternatively, the light transducer 240 can be a single color illuminated panel, whose temporal pattern of illumination was similar to that of the LEDs of Figures 2A and 2B. In such case, users can partially cover the panel with opaque or translucent patterns, such as a dog or a skull or a representation of a favorite entertainer.

[Para 119] Whereas the receiver 220 and the light controllers 242 or 243 can be hidden from view, either behind the light transducers or separated from the transducers by a wire, for example, the light transducers are meant to be perceptible to other people. For this purpose, the light transducers can be fashioned into fashion accoutrements such as bracelets, brooches, necklaces, pendants, earrings, rings, hair clips (e.g. barrettes), ornamental pins, netting to be worn over clothing, belts, belt buckles, straps, watches, masks, or other objects. Additionally, the light transducers can be fashioned into clothing, such as arrays of lighting elements sewn onto the outside of articles of clothing such as backpacks, wallets, purses, hats, or shoes. For those articles of clothing that are normally washed, however, the lighting transducers and associated electronics will preferably be able to withstand cleaning agents (e.g. water or dry cleaning chemicals), or will be used in clothing such as scarves and hats that do not need to be washable.

[Para 120] It is also convenient for there to be modular lighting arrangements in which the configuration can easily changed by a user. One example of such a modular arrangement is a light pipe made of a flexible plastic cable or rod, at one or both ends of which is positioned a light source that directs light into the rod. At predetermined locations along the rod, the rod surface can be roughened so as to allow a certain amount of light to escape, on which transparent glass or plastic pieces can be clipped, and that are lighted when the pipe is lighted. Alternatively, the light can be uniformly smooth, and transparent pieces of roughly index of refraction matching material can be clipped onto the rod, allowing some fraction of the light to be diverted from the rod into the pieces. The light sources and associated energy sources used in such an arrangement can be relatively bulky and be carried in a backpack, pouch or other carrying case, and can brightly illuminate a number of separate items.

[Para 121] It should be noted that the transducers require an energy store 270, which is conveniently in the form of a battery. The size of the battery will be highly dependent on the transduction requirements, but can conveniently be a small "watch battery". It is also convenient for the energy store 270 to be rechargeable. Indeed, all of the electric devices of the present invention will need energy stores or generators of some sort, which can comprise non-rechargeable batteries, rechargeable batteries, motion generators that can convert energy from the motion of the user into electrical energy that can be used or stored, fuel cells or other such energy stores or converters as are convenient.

Sound Transducers 260

[Para 122] Sound transducers 260 can supplement or be the primary output of the audio player of the unit 100. For example, the unit 100 can wirelessly transmit the audio signal to DJ 200 comprising a wireless headphone sound transducer. This would allow a user to listen to the audio from the audio player without the need for wires connecting the headphones to the unit 100. Such sound transducers can comprise, for example, electromagnetic or piezoelectric elements.

[Para 123] Alternative to headphone or earphone audio production, external speakers, which can be associated with light transducers 240 or tactile transducers 250, can be used to enhance audio reproduction from external speakers associated with the unit 100. In addition or alternative to simple reproduction of the audio signal output by the audio player 130, the sound transducers 260 can play modified or accompanying signals. For example, frequency filters can be used to select various frequency elements from the music (for low bass), so as to emphasize certain aspects of the music. Alternatively, musical elements not directly output from the audio player 130 can be output to complete all instrumental channels of a piece of music, for example.

Tactile Transducers 250

[Para 124] DJs 200 can be configured with tactile transducers, which can provide vibrational, rubbing, or pressure sensation. As before, signals of a format that control these transducers can be sent directly from the DJ transmitter 120, or can be filtered, modified or generated from signals of an unrelated format that are sent from the transmitter 120. As before, the signal can be the audio signal from the audio player 130, which can, for example, be frequency filtered and

possibly frequency converted so that the frequency of tactile stimulation is compatible with the tactile transducer. Alternatively, signals that are of the sort meant for light transduction can be modified so as to be appropriate for tactile transduction. For example, signals for light of a particular color can be used to provide vibrational transduction of a particular frequency, or light amplitudes can be converted into pressure values.

[Para 125] The tactile transducer can comprise a pressure cuff encircling a finger, wrist, ankle, arm, leg, throat, forehead, torso, or other body part. The tactile transducer can alternatively comprise a rubbing device, with an actuator that propels a tactile element tangentially across the skin. The tactile transducer can also alternatively comprise a vibrational device, with an actuator that drives an element normally to the skin. The tactile transducer can further alternatively comprise elements that are held fixed in relation to the skin, and which comprise moving internal elements that cause the skin to vibrate or flex in response to the movement of the internal element.

[Para 126] The tactile transducer can lack any moveable element, and can confer tactile sensation through direct electrical stimulation. Such tactile elements are best used where skin conductivity is high, which can include areas with mucus membranes.

[Para 127] Tactile transduction can take place on any part of the body surface with tactile sensation. In addition, tactile transduction elements can be held against the skin overlying bony structures (skull, backbone, hips, knees, wrists), or swallowed and conveyed through the digestive tract, where they can be perceived by the user.

Input Transducers

[Para 128] It should also be understood that the DJ 200 can comprise input transducers in order to create control signals from information or stimuli in the local environment. Figure 24 is a schematic block diagram of a DJ unit 200 with associated input transducers. The input-enabled DJ 1320 comprises energy storage 270, a controller 1322, output transducers 1324, a DJ receiver 220 and input transducers 1326. The input transducers 1326 can comprise one or more of a microphone 1328 and an accelerometer 1330.

[Para 129] In operation, the energy storage 270 provides energy for all other functions in the DJ 1320. The controller 1322 provides control signals for the output transducers 1324, which can comprise tactile transducers 250, sound transducers 260, and/or light transducers 240. Input

to the controller can be provided via the input transducers 1326, optionally along with input from the DJ receiver 220.

[Para 130] For example, on a dance floor, the microphone 1328 can provide electrical signals corresponding to the ambient music. These signals can be converted into transducer 1324 control signals in a manner similar to that described below for the automatic generation of control signals according to Figures 21 A-C, as will be described below. This allows the use of the DJ functionality in the absence of an accompanying audio unit 100, expanding the applications of the DJ 200. An automatic gain filter can be applied so as to compensate for the average volume level – because the user can be close or far from the sources of ambient music and the music can vary in volume, the strength of the DJ 200 transduction can be normalized. In addition, it can also be preferable for there to be a manual amplitude control 1323, such as a dial or two position rocker switch, by which the average intensity of the DJ 200 control signals can be varied to suit the taste of the user. The amplitude control 1323 can operate through modulating the input transducer 1326 output or as an input to the controller 1322 as it generates the signals for the output transducers 1324.

[Para 131] Alternatively, the accelerometer 1330 can track the movement of the person wearing the DJ 100, such that a signal indicating acceleration in one direction can be converted by the controller 1322 into signals for a channel of output transducers 1324. The accelerometer 1330 can be outfitted with sensors for monitoring only a single axis of motion, or alternatively for up to three independent directions of acceleration. Thus, the controller 1322 can convert sensed acceleration in each direction into a separate channel, horizontal axes of acceleration could be combined into a single channel and the vertical axis into a second channel, or other such linear or non-linear combination of sensed acceleration can be combined in aesthetic fashion.

[Para 132] It is also within the spirit of the present invention that multiple input signals be combined by the controller 1322 to create control signals for aesthetic output from the output transducers 1324. For example, one channel can be reserved for control signals generated from accelerometer signals, another channel for control signals generated from microphone signals, and yet a third channel from control signals generated from DJ receiver 220 input. In general, the information from the DJ receiver 220 and from the microphone 1328 will be of the same type (i.e. generated from audio signals), so that the most common configurations will be control

signals from a combination of the microphone 1328 and accelerometer 1330, and signals from a combination of the DJ receiver 220 and the accelerometer 1330.

[Para 133] The input transducers 1326 can further comprise a light sensor, such that the DJ would mimic light displays in its environment, making it appear that the DJ is part of the activity that surrounds it. In this case, the controller 1322 would preferably generate control signals based on rapid changes in the ambient lighting, since it would be less aesthetic to have the DJ transducers provide constant illumination. Furthermore, slowly changing light (on the order of tens or hundreds of milliseconds) will be created naturally by the movement of the user, whereas changes in the lighting (e.g. strobes, laser lights, disco balls) will be of much faster change (on the order of milliseconds). Thus, to match the ambient dance lighting, it is aesthetic for the DJ 200 to respond most actively to ambient light that is changing in intensity a predetermined percentage in a predetermined time, wherein the predetermined percentage is at least 20% and the predetermined time is 20 milliseconds or less, and even more preferably for the predetermined percentage to be at least 40% and the predetermined time is 5 milliseconds or less.

Unit to Unit Communication

[Para 134] Units 100 transfer audio signals from the audio player in one unit 100 to the audio player 130 of another unit 100. Figures 3A-C are schematic block diagrams of unit 100 elements used in inter-unit communications. Each diagram presents communications between a Unit A and a Unit B, with Unit A transmitting audio signals to Unit B. Dashed connectors and elements indicate elements or transfers that are not being utilized in that unit 100, but are placed to indicate the equivalence of the transmitting and receiving units 100.

[Para 135] In Figure 3A, compressed audio signals (e.g. in MP3 format or MPEG4 format for video transfers, as described below) stored in a compressed audio storage 310 are transferred to a signal decompressor 302, where the compressed audio signal is converted into an uncompressed form suitable for audio output. In Unit A, this decompressed signal is passed both to the local speaker 300, as well as to the inter-unit transmitter/receiver 110. The Unit B inter-unit transmitter-receiver 110 receives the uncompressed audio signal, which is sent to its local speaker for output. Thus, both Unit A and Unit B play the same audio from the Unit A storage, in which uncompressed audio is transferred between the two units 100.

[Para 136] In Figure 3B, compressed audio signals from the Unit A compressed audio storage 310 are sent both to the local signal decompressor 302 and to the inter-unit transmitter/receiver 110. The Unit A decompressor 302 conditions the audio signal so that it is suitable for output through the Unit A speaker 300. The compressed audio signal is sent via Unit A transmitter-receiver 110 to the Unit B transmitter/receiver 110, where it is passed to the Unit B decompressor 302 and thence to the Unit B speaker 300. In this embodiment, because compressed audio signals are transmitted between the units 100 transmitter/receivers 302, lower bandwidth communications means can be used in comparison with the embodiment of Figure 3A.

[Para 137] In Figure 3C, compressed audio signals from the Unit A compressed audio storage 310 are sent to the Unit A signal decompressor 302. These decompressed signals are sent to both the local speaker 300 as well as to a local compressor 330, which recompresses the audio signal to a custom format. In addition to decompressed audio signal input, the compressor also optionally utilizes information from a DJ signal generator 320, which generates signals to control DJ transducers 240, 250 and 260, which can be sent in conjunction with the audio signal. The signal generator 320 can include analog and/or digital filtering or other algorithms that analyze or modify the audio signals, or can alternatively take manually input transducer control signals input as described below. The custom compression can include multiplexing of the audio signals with the transducer control signals.

[Para 138] The custom compressed audio signals, are then passed to the Unit A inter-unit transmitter/receiver 110, which are then transferred to the Unit B inter-unit transmitter/receiver 110, and thence to the Unit B signal decompressor 302 and speaker 300.

[Para 139] Given the time delays in signal transfer between the units 100, custom compression that takes place in the sending unit, and any subsequent decompression that takes place in the receiving unit 100, it can be convenient to place a delay on the local (i.e. Unit A) speaker output of tens of milliseconds, so that both units 100 play the audio through their speakers at roughly the same time. This delay can include limited local digital storage between the local signal decompression and speaker 300 output.

[Para 140] Various hardware communications protocols will be discussed below with respect to unit-to-unit communications, but in general it is required that the distance between the units that must be maintained be preferably at least 40 feet, and more preferably at least 100 feet, and

most preferably 500 feet, in order to allow units 100 sharing music to be able to move reasonably with respect to one another (e.g. for a user to go to the bathroom without losing contact), or to find each other in a large venue such as a shopping mall.

Communications Protocols

[Para 141] Communication between the inter-unit transmitter/receivers 110 can involve a variety of protocols within the teachings of the present invention, and can include IP protocol-based transmissions mediated by such physical link layers as 802.11a, b or g, WDCT, HiperLAN, ultra-wideband, 2.5 or 3G wireless telephony communications, custom digital protocols such as Bluetooth or Millennial Net i-Beans. Indeed, it is not even necessary for the transmissions to be based on Internet protocol, and conventional analog radio-frequency or non-IP infrared transmissions are also within the spirit of the present invention. Each unit 100 will generally have both transmission and reception capabilities, though it is possible for a unit to have only reception capabilities. While the bandwidth of the broadcast is dependent on the compression of the audio signal, it is preferable for the transmission bandwidth to be larger than 100 kb/sec, and even more preferable for the transmission bandwidth to be greater than 250 kb/sec.

[Para 142] While the distance of transmission/reception is not bounded within the teachings of the present invention, it will generally be less than a few hundred meters, and often less than 50 meters. The distance of communication is limited in general by the amount of power required to support the transmission, the size of antennae supported by portable devices, and the amount of power allowed by national regulators of broadcast frequencies. Preferably, however, the range of transmission will be at least 10 meters, and even more preferably at least 30 meters, in order to allow people sharing communications to move some distance from one another without communications being lost.

[Para 143] The unit 100 is characterized generally by four sets of roughly independent characteristics: playing audio or not playing audio, transmitting or not transmitting, receiving or not receiving, searching or not searching.

[Para 144] Units 100 will often function in conditions with large numbers of other units 100 within the communications range. For example, in a subway car, a classroom, bicycling, or at a party, a unit 100 can potentially be within range of dozens of other units. A unit 100 that is

playing audio from local compressed audio storage 310 can, at the user's prerogative, choose to broadcast this audio to other units 100. A unit 100 that is currently "listening" to a broadcast or is searching for a broadcast to "listen" to will require a specific identifier roughly unique to a broadcaster in order to select that broadcaster signal from among the other possible broadcasters. Some of the communications protocols listed above, such as those based on IP protocols, 2.5G or 3G wireless, or Bluetooth communications, have such identifiers as part of the protocols. Custom radio frequency based protocols will require protocols to allow signals to be tagged with specific identifiers.

[Para 145] A unit 100 that is transmitting signals can, within the spirit of the present invention, be prevented from simultaneously receiving signals. Preferably, however, units 100 can both transmit and receive simultaneously. One example of the use of simultaneous transmission and reception is for a unit 100 that is receiving a signal to send a signal indicating its reception to the transmitting unit 100. This allows the transmitting unit to determine the number of units 100 that are currently receiving its broadcast. In return, this information could be sent, along with the audio signal, so that all of the users with units 100 receiving the broadcast can know the size of the current reception group. Alternatively, a user with a unit 100 that is currently broadcasting can be searching for other broadcasting units, so that the user can decide whether to continue broadcasting or whether to listen to the broadcast of another unit.

Unit to DJ Communication

[Para 146] Communication between the unit 100 and the DJ 200 can be either through the inter-unit transmitter/receiver 110, or through a separate system. In general, the requirement of the DJ 200 is for reception only, although it is permissible for the DJ 200 to include transmission capabilities (e.g. to indicate to the unit 100 when the DJ 200 energy storage 270 is near depletion).

[Para 147] The signals for which the DJ 200 is receptive is dependent on how the transduction control signals are generated. For example, for a controller 242 that incorporates a filter or modifier that takes the audio signal as its input, the DJ receiver 220 would receive all or a large fraction of the audio signal. In this case, the communication between the unit 100 and the DJ 200 would require a bandwidth comparable to that of inter-unit communication, as described above.

[Para 148] However, if the signals are either generated in the unit 100, or pre-stored along with the stored compressed audio signal, then the communications bandwidth can be quite modest. Consider a DJ 200 with 2 arrays 290 and 292 of LEDs 246, which flash with a frequency of no more than 10 Hertz, and that the LEDs are in either an ON or an OFF state, without intermediate amplitudes. In such case, the maximum bandwidth required would be only 20 bits/second, in addition to the DJ control signals.

[Para 149] The range of unit to DJ communications need not be far. In general, the unit 100 and the DJ 200 will be carried by the same user, so communications ranges of 10 feet can be adequate for many applications. Some applications (see below) can require, however, somewhat larger ranges. On the other hand, longer communications ranges will tend to confer the possibility of overlap and interference between two different units 100 to their respective DJs 200. In general, for the application of unit to DJ communications, it is preferable for the minimum range of communications to be at least 1 foot, and more preferably for the minimum range of communications to be at least 10 feet, and most preferably for the minimum range of communications to be at least 20 feet. Also, for the application of unit to DJ communications, it is preferable for the maximum range of communications to be no more than 500 feet, and more preferably for the maximum range of communications to be no more than 100 feet, and most preferably for the maximum range of communications to be no more than 40 feet. It should be noted that these communications ranges refer primarily to the transmission distance of the units 100, especially with regard to the maximum transmission distance.

[Para 150] Because there can be multiple unit 100/DJ 200 ensembles within a relatively short distance, communications between a unit 100 and a DJ 200 preferably comprise both a control signal as well as a unit identification signal, so that each DJ 200 receives its control signals from the correct unit 100. Because the unit 100 and the DJ 200 will not, in general, be purchased together, or that a user can buy a new unit 100 to be compatible with already owned DJs 200, it is highly useful to have a means of "entraining" a DJ 200 to a particular unit 100, called its "master unit", and a DJ 200 entrained to a master unit is "bound" to that unit.

[Para 151] Figure 4 is a schematic flow diagram of DJ entraining. To entrain a DJ 200, the DJ is set into entraining mode, preferably by a physical switch on the DJ 200. The master unit 100 to which the DJ 200 is to be entrained is then placed within communications range, and the unit 100 transmits through the DJ transmitter 120 an entraining signal that includes the master

unit 100 identifier. Even should there be other units 100 transmitting in the vicinity, it is unlikely that they would be transmitting the entraining signal, so that entraining can often take place in a location with other active units 100. Verification that the entraining took place can involve a characteristic sequence of light output (for light transduction), audio output (for sound transduction) or motion (for tactile transduction). After verification, the DJ 100 is reset to its normal mode of operation, and will respond only to control signals accompanied by the identifier of its master unit 200.

[Para 152] It should be noted that there can be multiple DJ's 200 bound to the same master unit 100. Thus, a single person can have multiple light transducing DJs 200, or DJs 200 of various modes (light, sound, tactile) transduction.

[Para 153] While DJs 200 will generally be bound to a master unit associated with the same person, this is not a requirement of the present invention. Figures 5A-B are schematic block diagrams of DJs 200 associated with multiple people bound to the same master unit. In Figure 5A, DJ A 200and DJ B 200 are both bound to the same DJ transmitter 120, even though DJ A 200 and DJ B 200 are carried by different persons. This is particularly useful if the control signals are choreographed manually or through custom means by one person, so that multiple people can then share the same control signals. Such a means of synchronization is less necessary if the DJ 200 control signals are transmitted between units 100 through the inter-unit transmitter/receiver 110 along with the audio signals. Furthermore, in this case, it is better for the range of unit-to-DJ communication to be in the range of the inter-unit communication described above.

[Para 154] In the case of sound transducers 260, the DJ B 200 can comprise a wireless audio earpiece, allowing users to share music, played on a single unit 100, privately. Consider Figure 5A, configured with sound transducers 260 (see, for example, Figure 1) in DJ A 200 and DJ B 200. Signals from the audio player 130 are transmitted by the DJ transmitter 120, where they are received by DJs 200 – DJ A and DJ B – that are carried by Person A and Person B, respectively. In this case, both persons can listen to the same music.

[Para 155] Figure 5B shows the operation of a wide-area broadcast unit 360, which is used primarily to synchronize control of a large number of DJs 200, such as might happen at a concert, party or rave. In this case, the audio player 130 is used to play audio to a large audience, many of whom are wearing DJs 200. In order to synchronize the DJ output, a relatively high-

power broadcast transmitter 125 broadcasts control signals to a number of different DJs 200 carried by Person A, Person B and other undesignated persons. The entraining signal can be automatically sent on a regular basis (e.g. whenever music is not being played, such as between songs, or interspersed within compressed or decompressed songs) so that patrons or partygoers could entrain their DJs 200 to the broadcast unit 360. The broadcast unit 360 can also transmit inter-unit audio signals, or can only play the audio through some public output speaker that both Person A and Person B can enjoy.

[Para 156] Figure 26 is a schematic diagram of people at a concert, in which DJs 200 conveyed by multiple individuals are commonly controlled. At a concert venue 1370, music is produced on a stage 1372, and concert patrons 1376 are located on the floor of the venue. Many of the patrons have DJs 200 which are receptive to signals generated by a broadcast DJ controller 1374. The broadcast DJ controller creates signals as described below, in which the music is automatically converted into beats, where microphones are used to pick up percussive instruments, and/or where individuals use a hand-pad to tap out control signals. These control signals are either broadcast directly from the area of the broadcast DJ controller 1374, or alternatively are broadcast from a plurality of transmitters 1380 placed around the venue 1370, and which are connected by wires 1378 to the controller 1374 (although the connection can also be wireless within the spirit of the present invention). It should be understood that the protocol for transmitting DJ control signals can be limited either by hardware requirements or by regulatory standards to a certain distance of reception. Thus, to cover a sufficiently large venue, multiple transmitters can be necessary to provide complete coverage over the venue 1370. In general, it is preferable for the maximum transmission distance of transmission from the transmitters to be at least 100 feet, and more preferably at least 200 feet, and most preferably at least 500 feet, so as to be able to cover a reasonable venue 1370 size without needing too many transmitters 1380.

[Para 157] An alternative embodiment of unit 100 to DJ 200 communications is the use of radio frequency transmitters and receivers, such as those used in model airplane control, which comprise multi-channel FM or AM transmitters and receivers. These components can be very small (e.g. the RX72 receivers from Sky Hooks and Riggings, Oakville, Ontario, Canada), and are defined by the crystal oscillators that determine the frequency of RF communications. Each channel can serve for a separate channel of DJ control signals. In such cases, an individual can

place a specific crystal in their audio unit 100, and entraining the DJ 200 is then carried out through the use of the same crystal in the DJ 200. Because of the large number of crystals that are available (e.g. comprising approximately 50 channels in the model aircraft FM control band), interference with other audio units 100 can be minimized. Furthermore, control of many DJs 200 within a venue, as described above, can take place by simultaneously transmitting over a large number of frequencies.

[Para 158] As described above, the wide-area broadcast transmitter 125 can transmit entriaing signals to which the DJs 200 can be set to respond. However, there are a number of other preferred means by which DJs 200 can be used to respond to control signals to which they have not been entrained. For example, the DJs 200 can be set to respond to controls signals to which they have not been entrained should there be no entrained control signals present (e.g. the corresponding unit 100 is not turned on).

[Para 159] Figure 35 is a schematic block diagram of DJ 200 switch control for both entraining and wide-area broadcast. The DJ 200 comprises a three-way switch 1920. In a first state 1922, the DJ 200 is entrained to the current control signal as described above. Thereafter, in a second state 1924, the DJ 200 responds to control signals corresponding to the entraining signal encountered in the step 1922. In a third state 1926, the DJ 200 responds to any control signal for which its receiver is receptive, and can therefore respond to a wide-area broadcast, thereby providing the user with manual control over the operational state of the DJ 200. It should be noted that the switch 1920 can be any physical switch with at least three discreet positions, or can alternatively be any manual mechanism by which the user can specify at least three states, including a button presses that have a visible user interface or a voice menu.

[Para 160] Figure 12B is a schematic drawing of modular digital jewelry 201. The modular jewelry 201 is comprised of two components: an electronics module 1934 and a display module 1932. These modules 1934 and 1932 can be electrically joined or separated through an electronics module connector 1936 and a display module connector 1938. The value of the modular arrangement is that the electronics module 1934 comprises, in general, relatively expensive components, whose combined price can be many-fold that of the display module 1932. Thus, if a user wants to change the appearance of the jewelry 201 without having to incur the cost of additional electronics components such as the energy storage 270, receiver 220 or controller 1322, they can simply replace the display module 1932 with its arrangement of output

transducers 1324 with an alternative display module 1933 with a different arrangement of output transducers 1325.

[Para 161] The transmitter for DJ 200 control signals has been previously discussed primarily in terms of its incorporation within a unit 100. It should be understood, however, that the transmitter can be used in conjunction with a standard audio player unrelated to unit-to-unit communications. Figure 12C is a schematic block diagram of a modular digital jewelry transmitter 143 that generates and transmits control signals from an audio player 131. The modular transmitter 143 is connected to the audio player 131 via audio output port 136 through the cable 134 to the audio input port 138 of the modular transmitter 143. The modular transmitter 143 comprises the the DJ transmitter 120, which can send unit-to-DJ communications. The output audio port 142 is connected to the earphone 901 via cable 146. The earphone 901 can also be a wireless earphone, perhaps connected via the DJ transmitter 120.

[Para 162] The audio output from the player 131 is split both to the earphone 901 and to the controller 241 (except, perhaps where the DJ transmitter transmits to a wireless earphone). The controller 241 automatically generates control signals for the DJ 200 in a manner to be described in detail below. These signals are then conveyed to the DJ transmitter 120. It should be understood that this arrangement has the advantage that the digital jewelry functionality can be obtained without the const of the components for the audio player 131, and in addition, that the modular transmitter 143 can then be used in conjunction with multiple audio players 131 (either of different types or as the audio players are lost or broken).

Inter-unit Audio Sharing

Overview

[Para 163] Inter-unit communication involves the interactions of multiple users, who may or may not be acquaintances of each other. That is, the users can be friends who specifically decide to listen to music together, or it can be strangers who share a transient experience on a subway train. The present invention supports both types of social interaction.

[Para 164] An important aspect of the present invention is the means by which groups of individuals join together. Figure 6 is a schematic block diagram of a cluster 700 of units 100, indicating the nomenclature to be used. The cluster 700 is comprised of a single broadcast unit

710, and its associated broadcast DJ 720, as well as one or more receive units 730 and their associated DJs 740. The broadcast unit 710 transmits music, while the receive unit 730 receives the broadcasted music. A search unit 750 and its associated search DJ 760 are not part of the cluster 700, and comprise a unit 100 that is searching for a broadcast unit 710 to listen to or a cluster 700 to become associated with.

[Para 165] It should be noted that many communications systems can be operated alternatively in two modes: one that supports peer-to-peer communications and one that requires a fixed infrastructure such as an access point. Figure 35 is a schematic block diagram of mode switching between peer-to-peer and infrastructure modes. A mode switch 1950 is made by the user, either manually, or automatically – for example, that the user chooses between different functions (listening or broadcasting, file transfers, browsing the Internet) and the system determine the optimal mode to use. A peer-to-peer mode 1952 is well configured for mutual communications between mobile units 100 that are within a predetermined distance, and is well-suited for short-range wireless communications and audio data streaming 1954. Alternatively, the mode switch 1950 enables an infrastructure mode 1956, which is of particular usefulness in gaining access to a wide area network such as the Internet, through which remote file transfer 1958 (e.g. downloading and uploading) and remote communications such as Internet browsing can be made through access points to the fixed network.local wireless audio streaming.

[Para 166] It should be noted, however, that certain communications systems, such as many modes of telephony, do not distinguish between mobile communications and communications through fixed access points, and that both file transfer 1958 and audio streaming 1954 can be available through the same mode. Even in those cases, however, it can be convenient to have two modes in order to make optimal use of the advantages of the different modes. In such cases, however, the two modes can alternatively be supported by multiple hardware and software systems within the same device – for example, for remote communications to be made through a telephony system (e.g. GSM or CDMA), while the local audio streaming 1954 can be made through a parallel communications system (e.g. Bluetooth or 802.11) – indeed, the two systems can operate simultaneously with one another.

Inter-unit Transmission Segmentation

[Para 167] Preferably, the broadcast unit 710 and the receive units 730 exchange information in addition to the audio signal. For example, each user preferably has indications as to the number of total units (broadcast units 710 and receive units 730) within a cluster, since the knowledge of cluster 700 sizes is an important aspect of the social bond between the users. This also will help search units 750 that are not part of the cluster determine which of the clusters 700 that might be within their range are the most popular.

[Para 168] The additional information shared between members of a cluster 700 would include personal characteristics that a person might allow to be shared (images, names, addresses, other contact information, or nicknames). For example, the broadcast unit 710 will preferably, along with the music, transmit their nickname, so that other users will be able to identify the broadcast unit 710 for subsequent interactions, and a nickname is significantly easier to remember than a numerical identifier (however, such numerical identifier can be stored in the unit 100 for subsequent searching).

[Para 169] Such additional information can be multiplexed along with the audio signal. For example, if the audio signal is transferred as an MP3 file, assuming that there is additional bandwidth beyond that of the MP3 file itself, the file can be broken into pieces, and can be interspersed with other information. Figure 7 is a schematic diagram of a broadcast unit 710 transmission 820. The transmission is comprised of separate blocks of information, each represented in the figure as a separate line. In the first line, a block code 800 is transmitted, which is a distinctive digital code indicating the beginning of a block, so that a search unit 750 receiving from the broadcast unit 710 for the first time can effectively synchronize itself to the beginning of a digital block. Following the block code 800 is a MP3 block header 802, which indicates that the next signal to be sent will be from a music file (in this case an MP3 file). The MP3 block header 802 includes such information as is needed to interpret the following block of MP3 file block 804, including such information as the length of the MP3 block 804, and characteristics of the music (e.g. compression, song ID, song length, etc.) that are normally located at the beginning of a MP3 file. By interspersing this file header information at regular intervals, a user can properly handle music files that are first received in the middle of the transmission of an MP3 file. Next, the MP3 block 804 containing a segment of a compressed music file is received.

[Para 170] Dependent on the amount of music compression and the bandwidth of the inter-unit communications, other information can be sent, such as user contact information, images (e.g. of the user), and personal information that can be used to determine the "social compatibility" of the user with the broadcast unit 710 and the receive unit 730. This information can be sent between segments of MP3 files or during "idle" time, and is generally preceded by a block code 800, that is used to synchronize transmission and reception. Next, a header file is transmitted, which indicates the type of information to follow, as well as characteristics that will aid in its interpretation. Such characteristics could include the length of information, descriptions of the data, parsing information, etc. In Figure 7, an ID header 806 is followed by an ID block 808, which includes nicknames, contact information, favorite recording artists, etc. Later, an image header 810 can be followed by an image block with an image of the user. The image header 810 includes the number of rows and columns for the image, as well as the form of image compression.

[Para 171] It should be understood that the communications format described in Figure 7 is only illustrative of a single format, and that a large number of different formats are possible within the present invention. Also, the use of MP3 encoding is just an example, and other forms of digital music encoding are within the spirit of the present invention, and can alternatively comprise streaming audio formats such as Real Audio, Windows Media Audio, Shockwave streaming audio, QuickTime audio or even streaming MP3 and others. Furthermore, these streaming audio formats can be modified so as to incorporate means for transmitting DJ 200 control signals and other information.

Transmitting Dynamic Data and Control Information

[Para 172] As described above, there are benefits to two-way communications between the broadcast unit 710 and the receive unit 730. There are many methods of carrying out this communication, even if the inter-unit transmitter/receiver 110 does not permit simultaneous transmission and reception. For example, additional transmission and reception hardware could be included in each unit 100. Alternatively, in the transmission 820 above, specific synchronization signals such as the block code 800 can be followed by specific intervals during which the inter-unit transmitter/receiver 110 that is transmitting switches into receive mode, while the inter-unit transmitter/receiver 110 that was receiving switches to transmit mode. This

switch in communications direction can be for a specific interval, or can be mediated through conventional handshake methods of prior art communications protocols.

[Para 173] It should be noted that in addition to transfer of static information (e.g. identifiers, contact information, or images), dynamic information and control information can also be transferred. For example, the user at the receive unit 730 can be presented with a set of positive and negative comments (e.g. "Cool!" "This is awful!") that can be passed back to the broadcast unit 710 with the press of a button. Such information can be presented to the user of the broadcast unit 710 either by visual icon on, for example, an LCD screen, by a text message on this screen, or by artificial voice synthesis generated by the broadcast unit 710 and presented to the user in conjunction with the music.

[Para 174] Alternatively, the user of the receive unit 730 can speak into a microphone that is integrated into the receive unit 730, and the user voice can be sent back to the broadcast unit 710. Indeed, the inter-unit communications can serve as a two-way or multi-way communications method between all units 100 within range of one another. This two-way or multi-way voice communication can be coincident with that of the playing of the audio entertainment, and as such, it is convenient for there to be separate amplitude control over the audio entertainment and the voice communication. This can be implemented either as two separate amplitude controls, or alternatively as an overall amplitude control, with a second control that sets the voice communications amplitude as a ratio to that of the audio entertainment. In this latter mode, the overall level of audio output by the unit is relatively constant, and the user then selects only the ability to hear the voice communication over the audio entertainment.

[Para 175] In order to express their feelings and appreciation about the music they are hearing, users within a cluster 700 can also press buttons on their units 100 that will interrupt or supplement the control signals being sent to their respective DJs 200, providing light shows that can be made to reflect their feelings. For example, it can be that all lights flashing together (and not in synchrony with the music) can express dislike for music, whereas intricate light displays could indicate pleasure.

[Para 176] It is also possible to send control requests between units 710. For example, a receive unit 730 can make song requests (e.g. "play again", "another by this artist") that can show on the broadcast unit 710 user interface. Alternatively, the user of a receive unit 730 can request that control be switched, so that the receive unit 730 becomes the broadcast unit 710, and

the broadcast unit 710 becomes a receive unit 730. Such requests, if accepted by the initial broadcast unit 710 user, will result in the memory storage of the identifier of the broadcast unit 710 being set in all units in the cluster 700 to that of the new broadcast unit 730. Descriptions of the communications resulting in such a transfer of control will be provided below.

[Para 177] Additionally, it is also possible for users of units 100 to privately "chat" with other users while they are concurrently receiving their audio broadcasts. Such chat can be comprised of input methods including keyboard typing, stylus free-form writing/sketching, and quickly selectable icons.

[Para 178] It should be understood that within the spirit of the present invention that the functional configuration can be supported by the extension of certain existing devices. For example, the addition of certain wireless transmitter and receiver, as well as various control and possibly display functionality to a portable audio player would satisfy some embodiments of the present invention. Alternatively, by the addition of music storage and some wireless transmitter and receiver functionality, a mobile telephone would also allow certain embodiments of the present invention. In such case, the normal telephony communications, perhaps supported by expanded 3G telephony capabilities, could serve to replace aspects of the IP communications described elsewhere in this specification.

IP Socket Communication Embodiments

[Para 179] A standard set of protocols for inter-unit communications is provided through IP socket communications, which is widely supported by available wireless communications hardware, including 820.11a, b and g (Wi-Fi). An embodiment of inter-unit communications is provided in Figures 14A-B. Figure 14A is a schematic block diagram of the socket configurations on the broadcast unit 710 and the receive unit 730.

[Para 180] In the discussion below, transfer of the different messages and audio information are provided, generally but not always, through an Internet protocol. At the transport layer of such protocols, there will generally be used either a connectionless protocol or a connection-oriented protocol. Among the most common of these protocols are respectively the User Datagram Protocol (UDP) and the Transmission Control Protocol (TCP), and wherever these protocols are used below, it should be noted that any like protocol (connectionless or connection-oriented), or the entire class of protocol can generally be substituted in the discussion.

[Para 181] The broadcast unit 710, prior to the membership of the receive unit 730, broadcasts the availability of the broadcast on a broadcast 1050, which is generally a TCP socket. The annunciator 1050 broadcasts on a broadcast address with a predetermined IP address and port. The receive unit 730 has a client message handler 1060 that is also a TCP socket that is looking for broadcasts on the predetermined IP address and port. When it receives the broadcast, a handshake creates a private server message handler 1070 on a socket with a new address and port on the broadcast unit 710. The broadcast unit 710 and the receive unit 730 can now exchange a variety of different messages using the TCP protocol between the server message handler 1070 and the client message handler 1060. This information can comprise personal information about the users of the broadcaster unit 710 and the receive unit 730. Alternatively or additionally, the broadcast unit 710 can transfer a section of the audio signal that is currently being played, so that the user of the receive unit 730 can "sample" the music that is being played on the broadcast unit 710. It should be noted that, in general, the broadcast unit 710 continues its broadcast on the broadcast annunciator 1050 for other new members.

[Para 182] Once it is established that the broadcast unit 710 and the receiver unit 730 are mutually desirous of providing and receiving an audio broadcast, respectively, sockets optimized for broadcast audio are created both on the broadcast unit 710 and the receiver unit 730. These sockets will often be UDP sockets – on the broadcast unit 710, a multicast out socket 1080 and on the receiver unit 730, a multicast in socket 1090.

[Para 183] Figure 14B is a schematic block flow diagram of using IP sockets for establishing and maintaining communications between a broadcast unit 710 and the receive unit 730, according to the socket diagram of Figure 14A. In a step 1100, the broadcast annunciator 1050 broadcasts the availability of audio signals. In a step 1102, the receiver unit 730 searches for a broadcast annunciator 1050 on the client message handler 1060 socket. Once a connection is initiated in a step 1104, the broadcast unit 710 creates the message handler socket 1070 in a step 1106, and the receiver unit 730 retasks the message handler socket 1060 for messaging with the broadcast unit 730. The broadcast annunciator 1050 continues to broadcast availability through the step 1100.

[Para 184] In a step 1110, the broadcast unit 710 and the receiver unit 730 exchange TCP messages in order to establish the mutual interest in audio broadcasting and reception. Should there not be mutual acceptance, then the system returns to the original state in which the

broadcast unit 710 is transmitting the broadcast annunciation in the step 1100, and the receive unit 730 searches for broadcasts in the step 1102. Given that the receive unit 730 and the broadcast unit 710 will be within communications distance, and that the broadcast unit 710 is transmitting an annunciation for which the receive unit 730 is receptive, the broadcast unit 710 will be set into a state where it will not establish communications with the receive unit 730 in the step 1106. This can occur either by not creating the message socket in the step 1106 when connection is made with the receiver unit 730, or that the annunciator 1050 remains silent for a predetermined period, perhaps for a period of seconds.

[Para 185] If the broadcast unit 710 and the receiver unit 730 do mutually accept a multicasting relationship, the broadcast unit 710 creates the multicast out UDP socket 1080 in a step 1112 and the receiver unit 730 creates the multicast in UDP socket 1090 in the step 1114, and multicast audio transmission and reception is initiated in a step 1116. It should be noted that should the broadcast unit 710 already be multicasting audio to a receiver unit 730 prior to the step 1112, the multicast out socket 1080 is not created, but that the address of this existing socket 1080 is communicated to the new cluster member.

[Para 186] Given that a cluster can comprise many members, the system of Figures 14A-B must be able to expand to include multiple members. Figure 15 is a schematic block diagram of the IP socket organization used with clusters comprising multiple members. The broadcast unit 710 includes a broadcast annunciator 1050 indicating broadcast availability for new members. For each member in the cluster, the broadcast unit further comprises a message handler 1070 dedicated to the specific member, whose receive unit 730 in turn comprises a message handler 1060, generally in a one-to-one relationship. The broadcast unit comprises N messaging sockets 1070 for the N receive units of the cluster, while each member has only a single socket 1060 connected to the broadcast unit. Thus, when a member wishes to send a message to the other members of the cluster, the message is sent via the receive unit message handler 1060 to the broadcast unit message handler 1070, and which is then multiply sent to the other receive unit message handlers 1060. It is also within the teachings of the present invention for each member of the cluster to have direct messaging capabilities with each other member, assisted in the creation of the communications by the broadcast unit 710, which can share the socket addresses of each member of the cluster, such that each member can assure that it is making connections with other members of the cluster rather than units of non-members. The broadcast unit 710 also

comprises a multicast out socket 1080 which transfers audio to individual receiver sockets 1090 on each of the members of the cluster.

[Para 187] Members of the cluster may come and go, especially since members will frequently move physically outside of the transmission range of the broadcast unit 710. In order for the broadcast unit 710 to determine the current number of members of its cluster, it is within the teachings of the present invention for the broadcast unit 710 to use the messaging sockets 1060 and 1070 to "ping" the receive units 730 from time to time, or otherwise attempt to establish contact with each member of the cluster 700. Such communications attempts will generally be done at a predetermined rate, which will generally be more frequent than once every ten seconds. Information about the number of members of a cluster can be sent by the broadcast unit 710 to the other members of the cluster, so that the users can know how many members there are. Such information is conveniently placed on a display on the unit (see, for example, Figures 18A-B).

Music Synchronization

[Para 188] It will be generally desirable that the synchronicity of the audio playback on the broadcast unit 710 and the receive units 730 be highly synchronized, preferably within 1 second (i.e. this provides a low level functionality of listening to music together), more preferably within 100 milliseconds (i.e. near-simultaneous sharing of music, but an observer would be able to hear – or see through DJ 200 visible cues – the non-synchronicity), and most preferably within 20 milliseconds of one another. In a simple embodiment of the present invention, all members of a cluster 700 must communicate directly with the broadcast unit 710, without any rebroadcast. In such cases, making playback on the two units 710 and 730 as similar as possible will tend to synchronize their audio production.

[Para 189] Figure 8A is a schematic block diagram of audio units 100 with self-broadcast so that audio output is highly synchronized. Two audio units 100 are depicted, including a broadcast unit 710 and a receive unit 730. The organization of audio unit 100 elements is chosen to highlight the self-broadcast architecture. The audio media 1500, which can be compressed audio storage 310, stores the audio signals for broadcast. The output port 1502, which can comprise the inter-unit transmitter/receiver 110, transmits a broadcast audio signal, provided by the audio media 1500. The audio media comprise a variety of different storage protocols and

media, including mp3 files, .wav files, or .au files which are either compressed or uncompressed, monoaural or stereo, 8-bit, 16-bit or 24-bit, and stored on tapes, magnetic disks, or flash media. It should be understood that the spirit of the present invention is applicable to a wide variety of different audio formats, characteristics, and media, of which the ones listed above are given only by way of example. This broadcast audio signal transmitted from the output port 1502 is received at the input port 1504, which can also comprise aspects of the inter-unit transmitter/receiver 110. The signal so received is then played to the associated user via the audio output 1508.

[Para 190] It should be noted that the audio output is normally connected to the audio media 1500 for audio playing when the unit 710 is not broadcasting to a receive unit 730. In such case, there is no need for the audio signals to go to the output port 1502 and thence to the input port 1504. Indeed, even when broadcasting, the audio signal within the broadcast unit 710 can go both directly to the audio output 1508 as well as to be broadcast from the output port 1502.

[Para 191] However, in order to assure the synchronicity of the audio output on the broadcast unit 710 and the receive unit 730, the broadcast unit 710 can present all audio signal from the audio media 1500 for output on the output port 1502. The signal will be received not only on the receiver 730 input port 1504, but also on the input port 1504 of the broadcast unit 710. This can take place either through the physical reception of the broadcast audio signal on a radio frequency receiver, or through local feedback loops within the audio unit 100 (e.g. through employment of IP loopback addresses).

[Para 192] In the receive unit 730, the audio signal received at the input port 1504 goes directly to the audio output 1508, and the other elements of the unit 100 depicted are not active. In the broadcast unit 710, however, if means are used to transfer audio signal between the output port 1502 and the input port 1504 are utilized, and if such transfer means requires less time than that taken for transmitting signal from the output port 1502 of the broadcast unit 710 to the input port 1504 of the receive unit 730, then a delay means 1506 is introduced to provide a constant delay between the input port 1504 and the audio output 1508. This delay can comprise a digital buffer if the signal is digitally encoded, or an analog delay circuit if the signal is analog. Generally, the delay introduced into the audio playback will be a predetermined amount based on the characteristics of the unit hardware and software.

[Para 193] Alternatively, in the case of a digital signal, the delay can be variably set according to the characteristics of the communications system. For example, if there are IP-based communications between the units, the units can "ping" one another in order to establish the time needed for a "round-trip" communications between the systems. Alternatively, each receive unit 730 of a cluster 700 can transmit to the broadcast unit 710 a known latency of the unit based on its hardware and transmission characteristics. It should be noted that in order to handle different delays between multiple members of a cluster, a delay can be introduced into both the broadcast unit 710 and the receive unit 730, should a new member to the cluster have a very long latency in communications.

[Para 194] Note that the delay 1506 can serve a second purpose, which is to buffer the music should there be natural interruptions in the connections between the members of the cluster 700 (for example, should the receive units 730 move temporarily outside of the range of the broadcaster unit 710). In such case, should enough audio signal be buffered in the delay 1506, there would not be interruption of audio signal in the receive unit 730. Even in such cases, however, in order to accommodate the differences in time to play audio between units and within a unit, the delays in the broadcast unit 710 can be larger than those in the receive unit 730.

[Para 195] If the music compression and the bandwidth of the inter-unit communications are large enough, it can be that the broadcast unit 710 will broadcast less than half of the time. This will generally allow the receive unit 730 to rebroadcast the information from an internal memory store, allowing the effective range of the broadcast signal to potentially double. This can allow, through multiple rebroadcasts, for a very large range even if each individual unit 100 has a small range, and therefore for a potentially large number of users to listen to the same music.

[Para 196] In order to synchronize those that listen to the music through first, second and Nth rebroadcast, a scheme for multi-broadcast synchronization is presented in Figure 8B, a schematic flow diagram for synchronous audio playing with multiple rebroadcast. In such a case, the cluster 700 is considered to be all units 100 that synchronize their music, whether from an original broadcast or through multiple rebroadcasts. In a first step 780, a unit 100 receives a music broadcast along with two additional data. The first data is the current "N", or "hop" of the broadcast it receives, where "N" represents the number of rebroadcasts from the original broadcast unit 710. Thus, a unit 100 receiving music from the original broadcast unit 710 would have an "N" of "1" (i.e. 1 hop), while a unit 100 that received from that receiving unit 100 would

have an "N" of "2" (2 hops), and so on. A second piece of information would be the "largest N" that was known to a unit 100. That is, a unit 100 is in contact generally with all units 100 with which it either receives or transmits music, and each send the "largest N" with which it has been in contact.

[Para 197] In a second step 782, the unit 100 determines the duration between signals in the broadcasts it is receiving. Then, two actions are taken. In a step 786, the unit 100 rebroadcasts the music it has received, marking the music with both its "N" and the largest "N" it knows of (either from the unit from which it received its broadcast or from a unit to which it has broadcast).

[Para 198] Also, in a step 784, the music that has been received is played after a time equal to the duration between signals and the "largest N" minus the unit's "N". This will allow for all units 100 to play the music simultaneously. Consider, for example the original broadcast unit 710. It's "N" is "0", and its "largest N" is the maximum number of rebroadcasts in the network. It will store music for a period of "largest N" (equals "largest N" minus "0") times the duration of a rebroadcast cycle, and then play it. For a unit 100 at the furthest rebroadcast, it's "N" and "largest N" will be equal to one another, so that it will store music for no time (i.e. "largest N" minus "N" = 0), but will play it immediately. This will allow all units 100 in the cluster to play music simultaneously. The limitation, however, is that there is memory in each unit 100 to store the music for a sufficient period of time. The units 100 on the system, however, can transfer the amount of storage that is available with the other information, and the number of rebroadcasts can be limited to the amount of memory available within the units 100 that comprise the cluster 700.

[Para 199] As the size of this multi-broadcast cluster 700 changes, the "largest N" can vary, and it will take generally on the order of "largest N" steps for the system to register "largest N". In such cases, there can be temporary gaps in the music on the order of the duration between signals, which will generally be on the order of tens of milliseconds, but which can be longer.

[Para 200] It should be noted that the synchronization of music does not need to accompany the transfer of an actual music signal. Figure 34A is a schematic block flow diagram of the synchronization of music playing from music files present on the units 100. In this embodiment, in a step 1900, the broadcast unit establishes the presence or absence of the music file comprising the music signals to be played on the receive unit. The music file can be referenced

either with respect to the name of the file (e.g. "Ooops.mp3"), or a digital identifier that is associated with the music file.

[Para 201] If the music file is not present, then transfer of the music file from the broadcast unit to the receive units can automatically proceed through a file transfer mechanism such as peer-to-peer transfer in a step 1904. If the file was already present, or if the file has been transferred, or alternatively, if the file transfer has begun and enough of the file is present to allow the simultaneous playing of music between the two units 100, transmission of synchronization signals between the two units 100 can commence in a step 1902.

[Para 202] These synchronization signals can comprise many different forms. For example, the synchronization signal can be the time stamp from the beginning of the music file to the current position of the music file being played on the broadcast unit. Alternatively, the broadcast unit can send the sample number that is currently being played on the broadcast unit 100. In order to allow receiving units to begin synchronous playing in the middle of a transmission from a broadcast unit, the synchronization signals will preferably include information about the song being played, such as the name of the file or the digital identifier associated with the file.

[Para 203] Transmission of this synchronization signal continues until the termination of the song, or until a manual termination (e.g. by actuating a Pause or Stop key) is caused (the frequency of transmission of the synchronization signal will be discussed below). At this point, the broadcast unit can send a termination, pause or other signal in a step 1906. Note that this method of synchronization can operate when the receiving unit establishes connection with the broadcast unit even in the middle of a song.

[Para 204] Figure 34B is a schematic layout of a synchronization signal record 1910 according to Figure 34A. The order and composition of the fields can vary according to the types of music files used, the means of establishing position, the use of digital jewelry, the desire for privacy, and more.

[Para 205] The position field 1912 (SAMPLE#) which contains an indicator of position in a music file – in this case the sample number within the file. The music file identifier field 1914 (SONGID) comprises a textual or numerical identifier of the song being played. The third field is the sample rate field 1916 (SAMPLERATE), and is primarily relevant if the position field 1912 is given in samples, which allows a conversion into time. Given that the same audio entertainment can be recorded or saved at different sample rates, this allows the conversion from

a potentially relative position key (samples) to one independent of sample rate (time). The jewelry signal field 1918 (JEWELSIGNAL) is used to encode a digital jewelry 200 control signal for controlling the output of the digital jewelry 200, should the receiver unit be associated with jewelry 200. The order and composition of the fields can vary according to the types of music files used, the means of establishing position, the use of digital jewelry, the desire for privacy, and more.

[Para 206] The frequency with which the record 1910 is broadcast can vary. The time of reception of the record 1910 sets a current time within the song that can adjust the position of the music playing on the receiver unit. It is possible for the record to be broadcast only once, at the beginning of the song, to establish synchronization. This, however, will not allow others to join in the middle of the music file. Furthermore, if the record 1910 is received or processed at different times for the single record, the music can be poorly synchronized. With multiple synchronization signals, the timing can be adjusted to account for the most advanced reception of the signal – that is, the music playing will be adjusted forward for the most advanced signal, but not be adjusted back for a more laggard signal.

[Para 207] If the record further contains a jewelry signal field 1918, the frequency with which the record 1910 should be sent should be comparable or faster than the rate with which these signals change, and should be preferably at least 6 times a second, and even more preferably at least 12 times a second. If less frequent record 1910 transmission is desired, then multiple jewel signal fields 1918 can be included in a single record 1910.

[Para 208] It should be noted that given units 100 of different design or manufacture, there can be different intrinsic delays between reception of music and/or synchronization signals and the playing of the music. Such delays can result from different speeds of MP3 decompression, different sizes of delay buffers (such as delay 1506), different speeds of handling wireless transmission, differing modes of handling music (e.g. directly from audio media 1500 to audio output 1508 on the broadcast unit, but requiring transmission through an output port 1502 and input port 1504 for the receiver unit), and more. In such cases, it is preferable for receiver units to further comprise a manual delay switch that can adjust the amount of delay on the receiver unit. This switch will generally have two settings: to increase the delay and to decrease the delay, and can conveniently be structured as two independent switches, a rocker switch, a dial switch or equivalent. It is useful for the increments of delay determined by the switch be

adjustable so as to allow users to sense the music from the broadcast unit and the receiver unit as being synchronous, and it is preferable for the increments of delay to be less than 50 milliseconds, and even more preferable for the increments of delay to be less than 20 milliseconds, and most preferable for the units of delay to be less than 5 milliseconds.

Creation and Maintenance of Clusters

[Para 209] Search units 750 can be playing music themselves, or can be scanning for broadcast units 710. Indeed, search units 750 can be members of another cluster 700, either as broadcast unit 710 or receive unit 730. To detect a different cluster 700 in which it might desire membership, the search unit 750 can either play the music of the broadcast unit 710 to the search unit 750 user, or it can scan for personal characteristics of the broadcast unit 710 user that are transmitted in the ID block 808. For example, a user can establish personal characteristic search criteria, comprising such criteria as age, favorite recording artists, and interest in skateboarding, and respond when someone who satisfies these criteria approaches.

[Para 210] Alternatively, the search unit 750 user can also identify a person whose cluster he wishes to join through visual contact (e.g. through perceiving the output of the person's light transducer 240).

[Para 211] Before a search unit 750 user can establish contact, it is preferable for a broadcast unit 710 user, or a receive unit 730 user, to provide permissions for others to join the cluster. For example, each unit 100 will generally be able to changeably set whether no one can join with their unit 100, whether anyone can join with their unit 100, or whether permission is manually granted for each user who wishes to join with their unit into a cluster. For a cluster 700, membership in the cluster can be provided either if any one member of the cluster 700 permits a search unit 750 user to join, or it can be set that all members of a cluster 700 need to permit other users to join, or through a variety of voting schemes. The permissions desired by each member will generally be sent between units 100 in a cluster as part of the ID block 808 or other inter-unit communications. Furthermore, these permissions can be used to establish the degree to which others can eavesdrop on a unit 100 transmission. This can be enforced either through the use of cryptography, which can only provide decryption keys as part of becoming a cluster 700 member, through provision of a private IP socket address or password, through standards agreed

by manufacturers of unit 100 hardware and software, or by unit 100 users limiting the information that is sent through the ID block 808 through software control.

[Para 212] The search unit 750 user can then establish membership in the group in a variety of ways. For example, if the search unit 750 is scanning music or personal characteristics of the unit 100 user, it can alert the search unit 750 user about the presence of the unit 100. The search unit 750 user can then interact with the search unit 750 interface to send the unit 100 user a message requesting membership in the cluster 700, which can be granted or not. This type of request to join a cluster 700 does not require visual contact, and can be done even if the search unit 750 and cluster are separated by walls, floors, or ceilings.

[Para 213] Another method of establishing contact between a search unit 750 user and a cluster 700 member is for the search unit 750 user to make visual contact with the cluster 700 member. In such case that physical contact or physical proximity is easily made between the unit 100 of the cluster member and the search unit 750, digital exchange can be easily made either through direct unit 100 contact through electrical conductors, or through directional signals through infra-red LEDs, for example. For example, the search unit 750 user can point his unit 100 at the cluster 700 member unit, and then if the cluster member wishes the search unit 750 user to join the cluster, could point his unit 100 at the search unit 100, and with both pressing buttons, effect the transfer of IDs, cryptography keys, IP socket addresses or other information that allows the search unit 750 user to join the cluster 700.

[Para 214] Alternatively, the broadcast DJ 720 (or the receive DJ 740) can present digital signals through the light transducer. For example, most DJ 720 light transduction will be modulated at frequencies of 1-10 Hz, with human vision not being able to distinguish modulation at 50 Hz or faster. This means that digital signals can be displayed through the light transducer 240 at much higher frequencies (kHz) that will not perceived by the human eye, even while lower frequency signals are being displayed for human appreciation. Thus, the broadcast DJ 720 can receive a signal from the broadcast unit 710 DJ transmitter 120 containing information needed for a search unit 750 to connect to the broadcast unit's cluster 700. This information will be expressed by the light transducer 240 of the broadcast DJ 720 in digital format. The search unit 750 can have an optical sensor, preferably with significant directionality, that will detect the signal from the light transducer 240, so that the search unit 750 is pointed in the direction of the broadcast DJ 720, and the identifier information required for search unit 750 to become a

member of cluster 700. This optical sensor serves as the DJ directional identifier 122 of Figure 1. At this point, if desired, the broadcast unit 710 user can determine if they want the search unit 750 user to join the cluster 700.

[Para 215] A summary of means to effect joining of a cluster is provided in Figures 13A through E, which display means for a search unit 750 to exchange information prior to joining a cluster 700 via a broadcast unit 710. It is also within the teachings of the present invention for the search unit 750 to institute communications with a receive unit 730 for the purposes of joining a cluster in a similar fashion, particularly since it may be difficult for a person outside of the cluster 700 to determine which of the cluster 700 members is the broadcast unit 710, and which is a receiver unit 730.

[Para 216] If should be noted in the Figures 13A-G that limited range and directionality are preferred. That is, there can be a number of broadcast units 710 within an area, and being able to select that one broadcast unit 710 whose cluster one wishes to join requires some means to allow the search unit 750 user to select a single broadcast unit 710 among many. This functionality is generally provided either by making a very directional communication between the two devices, or by depending on the physical proximity of the search unit 750 and the desired broadcast unit 710 (i.e. in a greatly restricted range, there will be fewer competing broadcast units 710). In the following description, the "broadcaster" denotes the user using the broadcast unit 710, and the "searcher" denotes the user using the search unit 750.

[Para 217] In the Figures 13A-G, the selection of the cluster by the searcher occurs in three ways, that will referred to as "search transmission mode", "broadcast transmission mode", and "mutual transmission mode", according to the entity that is conveying information. In search transmission mode, the searcher sends an ID via the search unit 750 to the broadcast unit 710. This ID can comprise a unique identifier, or specific means of communication (e.g. an IP address and port for IP-based communication). With this ID, the broadcast unit can either request the searcher to join, or can be receptive to the searcher when the searcher makes an undifferentiated request to join local units within its wireless range. In broadcast transmission mode, the broadcaster sends an ID via the broadcast unit 710 to the search unit 750. With this ID, the searcher unit can then make an attempt to connect with the broadcast unit 710 (e.g. if the ID is an IP address and port), or the search unit can respond positively to a broadcast from the broadcast unit 710 (e.g. from a broadcast annunciator 1050), wherein the ID is passed and checked between

the units early in the communications process. Mutual transmission mode comprises a combination of broadcast transmission mode and search transmission mode, in that information and communication is two way between the broadcaster and the searcher.

[Para 218] Figure 13A is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via visible or infrared LED emission in search transmission mode. On the right of the figure, a LED 1044 with an associated lens 1046 (the two of which can be integrated) transmits a directional signal from the unit case 1000. This light can optionally pass thorough a window 1048 that is transparent to the light. On the left of the figure, a lens element 1040 collects light through a broad solid angle and directs it onto a light sensing element 1042, which is conveniently a light-sensing diode or resistor. The directionality of the communication is conferred by the transmitting lens 1046 and the collecting lens 1040.

[Para 219] Alternatively, the LED 1044 can be replaced by a visible laser. Figure 13B is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via a visible or infrared laser in search transmission mode. The search unit 750 comprises a diode laser 1041 that is conditioned by a lens 1043 to form a beam that is sensed by the light sensing element 1042 on the broadcast unit 710. Because a collimated laser beam can be difficult to aim with precision at a photosensing element carried by a person, the optics can comprise a two focus lens 1043 that has a portion that produces a collimated beam 1045, and a second portion that produces a diverging beam 1047. The collimated beam is used by the user of the search unit 750 as a guide beam to direct the pointing of the unit 750, while the divergent beam provides a spread of beam so that the human pointing accuracy can be relatively low. The means for creating the two focus lens 1043 can include the use of a lens with two different patterns of curvature across its surface, or the use of an initial diverging lens whose output intersects a converging lens across only a part of its diameter, where the light that encounters the second lens is collimated, and the light that does not encounter the second lens remains diverging. It is also within the teachings of the present invention for the lens to be slowly diverging without a collimating portion, such that the user does not get visible feedback of their pointing accuracy. In such case, the laser can emit infrared rather than visible wavelengths.

[Para 220] Figure 13C is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via visible or infrared emission from a digital

jewelry element 200 in broadcast transmission mode. The digital jewelry 200 is carried by the broadcaster on a chain 1033, with the digital jewelry 200 visible. The digital jewelry is emitting through a light transducer 1031 a high frequency signal multiplexed within the visible low frequency signal. The search unit 750 is pointed in the direction of the digital jewelry 200, and receives a signal through the light-sensing element 1042. This manner of communication is convenient because the searcher knows, via the presence of the visible signal on the digital jewelry 200, that the broadcaster is receptive to cluster formation.

[Para 221] Figure 13D is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via contact in mutual transmission mode. In this case, the broadcast unit 710 and the search unit 750 both comprise a contact transmission terminus 1030, and electronic means by which contact transmission is performed. This means can operate either inductively (via an alternative current circuit), through direct electrical contact with alternating or direct current means, or other such means that involves a direct physical contact (indicated by the movement of the search unit 750 to the position of the unit depicted in dotted lines). The search unit 750 or the broadcast unit 710 can, via automatic sensing of the contact or manual control, initiate communications transfer. Given the mutuality of contact as well as the physical equivalence of the two units 710 and 750, information transfer is possible in both directions. It should be noted that in the case of direct current connection, the termini 1030 will comprise two contact points, both of which must make electrical contact in order for communications to occur.

[Para 222] Figure 13E is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via sonic transmissions in broadcast transmission mode. The broadcaster (or receivers) will be listening to the audio information generally through headphones 1020 or earphones, all of which comprise speakers 1022 that, to one extent or another, leak sonic energy. The use of audio output devices as depicted in Figure 10 and Figures 11A and 11B that admit external sound, will also increase the amount of sound energy lost. This sound energy can be detected by the searcher via a directional speaker comprising a sound collector 1024 and a microphone 1026. This system requires that the sound output of the broadcast unit 710 and the receiver unit 750 also output an ID encoded in the sound. Such sound can be conveniently output at inaudible frequencies, such as 3000-5000 Hz, which carry sufficient bandwidth to encode short messages or identifiers (e.g. an IP address and

port number can be carried in 5 bytes). Sound energy, especially at higher frequencies, can be quite directional, depending on the shape of the collector 1024 and the structure of the microphone 1024, allowing good directional selection by the searcher.

[Para 223] Figure 13F is a schematic cross-section through a search unit 750 and a broadcast unit 710 in which communications are provided via radio frequency transmissions in broadcast transmission mode. The radio frequency transmissions are not strongly directional (and for the purposes of the broadcast of audio information, are designed to be as directionless as possible). In order to distinguish a desired cluster 700 to join and an undesired cluster 700, a number of strategies can be employed. For example, the strengths of the various signals can be measured and the strongest chosen for connection. Alternatively, if there are multiple broadcast connections available, the search unit 750 can sequentially attempt a connection with each broadcast unit 710. When the attempt is made, the broadcast unit 710 can, prior to alerting the broadcaster of the attempted joining by a new member, cause the digital jewelry 200 associated with the broadcast unit 710 to visibly flash a characteristic signal. The searcher can then verify by pressing the appropriate button on the search unit 750 his desire to join the cluster 700 of the broadcast digital jewelry 200 that had just flashed. If the searcher decided not to join that cluster 700, the search unit 750 could search for yet another unit broadcast unit 750 within range, and attempt to join.

[Para 224] At any time, the members of a cluster 700 can share personal characteristics (nickname, real name, address, contact information, face or tattoo images, favorite recording artists, etc.) through selection of choices of the unit 100 interface, with all such characteristics or a subset thereof to be stored on the units 100. In order to assist cluster 700 members in determining whether or not to accept a person into their cluster 700, a search unit 750 member can display either the total number of people with whom he has shared personal characteristics, or he can alternatively allow the cluster members to probe his store of persons with whom personal characteristics have been stored to see whether a particular trusted person or group of common acquaintances are present therein. It is also within the spirit of the present invention for individuals to rate other individual members of their cluster, and such ratings can be collated and passed from person to person or cluster to cluster, and can be used for a cluster 700 to determine whether a search unit 750 person should be added to the cluster 700.

[Para 225] Figure 17 is a matrix of broadcaster and searcher preferences and characteristics, illustrating the matching of broadcaster and searcher in admitting a searcher to a cluster. A broadcaster preference table 1160 includes those characteristics that the broadcaster wishes to see in a new member of a cluster. These characteristics can include gender, age, musical "likes" and "dislikes", the school attended, and more. The searcher similarly has a preference table 1166. The searcher preference table 1166 and broadcaster preference table 1160 are not different in form, as the searcher will at another time function as the broadcaster for another group, and his preference table 1166 will then serve as the broadcaster preference table.

[Para 226] The broadcaster preference table 1160 can be automatically matched with a searcher characteristics table 1162. This table 1162 comprises characteristics of the searcher, wherein there will be characteristics that overlap in type (e.g. age, gender, etc.) which can then be compared with the parameters in the broadcaster preference table. This matching occurs during the period when the searcher is interrogating the cluster with interest in joining. Similarly, there is a broadcaster characteristics table 1164 indicating the characteristics of the broadcaster, which can be matched against the searcher preferences tale 1166.

[Para 227] The algorithm used in approving or disapproving of an accord between a preference table and a characteristics table can be varied and set by the user – whether by the broadcaster to accept new members into a cluster, or by a searcher to join a new cluster. For example, the user could require that the gender be an exact match, the age within a year, and the musical preferences might not matter. The user can additionally specify that an accord is acceptable if any one parameter matches, specify that an accord be unacceptable if any one parameter does not match, specify an accord be acceptable based on the overlap of a majority of the individual matches, or other such specification.

[Para 228] It should be noted that the broadcaster preferences table 1160 and the broadcaster characteristics table 1164 (and likewise with the searcher tables 1162 and 1166) can be a single table, according to the notion that a person will prefer people who are like themselves. Each user could then express the acceptable range of characteristics of people with which to join as a difference from their own values. For example, the parameter "same" could mean that the person needs to match closely, whereas "similar" could indicate a range (e.g. within a year) and "different" could mean anyone. In this way, there would not be the burden on the user to define the preference table 1160 or 1166 in a very detailed manner.

[Para 229] In the case of a cluster, the transfer of information between the searcher and the cluster can, as mentioned above, involve not only the broadcaster, but also other members of the cluster (especially since the searcher may not know the identity of a cluster's broadcaster from external observation). The cluster can also make communal decisions about accepting a new member. That is, if there are 4 members of a cluster, and a searcher indicates an interest in joining the cluster, there can be voting among the members of a cluster regarding the acceptance of the new member. The procedure of voting will normally be done by messaging among the members, which can be assisted by structured information transfer as will be described below.

[Para 230] A number of such voting schemes are described in Figure 19, a table of voting schemes for the acceptance of new members into a cluster. The first column is the name of the rule, and the second column describes the algorithm for evaluation according to the rule. In the "BROADCASTER" rule, the broadcaster decides whether or not the new member will be accepted. The new member is accepted when the broadcaster indicates "yes" and is otherwise rejected.

[Para 231] In the "Majority" rule, the members are polled, and whenever a majority of the members vote either acceptance or rejection, the new member is accordingly accepted or rejected. It should be noted that this rule (as well as the rules to follow) depends on the broadcaster or other member of the cluster having knowledge of the number of members in the cluster, which will generally be the case (e.g. in an IP socket based system, the broadcaster can simply count the number of socket connections). Thus, if the number of members in a cluster is given as N_{mem}, as soon as $(N_{mem}/2) + 1$ members have indicated the same result, that result is then communicated to the broadcaster, the members and the prospective new member. If the number of members is even, and there is a split vote, the result goes according to the broadcaster's vote.

[Para 232] According to the "Unanimous" rule, a new member is accepted only on unanimous decision of the members. Thus, the prospective new member is rejected as soon as the first "no" vote is received, and is accepted only when the votes of all members of the cluster are received, and all of the votes are positive.

[Para 233] The "Timed Majority" rule is similar to that of the "Majority" rule, except that a timer is started when the vote is announced, the timer being of a predetermined duration, and in a preferred embodiment, is indicated as a count down timer on the unit 100 of each member of the

cluster 700. The vote is completed when $(N_{mem}/2)+1$ members vote with the same indication ("yes" or "no") if the timer has not completed its predetermined duration. If all of the members have voted, and the vote is a tie, the result goes in accordance with that of the broadcaster. If the timer has expired, and the vote has not been decided, the number of members that have voted is considered a quorum of number Q. If (Q/2)+1 members have voted in some fashion, that is the result of the vote. Otherwise, in the case of a tie, the result goes according to the vote of the broadcaster. If the broadcaster has not voted, the vote goes according to the first vote received.

[Para 234] The "Synchronized Majority" rule is similar to the Timed Majority rule, but instead of initiating the vote, and then waiting a predetermined period for members to vote, the vote is announced, and then there is a predetermined countdown period to the beginning of voting. The voting itself is very limited in time, generally for less than 10 seconds, and preferably for less than 3 seconds. Counting votes is performed only for the quorum of members that vote, and is performed according to the rules for the Timed Majority.

[Para 235] There are many different voting schemes consistent with creating, growing and maintaining clusters within the spirit of the present invention. For instance, in cases where there are close votes, the voting can be reopened for individuals to change their vote. In cases, members can request a new round of voting. Furthermore, the voting can be closed ballot, in which the votes of individuals are not known to the other members, or open voting, in which the identity of each member's vote is publicly displayed on each unit 100.

[Para 236] In addition, the voting can be supported and enhanced by information made available to each member through displays on the units 100. Figure 18A is a screenshot of an LCD display 1170 of a unit 100, taken during normal operation. The display 1170 is comprised of two different areas, an audio area 1172 and a broadcaster area 1174. The audio area 1172 includes information about the status of the audio output and the unit 100 operation, which can include battery status, the name of the performer, the title of the piece of music, the time the audio has been playing, the track number and more. The broadcaster area 1174 comprises information about the status of the cluster 700. In the example given, the broadcaster area includes the number "5", which represents the number of people current in the cluster, the text "DJ", which indicates that the unit 100 on which the display 1170 is shown is currently the broadcaster of the cluster 700, and the text "OPEN", which indicates that the cluster is open for

new members to join (the text "CLOSED" would indicate that no new members are being solicited or allowed).

[Para 237] Figure 18B is a screenshot of an LCD display 1170 of a unit 100, taken during voting for a new member. The audio area 1172 is replaced by a new member characteristics area 1176, in which characteristics of the prospective new member are displayed. Such characteristics can include the name (or nickname) of the prospective new member, their age, and their likes (hearts) and dislikes (bolts). In the broadcaster area 1174, the digit "3" indicates that there are three current members of the cluster 700, and an ear icon indicates that the current unit 100 is being used to receive from the broadcaster rather than being a broadcaster, and the name [ALI] indicates the name of the current broadcaster. The text "VOTE-MAJ" indicates that the current vote is being done according to the Majority rule. The broadcaster area 1174 and the new member characteristics areas 1176 provide the information needed by the existing member to make a decision about whether to allow the prospective new member to join.

[Para 238] The displays 1170 of Figures 18A-B are indicative only of the types of information that can be placed on a display 1170, but it should be appreciated that there are many pieces of information that can be placed onto the displays 1170 and that the format of the display can be very widely varied. Furthermore, there need not be distinct audio areas 1172 and broadcaster areas 1174, but the information can be mixed together. Alternatively, especially with very small displays 1170, the display 1170 can be made to cycle between different types of information.

[Para 239] It is also within the spirit of the present invention for individuals to rate other individual members of their cluster, and such ratings can be collated and passed from person to person or cluster to cluster, and can be used for a cluster 700 to determine whether a search unit 750 person should be added to the cluster 700. Figure 27 is a schematic block flow diagram of using a prospective new member's previous associations to determine whether the person should be added to an existing cluster.

[Para 240] In a step 1400, from a search unit 750, the prospective new member places an external communication request with an operational broadcast annunciator 1050 by a broadcast unit 710. In a step 1402, a temporary message connection is established through which information can be passed mutually between the search unit 750 and the broadcast unit 710. The broadcast unit 710 requests personal and cluster ID's from the search unit 750. The personal ID

is a unique identifier that can be optionally provided to every audio unit 100, and which can further be optionally hard-encoded into the hardware of the unit 100. The cluster IDs represent the personal ID's of other units 100 with which the search unit 750 has been previously associated in a cluster. In a step 1406, the broadcast unit 710 matches the incoming personal IDs and cluster IDs with personal ID's and cluster IDs that are stored in the memory of the broadcast unit 710. If there exist a sufficient number of matches, which can be computed as a minimum number or as a minimum fraction of the IDs stored in the broadcast unit 710, the new member of the search unit 750 can be accepted into the cluster. In a step 1412, the search unit 750 can then store the ID of the broadcast unit 710 and the other members of the existing cluster 700 into his cluster IDs, and the broadcast unit 750 and the other receive units 730 of the cluster can then store the personal ID of the search unit 750 into their cluster IDs. If there does not exist a sufficient number or quality of matches, the broadcast unit 710 will reject the prospective new member, optionally send a message of rejection, and then close the socket connection (or other connection that had been created) between the broadcast unit 710 and the search unit 750. No new IDs are stored on either unit 710 or 750.

[Para 241] It is also within the spirit of the present invention for other information associated with the personal and cluster IDs to be shared and used in the algorithm for determining whether to accept or reject a prospective new member into a cluster 700. This information can include rating information, the duration of association with another cluster 700 (i.e. the longer the association, the more suitable the social connection of that person with the cluster 700 would have been), the size of the cluster 700 when the searcher was a member of a particular cluster 700, the popularity of a cluster 700 (measured by the number of cluster IDs carried by the broadcast unit 710), and more. The matching program, likewise, would weight the existence of a match by some of these quality factors in order to determine the suitability of the searcher to join the cluster.

[Para 242] While the comparisons can be made between a search unit 750 personal and cluster IDs and those from the broadcast unit 710, representing the personal experience of the owners of the respective units, it is also possible that the reputation or desirability of individuals with a given personal ID can be posted to or retrieved from trusted people. For example, two friends can swap the information of which IDs are to be trusted or not between two units 100, or alternatively, can be posted onto or retrieved from the Internet. For example, after a bad

personal experience with a unit 100 with a personal ID of 524329102, a person could post that ID on the Internet to share with friends, so that the friends could avoid allowing that person to join, or avoid joining a cluster with that person.

[Para 243] It should be noted that publishing a list of personal IDs allows people to establish the breadth of their contacts. By posting their contacts on web sites, people can demonstrate their activity and popularity. This also encourages people to join clusters, in order to expand the number of people with whom they have been associated. Furthermore, the personal ID serves as a "handle" by which people can further communicate with one another. For example, on the Internet, a person can divulge a limited amount of information (e.g. an email address) that would allow other people with whom they have been in a cluster together to contact them.

[Para 244] It should be noted that the formation and maintenance of a cluster 700 requires the initial and continued physical proximity of the broadcast unit 710 and the receive unit 730. In order to help maintain such physical proximity conducive to cluster maintenance, feedback mechanisms can be used to alert the users to help them maintain the required physical proximity, as will be discussed below.

[Para 245] Figure 28 is a block flow diagram indicating the steps used to maintain physical proximity between the broadcast unit 710 and the receive unit 730 via feedback to the receive unit user. In a step 1530, the wireless connection between the broadcast unit 710 and the receive unit 730 is established. In a step 1532, the connection between the two units 710 and 730 is tested. There are a number of different means by which this testing can take place. For example, in IP-based communications, the receive unit 730 can from time to time – though generally less than every 10 seconds, and even more preferably less than every 1 second – use the "ping" function to test the presence and speed of connection with the broadcast unit 710. Alternatively, the receive unit 730 will be receiving audio signals wirelessly almost continuously from the broadcast unit 710, and a callback alert function can be instituted such that loss of this signal determined at a predetermined repeat time – which is conveniently less than 5 seconds, and even more preferably less than every 1 second – and which is then reported to the system.

[Para 246] While the methods above determine the absolute loss of a signal, they do not anticipate loss of signal. A method that does anticipate signal issues prior to loss is the measurement of signal strength. This can be done directly in the signal reception hardware by measuring the wireless signal induced current or voltage.

[Para 247] In a step 1534, the results of the connection testing performed in the step 1532 is analyzed in order to determine whether the signal is adequate. It should be noted that a temporary loss of signal, lasting even seconds, may or may not be of importance. For example, the broadcast unit 710 user and receive unit 730 users could walk on opposite sides of a metallic structure, enter a building at different times, change their body posture such that the antennae are not optimally situated with respect to one another, etc. Thus, an algorithm is generally used to time average the results of the step 1532, with the results conveniently time averaged over a matter of seconds.

[Para 248] Whatever the results of the signal test of the step 1534, the step 1532 is continuously repeated as long as the connection between the broadcast unit 710 and the receive unit 730 is present. If the signal is deemed inadequate, however, feedback to that effect is provided to the receive unit 730 user in a step 1536. The user feedback can occur through a variety of mechanisms, including visual (flashing lights) and tactile (vibration) transducers, emanating either from the audio unit 100 or the digital jewelry 200. For example, the receiver unit 730 can send a signal to the associated digital jewelry 200 to effect a special sequence of light transducer output.

[Para 249] It is most convenient, however, for the audio output of the receiver unit 730 as heard by the user to be interrupted or overlain with an audio signal to alert the user to the imminent or possible loss of audio signal. This audio signal can include clicks, beeps, animal sounds, closed doors, or other predetermined or user selected signals heard over silence or the pre-existing signal, with the signal possibly being somewhat reduced in volume such that the combination of the pre-existing signal and the feedback signal is not unpleasantly loud.

[Para 250] It should be noted that the flow diagram of Figure 28 refers specifically to alerting the receive unit 730 user of potential communications issues. Such alerting can also be usefully transferred to or used by the broadcast unit 710. For example, with knowledge of the communications issues, the broadcast unit 710 user can move more slowly, make sure that the unit is not heavily shielding, that any changes in posture that could relate to the problems are reversed, etc. The broadcast unit 710 can perform communications tests (as in the step 1532) or analyze the tests to determine if the communications are adequate (as in the step 1534) – particularly through use of the messaging TCP channels. Given that there can be multiple receive units 730 connected to s single broadcast unit 710, it is generally preferable for the tests

to be performed on the receive units 730, and problems to be communicated to the broadcast unit 710 – provided, however, that communications still exist for such communication.

[Para 251] In order to overcome this deficiency, it is possible for the receiver unit 730 to communicate potential problems in communications to the broadcast unit 710 at an early indication. The broadcast unit 710 then starts a timer of predetermined length. If the broadcast unit 710 does not receive a "release" from the receive unit 730 before the timer has completed its countdown, it can then assume that communications with the receive unit 730 have been terminated, and it can then send feedback to the broadcast unit 710 user.

[Para 252] It is also within the teachings of the present invention for both the broadcast unit 710 and the receive unit 730 to independently monitor the connections with each other, and alert their respective users of communications problems.

[Para 253] It should be noted that the use of audio alerts can be used more generally within the user interface of the audio units 100. Thus, audio alerts can be conveniently used to inform the user of the joining of new members to the cluster 700, the initiation of communications with search units 750 outside of the group, the leaving of the group by existing cluster 700 members, the request by a receive unit 730 to become the broadcast unit 710, the transfer of cluster control from a broadcast unit 710 to a receive unit 730, and more. These alerts can be either predetermined by the hardware (e.g. stored on ROM), or can be specified by the user. Furthermore, it can be convenient for the broadcast unit 710 to temporarily transfer to new members of the cluster custom alerts, so that the alerts are part of the experience that the broadcast unit 710 user shares with the other members of the cluster. Such alerts would be active only as long as the receive units were members of the cluster 700, and then would revert back to the alerts present before becoming cluster members.

Cluster Hierarchy

[Para 254] A receive unit 730 can also be the broadcast unit 710 of a separate cluster 700 from the cluster 700 of which it is a member. This receive unit is called a broadcasting receiver 770. In such case, it is convenient for the receive units 730 that are associated with the broadcasting receiver 770 to become associated with the cluster 700 of which the broadcasting receiver 770 is a member. This can conveniently be accomplished in two different ways. In a first manner, the receive units 730 that are associated with the broadcasting receiver 770 can

become directly associated with the broadcast unit 710, so that they are members only of the cluster 700, and are no longer associated with the broadcasting receiver 770. In a second manner, the receive units 730 associated with the broadcasting receiver 770 can remain primarily associated with the broadcasting receiver 770, as shown in Figures 9A and 9B, which are schematic block diagrams of hierarchically-related clusters. In Figure 9A, the receive units 730 that are members of a sub-cluster 701 of which the broadcast unit is a broadcast receive unit 770, can receive music directly from the broadcast receive unit 710, while retaining their identification with the broadcasting receiver 770, such that if the broadcasting receiver 770 removes itself or is removed from the cluster 700, these receive units 730 similarly are removed from the cluster 700. In order to provide this form of hierarchical control, the sub-cluster 701 receive units 730 can obtain an identifier, which can be an IP socket address, from the broadcast receive unit 770, indicating the desired link to the broadcast unit 710. The sub-cluster receive units 730, however, maintain direct communications with the broadcast receive unit 770, such that on directive from the unit 770, they break their communications with the unit 710, and reestablish normal inter-unit audio signal communications with the broadcast receive unit 770. In an embodiment using IP addressing and communications, this can involve the maintenance of TCP messaging communications between the sub-cluster 701 receive units 730 with the broadcast receive unit 770, during the time that the sub-cluster 701 is associated with the cluster 700.

[Para 255] In Figure 9B, the receive units 730 of the sub-cluster 701 receive music directly from the broadcasting receiver 770, which itself receives the music from the broadcast unit 710. In such case, as the broadcasting receiver 770 is removed from the cluster 700, the receive units 730 of the sub-cluster 701 would also not be able to hear music from the cluster 700.

[Para 256] It would be apparent that such an arrangement can be hierarchically arranged, such that the receive unit 730 of the sub-cluster 701 can itself be the broadcast receiver 770 of another sub-cluster 701, and so forth. The advantage of this arrangement is that people that are associated with one another, forming a cluster 700, can move as a group from cluster to cluster, maintaining a separate identity.

[Para 257] It should be also noted that the configuration of communications between members of a hierarchical cluster can be variously arranged, not only as shown in Figures 9A and 9B. For example, every member of the cluster 700 can have a direct link between every

other member of the cluster 700, such that no re-broadcast of messages needs to take place. Furthermore, given that there are different inter-unit communications (for example, messaging versus audio broadcast), it is within the teachings of the present invention that the configuration for the different modes of communication can be different – for example direct communications between the broadcast unit 710 for audio broadcast, but peer-to-peer communications between individual units for messaging.

Maintaining Private Communications

[Para 258] In order to restrict membership in a cluster 700, either the information transfer must be restricted, such as by keeping private the socket IP addresses or passwords or other information that is required for a member to receive the signal, or the signal can be transmitted openly in encrypted form, such that only those members having been provided with the encryption key can properly decode the signal so sent. Both of these mechanisms are taught within the present invention, and are described at various points within this specification.

[Para 259] Figure 32A is a schematic block diagram of maintaining privacy in open transmission communications. In this case, the transmission is freely available to search units 750 in a step 1830, such as would occur with a digital RF broadcast, or through a multicast with open a fixed, public socket IP address available in certain transmission protocols. In this case, the broadcast audio signal or information signal is made in encrypted form, and membership in the cluster is granted through transfer of a decoding key in a step 1832.

[Para 260] Figure 32B is a schematic block diagram of maintaining privacy in closed transmission communication. In a step 1834, the broadcast unit 710 makes a closed transmission broadcast, such as through a socket IP address, that is not publicly available. In a step 1836, the broadcast unit 710 provides the private address to the search unit 750, which can now hear the closed transmission from the step 1834, which is not encrypted. Alternatively, or in addition to the provision of the private address in the step 1836, the establishment of the connection through the private, closed transmission is effected via a password provided in a step 1838. This password can, for example, be used in the step 1110 (e.g. see Figure 14B) to determine whether the broadcast unit 710 accepts the search unit 750 for audio multicasting.

[Para 261] In this section, the encryption of the musical signal and/or associated information about personal characteristics of members of the cluster 700 is described. The custom

compressor 330 of the unit 100 can perform the encryption. In such a case, before joining a cluster, the search unit 750 can only receive some limited information, such as characteristics of the music being heard or some limited characteristics of the users in the cluster 700. If the search unit 750 user requests permission to join the cluster 700 and it is granted, the broadcast unit 710 can then provide a decryption key to the search unit 750 that can be used to decrypt the music or provide a private IP address for multicasting, as well as supply additional information about the current members of cluster 700.

[Para 262] It should be noted that in certain cases, it can be useful to have multiple forms of privacy protection. For example, a broadcast unit 710 can provide a search unit 750 access to audio signals and information for the cluster 700, but can reserve certain information based on encryption to only some members of the cluster 700. For example, if a group of friends comprise a cluster 700, and accept some new members into the cluster 700, access to more private information about the friends, or communications between friends, can be restricted on the basis of shared decryption keys.

[Para 263] Figure 33 is a schematic block diagram of a hierarchical cluster, as in Figure 9A, in which communications between different units is cryptographically or otherwise restricted to a subset of the cluster members. Thus, there are three types of communication that are used in the communication: channel A, which takes place between the members of the original cluster; channel B, which takes place between the members of the original cluster (mediated through the broadcast unit 710) and members of the sub-cluster 701; and channel C, which takes place between the members of the sub-cluster 701. Thus, a communications originating from the broadcast unit 710 can be directed either through channel A or channel B, and likewise, a communications originating from the broadcast receive unit 770 can be directed either at members only of the sub-cluster 701 through channel C, or to all members of the cluster 700 through both channels C and B, which is then communicated trough channel A.

[Para 264] A number of means can be used to maintain such independent channels. For example, separate socket communications can be established, and the originators of the communications can determine that information which is carried on each separate channel. For example, given an open transmission scheme such as digital RF signal, the information can be encoded with separate keys for the different channels of communication – thus, the cryptographic encoding determines each channel. A given unit 100 can respond to more than

one encoding. Indeed, a channel identifier can be sent with each piece of information indicating the ID of the decoding key. If a unit 100 does not have the appropriate decoding key, then it is not privy to that channel communications.

[Para 265] Alternatively, if the communications is IP socket based, then each channel is determined by IP socket addresses. Furthermore, access to those addresses can be, for example, password controlled. Also, the socket communications can be broadcast so that any unit 100 can receive such broadcast, but that decoding of the broadcast can be mediated through cryptographic decoding keys.

[Para 266] It should be noted that there can be multiple forms of communication, which can comprise messaging communications using the TCP/IP protocols, versus multicasting using UDP protocols, and also DJ 200 control signals using yet another protocol. The access to each of these communications can be controlled via different privacy hierarchies and techniques. For example, the audio multicasting will be available to all members within a cluster, while the messaging may retain different groupings of privacy (e.g. hierarchical), while the DJ control signals will generally be limited to communications between a given unit 100 and its corresponding DJs 200.

Broadcast Control Transfer

[Para 267] The dynamics of cluster 700 can be such that it will be desirable for a receive unit 730 to become the broadcast unit for the cluster. Such a transfer of broadcast control will generally require the acquiescence of the broadcast unit 710 user. To effect such a transfer, the user of the receiver unit 730 desiring such control will send a signal to the broadcast unit 710 expressing such intention. If the user of the broadcast unit 710 agrees, a signal is sent to all of the members of the cluster indicating the transfer of broadcast control, and providing the identifier associated with the receive unit 730 that is to become the broadcast unit 710. The broadcast unit 710 that is relinquishing broadcast control now becomes a receive unit 730 of the cluster 700.

[Para 268] It should be noted that the transfer of control as described above requires the manual transfer of control, such as actuation of a DJ switch. This switch can be limited to this function, or can be part of a menu system, in which the switch is shared between different functions. It is also within the spirit of the present invention that there be voice-activated control

of the unit 100, in which the unit 100 further comprises a microphone for input of voice signals to a suitable controller within the unit 100, wherein the controller has voice-recognition capabilities.

[Para 269] In the case of a cluster 700 whose broadcast unit 710 is no longer broadcasting (e.g. it is out of range of the receive units 730, or it is turned off), the cluster can maintain its remaining membership by selecting one of the receive units 730 to become the new broadcast unit 710. Such a choice can happen automatically, for example by random choice, by a voting scheme, or by choosing the first receive unit 730 to have become associated with the broadcast unit 710. If the users of the cluster-associated units deem this choice to be wrong, then they can change the broadcast unit 710 manually as described above.

[Para 270] The receive unit 730 that is chosen to become the broadcast unit 710 of the cluster 700 will generally prompt its user of the new status, so that the newly designated broadcast unit 710 can make certain that it is playing music to the rest of the cluster 700. It can be further arranged so that a newly-designated broadcast unit 710 will play music at random, from the beginning, or a designated musical piece in such case.

[Para 271] An embodiment of a transfer of broadcast control using IP socket communications protocols is described here. Figure 16 is a schematic block flow diagram of transfer of control between the broadcast unit 710 and the first receive unit 730. In a step 1130, the receive unit 730 requests broadcast control (designated here as "DJ" control). In a step 1132, the user of the broadcast unit 710 decides whether control will be transferred. The decision is then transferred back to the first receive unit 730 via the TCP messaging socket. If the decision is affirmative, the first receive unit 730 severs its UDP connection to the broadcast unit 710 multicast. The reason for this is to allow the receive unit 730 opportunity to prepare the beginning of its broadcast, if such time is required, and the user cannot both listen to the multicast as well as prepare its own audio selections, which occurs in a step 1136. In a step 1138, the receive unit 730 creates a multicast UDP socket with which it will later broadcast audio to other members of the cluster, while in a step 1140, the receive unit 730 creates a broadcast annunciator TCP socket with which to announce availability of the cluster, as well as to accept transfers of members from the broadcast unit 710 to itself as the new broadcast unit.

[Para 272] When the two new sockets (multicast and annunciator) are created, the receive unit 730 transmits the new socket addresses to the broadcast unit 710 in a step 1142. Since the

other members of the cluster are guaranteed to be in contact with the broadcast unit, they can get addresses of the new, soon-to-be broadcast unit from the existing broadcast unit. In a step 1144, the original broadcast unit 710 transmits to the other cluster members (receive units 730 numbers 2-N) the addresses of the sockets on the receive 1 unit 730 that is now the new broadcast unit 710, and terminates its own multicast. The termination is performed here because the other receive units will be transferring to the new multicast, and because the original broadcast unit 710 is now becoming a receive unit 730 in the reconstituted cluster. In the step 1148, multicast of audio is now provided by the receive 1 unit 730 that has now become the new broadcast unit 710), and the original broadcast unit is listening to audio provided not by itself, but rather by the new broadcast unit.

[Para 273] In a step 1146, performed roughly synchronously with the step 1144, the original broadcast unit 710 transmits the socket addresses of the message handler TCP sockets of the other members of the cluster 700 (i.e. the receive units 730 numbers 2-N). In the subsequent step 1150, the original broadcast unit 710 and the receive units 730 numbers 2-N establish new messaging connections with the receive 1 unit 730 that is now the new broadcast unit 710. While there can be a set of criteria for the acceptance of a new member to a cluster, because the receive 1 unit 730 has received the message socket addresses of the other members of the cluster in the step 1144, the receive 1 unit 730 accepts new members with the socket addresses received. It should be noted that instead of socket addresses being the identifiers passed, the identifiers can also be unique machine IDs, random numbers, cryptograpically encoded numbers, or other such identifiers that can be transmitted from one member of the cluster to another.

[Para 274] It should be noted in certain embodiments, that there can be insufficient time for the new broadcast unit 710 to determine a set of music to broadcast to the members of its cluster. It is within the spirit of the present invention for a user to set a default collection of music that is broadcast when no other music has been chosen. This set of music can comprise one or more discrete audio files.

Audio and DJ Choreography

[Para 275] One of the attractions of the present invention is that it allows users to express themselves and share their expressions with others in public or semi-public fashion. Thus, it is

highly desirable for users to be able to personalize aspects of both the audio programming as well as the displays of their DJs 200.

Audio

[Para 276] Audio personalization comprises the creation of temporally linked collections of separate musical elements in "sets." These sets can be called up by name or other identifier, and can comprise overlapping selections of music, and can be created either on the unit 100 through a visual or audio interface, or can be created on a computer or other music-enabled device for downloading to the unit 100.

[Para 277] In addition, the unit 100 or other device from which sets are downloaded can comprise a microphone and audio recording software whereby commentary, personal music, accompaniment, or other audio recordings can be recorded, stored, and interspersed between commercial or pre-recorded audio signals, much in the manner that a radio show host or "disc jockey" might alter or supplement music. Such downloads can be accessible from a variety of sources including Internet web sites and private personal computers.

Automatic Generation of DJ 200 Control Signals

[Para 278] In this section, we will describe the automatic and manual generation of control signals for the DJ 200 transducers. The control signals are generally made to correspond to audio signals played on the units 100, although it is within the spirit of the present invention for such control signals to be made separate from audio signals, and to be displayed on the digital jewelry independently of audio signals played on the unit 100. Figure 20 is a time-amplitude trace of an audio signal automatically separated into beats. Beats 1180, 1182 and 1183 are denoted by vertical dashed and dotted lines and, as described below, are placed at locations on the basis of their rapid rise in low-frequency amplitude relative to the rest of the trace. As can be seen, the beats 1180 are generally of higher amplitude than the other beats 1182 and 1183, and represent the primary beats of a 4/4 time signature. The beat 1183 is of intermediate nature between the characteristics of the beats 1180 and 1182. It represents the third beat of the second measure. Overall, the audio signal thus displayed can be orally represented as ONE-two-Three-four-ONE-two-Three-four ("one" is heavily accented, and the "three" is more lightly accented), which is common in the 4/4 time signature.

[Para 279] Processing of this data can proceed via a number of different methods. Figure 21A is a block flow diagram of a neural network method of creating DJ 200 transducer control signals from an audio signal as shown in Figure 20. In a step 1200, audio data is received either at the unit 100 or the DJ 200. It should be noted that the creation of control signals from audio signals can, within the present invention, take place at either the unit 100 or the DJ 200, or even at a device or system not part of or connected to the unit 100 or DJ 200 (as will be described in more detail below). In an optional step 1202, the data is low pass filtered and/or decimated so that the amount of data is reduced for computational purposes. Furthermore, the data can be processed for automatic gain to normalize the data for recording volume differences. Furthermore, the automatic gain filtering can provide control signals of significant or comparable magnitude throughout the audio data.

[Para 280] In general, the creation of the audio signal depends on audio representing a period of time, which can be tens of milliseconds to tens of seconds, depending on the method. Thus, the audio data from the step 1202 is stored in a prior data array 1204 for use in subsequent processing and analysis. At the same time, the current average amplitude, computed over an interval of preferably less than 50 milliseconds, is computed in a step 1208. In broad outline, the analysis of the signal compares the current average amplitude against the amplitude history stored in the prior data analysis. In the embodiment of Figure 21A, the comparison takes places through neural network processing in a step 1206, preferably with a cascading time back propagation network which takes into account a slowly varying time signal (that is, the data in the prior data array changes only fractionally at each computation, with most of the data remaining the same). The use of prior steps of neural network processing in the current step of neural network processing is indicated by the looped arrow in the step 1206. The output of the neural network is a determination whether the current time sample is a primary or a secondary beat. The neural network is trained on a large number of different music samples, wherein the training output is identified manually as to the presence of a beat.

[Para 281] The output of the neural network is then converted into a digital jewelry signal in a step 1210, in which the presence of a primary or secondary beat determines whether a particular light color, tactile response, etc., is activated. This conversion can be according to either fixed, predetermined rules, or can be determined by rules and algorithms that are externally specified. Such rules can be according to the aesthetics of the user, or can

alternatively be determined by the specific characteristics of the transducer. For example, some transducers can have only a single channel or two or three channels. While light transducers will generally work well with high frequency signals, other transducers, such as tactile transducers, will want signals that are much more slowly varying. Thus, there can be algorithm parameters, specified for instance in configuration files that accompany DJ 200 transducers, that assist in the conversion of beats to transducer control signals that are appropriate for the specific transducer.

[Para 282] Figure 21B is a block flow diagram of a deterministic signal analysis method of creating DJ 200 transducer control signals from an audio signal as shown in Figure 20. The data is received in the step 1200. In this case, a running average over a time sufficient to remove high frequencies, and preferably less than 50 milliseconds, is performed in a step 1212. Alternatively, a low pass filter and/or data decimation as in the step 1202 can be performed.

[Para 283] In a step 1214, the system determines whether there has been a rise of X-fold in average amplitude over the last Y milliseconds, where X and Y are predetermined values. The value of X is preferably greater than two-fold and is even more preferably three-fold, while the value of Y is preferably less than 100 milliseconds and is even more preferably less than 50 milliseconds. This rise relates to the sharp rises in amplitude found in the signal at the onset of a beat, as shown in Figure 20 by the beat demarcations 1180, 1182, and 1183. If there has not been a rise meeting the criteria, the system returns to the step 1200 for more audio input.

[Para 284] If the signal does meet the criteria, it is checked to ensure that the rise in amplitude is not the "tail end" of a previously identified beat. For this, in a step 1216, the system determines whether there has been a previous beat in the past Z milliseconds, where Z is a predetermined value preferably less than 100 milliseconds, and even more preferably less than 50 milliseconds. If there has been a recent beat, the system returns to the step 1200 for more audio input. If there has not been a recent beat, then a digital jewelry signal is used to activate a transducer. The level of transduction can be modified according to the current average amplitude which is determined in a step 1208 from, in this case, the running average computed in the step 1212.

[Para 285] The embodiment of Figure 21B provides transducer activation signals at each rapid rise in amplitude, with the activation signal modulated according to the strength of the amplitude. This will capture much of the superficial musical quality of the audio signal, but will not capture or express more fundamental patterns within the audio signal.

[Para 286] Figure 21C is a schematic flow diagram of a method to extract fundamental musical patterns from an audio signal to create DJ 200 control signals. In the step 1200, the audio data is received into a buffer for calculations. In a step 1220, a low pass filter is applied to remove high frequency signal. Such high frequency signals can alternatively be removed via decimation, running averages, and other means as set forth in the embodiments of Figures 21A and B. As in the embodiment of Figure 21B, beat onsets are extracted from the audio signal in the steps 1214 and 1216, and a current average amplitude is computed in a step 1208.

[Para 287] The amplitudes and times of the onsets of beats are placed into an array in a step 1222. From this array, a musical model is created in a step 1224. This model is based on the regularity of beats and beat emphasis – as seen in the amplitudes – that is independent of the beats and amplitudes in any one short section of music (corresponding, for instance, to a measure of music).

[Para 288] In general, music is organized into repeating patterns, as represented in a time signature such as 3/4, 4/4, 6/8 and the like. Within each time signature, there are primary and secondary beats. In general, the downbeat to a measure is the first beat, representing the beginning of the measure. The downbeat is generally the strongest beat within a measure, but in any given measure, another beat may be given more emphasis. Indeed, there will be high amplitude beats that may not be within the time signature whatsoever (such as an eighth note in ¾ time that is not on one of the beats). Thus, by correlating the beats to standard amplitude patterns, the output to the music model identifies the primary (down) beats, secondary beats (e.g. the third beat in 4/4 time) and the tertiary beats (e.g. the second and fourth beats in 4/4/ time).

[Para 289] Figure 21D is a schematic flow diagram of an algorithm to identify a music model, resulting in a time signature. In a step 1600, the minimum repeated time interval is determined, using the array of beat amplitude and onset 1222. This is, over a period of time, the shortest interval for a quarter note equivalent is determined, wherein the time signature beat frequency (i.e. the note value of the denominator of the time signature, such as 8 in 6/8) is preferably limited to between 4 per second and one every two seconds, and even more preferably limited to between 3 per second and 1.25 per second. This is considered the beat time.

[Para 290] From the array of beat amplitudes and onsets 1222, the average and maximum amplitudes over a time period of preferably 3-10 seconds is computed in a step 1604. For the beginning of the audio signal, shorter periods of time can be used, though they will tend to give

less reliable DJ 200 control signals. Indeed, in this embodiment, the initial times of an audio signal will tend to follow audio signal amplitude and changes in amplitude more than fundamental musical patterns until the patterns are elicited.

[Para 291] In a step 1606, the amplitude of a beat is compared with the maximum amplitude determined in the step 1604. If the beat is within a percentage threshold of the maximum amplitude, wherein the threshold is preferably 50% and more preferably 30% of the maximum amplitude, the beat is designated a primary beat in a step 1612. In a step 1608, the amplitude of non-primary beats is compared with the maximum amplitude determined in the step 1604. If the beat is within a percentage threshold of the maximum amplitude, wherein the threshold is preferably 75% and more preferably 50% of the maximum amplitude, and the beat is greater than a predetermined fraction of the average amplitude, wherein the fraction is preferably greater than 40% and even more preferably greater than 70% of the average beat amplitude, the beat is designated a secondary beat in a step 1614. The remaining beats are denoted tertiary beats in the step 1610.

[Para 292] In a step 1616, the sequence of the three types of beats is compared with that of established time signatures, such as 4/4, 3/4, 6/8, 2/4 and others, each with their own preferred sequence of primary, secondary and tertiary beats, in order to determine the best fit. This best fit is identified as the time signature in a step 1618.

[Para 293] Returning to Figure 21C, the channels of the DJ are pre-assigned to four different beats in a step 1225. Thus, if there are four channels, each channel is given a separate assignment. With a smaller number of channels, a single channel is assigned multiple beats. Some beats can also be unassigned, thus not being represented in a DJ 200 transducer output. Thus, a high jewelry signal, medium jewelry signal, low jewelry signal and an amplitude dependent signal are each assigned to a channel for DJ 200 transduction.

[Para 294] In a step 1226, a beat determined to be a primary/down beat is assigned to a high jewelry signal 1228. In a step 1230, a beat determined to be a secondary beat is assigned to a medium jewelry signal 1232. In a step 1234, a beat determined to be a tertiary beat is assigned to a low jewelry signal 1236. Beats which are then unassigned, and which will generally be beats that occur not within the music model of the step 1224 (e.g. rapid beats not falling on beats of the time signature) are then assigned in a step 1238 to an amplitude dependent (and not music model dependent) signal 1240.

[Para 295] It should be noted that the computations performed in the flow methods of Figures 21A-C may take time on the order of milliseconds, such that if the computations are made in real time during the playing of music, the activation of the transducers in the DJ 200 are "behind" in time relative to the audio playing of the corresponding music in the audio unit 100. This can be compensated for by carrying out the computations while the audio signal is still in buffers prior to being played in the unit 100, as is described above for numerous embodiments of the present invention. Thus, signals to the DJ 200 can then be made simultaneously with respect to the audio signal to which it corresponds.

[Para 296] It should be noted that many of the parameters described above can conveniently be affected by manual controls either on the DJ 200 or the unit 100 that transmits signals to the DJ 200. For example, if can be convenient for the user to be able to set, for a given DJ 200 response amplitude, the threshold audio amplitude level at which the output transducer (e.g. light transducer 240) responds, or to set the output transducer amplitude corresponding to a maximum audio amplitude, or to set the frequency bands for which different DJ 200 channels respond, or to set other similar parameters. The manual controls for such parameters can comprise dials, rocker switches, up/down button, voice or display menu choices, or other such controls as are convenient for users. Alternatively, these choices can be set on a computer or other user input device, for download onto the unit 100 or DJ 200.

[Para 297] A preferable means of setting the parameters is for the parameters to be stored in a configuration file that can be altered either on the unit 100, the DJ 200 or a computer, so that the same DJ 200 can take on different characteristics dependent on the configuration settings within the file. The configuration settings can then be optimized for a particular situation, or set to individual preference, and be traded or sold between friends or as commercial transactions, for instance over the Internet. For a most preferable use of these configuration files, each file with its set of configurations can be considered to represent a "mode" of operation, and multiple configuration files can be set on the DJ 200 or the unit 100, depending on where the automatic generation of control signals is performed. The user can then select from the resident configuration files, appearing to the user as different modes, for use of his system, and can change the mode at will. This can be arranged as a series of choices on a voice or display menuing system, as a list toggled through by pressing a single button, or through other convenient user interfaces.

Manual Generation of DJ 200 Control Signals

[Para 298] In the description above, the use of filtering and digital modification of audio signals can be used to create control signals for DJ 200 transducers 240, 250, and 260. In addition, manual choreography of DJ 200 signals can be accomplished. For example, buttons or other interface features (e.g. areas on a touch-screen) on the unit 100 can correspond to different arrays of transducers, such as the LED arrays 290 and 292 of Figure 2A. While playing the audio signal, the user can press the buttons, where pressing of the buttons can correspond to a control signal for a transducer being ON, and otherwise the signal can be off. To aid in choreography where rapid changes in transducers are desired, the audio can be played at less than normal speed.

[Para 299] Figure 22A is a top-view diagram of an audio unit 100 user interface 1250, demonstrating the use of buttons to create DJ 200 control signals. The interface 1250 comprises a display screen (e.g. LCD or oLED), which can display information to the user, such as shown in Figures 18 A-B. Standard music control buttons 1254 for playing, stopping, pausing, and rewinding allow the user to control the audio signal musical output. Buttons 1252 further control aspects of the music output, such as volume control, musical tracks, and downloading and uploading of music. The number of buttons 1252 is conveniently three as shown, but can be more or less than three.

[Para 300] In addition, buttons are provided to allow the user to input DJ 200 control signals, comprising a record button 1256, a first channel button 1258, a second channel button 1260 and a third channel button 1262. The channel buttons 1258, 1260 and 1262 are prominent and accessible, since the user will want to easily depress the buttons. A record button 1256 allows the user to activate the channel buttons 1258, 1260 and 1262, and has a low profile (even below the nominal surface of the interface 1250) so that it is not accidentally activated. The record button can serve various purposes, including recording into a permanent storage file the sequence of DJ control signals relative to music being played, or controlling the DJ transducers in realtime, synchronously with music being played on the audio unit 100.

[Para 301] Pressing the buttons 1258, 1260 and 1262 create DJ control signals for the corresponding channels. The number of buttons is conveniently three as shown, but can also be two or four or more buttons. If a telephone is being used as the unit 100, keys on the telephone keypad can alternatively be used. The channel buttons will generally be used with thumbs, and

the buttons are spaced so that two of the buttons can be depressed with a single thumb, so that all three buttons can be activated with only two fingers. In is also convenient for the two secondary buttons 1260 and 1262 to be spaced more closely together, as it will be a preferred mode of operation that the secondary buttons be operated together from time to time.

[Para 302] To further aid in the choreography of the DJs 200, a separate "keyboard" with the number of keys related to the number of possible arrays can be used. The amplitude of the corresponding transducer signal can be modified either according to the pressure on the keys, according to the length of time that a key is depressed, or according to a foot pedal. Figure 22B is a top-view diagram of a hand-pad 1270 for creating DJ control signals. The hand-pad 1270 comprises a platform 1271, a primary transducer 1272, a secondary transducer 1274 and a tertiary transducer 1276. The platform 1271 has a generally flat top and bottom, and can conveniently be placed on a table, or held in the user's lap. The size of the platform is such that two hands are conveniently placed across it, being preferably more than 6 inches across, and even more preferably more than 9 inches across. The pressure transducers 1272, 1274 and 1276 respond to pressure by creating a control signal, with said control signal preferably capturing both the time and amplitude of the pressure applied to the corresponding transducer. The primary transducer 1272 creates a primary control signal, the secondary transducer 1274 creates a secondary control signal and the tertiary transducer 1276 creates a tertiary control signal. The sizes and placements of the transducers can be varied within the spirit of the present invention, but it is convenient for the primary transducer 1272 to be larger and somewhat separate from that of the other transducers 1274 and 1276. In one more method of user interaction, both hands can be rapidly and alternately used to make closely spaced control signals on the primary transducer 1272. In addition, it can be convenient on occasion for the user to activate both the secondary transducer 1274 and the tertiary transducer 1276 with different fingers on one hand, and thus these can be conveniently placed relatively near to one another. In general, while a single transducer will provide minimal function, it is preferable for there to be at least two transducers, and even more preferable that there be three transducers.

[Para 303] The control signals can be transferred to the audio unit 100 for playing and/or storage, or to the DJ 200 unit directly for playing, either wirelessly, or through wired communication. In addition, the hand-pad can also be configured to create percussive or other sounds, either directly through the incorporation of hollow chambers in the manner of a drum, or

preferably by the synthesis of audio waveform signals that can be played through the audio unit 100 (and other audio units 100 participating in a cluster 700), or directly through speakers within the hand-pad 1270 or attached to the hand-pad 1270 through wired or wireless communications. Such audible, percussive feedback can aid the user in the aesthetic creation of control signals.

[Para 304] It is within the spirit of the present invention for the hand-pad to take on various sizes and configurations. For instance, it is also convenient for the hand-pad 1270 to be configured for the use of index and middle fingers, being of dimensions as small as two by four inches or less. Such a hand-pad is highly portable, and can be battery powered.

[Para 305] Additionally, DJ 200 control signals can also be manually generated live, during broadcast at a party, for example, by a percussionist playing a set of digital drums. Figure 22C is a schematic block diagram of a set of drums used for creating DJ control signals. The set of drums comprises four percussive instruments 1280, 1282, 1284 and 1286, which can include snare drums, foot drums, cymbals, foot cymbals and other percussive musical instruments, such as might be found with a contemporary musical "band". Microphones 1290 are positioned so as to receive audio input primarily from instruments to which they are associated. One microphone can furthermore be associated with multiple instruments, as with the drums 1282 and 1284. The microphones 1290 are connected with a controller 1292 that takes the input and creates DJ control signals therefrom. For example, the drums 1282 and 1284 can be associated with the primary channel, the drum 1280 can be associated with the secondary channel, and the drum 1286 can be associated with the tertiary channel. The association of the microphone input with the channel can be determined in many ways. For example, the jack in the controller 1292 to which each microphone 1290 attaches can correspond to a given channel. Alternatively, the user can associate the jacks in the controller to different channels, with such control being manual through a control panel with buttons or touch control displays, or even through prearranged "sets". That is, a set is a pre-arranged configuration of associations of microphones to channels, and thus a set can be chosen with a single choice that instantiates a group of microphone-channel associations.

[Para 306] In general, the inputs from the microphones 1290 will be filtered in frequency and also to enhance audio contrast. For instance, control signals can be arranged to be the highest when the low-frequency envelope is rising the quickest (i.e. the beat or sound onset). The

algorithms for conversion of audio signal to DJ control signal can be pre-configured in the controller 1292, or can be user selectable.

[Para 307] It should be noted that the methods and systems of Figures 22 A-C need to synchronize the control signals so generated with the audio files to which they correspond. This can be accomplished in many ways. For example, the first control signal can be understood to correspond to the first beat within the audio file. Alternatively, the audio unit 100 or other device that is playing the audio signal to which the control signal is to correspond can send a signal to the device that is creating the control signals indicating the onset of playing of the audio file. The control signal can then be related to the time from the onset of the audio file. In addition, with regards to this synchronization, the user manually inputting the control signals will always be listening to the music during the control signal input. If the device on which control signals are being input is the same as the device that is playing the music, a control signal input cam be easily related to the sound that is currently being played by the audio output – many such devices allow information to within less than a millisecond of what sample or time within the audio files is currently being output by the audio device. With the arrangement of the control signal input device being also an audio player, close calibration of the control signals and the audio output is easily accomplished.

DJ 200 Control Signal Files

[Para 308] The control signals can be in a variety of formats within the spirit of the present invention. Such formats include pairs of locations within the associated music file and the corresponding amplitudes of the various DJ channels, and pairs of locations and the amplitudes of those DJ channels which are different from before. The locations can be either time from the start of the song (e.g. in milliseconds) or in terms of sample number. If the location is given in terms of sample number, the sample rate of the music will generally also be provided, since the same song can be recorded at different sample rates, and the invariant in terms of location will generally be time from onset of the music.

[Para 309] Other formats include an amplitude stream, corresponding to each DJ channel, provided in a constant stream with a fixed sample rate, which may be equal to or different from that of the corresponding music file. This format can be stored, for example, as additional channels into the music file, such that one channel corresponds to monoaural sound, two

channels correspond to stereo sound, three channels correspond to stereo sound and one channel of control signals, and additional channels correspond to stereo sound plus additional channels of DJ control signals. Another arrangement is to allow for only a small number of states of the transduction in the control signal, so that multiple channels of control signal can be multiplexed into a single transmitted channel for storage and transmission with the audio signal. For example, if the audio is stored as a 16-bit signal, 3 channels of 5 bit DJ 200 control signal could be stored in a single channel along side the one or two audio channels normally used.

[Para 310] It should be appreciated that these different control signal storage formats are largely interchangeable. For instance, as described above, control signals can be stored as if they are additional audio channels within a music file, but then be extracted from the file for separate transfer (e.g. over the Internet), and then be reintegrated into an audio file at the destination location.

[Para 311] It should be appreciated that there are a number of means by which DJ 200 control signals can be generated, either automatically or manually, and can include the use of devices other than the unit 100 that can have sophisticated digital or analog filtering and modification hardware and software. The control signals so created can be stored in files that are associated with the music files (e.g. MP3) that the control signals are meant to accompany. To aid in their distribution, particularly in reference to limitations on the commercial and private distribution of the corresponding music files, the signal files will generally be separate from the music files, and transferable between units 100 either through inter-unit communication mediated by the inter-unit transmitter/receiver 110, or alternatively through computers or computer networks to which the unit 100 can be connected.

[Para 312] The audio signals and the DJ control signals should also be well synchronized during playback. Figure 23 is a schematic block flow diagram of the synchronized playback of an audio signal file with a DJ control signal file, using transmission of both audio and control signal information. For purposes of convenience in discussion, the audio signal file will be called a "song file" and the "control signal file" will be called a "dance file." In a step 1300, the user is provided a list of song files for display, preferably on the display 1170. In a step 1302, the user then selects a song from the display to play. In a step 1304, the dance files that are associated with the selected song file from the step 1302 are displayed for the user. These song files can be either locally resident on the unit 100, or can alternatively be present on other audio

units 100 to which the audio unit 100 is connected, as in a cluster, or can alternatively be on the Internet, if the audio unit 100 is connected to the Internet. If there is a dance file that has been previously preferred in association with the song file, this file can be more prominently displayed than other associated dance files.

[Para 313] In a step 1306, the user selects the dance file to play along with the song file. This association is stored in a local database of song file/dance file associations in a step 1307, to be later used in a subsequent step 1304, should such an association not have been previously made, or if the preferred association is different from the previously preferred association. If the dance file is not locally resident, it can be copied to the audio unit 100 to ensure that the dance file is available throughout the duration of the song file playback.

[Para 314] In a step 1308, a timer is initialized at the beginning of the song file playback. In the step 1310, the song file is played on the local unit 100, and is also streamed to the other units 100 within the cluster 700. The corresponding DJ control signal accompanies the streaming song, either multiplexed within the song file audio signal, on another streaming socket, or through other communications (e.g. a TCP socket) channels between the two units. In a step 1312, the time advances along with the playback of the music. In a step 1314, this timer information is used to obtain current control signals from the dance file – that is, the dance file is arranged so that at each moment, the status of the different transducer channels can be determined. The control signals to be streamed along with the song file information can be either the current status of each transducer, or alternatively, can only send changes from the current transducer state.

[Para 315] The matching of the files in the database of song file and dance file associations of the step 1307 can be performed both within a machine, but also over a local or wide area network. In such cases, the association can either be external to the file – that is, using the name of the file, that is available the normal system file routines – or can use information internal to one or both files. For example, the dance file can have stored within it a reference to the song to which it is associated, either as the name of the song file, the name and/or other characteristics of the song (such as the recording artist, year of publication, music publisher) or alternatively as a numerical or alphanumerical identifier associated with the song. Then, given a song file, the relationship of the dance file with the song file can be easily determined.

[Para 316] For ease in creating an association, it is convenient for the names of the song files and the associated dance files to have a relationship with one another that is easily understood by casual users. For example, given a song file with the name "oops.mp3", it is convenient for an associated dance file to share the same root (in this case "oops") with a different extension, creating for example the dance file name "oops.dnc". Because of the multiplicity of dance files that will often be associated with a particular song file, the root itself can be extended to allow for either a numerical or descriptive filename, which can be preferably done in conjunction with a known punctuation mark to separate the song file root from the dance file description, such as the file names "oops.david2.dnc" or "oops$wild.dnc". It is preferable to use a punctuation mark that is allowed within a range of different operating systems.

[Para 317] Dance files can be stored on the Internet or other wide area network in a store for access by users who want dance files associated with a particular song file. In such case, if the storage is through the root of the filename, the user, requesting dance files corresponding to "oops.mps" would then be returned the names of related files such as "oops$wild.dnc". If the dance file internally carries the relationship with "oops.mps" as described above, either through the name or other characteristics, or alternatively, through a numerical or alphanumerical identifier, it is preferable to store the information in a database on the storage computer or unit 100, so that it is not necessary to open the file each time for perusal of the dance file information. Thus, if the music file has a substantially unique identifier associated with it internally, it is also useful for the dance file to also have the same identifier associated internally as well. In such case, the identifier is conveniently used to reference both files within a database.

[Para 318] In operation, a remote user would request a dance file for a particular song file by providing the name of the song file, along possibly with other information about the song file, which could include the name of the choreographer, the number of channels of DJ 200 transduction, the specific brand or type of DJ 200, or other information. The database would then return a listing of the various dance file that met the criteria requested. The remote user would then choose one or more of the files to download to the remote computer, and then the database would retrieve the dance files from storage and then transmits the dance file over the wide area network. On the remote computer or unit 100, the dance file would become associated with the corresponding song file through means such as naming the dance file appropriately or making an association between the song file and the dance file in a database or indexing file.

Alternatively, the dance file can be integrated into the song file as mentioned elsewhere within this specification.

[Para 319] It can be useful to preview a dance file for its desirability or suitability. Since the dance files can be retrieved from a wide area network such as the Internet, it is convenient for such an emulator to operate on a computer that may not be portable or have the proper transmitter that allows communications with a DJ 200. In such case, it is preferable to have an emulator which places an image or drawing of a DJ 200 on the screen, and which is provided the name of a song file and a dance file, and which then plays the song file through the audio of the computer and displays appropriate images or drawings of transducers being activated within the emulator image or drawing. The characteristics of the DJ 200 being emulated (e.g. colors of lights, frequency responses, levels of illumination, arrangement of lights, response to amplitude, etc.) can be simulated by a number of means. For example, the user can move slider controls, set checkboxes and radio boxes, enter numerical values, click-and-drag icons and use other standard user interface controls to make the DJ 200 operate as desired. Alternatively, manufacturers of DJ 200s can create configuration files (including, for example, bitmaps of photos of the actual DJ 200) that can be downloaded for this purpose (and which can also be used by prospective purchasers to view the "virtual" operation of the DJ 200 prior to purchase, for example, through an Internet merchant). The configuration files would contain the information necessary for the emulator to properly display the operation of the specific DJ.

[Para 320] Alternatively, as described above, the dance file information can be stored within the song file as, for example, another channel in place of an audio channel, or alternatively within MP3 header or other file information. In such case, the step 1307 would have the alternative function of looking through song files to find the song file with the particular desired embedded dance file within.

[Para 321] In addition to sending dance files from computers to units 100 or between units 100, the dance files can be streamed from unit 100 to unit 100 through the normal unit-to-unit communications, in the manners described above for audio communications. This is particularly convenient given that DJ 200 displays can be used to show group identification, and such displays can be more effective if the DJs for each user are nearly identical (which might not be the case if the users were using, for example, different dance files). The dance file control signal information can be transmitted in a variety of ways, including multiplexing the control signals

into the same packets as the audio information as if it were a different audio channel, alternating packets of control signals with packets of the audio information, or broadcasting control signals on a different UDP socket as the audio. Alternatively, if the receiving unit has a copy of the dance file corresponding to the song file being transferred by unit-to-unit communication, the receiving unit can determine the current time being played, and to extract from the local dance file the control signals for the receiving unit DJ 200.

[Para 322] It should be known that most streaming protocols have relatively small data packets that are communicated, due to the fact that reception at the source is not guaranteed and it is not desirable to lose a large amount of information in any one stream. Thus, it is possible with smaller transmission buffers and higher data rates to send a single DJ control signal in each transmission. For example, with a buffer size of 600 bytes, and an audio rate of 22,050 Hz with two single byte channels, each transmission covers only about 12 milliseconds, and any signal would therefore be at most 13 milliseconds from its correct time. Alternatively, each control signal can be accompanied by an offset in time from the beginning of the transmitted audio signal. Also, the time or packet number of each transmission buffer can be sent, as well as the time or packet number of the DJ audio signals, so that the audio unit 100 can compute the proper offset.

Stationary Transducers

[Para 323] DJs 200 that have been previously described are portable devices, usually associated with a particular user and unit 100. Figures 5A and 5B indicate the ways in which DJs 200 associated with multiple users can be controlled by a single unit 100.

[Para 324] It is also convenient for transducers to be non-portable and stationary. Consider, for example, a user who is at home listening to music. Instead of a DJ 200 worn by the user, the user can alternatively have a bank of lights or other transducers in fixed locations through the room that operate under the same or similar control signals as to which DJs respond. Such fixed transducers can operate at far higher power than portable DJs 200, and can each incorporate a large number of separate transducers.

[Para 325] Furthermore, in a party, concert or other large social gathering, the effects of portable DJs worn by guests can be supplemented by large transducers that are generally perceptible by most guests. For example, such transducers can include spark or smoke

generators, strobe lights, laser painters, arrays of lights similar to Christmas light strings, or mechanical devices with visible (e.g. a flag waving device) or tactile effects (e.g. a machine that pounds the floor). In general, transducers for large gatherings will not communicate with a unit 100, but will be directed by a wide-area broadcast unit 360, as in Figure 5B.

[Para 326] Because of the large area over which such stationary transducers can operate, the communications between the unit 100 and the stationary transducers can be through wired rather than wireless transmission. Furthermore, there can be mixed communication, such as wireless transmission of control signals from a portable unit 100 to a stationary receiver, and thence wired transmission to one or multiple transducers.

Modular Configurations

[Para 327] In the embodiments above, the audio player 130 is directly integrated with the inter-unit and unit-to-DJ communications. This requires both a re-engineering of existing audio players (e.g. CD, MP3, MO and cassette players), and furthermore does not allow the communications functionality to be reused between players.

[Para 328] An alternative embodiment of the present invention is to place the communications functions external to the audio playing functions, and to adjustably connect the two via the audio output port of the audio player. Figure 12A is a schematic diagram of a modular audio unit 132. Audio player 131 is a conventional audio player (e.g. CD or MP3 player) without the functionality of the present invention. Analog audio output is sent via audio output port 136 through the cable 134 to the audio input port 138 of the modular audio unit 132. The modular audio unit 132 comprises the inter-unit transmitter/receiver 110 and the DJ transmitter 120, which can send and receive inter-unit and unit-to-DJ communications in a manner similar to an audio unit 100. A switch 144 chooses between audio signals from the audio player 131 and from the inter-unit transmitter/receiver 110 for output to the output audio port 142 to the earphone 901 via cable 146 (the earphone 901 can also be a wireless earphone, wherein the output port 142 can be a wireless transmitter, which can also be a DJ transmitter 120). A convenient configuration for the switch 144 is a three way switch. In an intermediate position, the unit 132 acts simply as a pass-through, in which output from the audio player 131 is conveyed directly to the earphone 901, and the transmitter/receiver functions of the unit 132 do

not operate. In another position, the unit 132 operates as a receiver, and audio from the inter-unit transmitter/receiver 110 is conveyed to the earphone 901.

[Para 329] When the combined system operates as a broadcast unit 710, audio input from the audio unit 131 is directed to the inter-unit transmitter/receiver 110 for transmission to receive units 730, as well as for output to the earphone 901 (which can be direct to the earphone 901 through the switch, or indirectly through the inter-unit transmitter/receiver 110).

[Para 330] When the combined system operates as a conventional audio player, the switch directs audio signals from the input port 138 directly through to the output port 142. In this mode of operation, it can be arranged for the audio output to traverse the modular audio unit 132 without the unit being powered up. In case there is a transmission delay to the receive unit 730 such that audio played locally through the earphone 901 and audio played remotely on the receive unit 730 are not in synchrony, the system can incorporate a time delay in the output port 142 such that the local and remote audio output play with a common time delay, and are thus in synchrony.

[Para 331] When the combined system operates as a receiver unit 730, audio input from the input port 138 is ignored, and signals to the audio output port are delivered solely through the inter-unit transmitter/receiver 110.

[Para 332] It is convenient for the modular audio unit 132 to be able to operate independently of the associated audio player 131. In such a case, the unit 132 must have an independent energy store, such as one or more batteries, which can be rechargeable. In that case, the unit 132 has no audio signals locally to listen to through the earphone 901 or to transmit over the transmitter/receiver 110. However, the unit 132 can in that case receive external audio signals sent by other units 132 or units 100 for listening.

[Para 333] The audio player 131 can be placed in a backpack, purse, or other relatively inaccessible storage location, while the modular audio unit is, like a "remote control", accessible for interaction with other users.

Video

[Para 334] While the units 100 described above have comprised audio players 130, within the spirit of the present invention, such units can also comprise video or audio/visual players (both of which are referred to below as video players). Such video players would be used

generally for different entertainment and educational purposes, not limited to films, television, industrial training and music videos. Such video enabled units can operate similarly to audio units, including the capability of sharing video signals, synchronously played, with nearby units through inter-unit communication, as well as the use of DJ's that can produce human-perceptible signals (such as light transduction for accompaniment of audio signals in music videos). It should be noted, however, that there is a larger bandwidth requirement for the inter-unit transmitter/receiver 110 for the communication of video signals as compared with audio signals. In the case of shared video, wire connections (e.g. FireWire) between two units can allow simultaneous viewing of a single video signal.

[Para 335] In addition, text, including language-selectable closed caption and video subtitling, can accompany such video, as well as chat or dubbing to allow the superposition of audio over the audio normally accompanying such video.

Music Distribution Using Audio Units

[Para 336] The music industry is suffering from reduced sales due to the advent of Internet-based music file sharing; in addition, the manufacturers of personal audio devices are bringing to market audio devices that can wirelessly transfer music files between the devices. Such sharing-enabled devices could significantly reduce the sales of music. Audio units of the present invention, however, can be used to provide new means of music distribution and thereby increase the sales of music.

[Para 337] Figure 25 is a schematic flow diagram indicating music sharing using audio devices, providing new means of distributing music to customers. Three entities are involved in the transactions – the DJ (operating a broadcast unit 710), the cluster member (operating a receive unit 730), and the music distributor, and their actions are tracked in separate columns. In this case, the term DJ is used to indicate the person operating a broadcast unit 710, and has no meaning with respect to a DJ unit 200. Indeed, the DJ unit 200 is a part of the system only inasmuch as it provides for heightened pleasure of the DJ and the member in enhancing their experience of the music. For the rest of this section, DJ will refer specifically to the person operating the broadcast unit 710.

[Para 338] In a first step 1340, the DJ registers with the distributor, who places information about the DJ into a database in a step 1342. Part of this information is a DJ identifier (the DJ

ID), which is unique to the DJ, and which DJ ID is provided to the DJ as part of the registration process. This ID is stored in the unit 100 for later retrieval. The DJ at some later time broadcasts music of the type distributed by the distributor, in a step 1344. The broadcast of the music by the DJ can be adventitious (that is, without respect to the prior registration of the DJ with the distributor), or the distributor can provide the music to the DJ either free of charge, at a reduced charge, or free of charge for a limited period of time.

[Para 339] In a step 1346, the member becomes a part of the cluster 700 of which the DJ is the broadcaster broadcasting the distributor's music, and has thereby an opportunity to listen to the music. Along with the transfer of the audio signal of the music, in a step 1348, the DJ can send information about the song, which can include a numerical identifier of the music or album from which the music is derived. Furthermore, the DJ ID is provided to the member, and is associated with the music ID and stored in a database on the member unit 100 in a step 1350. In order to prevent this database from becoming too sizable, music IDs and DJ IDs can be purged from it on a regular basis (for example, IDs which are older than 60 or 120 days can be removed).

[Para 340] If the member requests purchase of the music from the distributor in a step 1352, in a step 1354, the distributor stores the member information, the music ID, and the DJ ID associated with the music (i.e. the person who introduced the member to the music). The distributor then completes the transaction with the member, providing a copy of the music in exchange for money, in a step 1356. As the member receives the music copy, he also becomes registered as a DJ as well in a step 1358. Thus, if the member now becomes the DJ of his own cluster, and introduces people to this music, he will also be known to the distributor as an introducer of the music.

[Para 341] In a step 1360, the distributor provides points to the DJ who introduced the member to the music and facilitated the sale of the music. In a step 1362, the DJ accumulates points related to the sale of the music to the member, as well as points related to the sale of other music to other members. These points can at that point or later be redeemed for money, discounted music, free music, gifts, access to restricted activities (e.g. seats at a concert) or other such real or virtual objects of value to the DJ.

[Para 342] In a step 1364, the DJ is optionally further linked to the music and member for whom he has received points. If this member introduces the music to yet other members, who

are induced to buy the music from the distributor, the DJ is further awarded points in a step 1366, given that the "chain" of members introduced directly or indirectly to the music includes the original DJ.

[Para 343] This set of interactions does not decrease music sales as does file sharing, but rather increases sales of music, as the DJ has incentives to encourage others to buy the music, and the offering of the music by the DJ through his broadcasts introduces music to people who may not have already had the opportunity to hear the music.

[Para 344] Figure 31 contains tables of DJ, song and transaction information according to the methods of Figure 25. A USER table 1810 comprises information about the USER, which can include the name of the person (Alfred Newman), their nickname/handle ("WhatMeWorry"), their email address (AEN@mad.com), and the machine ID of their unit 100 (B1B25C0). This information is permanently stored in the audio unit 100. A second set of information relates to music that the USER has heard while in other clusters 700 that the USER liked, and which is indicated as the USER's "wish list". This set of information includes a unique ID associated with the song (or other music or audio signal), which is transmitted by the broadcast unit 710 of the cluster 700. This information can alternatively or additionally include other information about the music, such as an album name, an artist name, a track number, or other such information that can uniquely identify the music of interest.

[Para 345] Along with each song ID is a DJ identifier, indicating the unique ID associated with the DJ who introduced the desired music to the USER. Additionally or alternatively, the information can comprise the DJ's email address, personal nickname/handle, name, or other uniquely identifying information.

[Para 346] The Wish List can either be permanent, or it can be that each song entry is dated, and that after a predetermined amount of time, which can be set by the user, the songs that are still on the Wish List are removed. It is also convenient that songs that are purchased according to the methods of the present invention, such as Figure 25, are also removed from the list automatically.

[Para 347] A DISTRIBUTOR table 1812 comprises information about purchases made by USERS with the DISTRIBUTOR. The table 1812 has numerous records keyed according to unique USER identifiers, which in this case is the MAC ID of the unit 100. A single record from

the table is provided, of which there can be hundreds of thousands or millions of such records stored.

[Para 348] The record can include contact information about the USER, including name, email address, or other business related information such as credit card number. In addition, each record comprises a list of all of the songs known to have been purchased through the DISTRIBUTOR, as identified by a unique song ID. In addition, the DJ associated with the purchase of the given song by the USER is also noted. This information was previously transmitted from the USER table 1810, which includes the associated DJ identifier along with the song identifier, at the time of purchase of the song. This association allows the DISTRIBUTOR to compensate the DJ for his part in introducing the USER to the song.

[Para 349] It should also be noted that such an arrangement of information allows the compensation, if desired, of the individual who introduced the DJ to the song, prior to the DJ introducing the USER to the song. For example, when the user purchased the song with song ID 230871C40, points were credited with the DJ whose ID is 42897DD. Looking in the record for the DJ 42897DD, one can determine whether there is another individual (DJ) associated with the purchase of the song 230871C40 by the DJ. If so, that individual can also receive compensation for the purchase of the song by the USER.

Use of Internet Connections

[Para 350] It is within the teachings of the present invention to allow normal Internet connections of the audio unit 100 with non-mobile devices connected with the Internet. Figure 29A is a schematic block diagram of the connection of an Internet-enabled audio unit 100 with an Internet device through the Internet cloud 1708, using an Internet access point 1704. An Internet-enabled audio unit 1700, unit A, is wirelessly connected to an audio unit 100, denoted unit B, as members in a cluster 700. The dashed line connecting the two units A and B indicates that the connection is wireless, whereas the solid connecting lines indicate wired connections. The unit A is connected to a wireless access point 1704, such as an 802.11 access point, which is connected to an Internet device 1706 via wired connections through the Internet cloud 1708.

[Para 351] Figure 29B is a schematic block diagram of the connection of an Internet-enabled audio unit 1702 with an Internet device through the Internet cloud, with an audio unit 1702 directly connected to the Internet cloud 1708. In this case the audio unit 1702 is capable of

directly connecting to the Internet cloud 1708, and thence to the Internet device 1706, through a wired connection. This could be through a high speed connection (such as a twisted wire Ethernet connection) or through a lower speed connection (e.g. a serial port connection, or a dial-up modem).

[Para 352] The connection of the unit 1700 or unit 1702 is illustrated in Figure 30, tables of ratings of audio unit 100 users. As described above, members of a cluster can decide whether or not to admit a new member to the cluster using a variety of automatic or manual methods. One method of determining the suitability of a user to become a member of the cluster 700 is to determine the user's ratings by members of other clusters to which the user has previously been a member. In this case, the Internet device 1706 is a computer hosting a database, which can be queried and to which information can be supplied by the unit A (either 1700 or 1702). On the Internet device 1706 are stored ratings of units 100, as indicated by the table 1802. The left hand column is the primary key of the database, and is a unique identifier associated with each unit 100. This ID can be a numerical MAC ID, associated with the hardware and software of each unit 100, a unique nickname or word handle (e.g. "Jen412smash") associated with each audio unit user, or other such unique identifier.

[Para 353] The second and third columns, indicated as numbers with dollar signs, are the total summed positive ratings (column two) and the negative ratings (column three) registered with each user by another member of a cluster 700 with which the user has been associated, and in which the user was operating the broadcast unit 710. This rating can, for example, reflect the perceived quality of music provided by the user. The fourth and fifth columns are the total, summed ratings of the user by other members of clusters 700 with which the user has been associated, in which the user was the operator of a receive unit 730. This rating can, for example, indicate the good spirits, friendliness, dress or other characteristics of the user as perceived by other members of the cluster. The sixth column indicates the largest cluster 700 for which the user has been the broadcaster. This is a good indicator of a broadcaster's popularity, since a poor or unpopular broadcaster would not be able to attract a large group of members for a cluster.

[Para 354] There are many other characteristics that can be stored in such a database, and can also include IDs of other members of groups with which the user has been associated (so that members can accept new members who have been associated with friends of those in the

cluster), specific music that the user has played (in order to determine musical compatibility), information on the individuals making each rating (in order to determine rating reliability), and gradations of ratings (rather than simply a positive or negative response).

[Para 355] The cluster members can access the ratings of the user requesting membership in the cluster 700 in order to determine their desirability and suitability. This would require a connection with the Internet device 1706 at the time that the user was requesting to join, and would preferably involve a wireless connection through an access point, as in Figure 29A. The information from the database on the device 1706 can either be displayed to the members of the cluster 700, or can be used by an automatic algorithm to determine whether the person can join.

[Para 356] The table 1800 represents the ratings of a cluster 700 of 5 total members (comprising a broadcaster with ID 12089AD, and four additional members with IDs E1239AC, F105AA3, B1B25C0, and ED5491B). The ratings are supplied by ED5491B (whose ID is preceded by a zero), and then specific ratings of each member are made. The DJ is indicated by a dollar sign preceding his ID. These ratings can be made by putting the nicknames/handles of the cluster members on a screen, and allowing the member to indicate positive or negative ratings by pressing one of two buttons. A plus in the first column indicates a positive response, and a minus sign indicates a negative response. These ratings can then be sent during either wired communications directly to the Internet device 1706 or via the access point 1704. It should be noted that the ratings, once made, can be stored on the unit 1700 or 1702 indefinitely, until connection with the Internet cloud 1708 can be made. As indicated by the arrow, the information for B1B25C0 can be added to the table 1802 – in this case, by incrementing the value in the fourth column (a positive rating for a user who is not the broadcaster).

[Para 357] Other applications of connections to Internet devices 1706 include exchanging (via uploading and downloading) dance files with distant individuals, and obtaining music via downloading , which can include transactions with distributors similar to that seen in Figure 25. Such connections also allow the integration of other connectivity, such as telephone and messaging capabilities, expanding the usefulness and attractiveness of audio units 100.

Many Embodiments Within the Spirit of the Present Invention

[Para 358] It should be apparent to one skilled in the art that the above-mentioned embodiments are merely illustrations of a few of the many possible specific embodiments of the

present invention. For example, the elements of a unit 100, including the inter-unit transmitter/receiver 110 protocol and hardware, the DJ transmitter 120 and the audio player 130 can be chosen from a range of available technologies, and can be combined with user interface elements (keyboards, keypads, touch screens, and cursor buttons, without significantly affecting the operation of the unit 100. Furthermore, many different transducers can be combined into DJs 200, which can further comprise many decorative and functional pieces (e.g. belt clasps, functional watches, microphones, or wedding rings) within the spirit of the present invention. Indeed, the unit 100, itself, can comprise transducers 240, 250 or 260.

[Para 359] It should also be appreciated that communications protocols provide a nearly uncountable number of arrangements of communications links between units in a cluster, that the links can be of mixed software protocols (e.g. comprising both TCP and UDP protocols, and even non-IP protocols) over a variety of hardware formats, including DECT, Bluetooth, 802.11 a, b, and g, Ultra-Wideband, 3G/GPRS, and i-Beans, and that communications can include not only digital but also analog communications modes. Furthermore, communications between audio units and digital jewelry can further comprise analog and digital communications, and a variety of protocols (both customized as well as well-established IP protocols).

[Para 360] It is important, as well, to note that the inter-unit communication and the unit-to-DJ communication can operate and provide significant benefits independently of one another. For example, members listening to music together gain the benefits of music sharing, even without the use of DJs 200. Alternatively, an individual's appreciation of music and personal expression can be augmented through use of a DJ 200, even in the absence of music sharing. However, the combination of music sharing along with enhanced personal expression through a DJ 200 provides a synergistic benefit to all members sharing the music.

[Para 361] Numerous and varied other arrangements can be readily devised by those skilled in the art without departing from the spirit and scope of the invention. Moreover, all statements herein reciting principles, aspects and embodiments of the present invention, as well as specific examples thereof, are intended to encompass both structural and functional equivalents thereof. Additionally, it is intended that such equivalents include both currently known equivalents as well as equivalents developed in the future, i.e. any elements developed that perform the same function, regardless of structure.

[Para 362] In the specification hereof any element expressed as a means for performing a specified function is intended to encompass any way of performing that function. The invention as defined by such specification resides in the fact that the functionalities provided by the various recited means are combined and brought together in the manner which the specification calls for. Applicant thus regards any means which can provide those functionalities as equivalent as those shown herein.

What is claimed is:

[Claim 1] A system for identifying a first mobile device that introduces a music selection to a second mobile device, comprising:

a music transmitter operated by the first device;

a music receiver operated by the second device receptive of the music transmitted by the first device;

a music signal comprising the music selection transmitted by the transmitter and received by the receiver, wherein the music selection is introduced to the user of the second device;

a musical identifier that is associated with the transmitted music selection and is transmitted with the transmitted music selection; and

an individual identifier that identifies the first device and is transmitted with the transmitted music selection;

wherein the individual identifier and the music identifier are stored in association with each other on the second device.

[Claim 2] The system of claim 1 further comprising an infrastructure connection for obtaining the music on the second device from a distributor on a wide area network.

[Claim 3] The system of claim 1, the receiver further comprising a switch wherein actuation of the switch causes the device to toggle between peer-to-peer communications and infrastructure-based communications.

[Claim 4] The system of claim 1, wherein the individual identifier comprises one or more of an email address of a user associated with the transmitting device, a nickname of the user, a name of the user or the machine identifier.

[Claim 5] An audio device enabled to transfer and receive audio signals and associated identifiers, comprising:

a transmitter/receiver for transmitting audio signals to a receiving device and receiving audio signals from a transmitting device, wherein the audio signals comprise a music selection, a music identifier that identifies the audio signal,

and an individual identifier that identifies a characteristic of the transmitting device;

a player for playing the received audio signals, the player further comprising audio storage for storing audio signals received by the transmitter/receiver;

a unit controller for preparing the audio signal from the storage for transmission to the receiving device and for preparing received audio signals to be played on the player; and

a database interconnected with the unit controller for storing the received music identifier in association with the identifier of the transmitting device,

wherein the database enables the receiving device to identify the transmitting device.

[Claim 6] The device of claim 5, wherein the transmitter/receiver receives the audio signal on a UDP socket.

[Claim 7] The device of claim 5, wherein the transmitter/receiver receives the music identifier and the individual identifier on a TCP socket.

[Claim 8] The device of claim 5, wherein the transmitter/receiver receives streamed music.

[Claim 9] The device of claim 5, wherein the transmitter/receiver receives a file transfer comprising the audio signal.

[Claim 10] The device of claim 5 wherein the transmitter/receiver operates in peer-to-peer mode.

[Claim 11] The device of claim 5, wherein the individual identifier comprises one or more of an email address of a user of the device, a nickname of the user, or a machine identifier of the transmitting device.

[Claim 12] The device of claim 5 further comprising a connector for connection with a distributor over a wide area network.

[Claim 13] The device of claim 12, wherein a file comprising the music selection is downloaded from the distributor.

[Claim 14] The device of claim 12, wherein the individual identifier is transferred to the distributor in association with the music identifier.

[Claim 15] The device of claim 12, further comprising a second individual identifier for identifying the user of the audio device, wherein the second individual identifier is transferred to the distributor in association with the individual identifier.

[Claim 16] The device of claim 12, wherein the connector connects to the wide area network with a wired connection.

[Claim 17] The device of claim 12, wherein the connector connects to the wide area network with a wireless connection.

[Claim 18] The device of claim 5, wherein the device comprises a telephone.

[Claim 19] The device of claim 5, further comprising a delay for delaying the playing of the music selection so that playing the music selection on the audio device is synchronous with playing of the music selection on the broadcasting audio device.

[Claim 20] The device of claim 5, wherein the audio device is mobile.

[Claim 21] A computerized database for identifying a broadcasting device that transferred a music selection to a receiving device, the database configured to:

receive from the receiving device a music identifier, the music identifier associated with a music selection transmitted from the broadcasting device to the receiving device, a first user identifier that identifies the user of the receiving device, and a second user identifier that identifies the user of the broadcasting device;

transact with the receiving device for the purposes of performing at least one action selected from the group of:

associating and storing the music identifier, the received first user identifier and the received second user identifier in the database;

providing a requested music selection to the first user;

registering the first user as a broadcaster in the event that the first user transmits the purchased music selection to another user; and

awarding points for any additional purchasers that identify the first user as the broadcaster of the music selection.

[Claim 22] The database of claim 21, wherein the database is hosted on an Internet computer.

[Claim 23] The database of claim 22, wherein the database further comprises user ratings of audio players that are members of a cluster of audio players.

[Claim 24] A mobile wireless audio player, comprising:

a unit integrated with the mobile wireless audio player that allows the user to decide whether to share music with a second player, the unit further comprising:

a receiver for receiving a unique identifier from the second player;

an Internet connector for connecting with a database hosted on the Internet, wherein the database includes information associated with the unique identifier;

a means for accessing from the database ratings associated with the unique identifier;

a means for determining whether to share music on the basis of the access ratings; and

a transmitter for transmitting the music to the second player.

[Claim 25] A first mobile music player for introducing a user of a second mobile music player to a music selection, comprising:

a personal identifier of a user of the player;

storage for storing the music selection and a music identifier of the music selection;

an audio output for outputting the stored music selection to the user of the player;

a transmitter for transmitting the stored music selection, the stored music identifier and the personal identifier;

wherein the music selection is introduced to the user of the second music player by playing on the audio output of the second music player, and the personal identifier is stored on the second music player in association with the music selection and the music identifier.

[Claim 26] The player of claim 25, wherein the transmission is delayed from outputting, wherein the audio output plays the music selection synchronously with the audio output of the second music player.

[Claim 27] The player of claim 25, wherein the transmitter further transmits a user identifier for identifying the user of the music player.

[Claim 28] The player of claim 27, wherein the user identifier is obtained from the distributor through the receiver.

[Claim 29] The player of claim 27, further comprising a receiver for receiving the music selection from a music distributor on the Internet.

[Claim 30] A music distribution system for identifying a broadcasting device that has transferred a music selection to a receiving device, comprising:

a receiver that receives from the receiving device a music identifier, the music identifier associated with a music selection transmitted from the broadcasting device to the receiving device, a first user identifier that identifies the user of the receiving device, and a second user identifier that identifies the user of the broadcasting device;

a database that stores the received music identifier, the first user identifier, and the second user identifier in association with one another;

a means for transaction with the receiving device, wherein the means for transaction provides the requested music selection associated with the music identifier to the receiving device associated with the first user identifier and provides redeemable points to the associated second user identifier.

[Claim 31] A system for distributing an audio selection over the Internet, comprising:

a distributor providing the audio selection to an audio device;

the audio device broadcasting to a cluster of devices enabled to receive the provided audio selection;

one or more cluster members listening to the broadcasted audio selection;

a cluster member identifier associated with the cluster member device;

an audio selection identifier associated with the audio selection;

a broadcaster identifier associated with the broadcasting audio device that is broadcast from the broadcaster to the cluster member along with the audio selection that identifies the broadcaster; and

a request made by the cluster member to the distributor requesting the audio selection, wherein the request comprises the broadcaster identifier and at least one of the audio selection identifier and the cluster member identifier;

wherein the distributor provides the audio selection to the cluster member and stores the broadcaster identifier along with at least one of the audio selection identifier and the cluster member identifier.

[Claim 32] The system of claim 31, wherein the broadcaster identifier comprises a machine identifier of the device over which the broadcaster is broadcasting.

[Claim 33] The system of claim 31, wherein the broadcaster identifier identifies the user of the broadcasting mobile audio device.

[Claim 34] A rating system for determining the rating of a user requesting membership in a music sharing cluster, comprising:

a database for storing ratings in association with a predetermined user identifier, wherein the ratings are entered by one or more members of a music sharing cluster;

a computer on which the database is hosted on the Internet; and

an audio player connected to the music sharing cluster that connects to the computer over the Internet and queries the database for ratings;

wherein the ratings are used to determine whether to allow the user to join in the music sharing cluster.

[Claim 35] The system of claim 34, wherein the ratings are displayed on the audio player.

[Claim 36] The system of claim 34, wherein the audio player is mobile.

Abstract

A system and apparatus for identifying a first mobile device that introduces a music selection to a second mobile device. In one aspect, the first device transmits a music signal to a second device. The music signal comprises a music selection, a music identifier and an identifier of the first device. The second device is enabled to store the identifier of the first device and the music identifier in association with each other. In another aspect, a computerized database is disclosed for the purposes of transacting with the second device, wherein transacting may include storing the music identifier, the first user identifier and the second user identifier in the database, providing a requested music selection to the first user, registering the first user as a broadcaster, awarding points for purchasers of the music selection broadcast by the first user, or storing and providing ratings of devices of a cluster.

Fig. 1

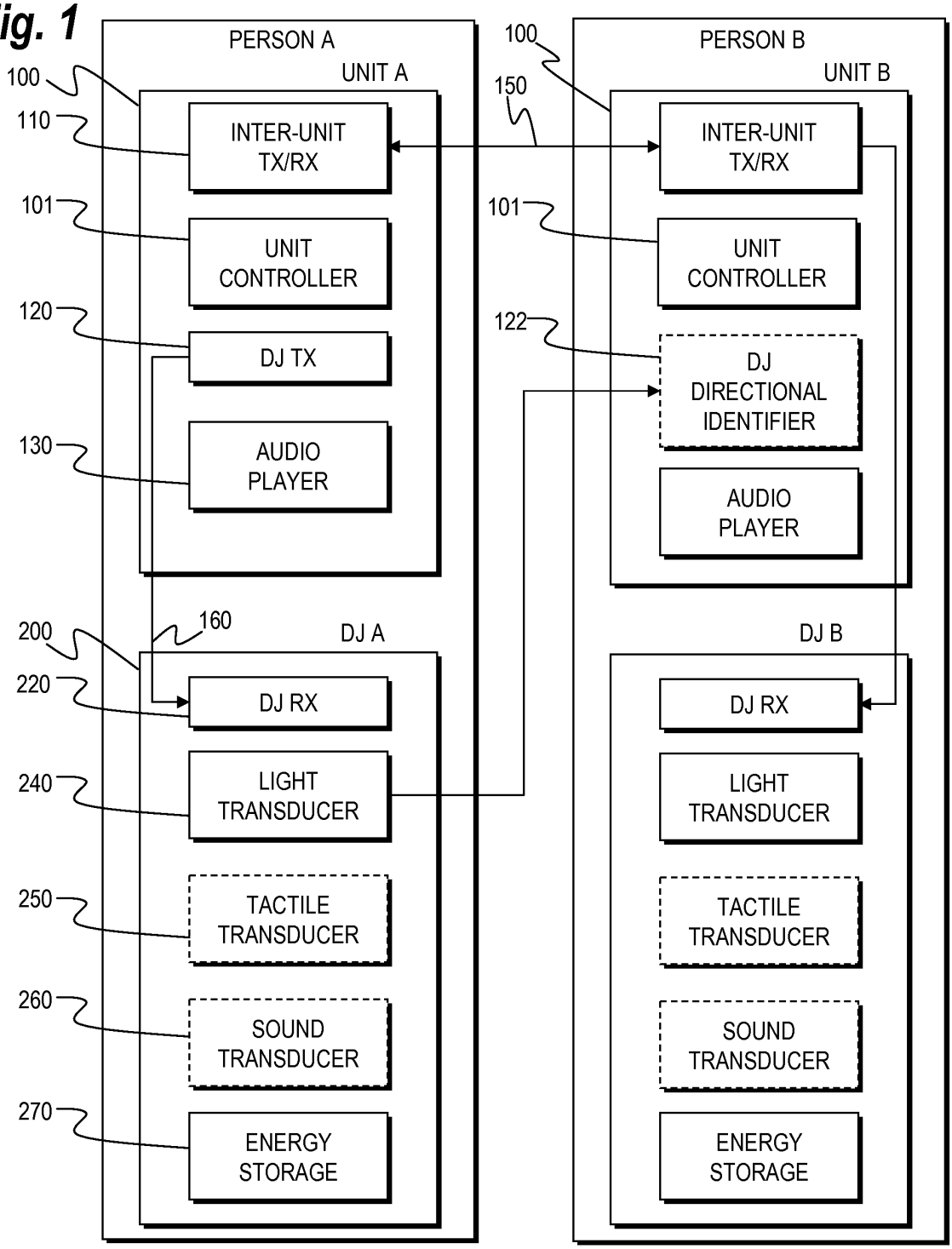

PERSON A
UNIT A
100
110
INTER-UNIT TX/RX
101
UNIT CONTROLLER
120
DJ TX
130
AUDIO PLAYER
160
200
DJ A
220
DJ RX
240
LIGHT TRANSDUCER
250
TACTILE TRANSDUCER
260
SOUND TRANSDUCER
270
ENERGY STORAGE
100
PERSON B
UNIT B
150
INTER-UNIT TX/RX
101
UNIT CONTROLLER
122
DJ DIRECTIONAL IDENTIFIER
AUDIO PLAYER
DJ B
DJ RX
LIGHT TRANSDUCER
TACTILE TRANSDUCER
SOUND TRANSDUCER
ENERGY STORAGE

Fig. 2A

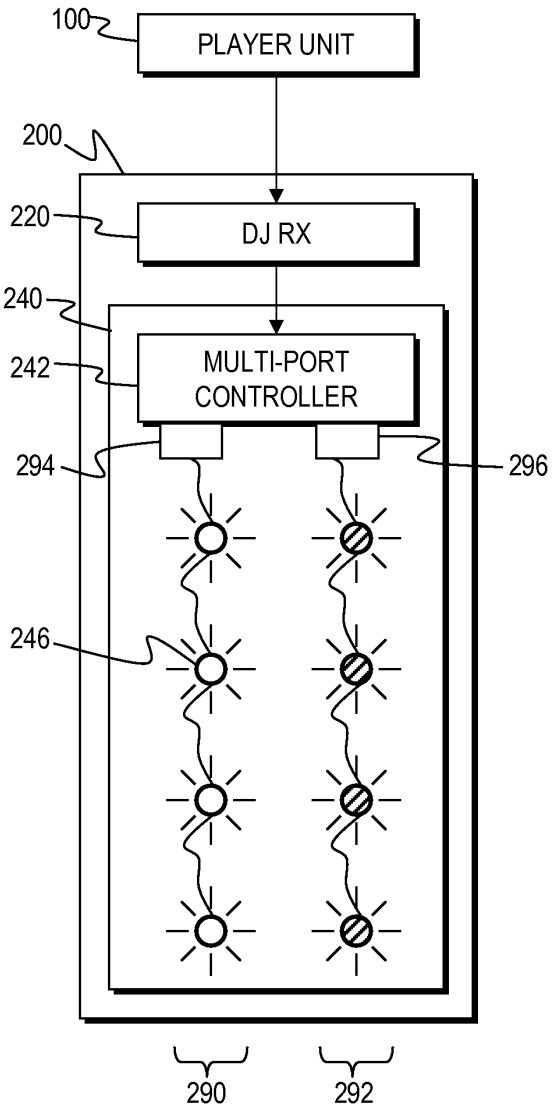

100
PLAYER UNIT
200
220
DJ RX
240
242
MULTI-PORT CONTROLLER
294
296
246
290
292

Fig. 2B

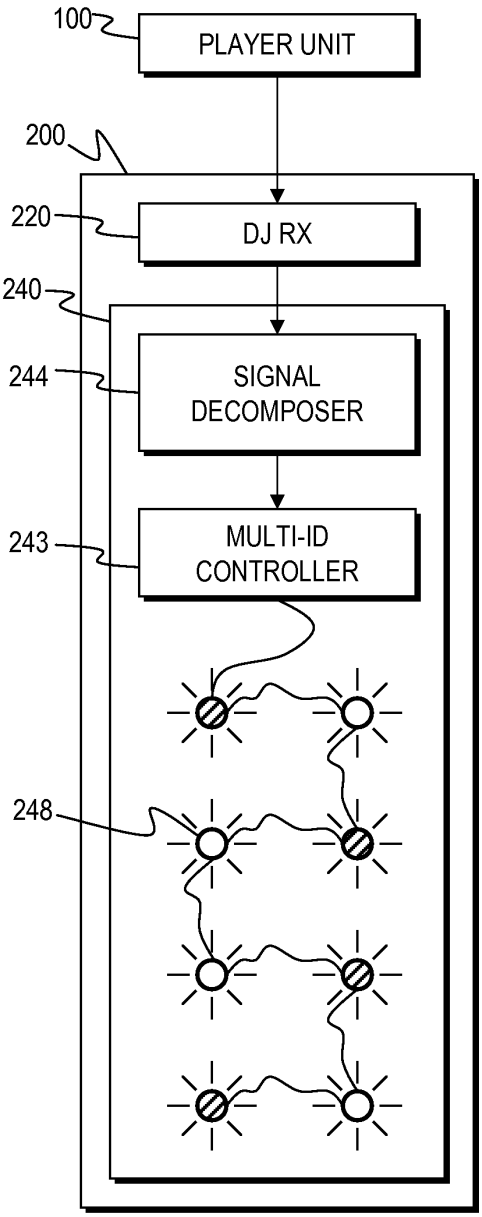

100
PLAYER UNIT
200
220
DJ RX
240
244
SIGNAL DECOMPOSER
243
MULTI-ID CONTROLLER
248

Fig. 3A

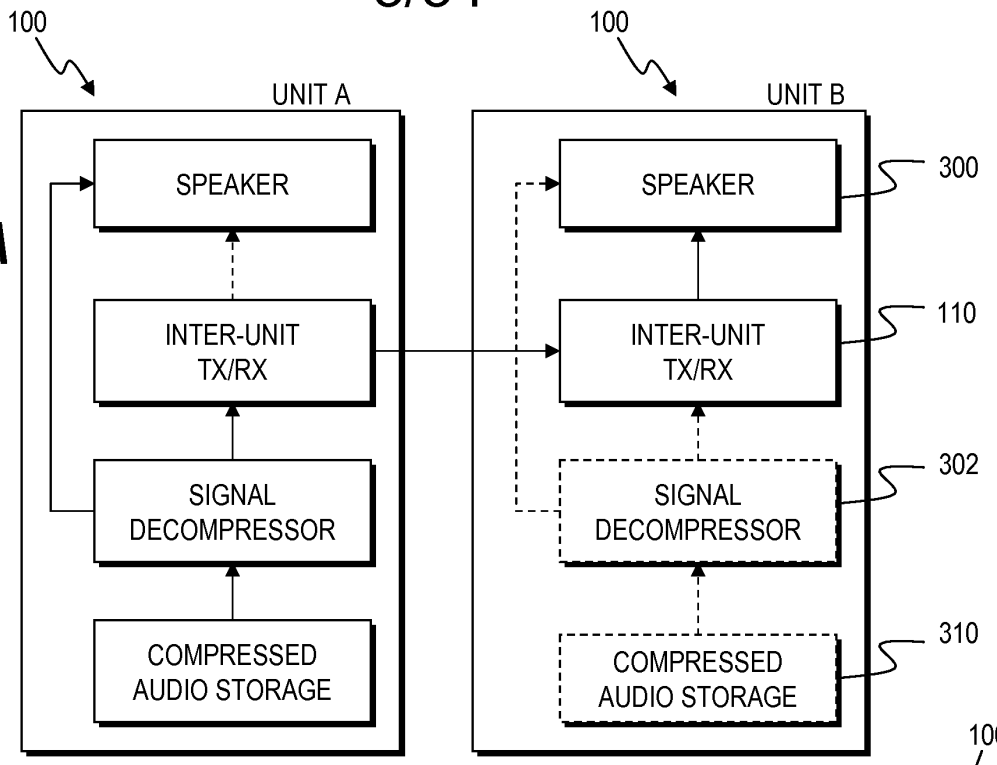

100
UNIT A
SPEAKER
INTER-UNIT TX/RX
SIGNAL DECOMPRESSOR
COMPRESSED AUDIO STORAGE
100
UNIT B
SPEAKER
300
INTER-UNIT TX/RX
110
SIGNAL DECOMPRESSOR
302
COMPRESSED AUDIO STORAGE
310

Fig. 3B

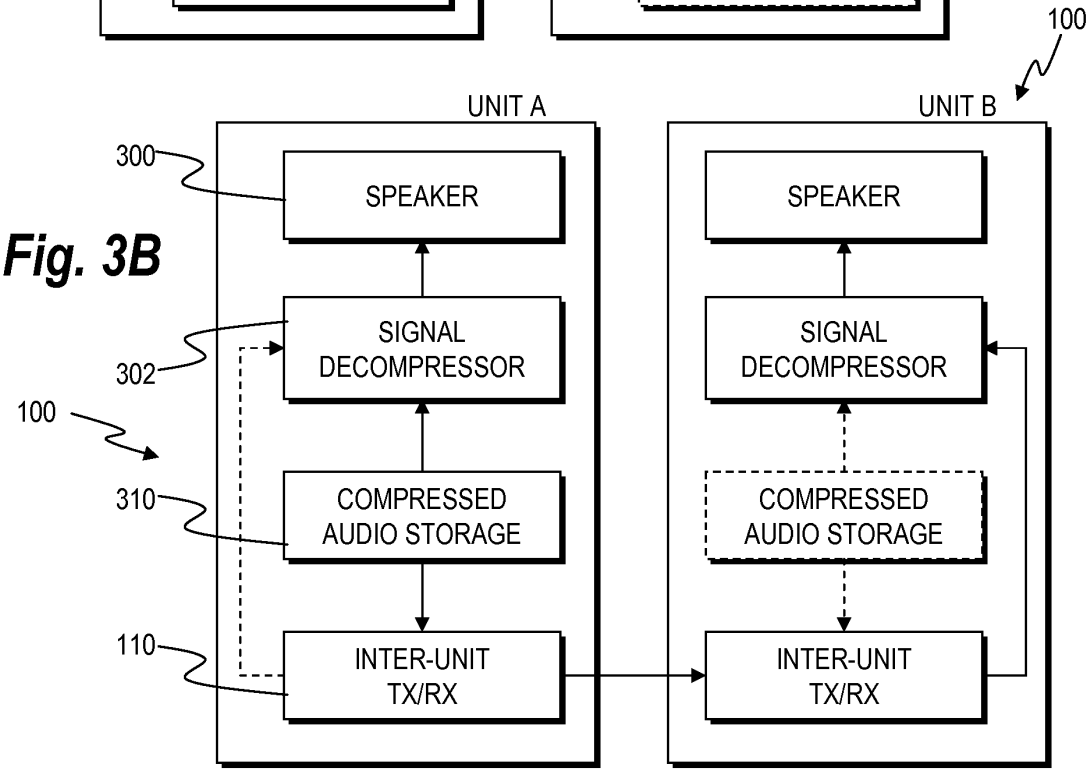

100
UNIT A
UNIT B
300
SPEAKER
SPEAKER
302
SIGNAL DECOMPRESSOR
SIGNAL DECOMPRESSOR
100
310
COMPRESSED AUDIO STORAGE
COMPRESSED AUDIO STORAGE
110
INTER-UNIT TX/RX
INTER-UNIT TX/RX

Fig. 3C

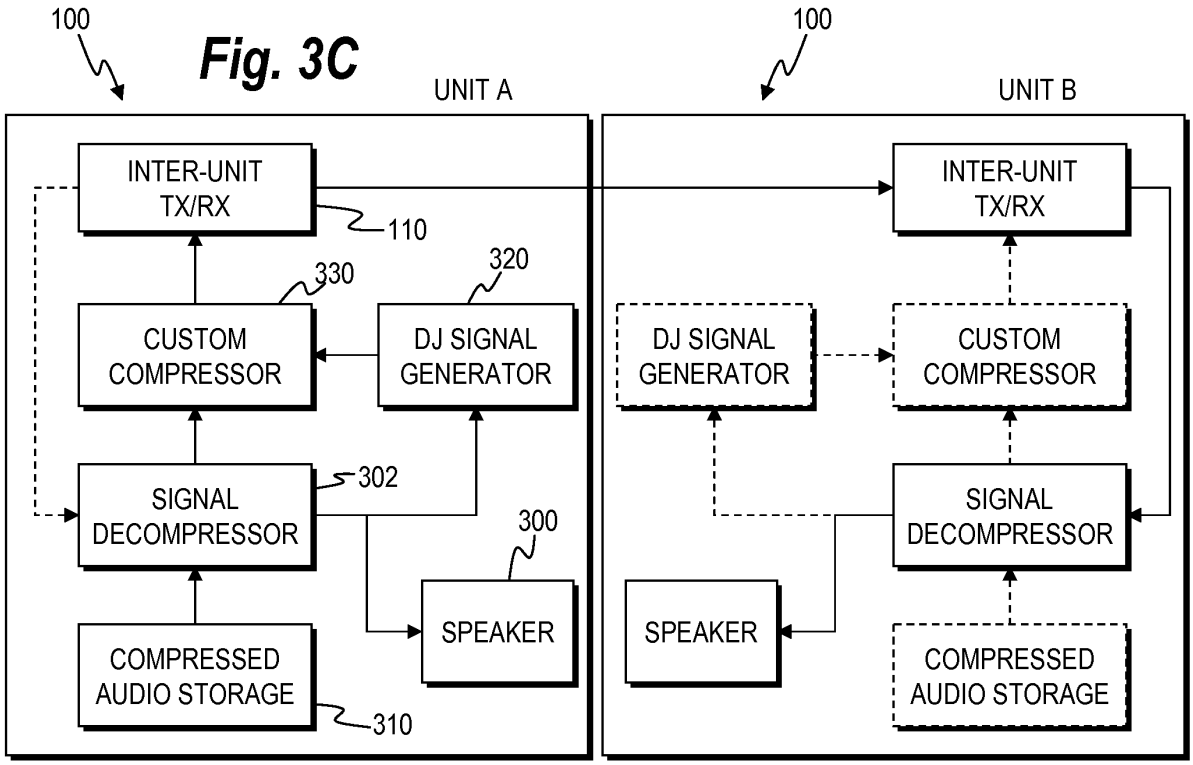

100
100
UNIT A
UNIT B
INTER-UNIT TX/RX
110
INTER-UNIT TX/RX
330
320
CUSTOM COMPRESSOR
DJ SIGNAL GENERATOR
DJ SIGNAL GENERATOR
CUSTOM COMPRESSOR
302
SIGNAL DECOMPRESSOR
300
SIGNAL DECOMPRESSOR
SPEAKER
SPEAKER
COMPRESSED AUDIO STORAGE
310
COMPRESSED AUDIO STORAGE

Fig. 4

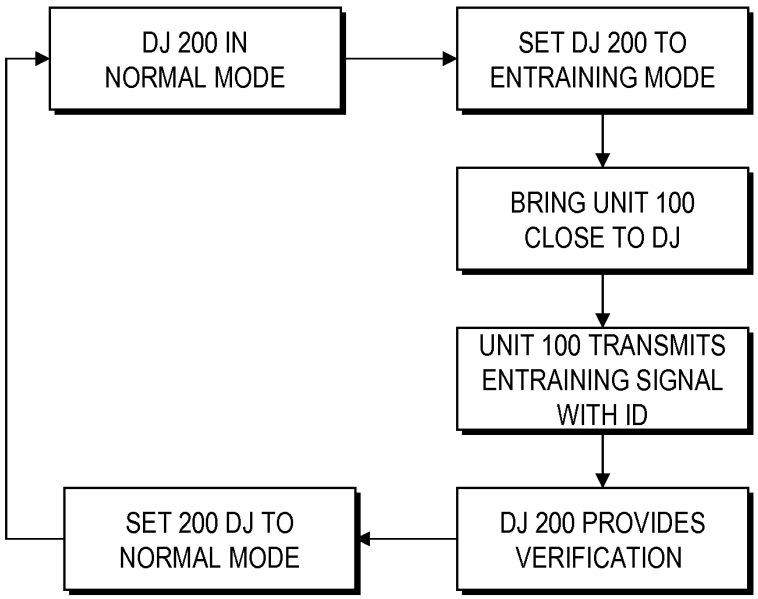

DJ 200 IN NORMAL MODE
SET DJ 200 TO ENTRAINING MODE
BRING UNIT 100 CLOSE TO DJ
UNIT 100 TRANSMITS ENTRAINING SIGNAL WITH ID
DJ 200 PROVIDES VERIFICATION
SET 200 DJ TO NORMAL MODE

Fig. 5A

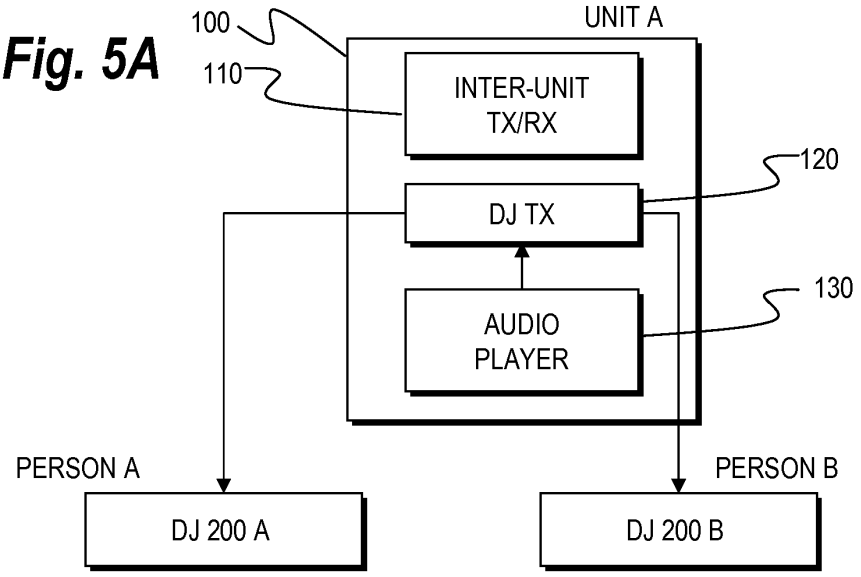

100
UNIT A
110
INTER-UNIT TX/RX
120
DJ TX
130
AUDIO PLAYER
PERSON A
PERSON B
DJ 200 A
DJ 200 B

Fig. 5B

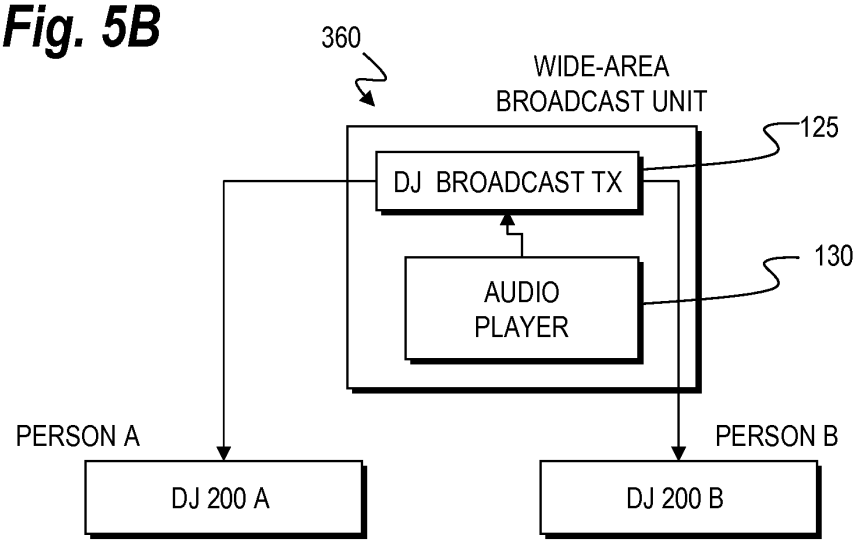

360
WIDE-AREA BROADCAST UNIT
125
DJ BROADCAST TX
130
AUDIO PLAYER
PERSON A
PERSON B
DJ 200 A
DJ 200 B

Fig. 6

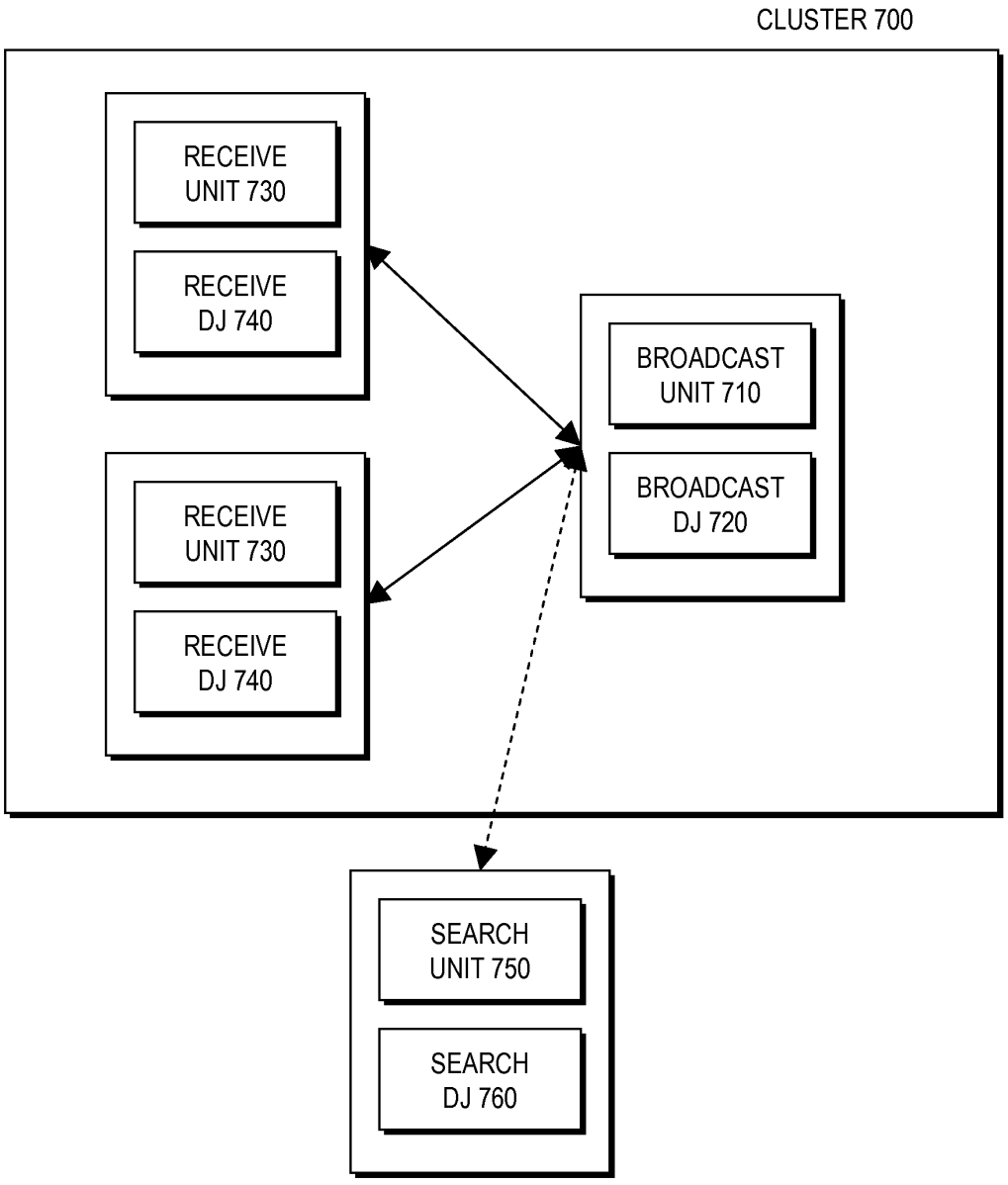

CLUSTER 700
RECEIVE UNIT 730
RECEIVE DJ 740
RECEIVE UNIT 730
RECEIVE DJ 740
BROADCAST UNIT 710
BROADCAST DJ 720
SEARCH UNIT 750
SEARCH DJ 760

Fig. 7

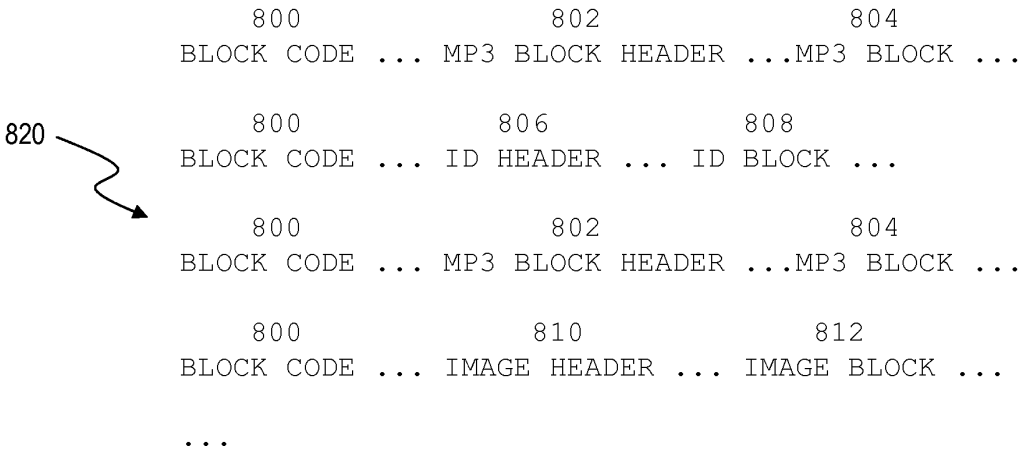

800
802
804
BLOCK CODE ... MP3 BLOCK HEADER ...MP3 BLOCK ...
800
806
808
820
BLOCK CODE ... ID HEADER ... ID BLOCK ...
800
802
804
BLOCK CODE ... MP3 BLOCK HEADER ...MP3 BLOCK ...
800
810
812
BLOCK CODE ... IMAGE HEADER ... IMAGE BLOCK ...
...

Fig. 36

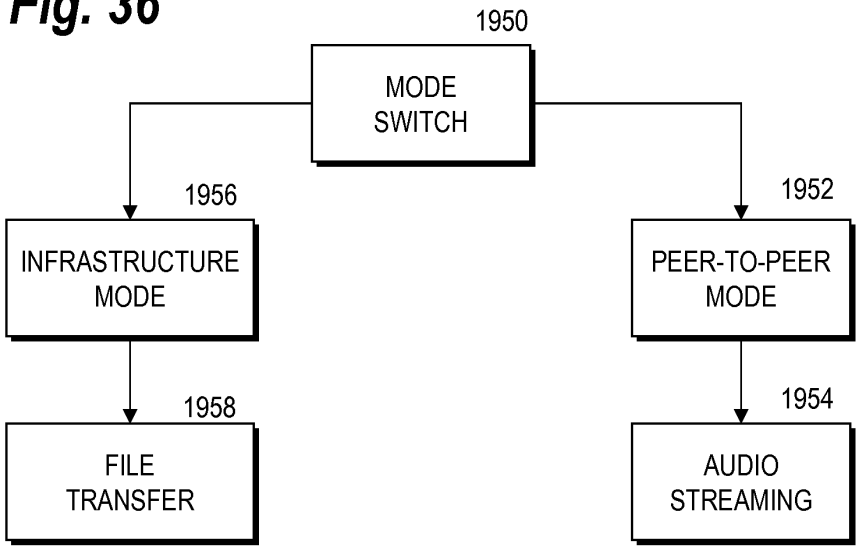

1950
MODE SWITCH
1956
INFRASTRUCTURE MODE
1952
PEER-TO-PEER MODE
1958
FILE TRANSFER
1954
AUDIO STREAMING

Fig. 8A

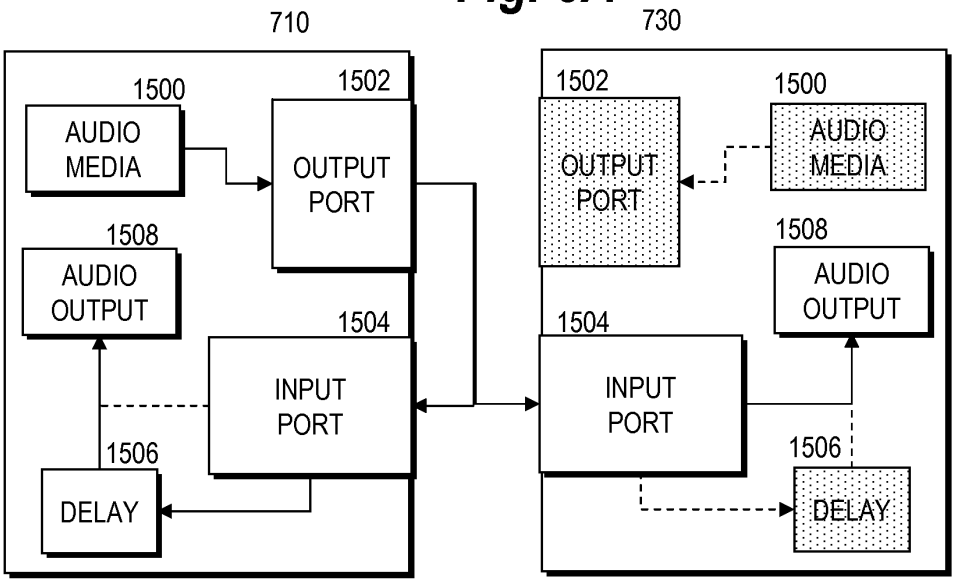

710
730
1500
AUDIO MEDIA
1502
OUTPUT PORT
1508
AUDIO OUTPUT
1504
INPUT PORT
1506
DELAY
1502
OUTPUT PORT
1500
AUDIO MEDIA
1508
AUDIO OUTPUT
1504
INPUT PORT
1506
DELAY

Fig. 8B

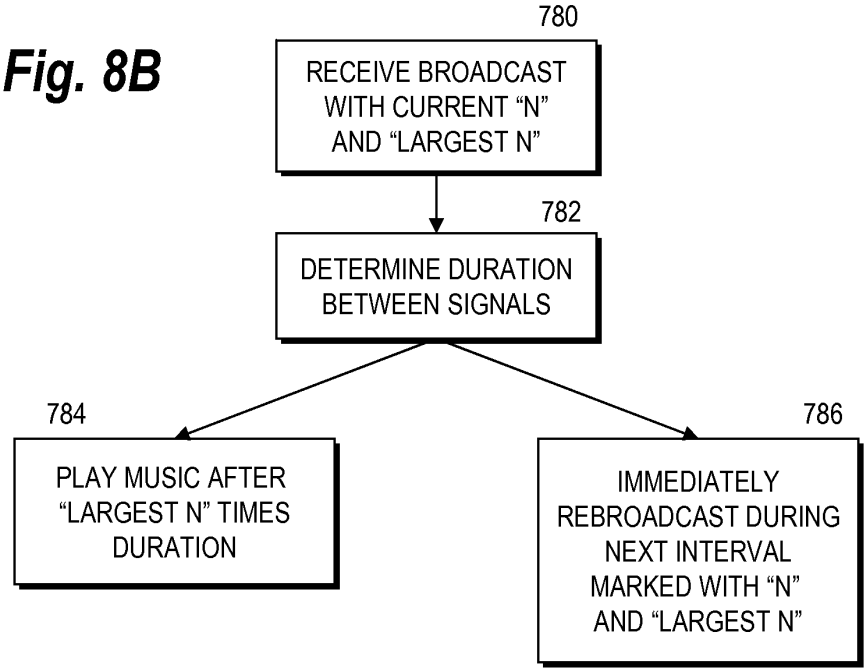

780
RECEIVE BROADCAST WITH CURRENT "N" AND "LARGEST N"
782
DETERMINE DURATION BETWEEN SIGNALS
784
PLAY MUSIC AFTER "LARGEST N" TIMES DURATION
786
IMMEDIATELY REBROADCAST DURING NEXT INTERVAL MARKED WITH "N" AND "LARGEST N"

Fig. 9A

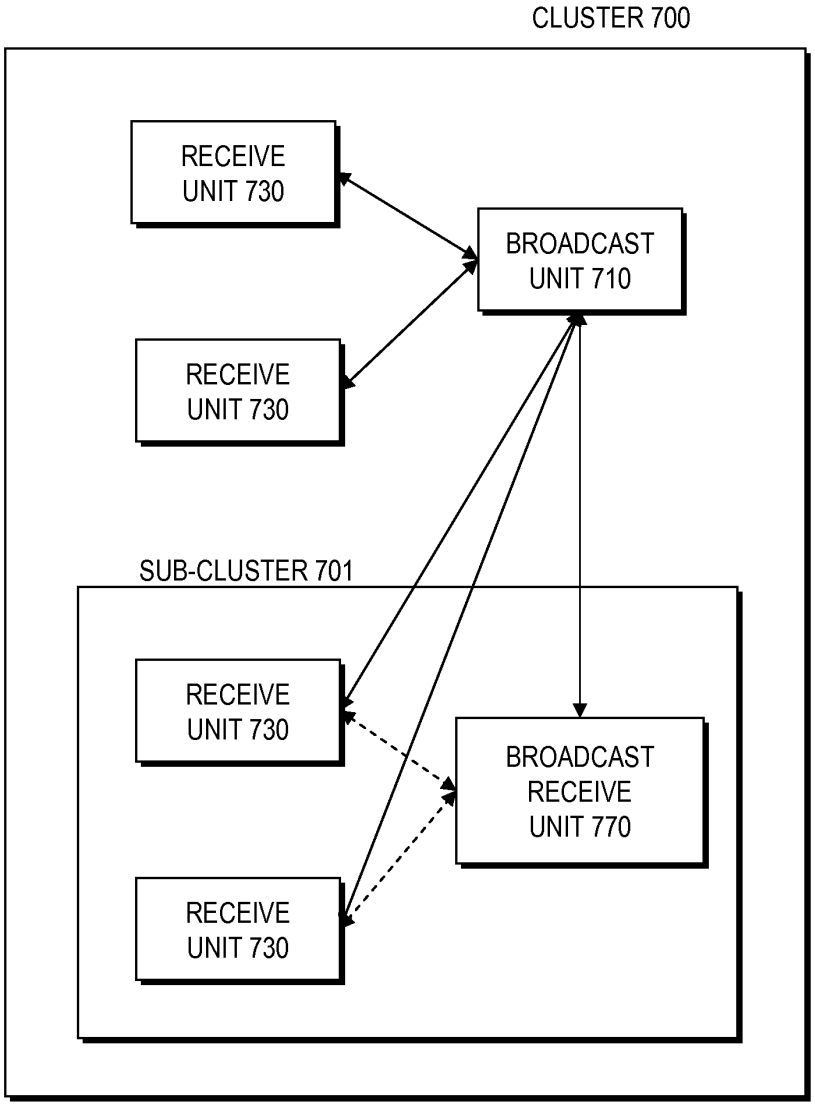

CLUSTER 700
RECEIVE UNIT 730
BROADCAST UNIT 710
RECEIVE UNIT 730
SUB-CLUSTER 701
RECEIVE UNIT 730
BROADCAST RECEIVE UNIT 770
RECEIVE UNIT 730

Fig. 9B

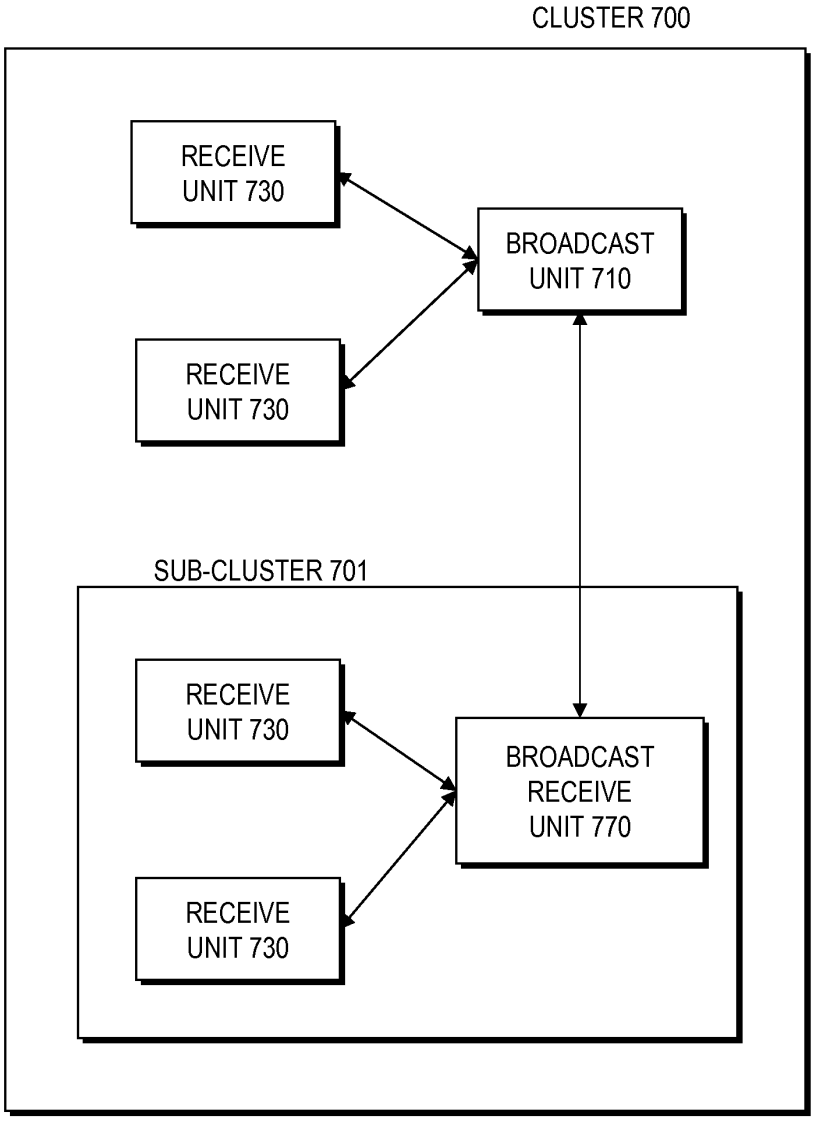

CLUSTER 700
RECEIVE UNIT 730
BROADCAST UNIT 710
RECEIVE UNIT 730
SUB-CLUSTER 701
RECEIVE UNIT 730
BROADCAST RECEIVE UNIT 770
RECEIVE UNIT 730

Fig. 10

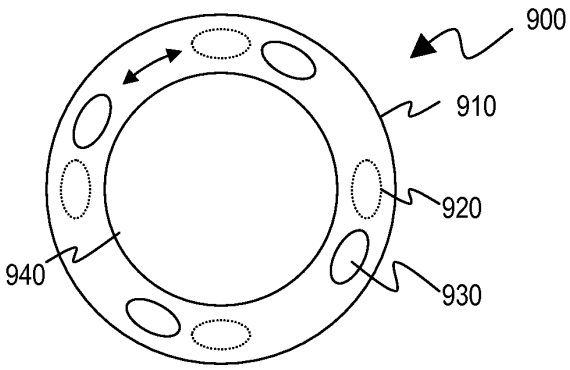


Fig. 11A

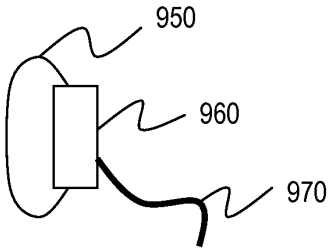


Fig. 11B

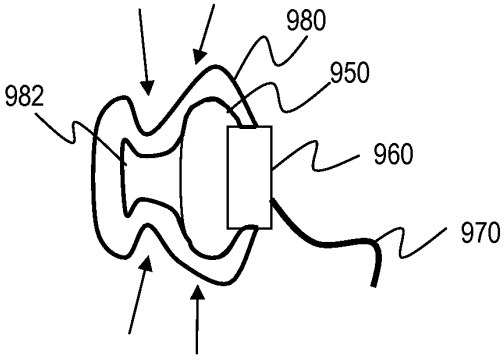


Fig. 12A

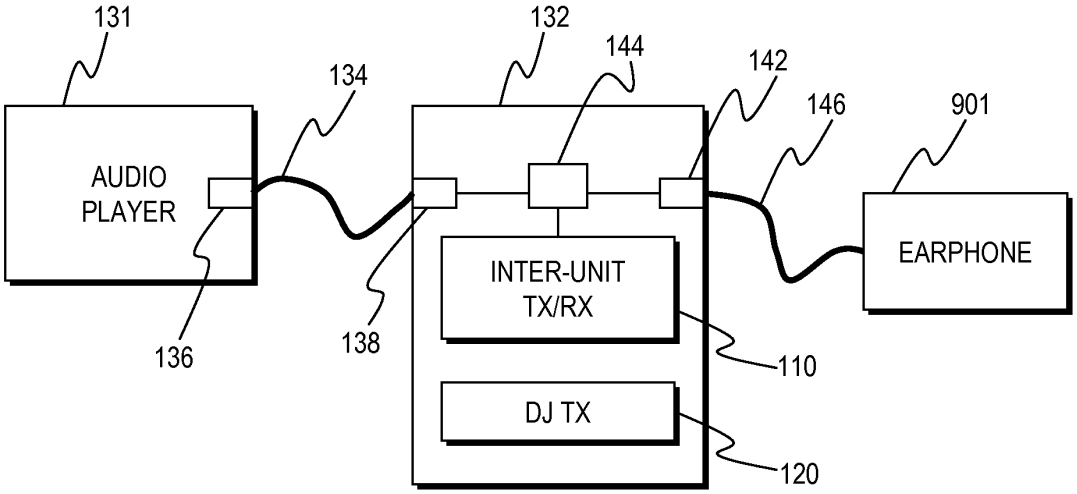


Fig. 12B

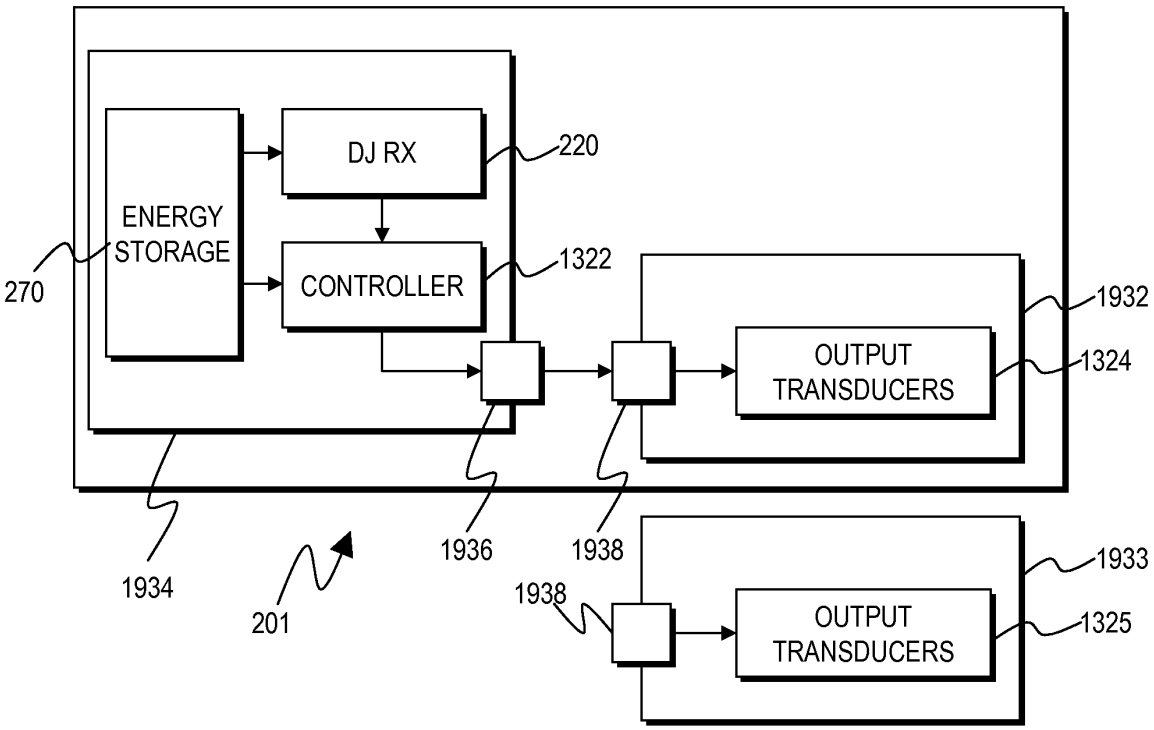
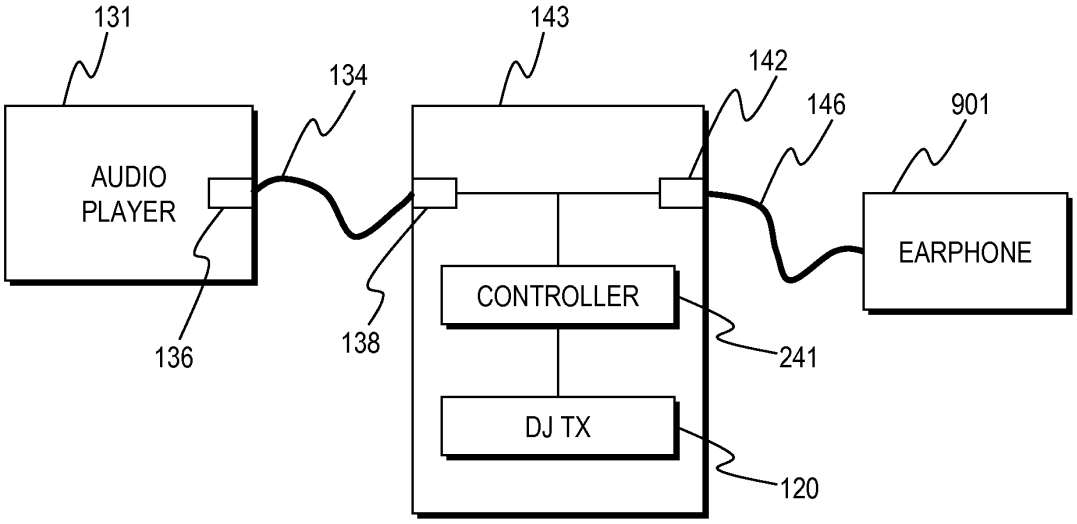


Fig. 12C


131
134
143
142
146
901
AUDIO PLAYER
EARPHONE
CONTROLLER
DJ TX
136
138
241
120

BROADCAST UNIT 710 SEARCH UNIT 750

Fig. 13A

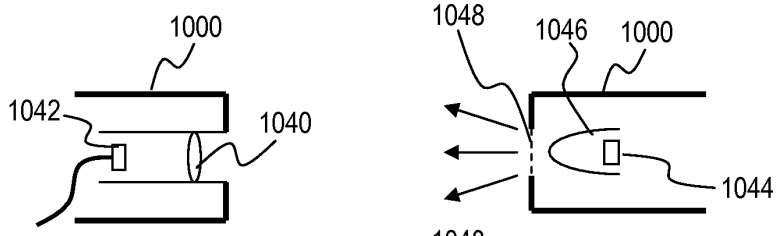


Fig. 13B

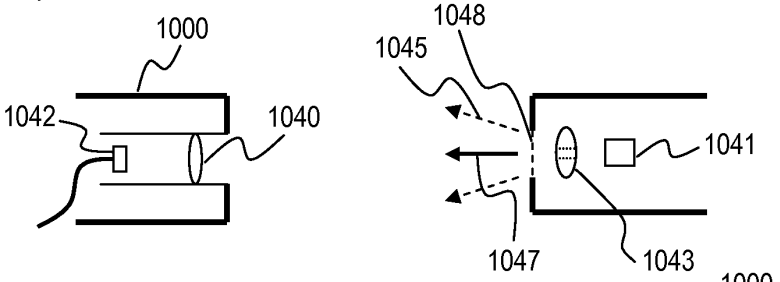


Fig. 13C

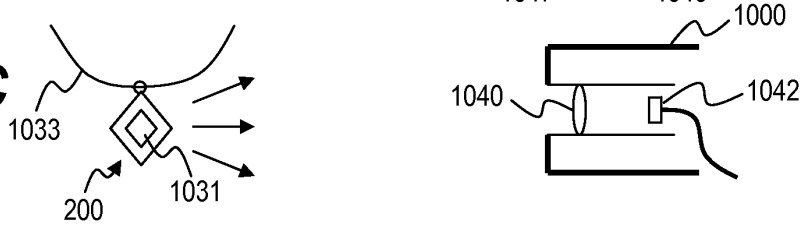


Fig. 13D

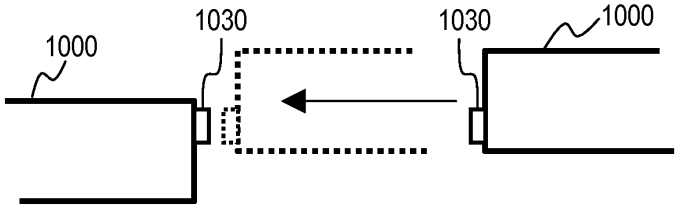


Fig. 13E

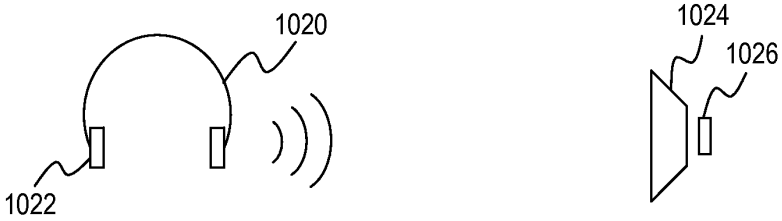


Fig. 13F



Fig. 14A

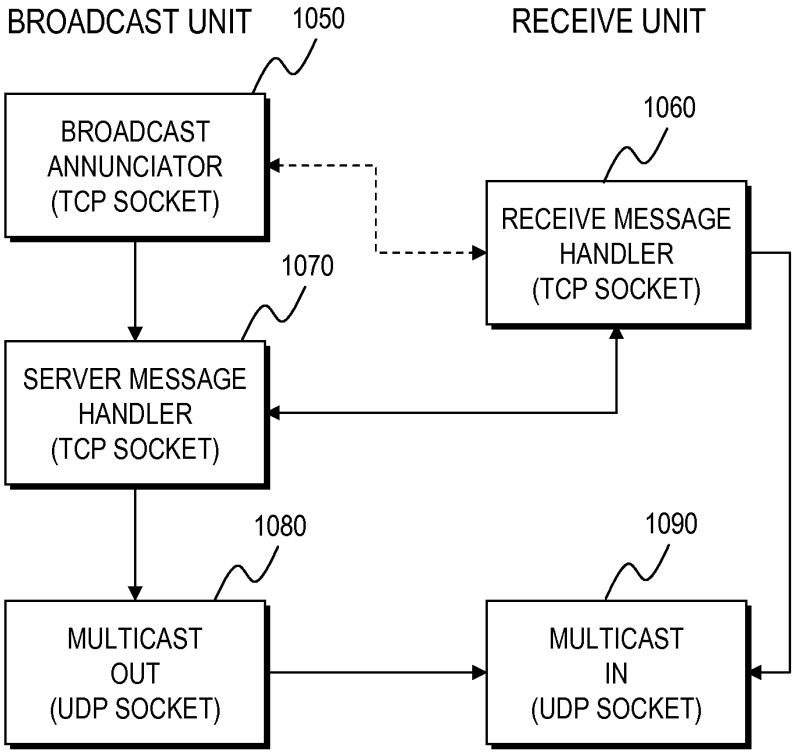

BROADCAST UNIT
1050
RECEIVE UNIT
BROADCAST ANNUNCIATOR (TCP SOCKET)
1060
RECEIVE MESSAGE HANDLER (TCP SOCKET)
1070
SERVER MESSAGE HANDLER (TCP SOCKET)
1080
1090
MULTICAST OUT (UDP SOCKET)
MULTICAST IN (UDP SOCKET)

Fig. 14B

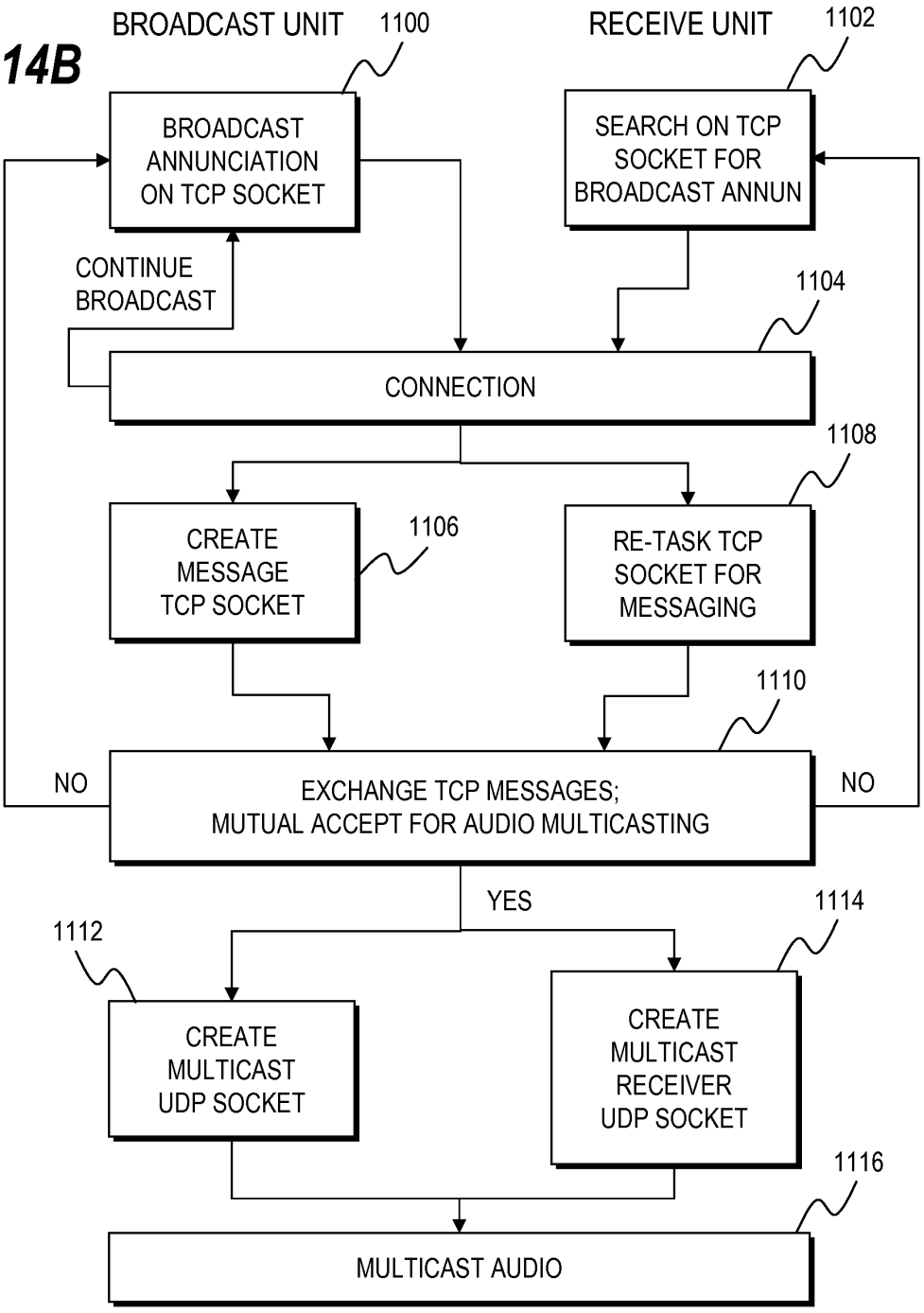

BROADCAST UNIT
1100
RECEIVE UNIT
1102
BROADCAST ANNUNCIATION ON TCP SOCKET
SEARCH ON TCP SOCKET FOR BROADCAST ANNUN
CONTINUE BROADCAST
1104
CONNECTION
1108
CREATE MESSAGE TCP SOCKET
1106
RE-TASK TCP SOCKET FOR MESSAGING
1110
NO
EXCHANGE TCP MESSAGES; MUTUAL ACCEPT FOR AUDIO MULTICASTING
NO
YES
1112
1114
CREATE MULTICAST UDP SOCKET
CREATE MULTICAST RECEIVER UDP SOCKET
1116
MULTICAST AUDIO

Fig. 15

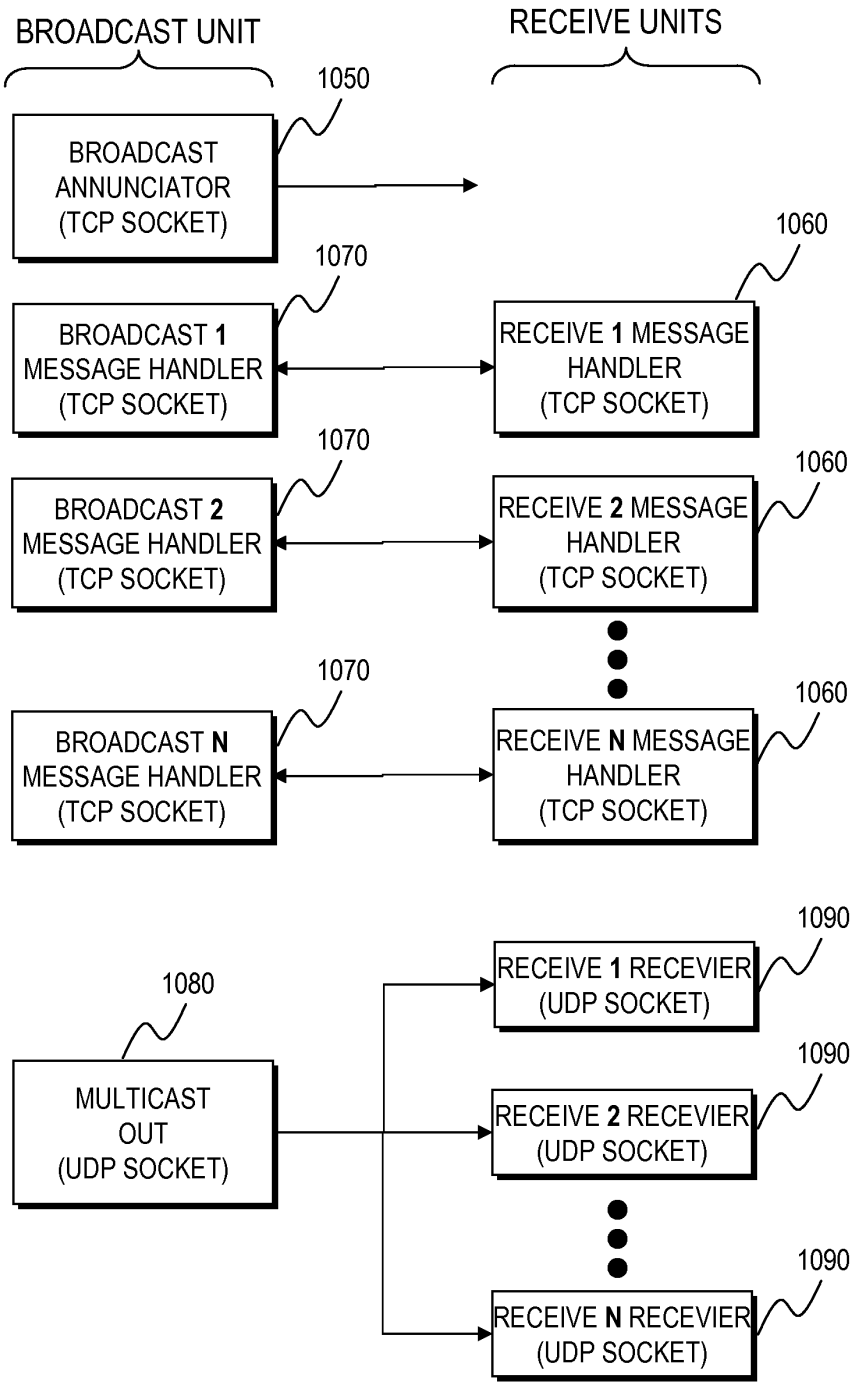

BROADCAST UNIT
RECEIVE UNITS
1050
BROADCAST ANNUNCIATOR (TCP SOCKET)
1060
1070
BROADCAST 1 MESSAGE HANDLER (TCP SOCKET)
RECEIVE 1 MESSAGE HANDLER (TCP SOCKET)
1070
1060
BROADCAST 2 MESSAGE HANDLER (TCP SOCKET)
RECEIVE 2 MESSAGE HANDLER (TCP SOCKET)
1070
1060
BROADCAST N MESSAGE HANDLER (TCP SOCKET)
RECEIVE N MESSAGE HANDLER (TCP SOCKET)
1090
1080
RECEIVE 1 RECEVIER (UDP SOCKET)
MULTICAST OUT (UDP SOCKET)
1090
RECEIVE 2 RECEVIER (UDP SOCKET)
1090
RECEIVE N RECEVIER (UDP SOCKET)

Fig. 16

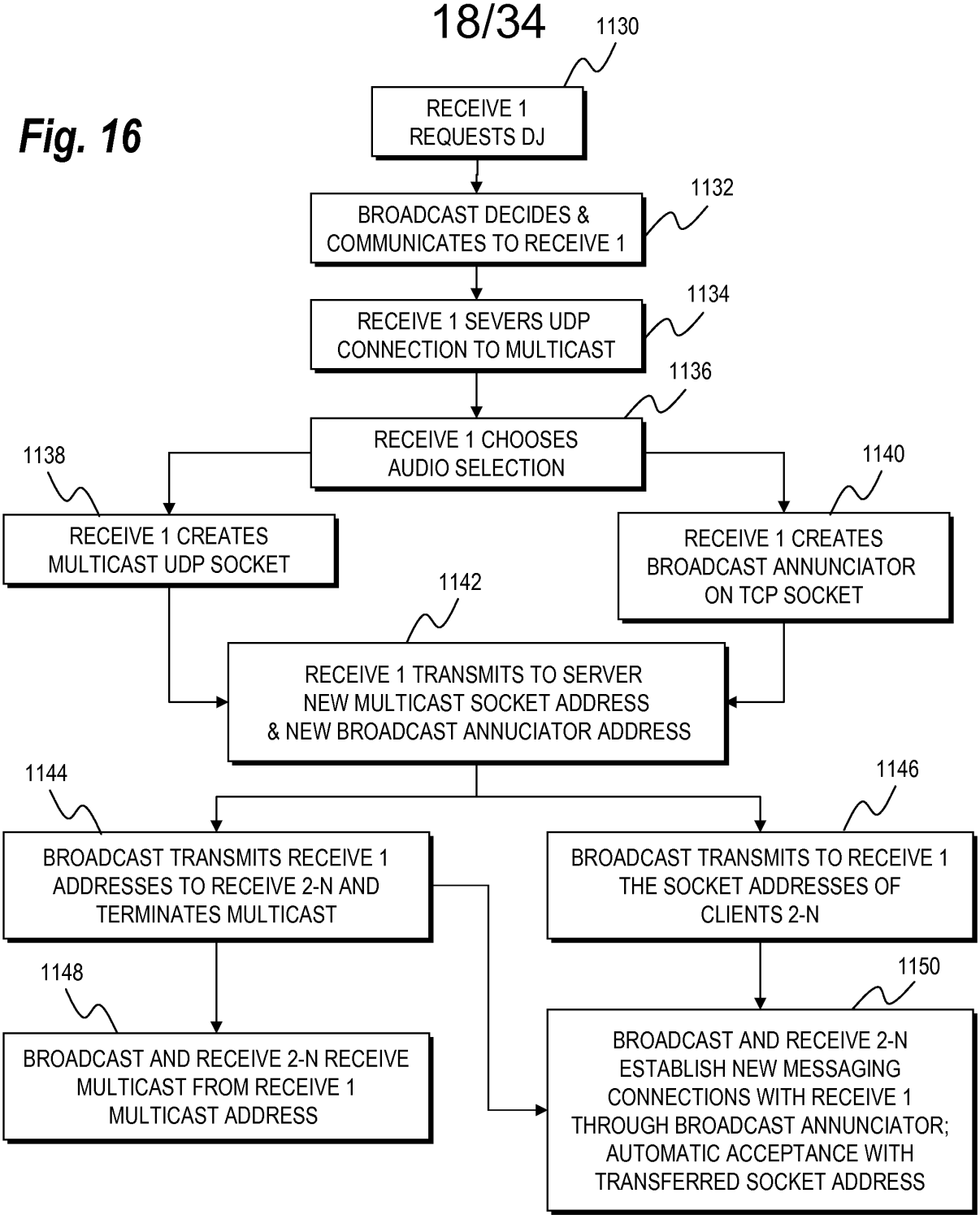

1130
RECEIVE 1 REQUESTS DJ
1132
BROADCAST DECIDES & COMMUNICATES TO RECEIVE 1
1134
RECEIVE 1 SEVERS UDP CONNECTION TO MULTICAST
1136
RECEIVE 1 CHOOSES AUDIO SELECTION
1138
RECEIVE 1 CREATES MULTICAST UDP SOCKET
1140
RECEIVE 1 CREATES BROADCAST ANNUNCIATOR ON TCP SOCKET
1142
RECEIVE 1 TRANSMITS TO SERVER NEW MULTICAST SOCKET ADDRESS & NEW BROADCAST ANNUCIATOR ADDRESS
1144
BROADCAST TRANSMITS RECEIVE 1 ADDRESSES TO RECEIVE 2-N AND TERMINATES MULTICAST
1146
BROADCAST TRANSMITS TO RECEIVE 1 THE SOCKET ADDRESSES OF CLIENTS 2-N
1148
BROADCAST AND RECEIVE 2-N RECEIVE MULTICAST FROM RECEIVE 1 MULTICAST ADDRESS
1150
BROADCAST AND RECEIVE 2-N ESTABLISH NEW MESSAGING CONNECTIONS WITH RECEIVE 1 THROUGH BROADCAST ANNUNCIATOR; AUTOMATIC ACCEPTANCE WITH TRANSFERRED SOCKET ADDRESS

Fig. 17

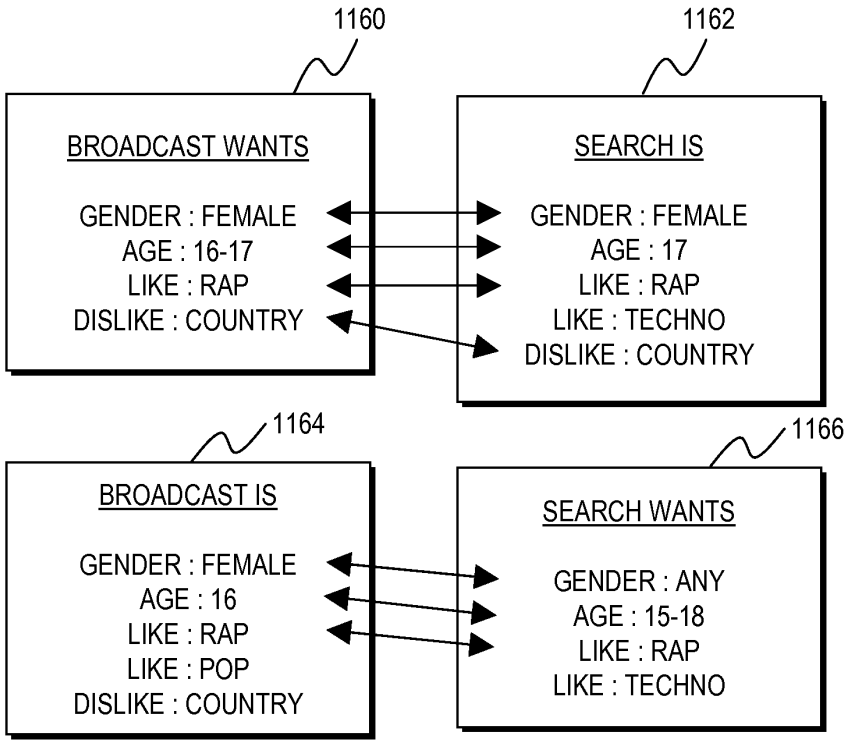


Fig. 18A



Fig. 18B

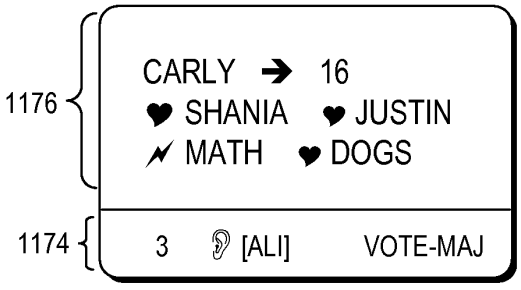


Fig. 19

RULE	METHOD
BROADCASTER	ACCEPTED WHEN BROADCASTER INDICATES “YES”. REJECTED WHEN BROADCASTER INDICATES “NO”
MAJORITY	ACCEPTED WHEN (N/2)+1 INDICATE “YES”. REJECTED WHEN (N/2) INDICATE “NO”.
UNANIMOUS	ACCEPTED WHEN N MEMBERS INDICATE “YES”. REJECTED WHEN 1 MEMBER INDICATES “NO”.
TIMED MAJORITY	MACHINE INDICATES ONSET OF VOTING, AND COUNTS DOWN TO VOTING TERMINATION. ACCEPTED IF (Q/2)+1 INDICATE “YES” BEFORE TERMINATION; OTHERWISE “NO”.
SYNCHRONIZED MAJORITY	MACHINE COUNTS DOWN TO VOTE. ACCEPTED IF (Q/2)+1 INDICATE “YES” WITHIN PREDETERMINED TIME OF COUNTDOWN. OTHERWISE “NO”.

Fig. 20

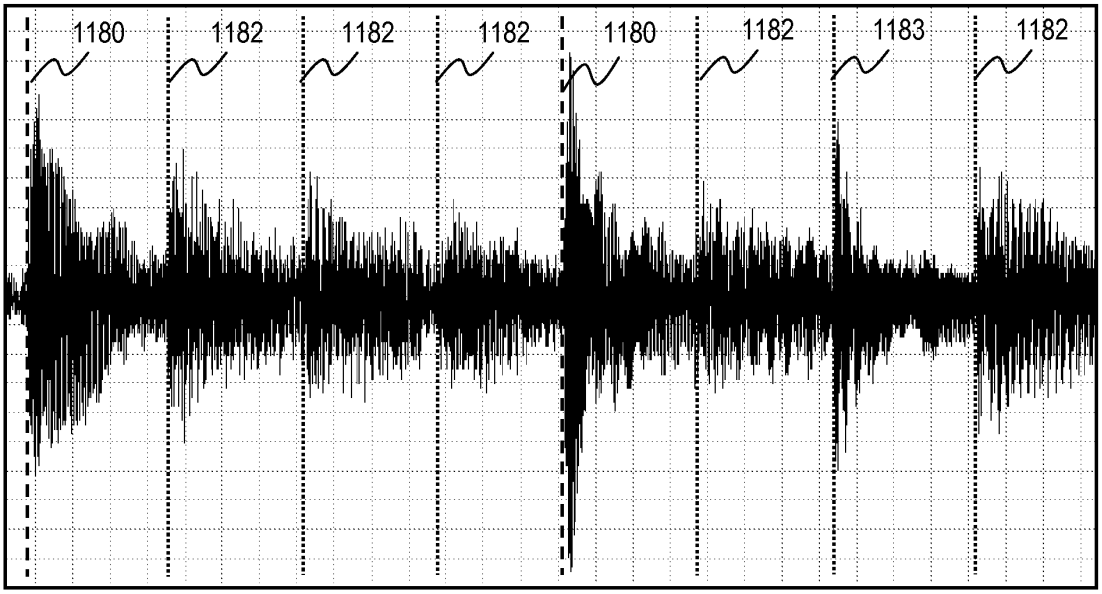


Fig. 21A

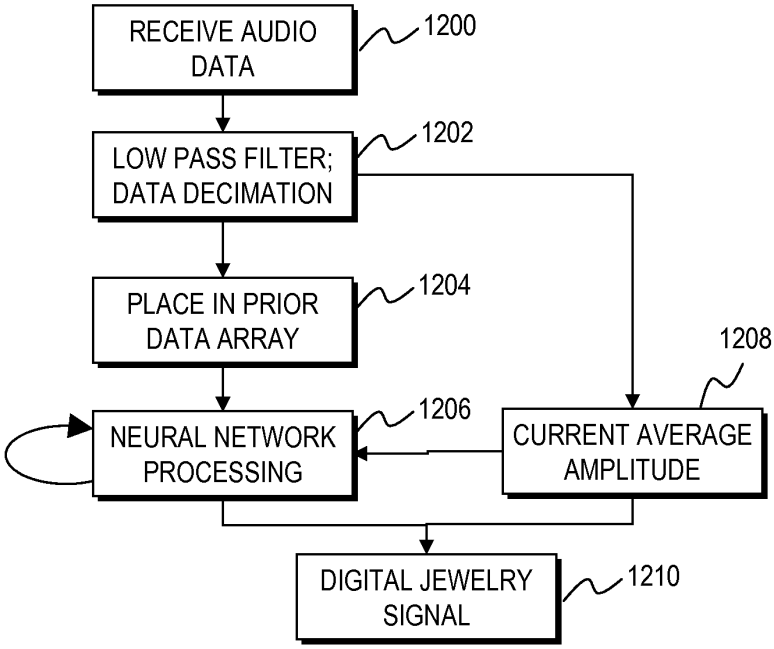
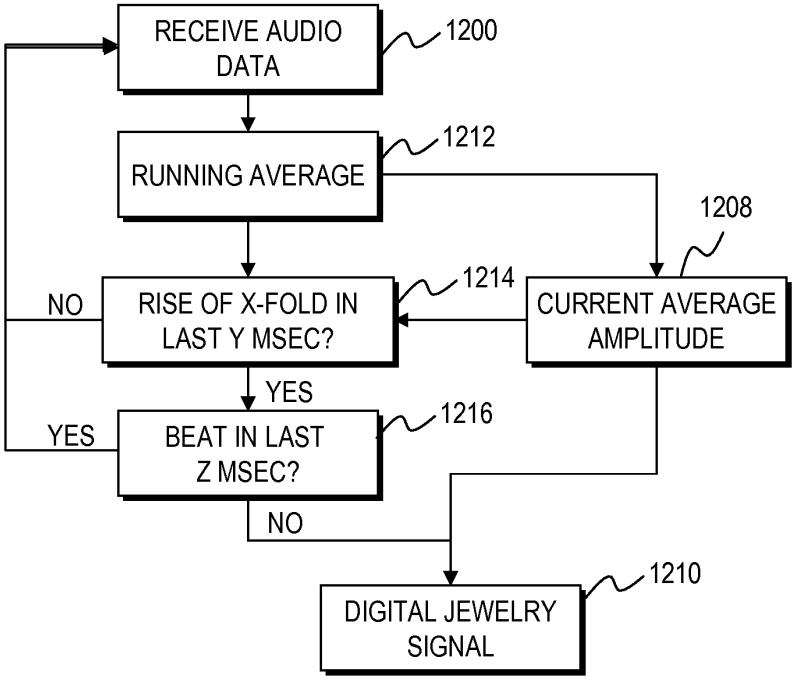


Fig. 21B



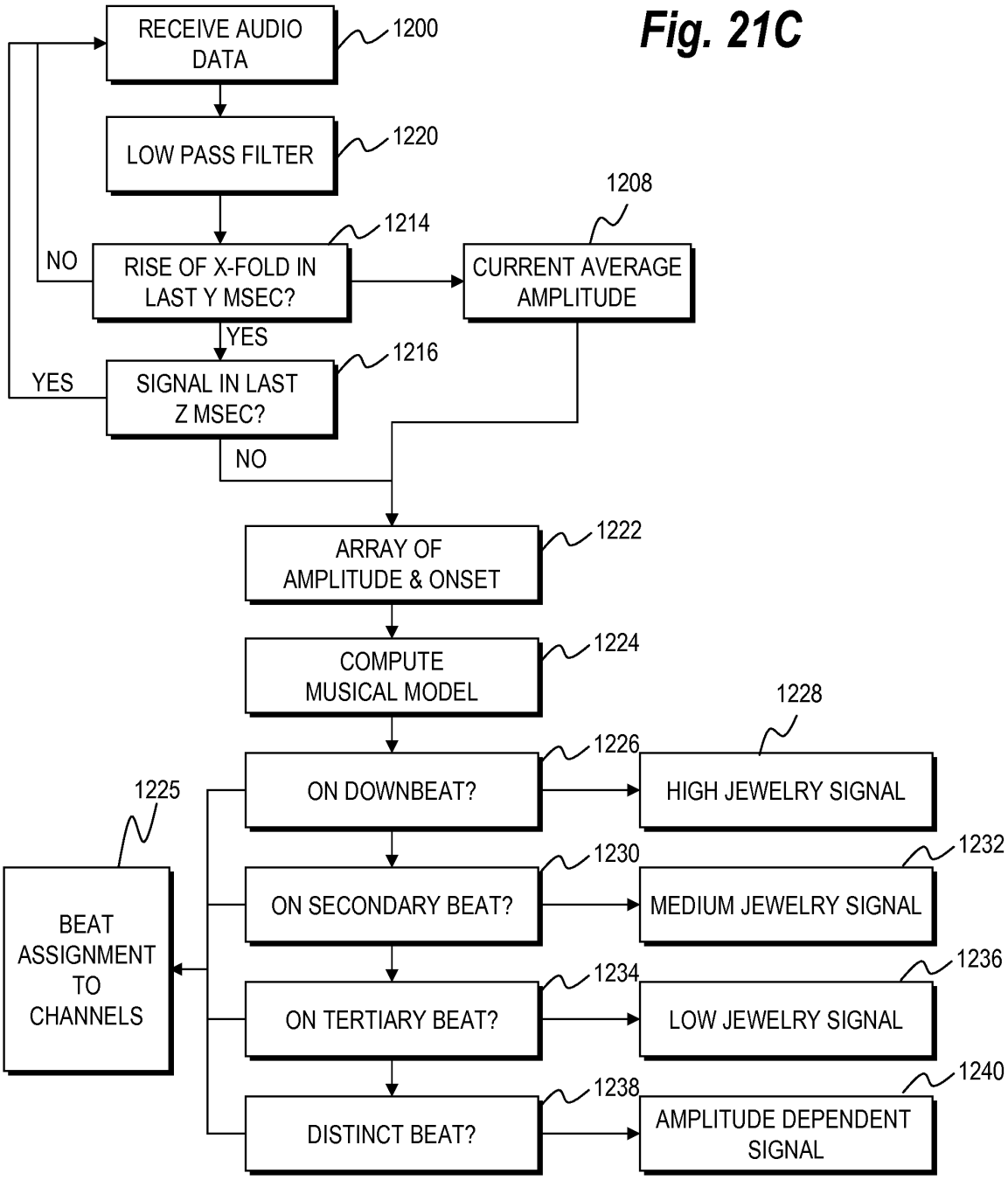
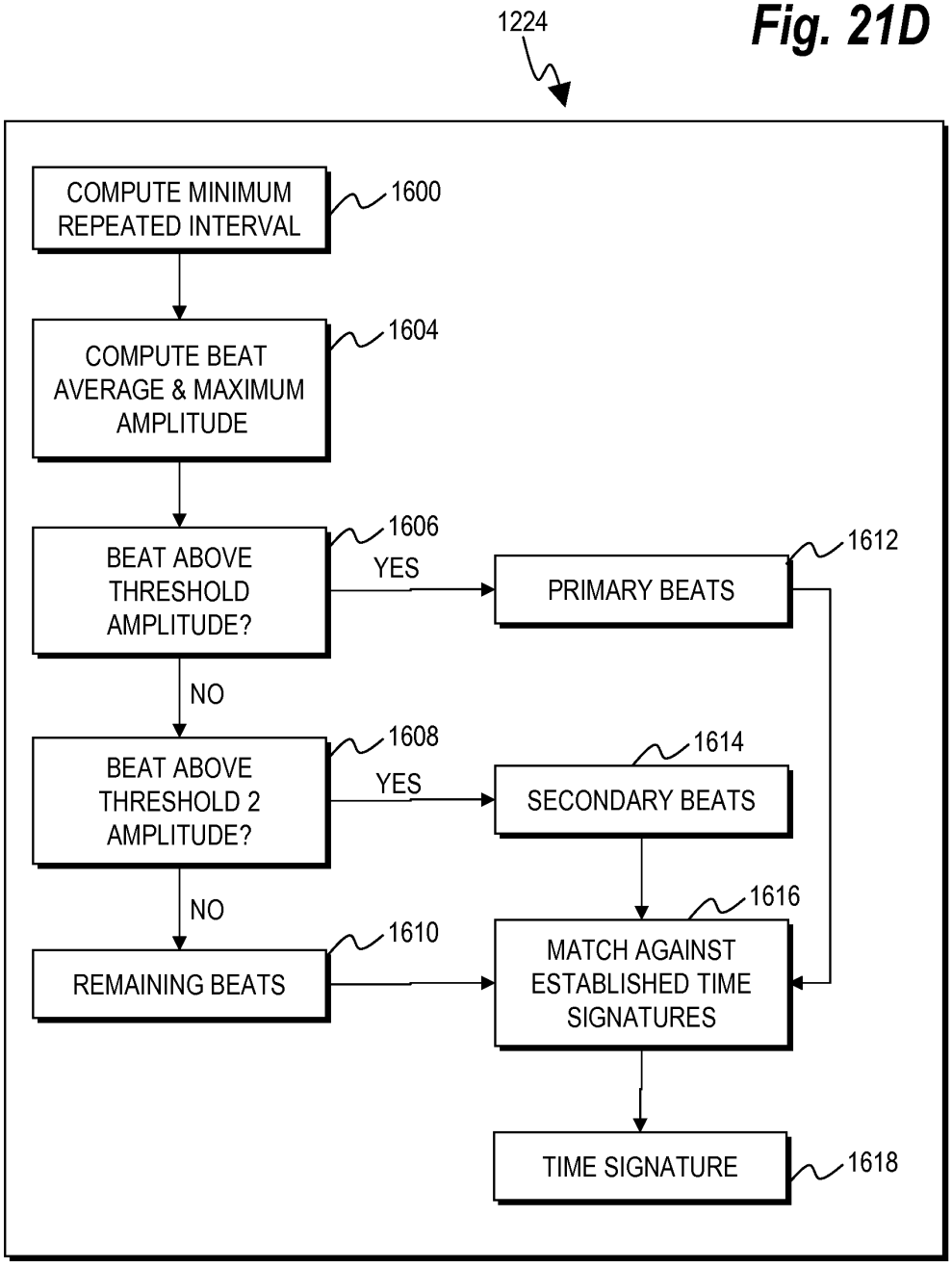

RECEIVE AUDIO DATA
1200
LOW PASS FILTER
1220
1208
1214
NO
RISE OF X-FOLD IN LAST Y MSEC?
CURRENT AVERAGE AMPLITUDE
YES
1216
YES
SIGNAL IN LAST Z MSEC?
NO
ARRAY OF AMPLITUDE & ONSET
1222
COMPUTE MUSICAL MODEL
1224
1228
1226
ON DOWNBEAT?
HIGH JEWELRY SIGNAL
1225
1230
1232
ON SECONDARY BEAT?
MEDIUM JEWELRY SIGNAL
BEAT ASSIGNMENT TO CHANNELS
1234
1236
ON TERTIARY BEAT?
LOW JEWELRY SIGNAL
1238
1240
DISTINCT BEAT?
AMPLITUDE DEPENDENT SIGNAL

Fig. 21C

Fig. 21D


1224
COMPUTE MINIMUM REPEATED INTERVAL
1600
COMPUTE BEAT AVERAGE & MAXIMUM AMPLITUDE
1604
BEAT ABOVE THRESHOLD AMPLITUDE?
1606
YES
PRIMARY BEATS
1612
NO
BEAT ABOVE THRESHOLD 2 AMPLITUDE?
1608
YES
SECONDARY BEATS
1614
NO
REMAINING BEATS
1610
MATCH AGAINST ESTABLISHED TIME SIGNATURES
1616
TIME SIGNATURE
1618

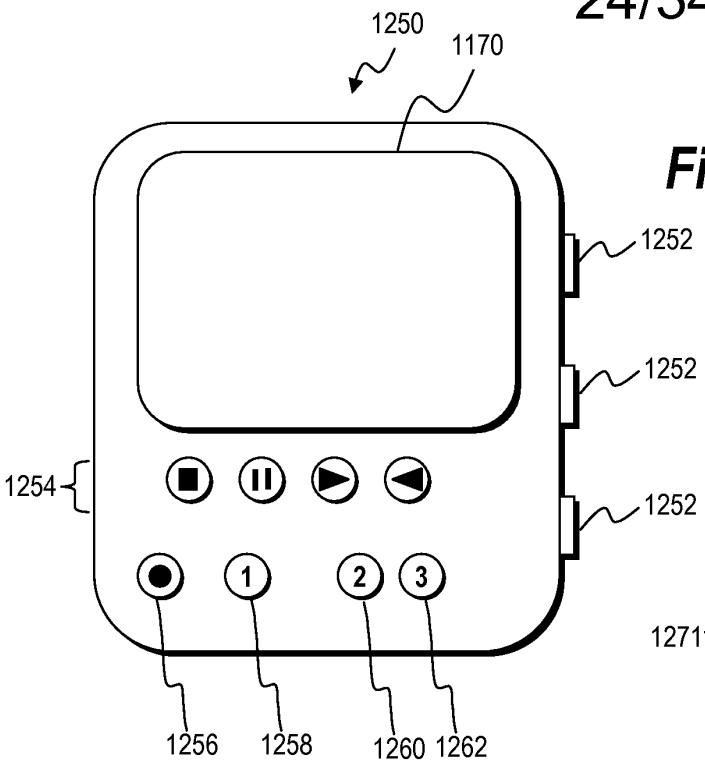


Fig. 22A

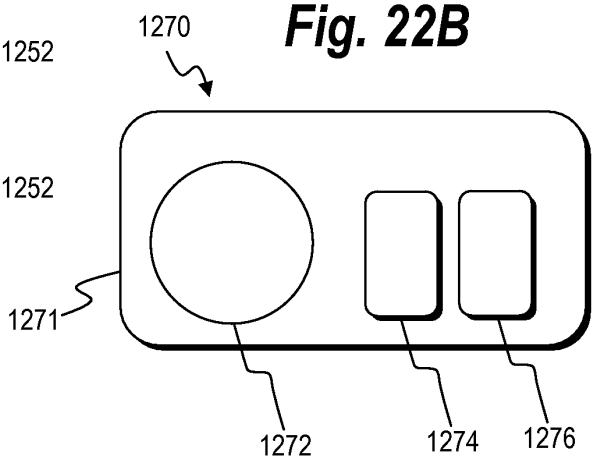


Fig. 22B

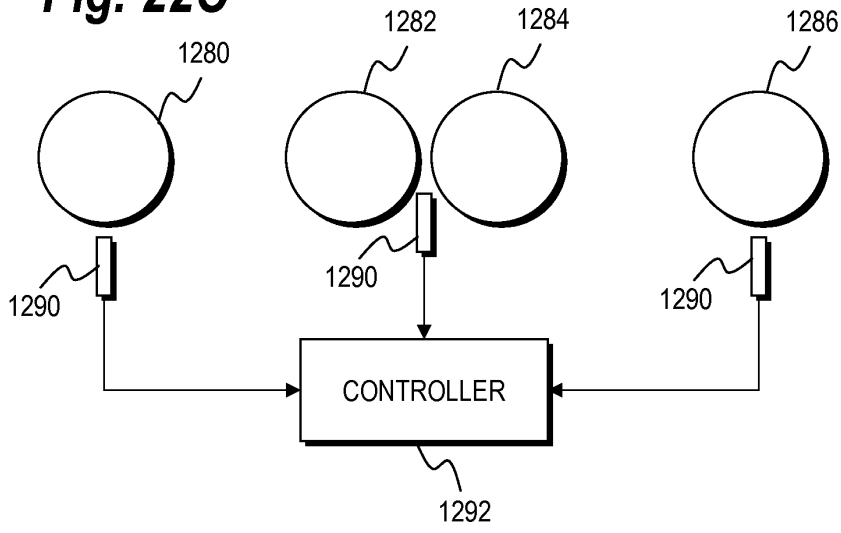


Fig. 22C

Fig. 23

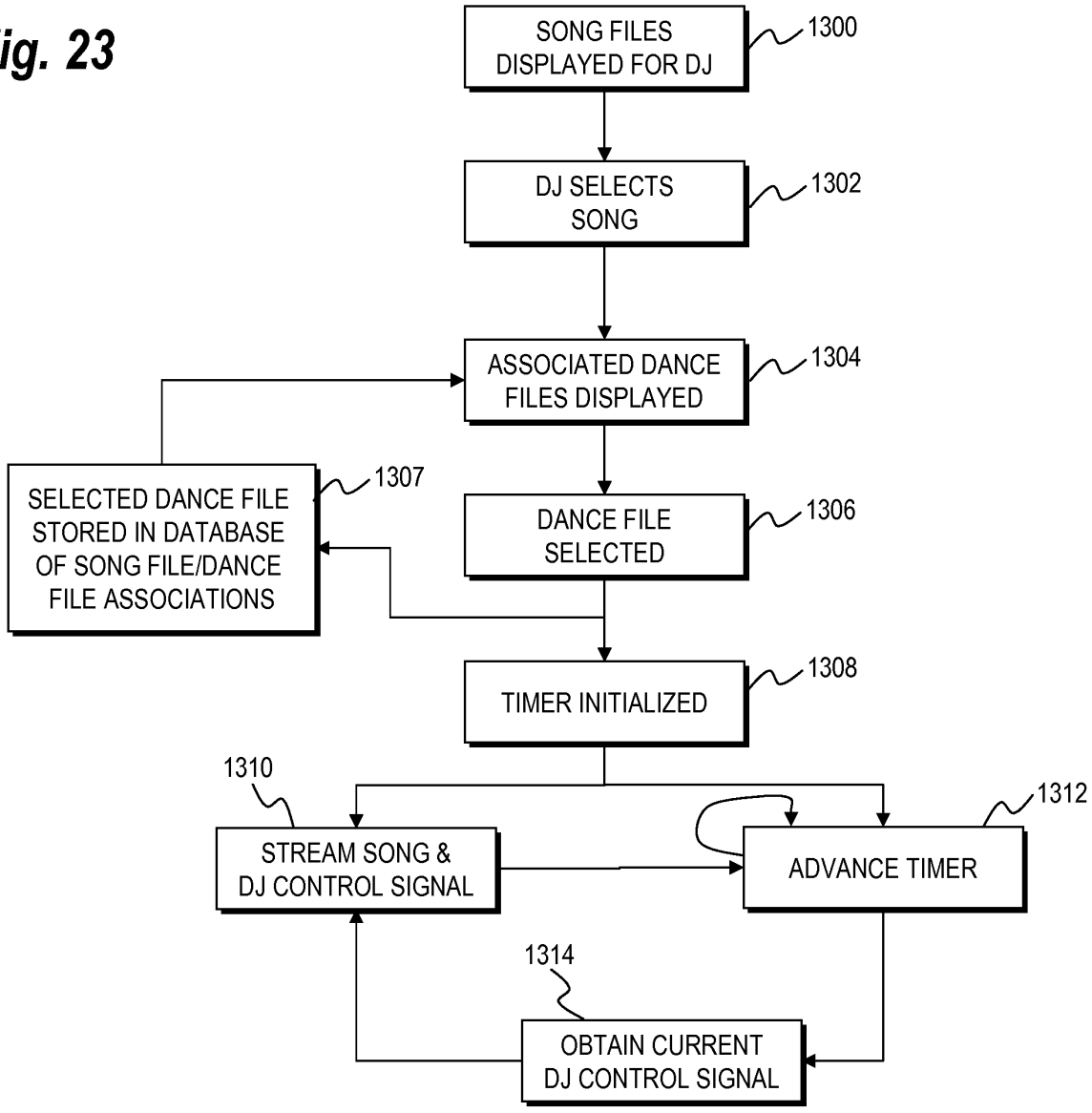

SONG FILES DISPLAYED FOR DJ
1300
DJ SELECTS SONG
1302
ASSOCIATED DANCE FILES DISPLAYED
1304
SELECTED DANCE FILE STORED IN DATABASE OF SONG FILE/DANCE FILE ASSOCIATIONS
1307
DANCE FILE SELECTED
1306
TIMER INITIALIZED
1308
1310
STREAM SONG & DJ CONTROL SIGNAL
1312
ADVANCE TIMER
1314
OBTAIN CURRENT DJ CONTROL SIGNAL

Fig. 24

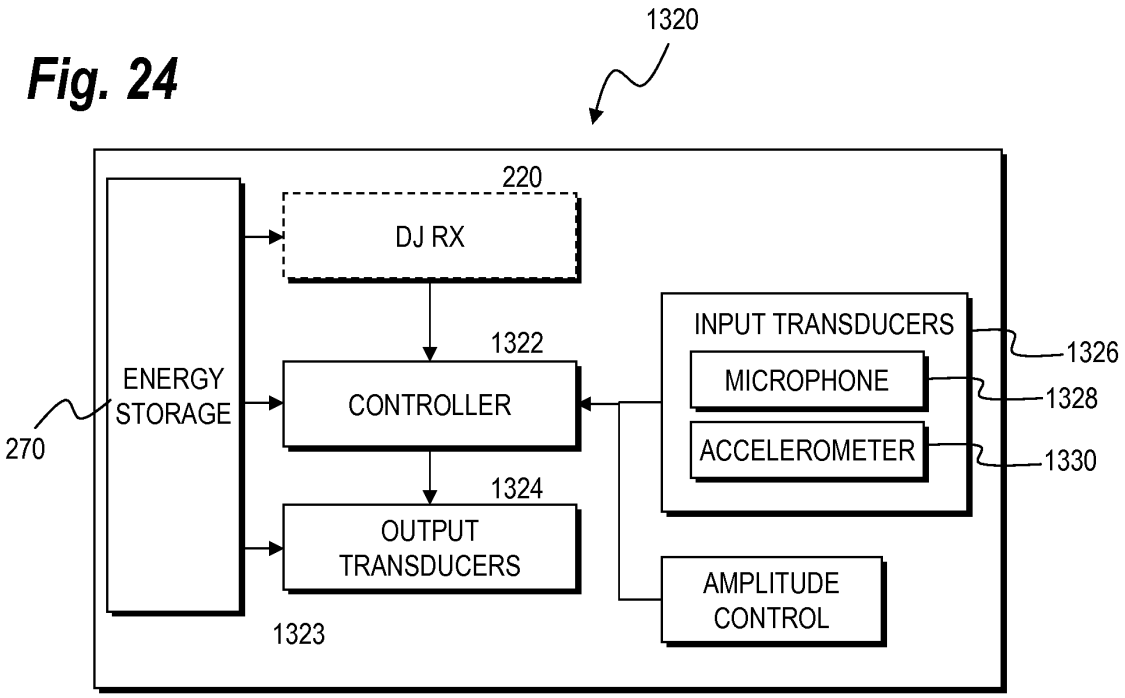

1320
220
DJ RX
1322
ENERGY STORAGE
270
CONTROLLER
1324
OUTPUT TRANSDUCERS
1323
INPUT TRANSDUCERS
MICROPHONE
ACCELEROMETER
1326
1328
1330
AMPLITUDE CONTROL

Fig. 25

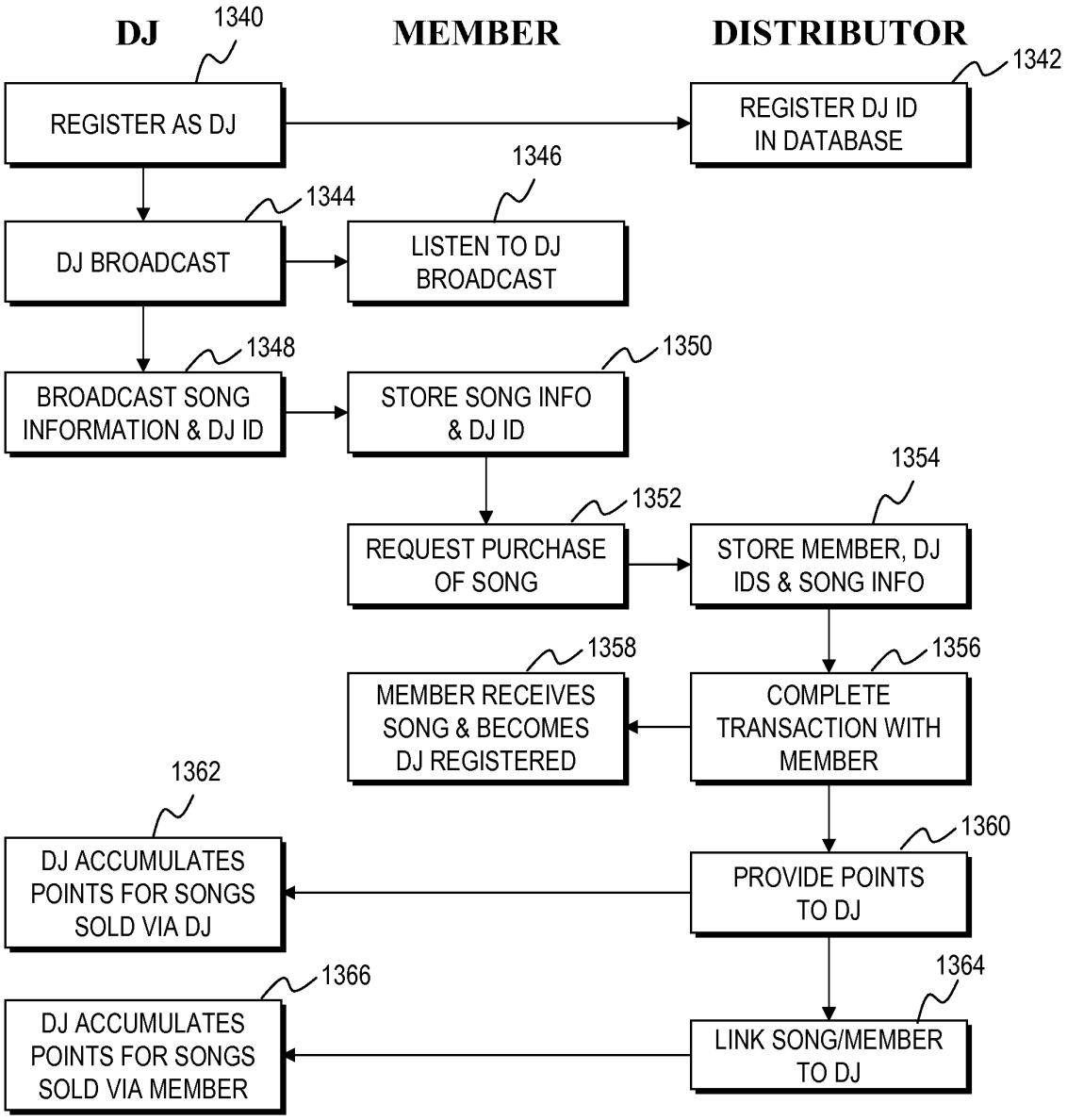

DJ
MEMBER
DISTRIBUTOR
1340
1342
REGISTER AS DJ
REGISTER DJ ID IN DATABASE
1346
1344
DJ BROADCAST
LISTEN TO DJ BROADCAST
1348
1350
BROADCAST SONG INFORMATION & DJ ID
STORE SONG INFO & DJ ID
1354
1352
REQUEST PURCHASE OF SONG
STORE MEMBER, DJ IDS & SONG INFO
1358
1356
MEMBER RECEIVES SONG & BECOMES DJ REGISTERED
COMPLETE TRANSACTION WITH MEMBER
1362
1360
DJ ACCUMULATES POINTS FOR SONGS SOLD VIA DJ
PROVIDE POINTS TO DJ
1366
1364
DJ ACCUMULATES POINTS FOR SONGS SOLD VIA MEMBER
LINK SONG/MEMBER TO DJ

Fig. 26

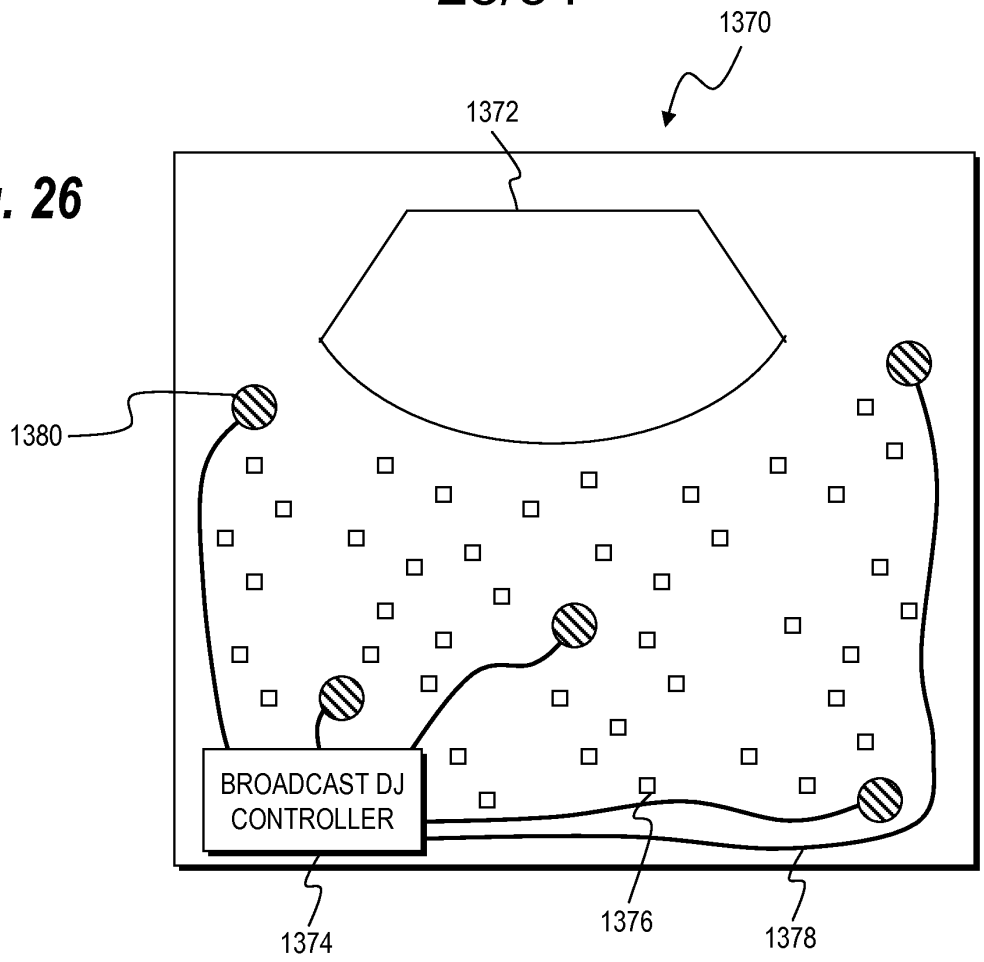

1370
1372
1380
BROADCAST DJ CONTROLLER
1374
1376
1378

Fig. 35

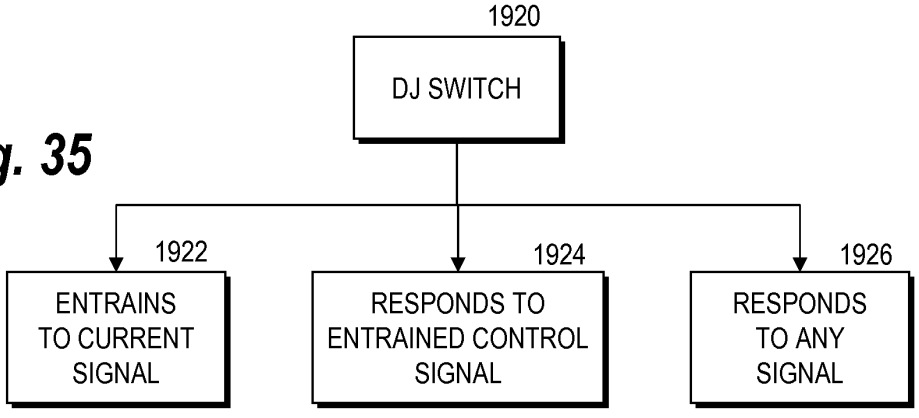

1920
DJ SWITCH
1922
ENTRAINS TO CURRENT SIGNAL
1924
RESPONDS TO ENTRAINED CONTROL SIGNAL
1926
RESPONDS TO ANY SIGNAL

Fig. 27

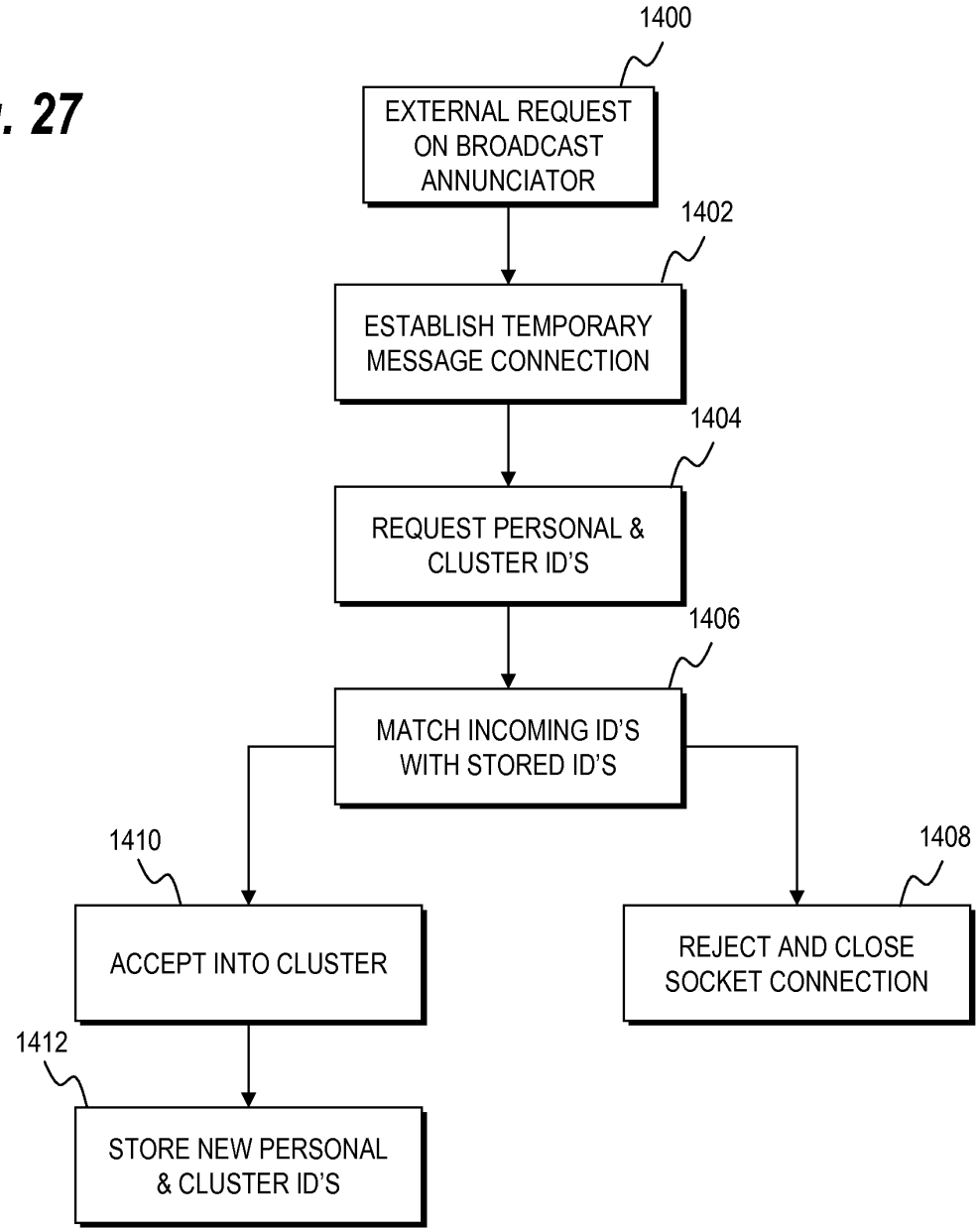

1400
EXTERNAL REQUEST ON BROADCAST ANNUNCIATOR
1402
ESTABLISH TEMPORARY MESSAGE CONNECTION
1404
REQUEST PERSONAL & CLUSTER ID'S
1406
MATCH INCOMING ID'S WITH STORED ID'S
1410
ACCEPT INTO CLUSTER
1408
REJECT AND CLOSE SOCKET CONNECTION
1412
STORE NEW PERSONAL & CLUSTER ID'S

Fig. 28

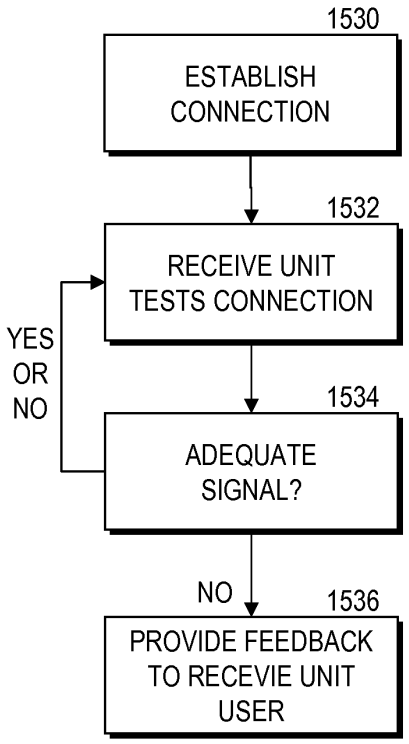

1530
ESTABLISH CONNECTION
1532
RECEIVE UNIT TESTS CONNECTION
YES OR NO
1534
ADEQUATE SIGNAL?
NO
1536
PROVIDE FEEDBACK TO RECEVIE UNIT USER

Fig. 29A

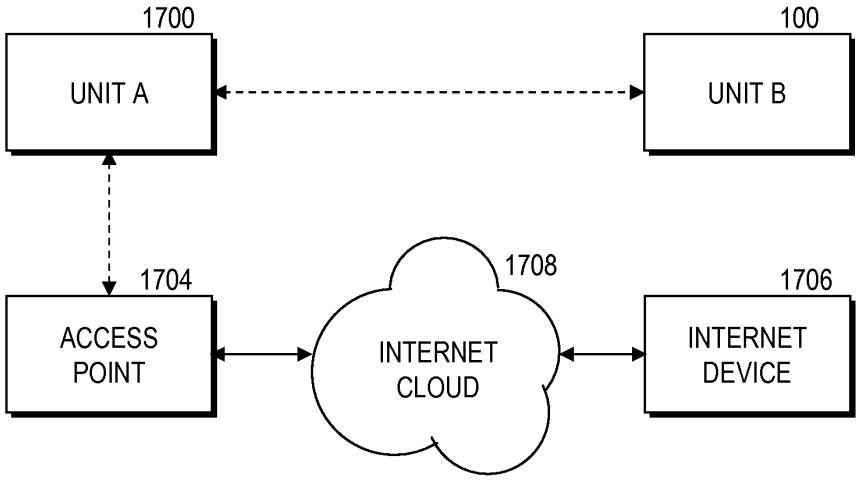


Fig. 29B

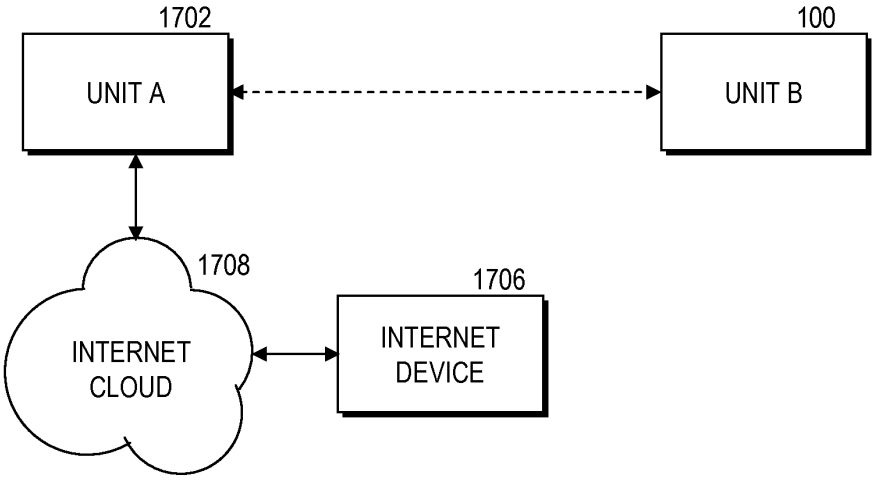


Fig. 30

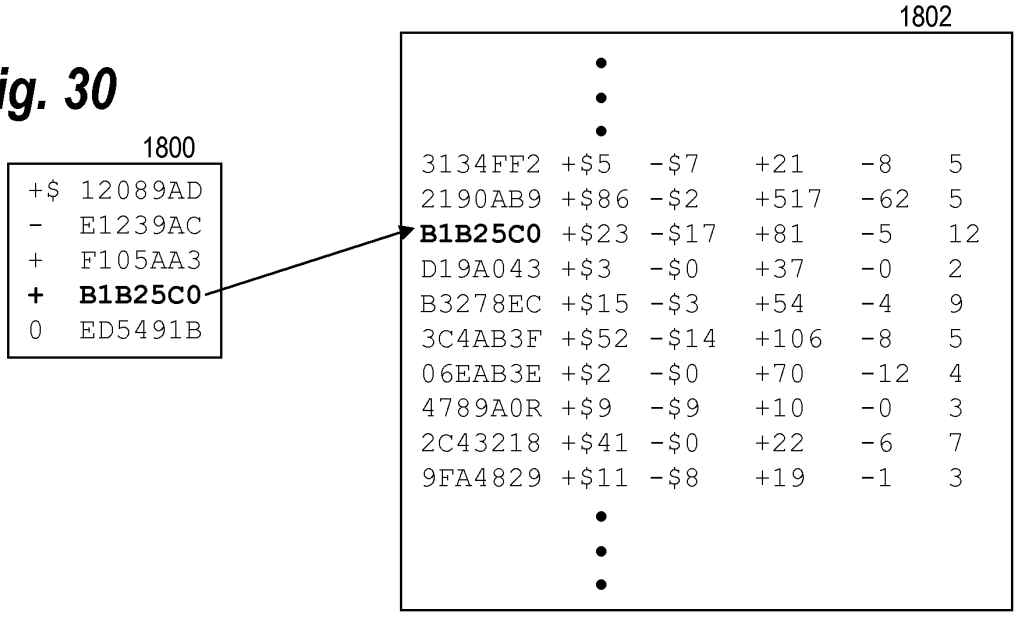

1800
+$ 12089AD
- E1239AC
+ F105AA3
+ B1B25C0
0 ED5491B
1802
3134FF2 +$5 -$7 +21 -8 5
2190AB9 +$86 -$2 +517 -62 5
B1B25C0 +$23 -$17 +81 -5 12
D19A043 +$3 -$0 +37 -0 2
B3278EC +$15 -$3 +54 -4 9
3C4AB3F +$52 -$14 +106 -8 5
06EAB3E +$2 -$0 +70 -12 4
4789A0R +$9 -$9 +10 -0 3
2C43218 +$41 -$0 +22 -6 7
9FA4829 +$11 -$8 +19 -1 3

Fig. 31

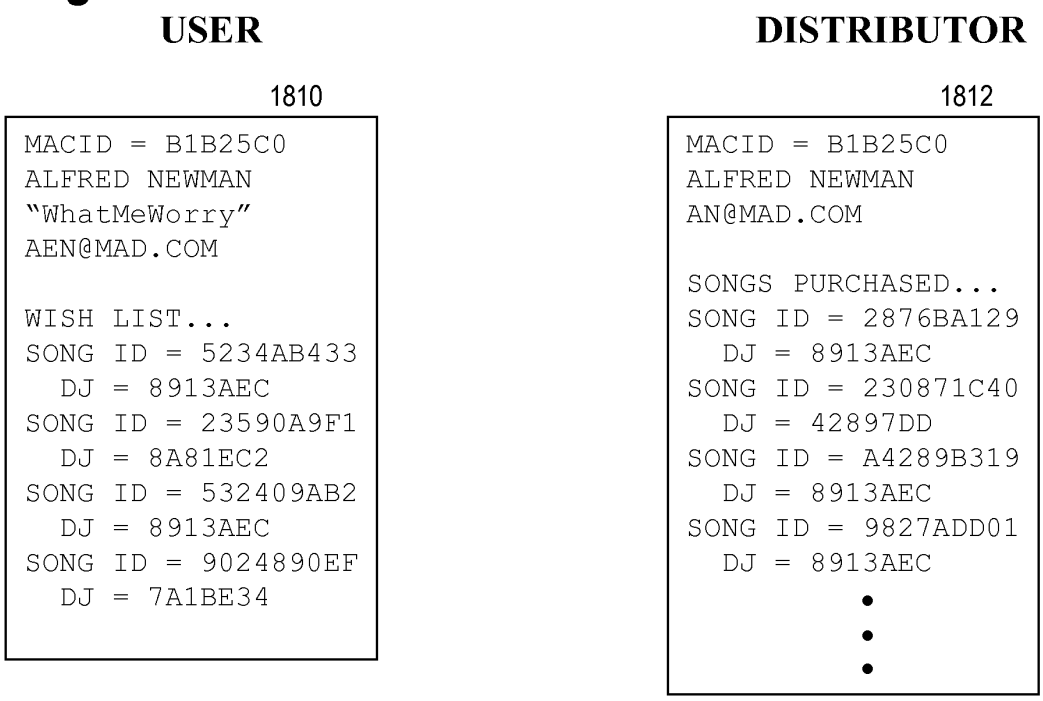

USER
DISTRIBUTOR
1810
MACID = B1B25C0
ALFRED NEWMAN
"WhatMeWorry"
AEN@MAD.COM
WISH LIST...
SONG ID = 5234AB433
DJ = 8913AEC
SONG ID = 23590A9F1
DJ = 8A81EC2
SONG ID = 532409AB2
DJ = 8913AEC
SONG ID = 9024890EF
DJ = 7A1BE34
1812
MACID = B1B25C0
ALFRED NEWMAN
AN@MAD.COM
SONGS PURCHASED...
SONG ID = 2876BA129
DJ = 8913AEC
SONG ID = 230871C40
DJ = 42897DD
SONG ID = A4289B319
DJ = 8913AEC
SONG ID = 9827ADD01
DJ = 8913AEC

Fig. 32A

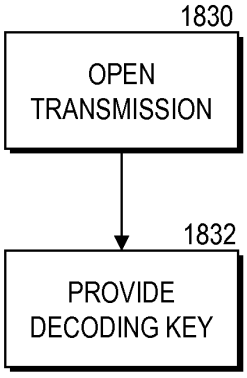


Fig. 32B

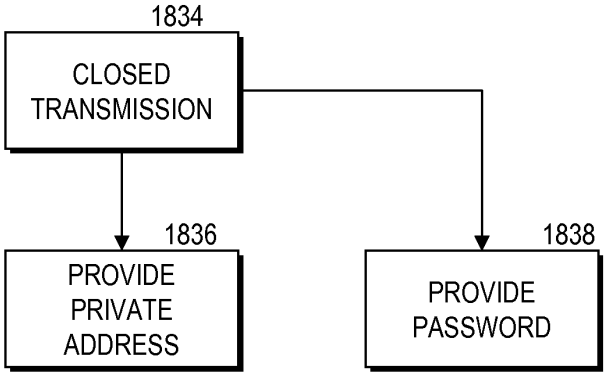


Fig. 33

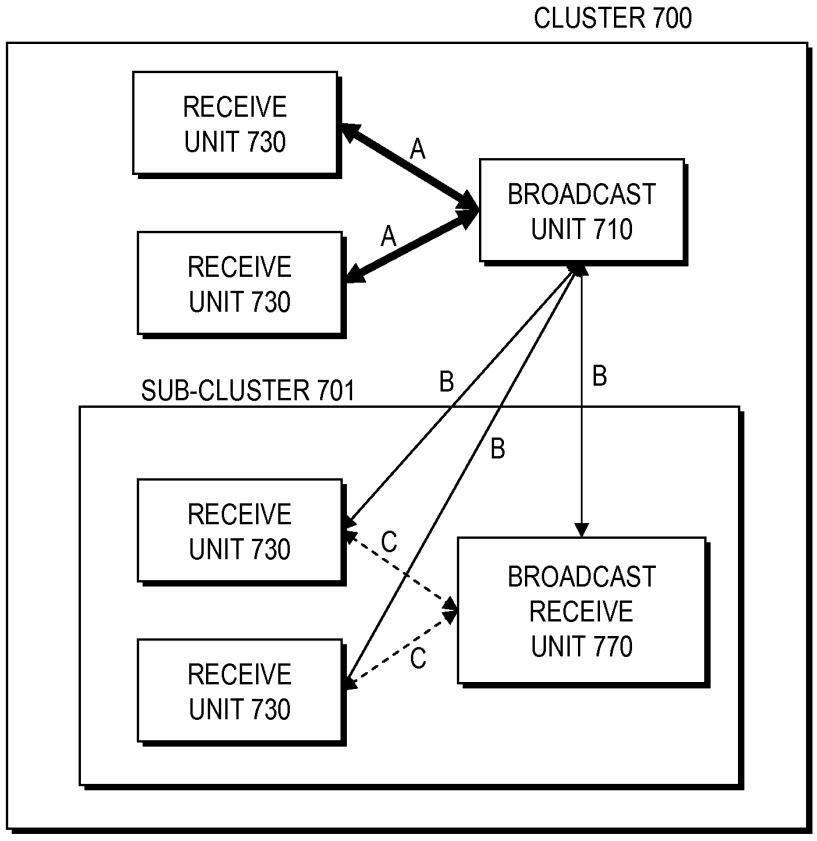


Fig. 34A

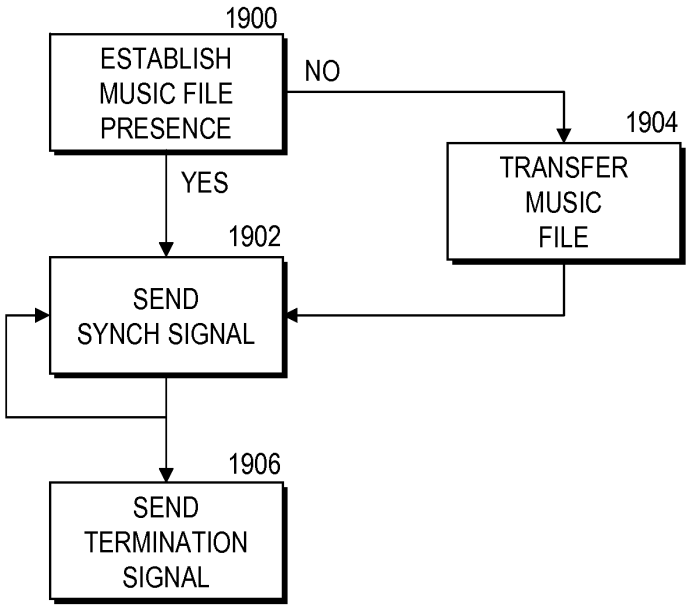
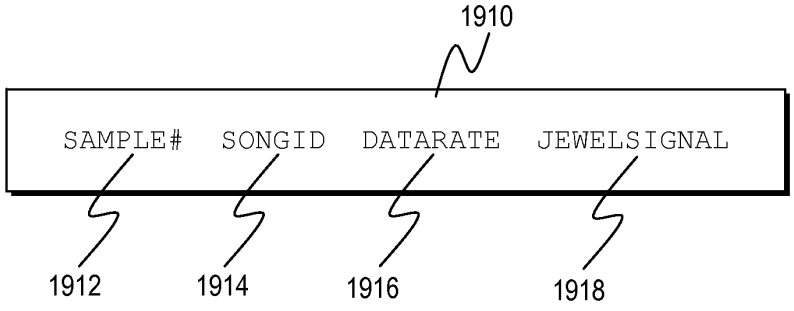


Fig. 34B



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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted With Initial Filing OR ☐ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16 (e)) required)

Attorney Docket Number	TRIS001-3
First Named Inventor	Goldberg, David
COMPLETE IF KNOWN	
Application Number	
Filing Date	
Art Unit	
Examiner Name	

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Distribution of Music Between Members of a Cluster of Mobile Audio Devices and a Wide Area Network

(Title of the Invention)

the specification of which

☑ is attached hereto

OR

☐ was filed on (MM/DD/YYYY) ☐ as United States Application Number or PCT International Application Number ☐ and was amended on (MM/DD/YYYY) ☐ (if applicable).

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

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	NO
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 21 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 completing the form, call 1-800-PTO-9199 and select option 2.

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DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☑ The address associated with Customer Number: 30846 OR ☐ Correspondence address below

Name

Address

City	State	Zip

Country	Telephone	Email

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

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 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

NAME OF SOLE OR FIRST INVENTOR: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any])	Family Name or Surname	
David	Goldberg	
Inventor's Signature		Date
		20 Dec 2006

Residence: City	State	Country	Citizenship
Boulder	Colorado	USA	USA

Mailing Address
4255 Pinon Drive

City	State	Zip	Country
Boulder	CO	80301	USA

☐ Additional inventors or a legal representative are being named on the ____ supplemental sheet(s) PTO/SB/02A or 02LR attached hereto

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DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet

Page 2 of 5

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))	Family Name or Surname
Benjamin	Goldberg

Inventor's Signature _____ Date _____

Boulder	Colorado	USA	USA
Residence: City	State	Country	Citizenship

4585 Pearl Drive

Mailing Address

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City	State	Zip	Country

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))	Family Name or Surname
Martha	Goldberg

Inventor's Signature Martha Goldberg Date 12/2/06

Boulder	Colorado	USA	USA
Residence: City	State	Country	Citizenship

4585 Pearl Drive

Mailing Address

Boulder	CO	80303	USA
City	State	Zip	Country

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))	Family Name or Surname
Miriam	Goldberg

Inventor's Signature _____ Date _____

Boulder	Colorado	USA	USA
Residence: City	State	Country	Citizenship

4585 Pearl Drive

Mailing Address

Boulder	CO	80303	USA
City	State	Zip	Country

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DECLARATION | **ADDITIONAL INVENTOR(S)** Supplemental Sheet Page 4 of 5

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any)) | Family Name or Surname

Inventor's Signature: Benjamin Hellwig | Date: 12/3/2006

Residence: City | Colorado State | USA Country | USA Citizenship

Post Office Address

Mailing Address

City | CO State | 80303 Zip | USA Country

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any)) | Family Name or Surname

Inventor's Signature | Date

Residence: City | State | Country | Citizenship

Post Office Address

Mailing Address

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Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any)) | Family Name or Surname

Inventor's Signature | Date

Residence: City | State | Country | Citizenship

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Mailing Address

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PTO/SB/01 (07-06)
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DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet
Page 5 of 5

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))	Family Name or Surname
Mathieu	Goldberg

Inventor's Signature | Date

Boulder	Colorado	USA	USA
Residence: City	State	Country	Citizenship

4055 Pearl Street

Mailing Address

Boulder	CO	80303	USA
City	State	Zip	Country

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))	Family Name or Surname
Mathieu	Goldberg

Inventor's Signature | Date

Boulder	Colorado	USA	USA
Residence: City	State	Country	Citizenship

4055 Pearl Street

Mailing Address

Boulder	CO	80303	USA
City	State	Zip	Country

Name of Additional Joint Inventor, if any: ☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))	Family Name or Surname
Mathieu	Goldberg

Inventor's Signature | Date 12-2-06

Boulder	Colorado	USA	USA
Residence: City	State	Country	Citizenship

4055 Pearl Street

Mailing Address

Boulder	CO	80303	USA
City	State	Zip	Country

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Title: "DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK"
Applicant: Goldberg, David
Filed: December 4, 2006
Art Unit: Not yet assigned
Examiner: Not yet assigned
Attorney Docket No.: Trib001-3
Customer No.: 35846

Commissioner For Patents
P.O. Box 1450
Alexandria VA 22313-1450

TRANSMITTAL OF DIVISIONAL PATENT APPLICATION

Sir:

Enclosed herewith is the above titled divisional patent application claiming priority to pending U.S. Patent Application No. 10/513,702 entitled, "Localized Audio Networks and Associated Digital Accessories" based on PCT Application No. PCT/US03/14154 having the same title claiming priority from Provisional Patent Application No. 60/378,415, filed May 6, 2002, titled "Localized Audio Networks and Associated Digital Accessories," and from Provisional Patent Application No. 60/388,887, filed June 14, 2002, titled " Localized Audio Networks and Associated Digital Accessories," and from Provisional Patent Application No. 60/452,230, filed March 4, 2003, titled " Localized Audio Networks and Associated Digital Accessories," the contents of each of which are incorporated therein by reference.

A substitute specification is being filed herewith which incorporates the following changes: the title and abstract have been changed to reflect the subject matter being claimed; a new claim set is submitted; and the paragraph cross referencing related applications has been amended to reflect that this application is a divisional of pending parent application 10/513,702. No further

changes have been made to the specification. In addition, Applicant submits that the changes submitted herewith do not add new matter. Accordingly, formal examination is requested. The Commissioner is invited to contact the undersigned for any questions.

Respectfully Submitted,
The McIntosh Group

/Kelly de la Torre/

Kelly de la Torre, Esq.
Registration No. 53,677

12635 East Montview Blvd., Suite 370
Aurora, CO 80010
(720) 859-3543
December 4, 2006

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Filer:	Kelly Kristine De la Torre
Attorney Docket Number:	TRIB001-3

Filed as Small Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	75	75
Utility Search Fee	2111	1	250	250
Utility Examination Fee	2311	1	100	100
Pages:				
Claims:				
Claims in excess of 20	2202	16	25	400
Independent claims in excess of 3	2201	5	100	500
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1325**

Electronic Acknowledgement Receipt

EFS ID:	1350997
Application Number:	11566552
International Application Number:	
Confirmation Number:	6195
Title of Invention:	DISTRIBUTION OF MUSIC BETWEEN MEMBERS OF A CLUSTER OF MOBILE AUDIO DEVICES AND A WIDE AREA NETWORK
First Named Inventor/Applicant Name:	David Goldberg
Customer Number:	35846
Filer:	Kelly Kristine De la Torre
Filer Authorized By:	
Attorney Docket Number:	TRIB001-3
Receipt Date:	04-DEC-2006
Filing Date:	
Time Stamp:	17:54:57
Application Type:	Utility

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
1		Trib001-3DistributionofMusic.pdf	366197	yes	96

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	89
	Claims	90	95
	Abstract	96	96

Warnings:					
Information:					
2	Drawings	Tribaldrawings.pdf	285070	no	34
Warnings:					
Information:					
3	Oath or Declaration filed	001-3decl.pdf	1517246	no	5
Warnings:					
Information:					
4	Miscellaneous Incoming Letter	Tribal001-3TransmittaLletter.pdf	70350	no	2
Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	8611	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2247474		

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

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

PTO/SB/06 (12-04)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 11/566,552

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))				75			300
SEARCH FEE (37 CFR 1.16(k), (i), or (m))				250			500
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))				100			200
TOTAL CLAIMS (37 CFR 1.16(i))	36 minus 20 =	16	X$ 25	400	OR	X$50	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	8 minus 3 =	* 5	X$100	500		X$200	
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						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			180			360	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	1325		TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	X =		OR	X =	
	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))					180		OR	360	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T 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))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

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

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