

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 8,170,538 B2
APPLICATION NO. : 12/128991
DATED : May 1, 2012
INVENTOR(S) : Michael E. Shanahan

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the Title page, Item (63) should read:

(63) Continuation of application No. 11/633,142, filed on Dec. 2, 2006, now Pat. No. 7,555,317,
--which is a continuation of application No. 10/600,975, filed on Jun. 20, 2003, now Pat.
No. 7,149,509--, which is a continuation of application No. 09/518,846, filed on Mar. 3,
2000, now abandoned.

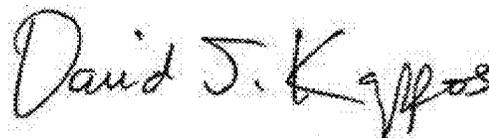
In column 9, line 48, please change "tither" to --further--.

In column 11, line 46, please change "(i.e." to --(i.e.,--.

In column 12, line 9, please change "receivers" to --receiver's--.

In column 15, line 11, Claim 27, after "customized" delete "10".

Signed and Sealed this
Twenty-seventh Day of November, 2012



David J. Kappos
Director of the United States Patent and Trademark Office



UNITED STATES PATENT AND TRADEMARK OFFICE

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

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL. FEE REC'D, ATTY. DOCKET NO, TOT CLAIMS, IND CLAIMS. Values: 12/128,991, 05/29/2008, 2617, 840, 116236-00016, 32, 4

CONFIRMATION NO. 1294

27614
MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102

FILING RECEIPT



Date Mailed: 06/16/2008

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

Applicant(s)

Michael E. Shanahan, Nyack, NY;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/633,142 12/02/2006
which is a CON of 10/600,975 06/20/2003 PAT 7,149,509
which is a CON of 09/518,846 03/03/2000 ABN
which claims benefit of 60/169,158 12/06/1999

Foreign Applications

If Required, Foreign Filing License Granted: 06/13/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 12/128,991

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **



UNITED STATES PATENT AND TRADEMARK OFFICE

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

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL. FEE REC'D, ATTY. DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 12/128,991, 05/29/2008, 2617, 905, 116236-00016, 32, 4

CONFIRMATION NO. 1294

UPDATED FILING RECEIPT



27614
MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102

Date Mailed: 08/12/2008

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

Applicant(s)

Michael E. Shanahan, Nyack, NY;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/633,142 12/02/2006
which is a CON of 10/600,975 06/20/2003 PAT 7,149,509
which is a CON of 09/518,846 03/03/2000 ABN
which claims benefit of 60/169,158 12/06/1999

Foreign Applications

If Required, Foreign Filing License Granted: 06/13/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 12/128,991

Projected Publication Date: 11/20/2008

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

PATENT NO. : 8,170,538
APPLICATION NO. : 12/128,991
ISSUE DATE : May 1, 2012
INVENTOR(S) : Michael E. Shanahan

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the face sheet, please correct following chain of priority:

(63) Continuation of application No. 11/633,142, filed on Dec. 2, 2006, now Pat. No. 7,555,317,
-- which is a continuation of application No. 10/600,975, filed on Jun. 20, 2003, now Pat.
No. 7,149,509 --, which is a continuation of application No. 09/518,846, filed on Mar. 3,
2000, now abandoned.

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In column 11, line 46, please change "(i.e." to --(i.e.,--.

In column 12, line 9, please change "receivers" to --receiver's--.

In column 15, line 11, Claim 27, after "customized" delete "10".

MAILING ADDRESS OF SENDER:

John R. King
KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 Main Street, 14th Floor
Irvine, California 92614

DOCKET NO. SOLME.001A2C5

Electronic Patent Application Fee Transmittal

Application Number:	12128991
Filing Date:	29-May-2008
Title of Invention:	METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES
First Named Inventor/Applicant Name:	Michael E. Shanahan
Filer:	John R. King/Amy Durrant
Attorney Docket Number:	SOLME.001A2C5

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Certificate of correction	1811	1	100	100

Extension-of-Time:

5

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt

EFS ID:	14068753
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	20995
Filer:	John R. King/Nino Lopez
Filer Authorized By:	John R. King
Attorney Docket Number:	SOLME.001A2C5
Receipt Date:	24-OCT-2012
Filing Date:	29-MAY-2008
Time Stamp:	18:51:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$100
RAM confirmation Number	6963
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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

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

Charge any Additional Fees required under 37 C.F.R. Section 1.77 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		SOLME-001A2C5_cert.pdf	170145 fe552859142a18c1a82ac848ea1eadec550a cafb	yes	4
Multipart Description/PDF files in .zip description					
Document Description			Start	End	
Transmittal Letter			1	1	
Request for Certificate of Correction			2	4	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	29902 2feaf73e552542746fa5b1c8f149afc3c7e97 5d	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			200047		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

October 24, 2012

ATTN: Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Re: **Certificate of Correction**
Title: METHODS AND APPARATUSES FOR PROGRAMMING USER
DEFINED INFORMATION INTO ELECTRONIC DEVICES
Letters Patent No. 8,170,538
Issued: May 1, 2012
Our Reference: SOLME.001A2C5

Dear Sir:

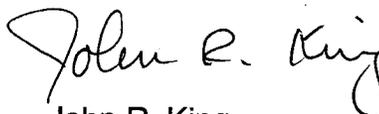
Enclosed for filing is a Certificate of Correction in connection with the above-identified patent.

Also enclosed are copies of the filing receipt and an updated filing receipt from the file history that show the chain of priority includes U.S. Patent Application No. 10/600,975, filed on Jun. 20, 2003, now Pat. No. 7,149,509. The listing of U.S. Patent Application No. 10/600,975, however, does not appear on the face of the patent. Appropriate correction is requested.

The required fee of \$100 is submitted herewith. Please charge any additional fees to our Deposit Account No. 11-1410.

Respectfully submitted,

Knobbe, Martens, Olson & Bear, LLP



John R. King
Registration No. 34,362
Customer No. 20,995

Enclosures

14130371
101012



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/128,991	05/01/2012	8170538	PREMM.001A2C5	1294

20995 7590 04/11/2012
Knobbe Martens Olson & Bear LLP
 2040 MAIN STREET
 FOURTEENTH FLOOR
 IRVINE, CA 92614

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 744 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):

Michael E. Shanahan, Nyack, NY;

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: MICHAEL E. SHANAHAN

5 TITLE: METHODS AND APPARATUSES FOR PROGRAMMING USER-
DEFINED INFORMATION INTO ELECTRONIC DEVICES

SPECIFICATION

10 BACKGROUND OF THE INVENTION

RELATED APPLICATIONS

15 This application is a continuation of U.S. Patent Application Serial No. 11/633,142, filed
December 2, 2006, now U.S. Patent No. 7,555,317, which is a continuation of U.S. Patent
No. 7,149,509, filed June 20, 2003, which is a continuation of U.S. Patent Application Serial No.
09/518,846, filed March 3, 2000, now abandoned, which claims the priority from U.S.
Provisional Patent Application Serial No. 60/169,158, filed December 6, 1999, the entire
20 disclosures of which are expressly incorporated herein by reference.

FIELD OF THE INVENTION

This application relates to electronic devices, and more particularly to a programming
apparatus that allows users to program user-defined information into their electronic device.

25

RELATED ART

There are many types of electronic devices available to consumers today that have the
ability to produce both audio sounds and video displays. Many of these devices provide users
with the ability to select and play a particular piece of audio or video. A television viewer, for
30 example, may tune to a TV channel and watch a particular program, or connect a VCR or DVD

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/128,991	
	Filing Date	05-29-2008	
	First Named Inventor	Shanahan, Michael E.	
	Art Unit	2617	
<i>(Multiple sheets used when necessary)</i>		Examiner	Beamer, Temica M.
SHEET 1 OF 1		Attorney Docket No.	PREMM.001A2C5

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	5,262,275	11-1993	Fan	
	2	5,479,477	12-1995	McVey et al.	
	3	5,550,557	08-1996	Kapoor et al.	
	4	6,233,682 B1	05-2001	Fritsch	
	5	6,418,330 B1	07-09-2002	Lee	
	6	6,871,048 6,871,084 B2	03-22-2005	Takagaki	
	7	7,555,317	06-30-2009	Shanahan, Michael	
	8	7,620,427	11-17-2009	Shanahan, Michael	
	9	7,742,759	06-22-2010	Shanahan, Michael	

Change(s) applied
to document,
/D.H.P./
3/6/2012

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	10	GB 2343084 A	04-26-2000	Putnam, et al.		
	11	JP 10173737 A2	06-26-1998	Emiko		X-abs
	12	JP 2001195068	07-19-2001	Takeshi, et al.		X-abs
	13	JP 2001404867 A	02-16-2001	Takeshi, et al.		X-abs
	14	WO 00/79770	12-28-2000	Son, et al.		
	15	WO 01/41411 A2	06-07-2001	Schuster, et al.		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	16	FRERE-JONES, "Ring My Bell", The New Yorker, March 7, 2005. http://www.newyorker.com/archive/2005/03/07/050307crmu_music?printable=true	
	17	PEREMULTER, "First Ever MEF Special Recognition Award Goes to the Pioneer of the Mobile Ringtone Business", MEFMobile, www.mefmobile.org/index.php?id=391 Date Unknown	
	18	TAKEISHI, ET AL., "Mobile Innovation and the Music Business in Japan: The Case of Ringing Tone Melody", Institute of Innovation Research - Hitotsubashi University, May 2003, http://www.newyorker.com/archive/2005/03/07/050307crmu_music?printable=true	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.B./

Examiner Signature	/Temica Beamer/	Date Considered	12/19/2011
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*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T¹ - Place a check mark in this area when an English language Translation is attached.

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)

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.

20995 7590 12/29/2011
KNOBBE MARTENS OLSON & BEAR LLP
 2040 MAIN STREET
 FOURTEENTH FLOOR
 IRVINE, CA 92614

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.
-----------------	-------------	----------------------	---------------------	------------------

12/128,991 05/29/2008 Michael E. Shanahan PREMM.001A2C5 1294

TITLE OF INVENTION: METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional YES \$870 \$300 \$0 \$1170 03/29/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
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BEAMER, TEMICA M 2617 455-567000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.	2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.	1 <u>Knobbe, Martens,</u> 2 <u>Olson & Bear, LLP</u> 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 **Solocron Media, LLC** (B) RESIDENCE: (CITY and STATE OR COUNTRY) **Tyler, TX**

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

4a. The following fee(s) are submitted: <input checked="" type="checkbox"/> Issue Fee <input checked="" type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____	4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input checked="" type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number <u>11-1410</u> (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 John R. King Date 3-27-2012
 Typed or printed name John R. King Registration No. 34,362

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:	12128991
Filing Date:	29-May-2008
Title of Invention:	METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES
First Named Inventor/Applicant Name:	Michael E. Shanahan
Filer:	John R. King/Amy Durrant
Attorney Docket Number:	PREMM.001A2C5

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	2501	1	870	870
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1170

Electronic Acknowledgement Receipt

EFS ID:	12404164
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	20995
Filer:	John R. King/Nino Lopez
Filer Authorized By:	John R. King
Attorney Docket Number:	PREMM.001A2C5
Receipt Date:	27-MAR-2012
Filing Date:	29-MAY-2008
Time Stamp:	16:40:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$1170
RAM confirmation Number	4085
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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

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

Charge any Additional Fees required under 37 C.F.R. Section 1.18 (Patent application and reexamination processing fees)

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)	PREMM-001A2C5_issuefee.pdf	112529 <small>3ca5d4a6960b4968327d684f1c6636ab2c7adfd2</small>	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31890 <small>4a28e7b25b065202cb680a88200dbd1bc0ac01d0</small>	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			144419		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Index of Claims 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	08/30/2010	04/25/2011	12/19/2011	03/04/2012				
1	1	✓	✓	=	=				
2	2	✓	✓	=	=				
3	3	✓	✓	=	=				
4	4	✓	✓	=	=				
5	5	✓	✓	=	=				
6	6	✓	✓	=	=				
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17	17	✓	✓	=	=				
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24	24	✓	✓	=	=				
25	25	✓	✓	=	=				
26	26	✓	✓	=	=				
27	27	✓	✓	=	=				
28	28	✓	✓	=	=				
29	29	✓	✓	=	=				
30	30	✓	✓	=	=				
31	31	✓	✓	=	=				
32	32	✓	✓	=	=				



UNITED STATES PATENT AND TRADEMARK OFFICE

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

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for Michael E. Shanahan and examiner information for BEAMER, TEMICA M.

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

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

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

- jcartee@kmob.com
efiling@kmob.com
eOAPilot@kmob.com

**Corrected
Notice of Allowability**

Application No.

12/128,991

Examiner

TEMICA M. BEAMER

Applicant(s)

SHANAHAN, MICHAEL E.

Art Unit

2617

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

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

1. This communication is responsive to amendment filed 9/26/2011.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-32.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____ .
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

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

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date ____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

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

/TEMICA M. BEAMER/
Primary Examiner, Art Unit 2617

Detailed Action

Examiner's Amendment

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

Begin Amendment

The application has been amended as follows: In Claim 18, line 1, "claim 18" has been changed to --claim 17--.

End Amendment

Conclusion

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TEMICA M. BEAMER whose telephone number is (571)272-7797. The examiner can normally be reached on Monday-Thursday (alternate Fridays) 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

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

/TEMICA M. BEAMER/
Primary Examiner, Art Unit 2617

Search Notes 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner
455	414.1, 415, 418, 419, 566, 567, 557, 556.1	8/30/2010	TMB
	updated search	12/19/2011	TMB

SEARCH NOTES		
Search Notes	Date	Examiner
WEST text search	8/30/2010	TMB
WEST text search	12/19/2011	TMB

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
455	418, 567, 557	12/19/2011	TMB
	PGPUB text search	12/19/2011	TMB

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NOTICE OF ALLOWANCE AND FEE(S) DUE

20995 7590 12/29/2011
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER
BEAMER, TEMICA M
ART UNIT PAPER NUMBER

2617
DATE MAILED: 12/29/2011

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

12/128,991 05/29/2008 Michael E. Shanahan PREMM.001A2C5 1294
TITLE OF INVENTION: METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

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

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

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

HOW TO REPLY TO THIS NOTICE:

I. Review the 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.



UNITED STATES PATENT AND TRADEMARK OFFICE

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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
12/128,991 05/29/2008 Michael E. Shanahan PREMM.001A2C5 1294

20995 7590 12/29/2011
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

BEAMER, TEMICA M

ART UNIT PAPER NUMBER

2617

DATE MAILED: 12/29/2011

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

The Patent Term Adjustment to date is 406 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 406 day(s).

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

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

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

Privacy Act Statement

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

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

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

Notice of Allowability

Application No.

12/128,991

Examiner

TEMICA M. BEAMER

Applicant(s)

SHANAHAN, MICHAEL E.

Art Unit

2617

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

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- 1. This communication is responsive to amendment filed 9/26/2011.
- 2. An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 3. The allowed claim(s) is/are 1-32.
- 4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some* c) None of the:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. ____ .
 - 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

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

- 5. A **SUBSTITUTE OATH OR DECLARATION** must be submitted. Note the attached **EXAMINER'S AMENDMENT** or **NOTICE OF INFORMAL PATENT APPLICATION (PTO-152)** which gives reason(s) why the oath or declaration is deficient.
 - 6. **CORRECTED DRAWINGS** (as "replacement sheets") must be submitted.
 - (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) hereto or 2) to Paper No./Mail Date ____.
 - (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
- 7. **DEPOSIT OF and/or INFORMATION** about the deposit of **BIOLOGICAL MATERIAL** must be submitted. Note the attached Examiner's comment regarding **REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL**.

Attachment(s)

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

/TEMICA M. BEAMER/
Primary Examiner, Art Unit 2617

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/128,991	
	Filing Date	05-29-2008	
	First Named Inventor	Shanahan, Michael E.	
	Art Unit	2617	
<i>(Multiple sheets used when necessary)</i>		Examiner	Beamer, Temica M.
SHEET 1 OF 1		Attorney Docket No.	PREMM.001A2C5

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	5,262,275	11-1993	Fan	
	2	5,479,477	12-1995	McVey et al.	
	3	5,550,557	08-1996	Kapoor et al.	
	4	6,233,682 B1	05-2001	Fritsch	
	5	6,418,330 B1	07-09-2002	Lee	
	6	6,871,084 B2	03-22-2005	Takagaki	
	7	7,555,317	06-30-2009	Shanahan, Michael	
	8	7,620,427	11-17-2009	Shanahan, Michael	
	9	7,742,759	06-22-2010	Shanahan, Michael	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	10	GB 2343084 A	04-26-2000	Putnam, et al.		
	11	JP 10173737 A2	06-26-1998	Emiko		X-abs
	12	JP 2001195068	07-19-2001	Takeshi, et al.		X-abs
	13	JP 2001404867 A	02-16-2001	Takeshi, et al.		X-abs
	14	WO 00/79770	12-28-2000	Son, et al.		
	15	WO 01/41411 A2	06-07-2001	Schuster, et al.		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	16	FRERE-JONES, "Ring My Bell", The New Yorker, March 7, 2005. http://www.newyorker.com/archive/2005/03/07/050307crmu_music?printable=true	
	17	PEREMULTER, "First Ever MEF Special Recognition Award Goes to the Pioneer of the Mobile Ringtone Business", MEFMobile, www.mefmobile.org/index.php?id=391 Date Unknown	
	18	TAKEISHI, ET AL., "Mobile Innovation and the Music Business in Japan: The Case of Ringing Tone Melody", Institute of Innovation Research - Hitotsubashi University, May 2003, http://www.newyorker.com/archive/2005/03/07/050307crmu_music?printable=true	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.B./

Examiner Signature	/Temica Beamer/	Date Considered	12/19/2011
--------------------	-----------------	-----------------	------------

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

T¹ - Place a check mark in this area when an English language translation is attached.

Search Notes 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner
455	414.1, 415, 418, 419, 566, 567, 557, 556.1	8/30/2010	TMB
	updated search	12/19/2011	TMB

SEARCH NOTES		
Search Notes	Date	Examiner
WEST text search	8/30/2010	TMB
WEST text search	12/19/2011	TMB

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
455	418, 567, 557	12/19/2011	TMB
	PGPUB text search	12/19/2011	TMB

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Index of Claims 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	08/30/2010	04/25/2011	12/19/2011					
1	1	✓	✓	=					
2	2	✓	✓	=					
3	3	✓	✓	=					
4	4	✓	✓	=					
5	5	✓	✓	=					
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31	31	✓	✓	=					
32	32	✓	✓	=					

Application Number 	Application/Control No. 12/128,991	Applicant(s)/Patent under Reexamination SHANAHAN, MICHAEL E.

Document Code - DISQ	Internal Document – DO NOT MAIL
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TERMINAL DISCLAIMER	<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED
Date Filed : 26 SEPT 2011	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

JAB

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Michael E. Shanahan
App. No. : 12/128,991
Filed : May 29, 2008
For : METHODS AND APPARATUSES
FOR PROGRAMMING USER-
DEFINED INFORMATION INTO
ELECTRONIC DEVICES
Examiner : Temica M. Beamer
Art Unit : 2617
Conf No. : 1294

RESPONSE TO OFFICE ACTION DATED APRIL 28, 2011**Mail Stop Amendment**

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

Dear Sir:

In response to the Office Action mailed April 28, 2011, Applicants respectfully submit the following comments.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

No amendments have been made to the claims. The claims remain as originally filed.

1. (Original) A method for allowing a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the method comprising:

allowing the wireless communication device to contact the remote computer;

allowing the wireless communication device to select one or more of the user customized data files;

determining a format of the one or more user customized data files selected with the wireless communication device; and

downloading the selected one or more user customized data files to the wireless communication device for subsequent use by a user.

2. (Original) The method of claim 1 further comprising determining at least one format compatible with the wireless communication device.

3. (Original) The method of claim 2 further comprising comparing the at least one format compatible with the wireless communication device with the format of the one or more user customized data files selected by the wireless communication device to determine whether the one or more user customized data files selected with the wireless communication device are compatible with the wireless communication device.

4. (Original) The method of claim 3 further comprising converting the one or more user customized data files selected by the wireless communication device to the at least one format compatible with the wireless communication device if the one or more user customized data files selected by the wireless communication device are not compatible with the wireless communication device.

5. (Original) The method of claim 4 wherein converting the one or more user customized data files selected by the wireless communication device includes converting from HTML format to WML format.

6. (Original) The method of claim 1 further comprising allowing the user to review the one or more user customized data files selected with the wireless communication device prior to downloading to the wireless communication device.

7. (Original) The method of claim 6 further comprising providing the user with an opportunity to modify the one or more user customized data files selected with the wireless communication device.

8. (Original) The method of claim 1, accomplished at least in part, using a Wireless Application Protocol (WAP) compliant system.

9. (Original) The method of claim 1, wherein the method is periodically performed by the wireless device based on preferences specified in software.

10. (Original) The method of claim 1 wherein the one or more user customized data files include Internet access information.

11. (Original) The method of claim 1 wherein the one or more user customized data files include text files.

12. (Original) The method of claim 1 wherein the one or more user customized data files include HTML files or WML files.

13. (Original) The method of claim 1 wherein the one or more user customized data files include word processing or spreadsheet files.

14. (Original) A method for allowing a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the method comprising:

allowing the wireless communication device to contact the remote computer;

allowing the wireless communication device to select one or more of the user customized data files;

determining a format of the one or more user customized data files selected with the wireless communication device; and

periodically downloading the selected one or more user customized data files to the wireless communication device for subsequent use by a user based on preferences specified in software.

15. (Original) The method of claim 4 wherein converting the one or more user customized data files selected by the wireless communication device includes converting the one or more user customized data files selected to a wireless device format suitable for use with the wireless communication device.

16. (Original) The method of claim 15 wherein converting the one or more user customized data files selected by the wireless communication device includes converting from HTML format to WML format.

17. (Original) A computer-readable medium having stored thereon a plurality of sequences of instructions including sequences of instructions which, when executed by one or more processors cause one or more electronic devices to allow a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the plurality of sequences of instructions further comprising instructions which:

allow the wireless communication device to contact the remote computer;

allow the wireless communication device to select one or more of the user customized data files;

determine a format of the one or more user customized data files selected with the wireless communication device; and

download the selected one or more user customized data files to the wireless communication device for subsequent use by a user.

18. (Original) The computer readable medium of claim 18 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one

or more processors cause one or more electronic devices to determine at least one format compatible with the wireless communication device.

19. (Original) The computer readable medium of claim 18 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to compare the at least one format compatible with the wireless communication device with the format of the one or more user customized data files selected by the wireless communication device to determine whether the one or more user customized data files selected with the wireless communication device are compatible with the wireless communication device.

20. (Original) The computer readable medium of Claim 19 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device to the at least one format compatible with the wireless communication device if the one or more user customized data files selected by the wireless communication device are not compatible with the wireless communication device.

21. (Original) The computer readable medium of claim 20 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device from HTML format to WML format.

22. (Original) The computer readable medium of claim 17 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to allow the user to review the one or more user customized data files selected with the wireless communication device prior to downloading to the wireless communication device.

23. (Original) The computer readable medium of claim 22 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to provide the user with an

opportunity to modify the one or more user customized data files selected with the wireless communication device.

24. (Original) The computer readable medium of claim 17 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices including the wireless communication device to operate in compliance with a Wireless Application Protocol (WAP).

25. (Original) The computer readable medium of claim 17 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices including the wireless communication device to periodically execute the instructions of claim 17 based on preferences specified in software.

26. (Original) The computer readable medium of claim 17 wherein the one or more user customized data files include Internet access information.

27. (Original) The computer readable medium of claim 17 wherein the one or more user customized 10 data files include text files.

28. (Original) The computer readable medium of claim 17 wherein the one or more user customized data files include HTML files or WML files.

29. (Original) The computer readable medium of claim 17 wherein the one or more user customized data files include word processing or spreadsheet files.

30. (Original) A computer-readable medium having stored thereon a plurality of sequences of instructions including sequences of instructions which, when executed by one or more processors cause one or more electronic devices to allow a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the plurality of sequences of instructions further comprising instructions which:

allow the wireless communication device to contact the remote computer;

allow the wireless communication device to select one or more of the user customized data files;

determine a format of the one or more user customized data files selected with the wireless communication device; and

periodically download the selected one or more user customized data files to the wireless communication device for subsequent use by a user based on preferences specified in software.

31. (Original) The computer readable medium of claim 30 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device to a wireless device format suitable for use with the wireless communication device.

32. (Original) The computer readable medium of claim 31 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device from HTML format to WML format.

Application No.: 12/128,991
Filing Date: May 29, 2008

REMARKS

The April 28, 2011 Office Action was based upon pending Claims 1-32. No claim amendments have been made. Thus, after entry of this response, Claims 1-32 are pending and presented for further consideration.

ISSUES RAISED IN THE OFFICE ACTION

The Examiner rejected Claims 1-32. In particular, the Examiner rejected Claims 1-32 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-10 of U.S. Patent No. 7,319,866; Claims 1-30 of U.S. Patent No. 7,295,864; Claims 1-34 of U.S. Patent No. 7,289,798; Claims 1-46 of U.S. Patent No. 7,257,395; and Claims 1-9 of U.S. Patent No. 6,496,692.

Further, the Examiner provisionally rejected Claims 1-32 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 2-47 of U.S. Application No. 12/335,300.

REJECTION OF CLAIMS 1-32 FOR OBVIOUSNESS-TYPE DOUBLE PATENTING

The Examiner rejected Claims 1-32 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-10 of U.S. Patent No. 7,319,866; Claims 1-30 of U.S. Patent No. 7,295,864; Claims 1-34 of U.S. Patent No. 7,289,798; Claims 1-46 of U.S. Patent No. 7,257,395; and Claims 1-9 of U.S. Patent No. 6,496,692. In response, Applicant submits herewith Terminal Disclaimers in compliance with 37 C.F.R. §1.321(b) and (c). Applicant respectfully requests that the obviousness-type double patenting rejection be withdrawn.

PROVISIONAL REJECTION OF CLAIMS 1-32 FOR OBVIOUSNESS-TYPE DOUBLE PATENTING

The Examiner provisionally rejected Claims 1-32 under obviousness-type double patenting as being unpatentable over Claims 2-47 of U.S. Application No. 12/335,300. In response, Applicant submits herewith a Terminal Disclaimer in compliance with 37 C.F.R. §1.321(b) and (c). Applicant respectfully requests that the obviousness-type double patenting rejection be withdrawn.

Application No.: 12/128,991

Filing Date: May 29, 2008

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Submitted concurrently herewith is a Supplemental Information Disclosure Statement citing 16 new references. Applicant respectfully requests the Examiner to consider the pending claims in connection with these references in order to make the references of record.

NO DISCLAIMERS OR DISAVOWALS

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application.

Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution.

Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

RESCISSION OF ANY PRIOR DISCLAIMERS AND REQUEST TO REVISIT ART

The claims of the present application are different and possibly broader in scope than any pending claims in any related application or issued claims in any related patent. In particular, in one or more parent applications, the following references were cited: U.S. Publication No. 2004/0073591 and U.S. Patent Nos. 5,479,477; 5,694,455; 5,724,411; 5,870,683; 5,963,877; 6,138,006; 6,192,340; 6,233,682; 6,275,234; 6,366,791; 6,385,305; 6,449,359; 6,496,692; 6,501,967; 6,603,985; 6,718,021; 6,720,969; 6,728,531; 6,778,179; 6,829,618; 6,831,617; 6,845,398; 6,848,011; 7,013,006; 7,020,497; 7,031,453; 7,035,675; 7,065,342; 7,088,990; 7,113,981; 7,119,268; 7,119,368; 7,149,509; 7,161,081; 7,203,523; and 7,209,900.

Application No.: 12/128,991

Filing Date: May 29, 2008

To the extent that any amendments or characterizations of the scope of any claim or referenced art could be construed as a disclaimer of any subject matter supported by the present disclosure, Applicant hereby rescinds and retracts such disclaimer. Accordingly, the above-listed references, or other listed or referenced art may need to be re-visited.

In addition, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

OTHER APPLICATIONS OF ASSIGNEE

Applicant wishes to draw the Examiner's attention to the following applications of the present application's assignee.

Inventor	App. No.	Filed	Docket No.	Title
Shanahan	09/518,712 Now Pat No. 6,496,692	03/03/00	PREMM.001A1	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	10/223,200 Now Pat No. 7,257,395	08/16/02	PREMM.001A1C1	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	10/915,862 Now Pat. No. 7,289,798	08/11/04	PREMM.001A1C2	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	10/915,866 Now Pat No. 7,319,866	08/11/04	PREMM.001A1C3	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	11/633,135 Publication No. 2008- 0182619	12/02/06	PREMM.001A1C4	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	10/600,975 Now Pat No. 7,149,509	06/20/03	PREMM.001A2C1	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	10/603,271 Now Pat No. 7,295,864	06/24/03	PREMM.001A2C2	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices

Application No.: 12/128,991

Filing Date: May 29, 2008

Inventor	App. No.	Filed	Docket No.	Title
Shanahan	10/603,285 Now Pat No. 7,620,427	06/24/03	PREMM.001A2C3	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	11/633,122 Now Pat No. 7,742,759	12/02/06	PREMM.001A2C4	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	12,128,991 Publication No. 2008- 0287115	05/29/08	PREMM.001A2C5	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	12/335,300 Publication No. 2009- 0131105	12/15/08	PREMM.001A2C6	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices
Shanahan	11/633,142 Now Pat No. 7,555,317	12/05/06	PREMM.001A2C7	Methods And Apparatuses For Programming User-Defined Information Into Electronic Devices

Applicant notes that cited references, office actions, responses and notices of allowance currently exist or will exist for the above-referenced matters. Applicant also understands that the Examiner has access to sophisticated online Patent Office computing systems that provide ready access to the full file histories of these matters including, for example, specifications, drawings, pending claims, cited art, office actions, responses, declarations, and notices of allowance.

Rather than submit copies these file histories, Applicant respectfully requests that the Examiner continue to review these file histories online for past, current, and future information about these matters. Also, if the Examiner cannot readily access these file histories, the Applicant would be pleased to provide any portion of any of the file histories at any time upon specific Examiner request.

CONCLUSION

In view of the forgoing, the present application is believed to be in condition for allowance, and such allowance is respectfully requested. If further issues remain to be resolved, the Examiner is cordially invited to contact the undersigned such that any remaining issues may be promptly resolved.

Application No.: 12/128,991
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Also, please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9-26-2011

By: John R. King
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INFORMATION DISCLOSURE STATEMENT

Applicant : Shanahan, Michael E.
App. No : 12/128,991
Filed : May 29, 2008
For : METHODS AND APPARATUSES
FOR PROGRAMMING USER-
DEFINED INFORMATION INTO
ELECTRONIC DEVICES
Examiner : Beamer, Temica M.
Art Unit : 2617
Conf No. : 1294

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

Dear Sir:

Enclosed for filing in the above-identified application is a PTO/SB/08 Equivalent listing 18 references, of which 9 are enclosed/submitted.

This Information Disclosure Statement is being filed before the mailing date of a final action and before the mailing of a Notice of Allowance. This Statement is accompanied by the fees set forth in 37 C.F.R. § 1.17(p). The Commissioner is hereby authorized to charge any additional fees which may be required or to credit any overpayment to Account No. 11-1410.

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 9-26-2011

By: John R. King
John R. King
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	12/128,991	
	Filing Date	05-29-2008	
	First Named Inventor	Shanahan, Michael E.	
	Art Unit	2617	
<i>(Multiple sheets used when necessary)</i>		Examiner	Beamer, Temica M.
SHEET 1 OF 1		Attorney Docket No.	PREMM.001A2C5

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number Number - Kind Code (if known) Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	5,262,275	11-1993	Fan	
	2	5,479,477	12-1995	McVey et al.	
	3	5,550,557	08-1996	Kapoor et al.	
	4	6,233,682 B1	05-2001	Fritsch	
	5	6,418,330 B1	07-09-2002	Lee	
	6	6,871,084 B2	03-22-2005	Takagaki	
	7	7,555,317	06-30-2009	Shanahan, Michael	
	8	7,620,427	11-17-2009	Shanahan, Michael	
	9	7,742,759	06-22-2010	Shanahan, Michael	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document Country Code-Number-Kind Code Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ¹
	10	GB 2343084 A	04-26-2000	Putnam, et al.		
	11	JP 10173737 A2	06-26-1998	Emiko		X-abs
	12	JP 2001195068	07-19-2001	Takeshi, et al.		X-abs
	13	JP 2001404867 A	02-16-2001	Takeshi, et al.		X-abs
	14	WO 00/79770	12-28-2000	Son, et al.		
	15	WO 01/41411 A2	06-07-2001	Schuster, et al.		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ¹
	16	FRERE-JONES, "Ring My Bell", The New Yorker, March 7, 2005. http://www.newyorker.com/archive/2005/03/07/050307crmu_music?printable=true	
	17	PEREMULTER, "First Ever MEF Special Recognition Award Goes to the Pioneer of the Mobile Ringtone Business", MEFMobile, www.mefmobile.org/index.php?id=391	
	18	TAKEISHI, ET AL., "Mobile Innovation and the Music Business in Japan: The Case of Ringing Tone Melody", Institute of Innovation Research - Hitotsubashi University, May 2003, http://www.newyorker.com/archive/2005/03/07/050307crmu_music?printable=true	

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

T¹ - Place a check mark in this area when an English language translation is attached.

(12) **UK Patent Application** (19) **GB** (11) **2 343 084** (13) **A**

(43) Date of A Publication **26.04.2000**

(21) Application No **9919999.4**
 (22) Date of Filing **25.08.1999**
 (30) Priority Data
 (31) **09175156** (32) **19.10.1998** (33) **US**

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(51) INT CL⁷
H04M 1/64 // H04M 1/65

(52) UK CL (Edition R)
H4K KBHE

(56) Documents Cited
GB 2318702 A EP 0763958 A2 EP 0719019 A2
WO 93/11643 A1 US 5581604 A US 5446785 A
US 5406618 A US 5031205 A US 5029198 A

(58) Field of Search
 UK CL (Edition Q) **H4K KBHE**
 INT CL⁶ **H04M 1/64 1/65**
ONLINE: WPI, PAJ, EPODOC

(54) Abstract Title
Method and system for providing customized audio responses to incoming phone calls.

(57) A telephone answering system 100 and method 200 that permits a user to immediately generate a customized playback message in response to an incoming call without having to actually answer the call. The system 100 can include a ring detector 104 a command interface 114 a controller 110 and a telephone network interface 102. In response to an incoming call, the ring detector 104 alerts the called party and causes the controller 110 to activate the command interface 114. The command interface 114 is activated for a predetermined time while the call is still ringing. While activated, the called party can select or enter a playback message. The playback message can be a pre-recorded audio message stored within the device, or a voice message spoken by the called party during the activation period. After the playback message is selected by the called party, the telephone system 100 answers the incoming call and automatically plays the customized message to the calling party.

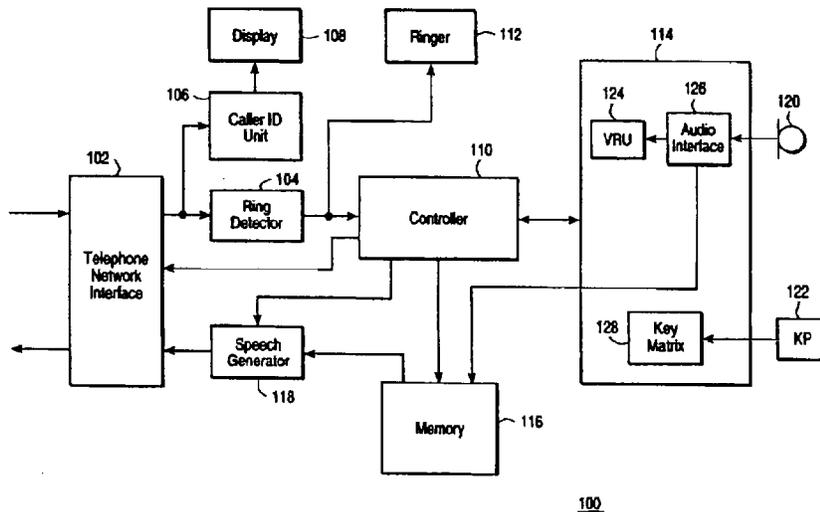


FIG. 2

100

GB 2 343 084 A

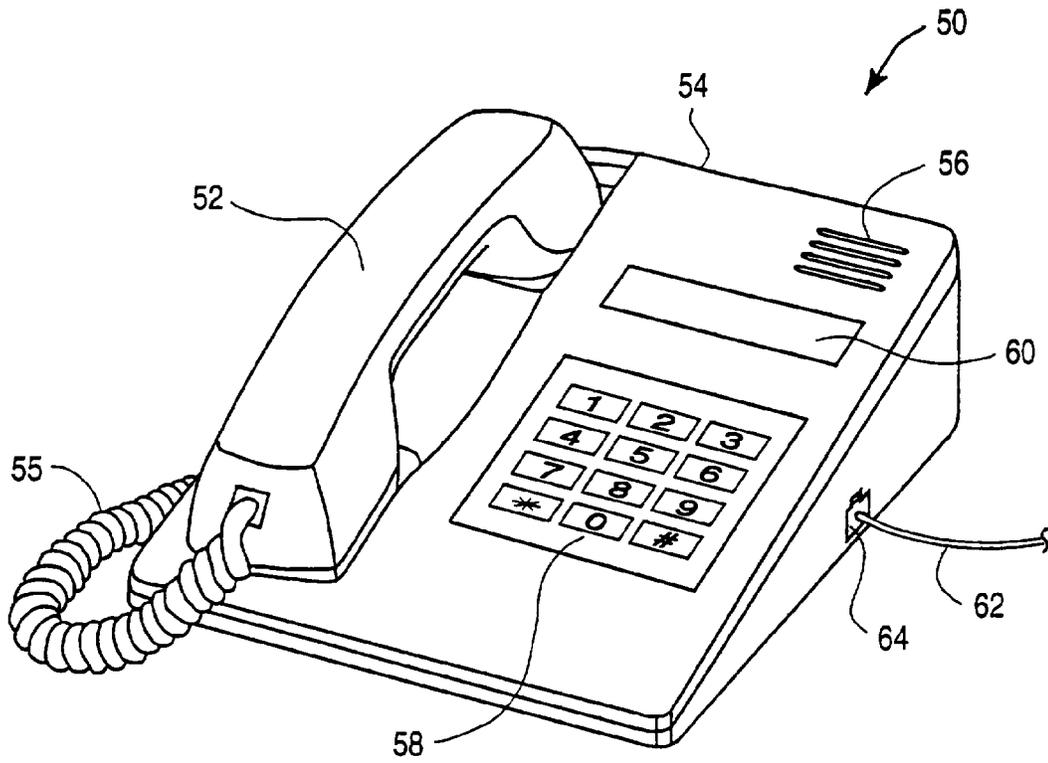
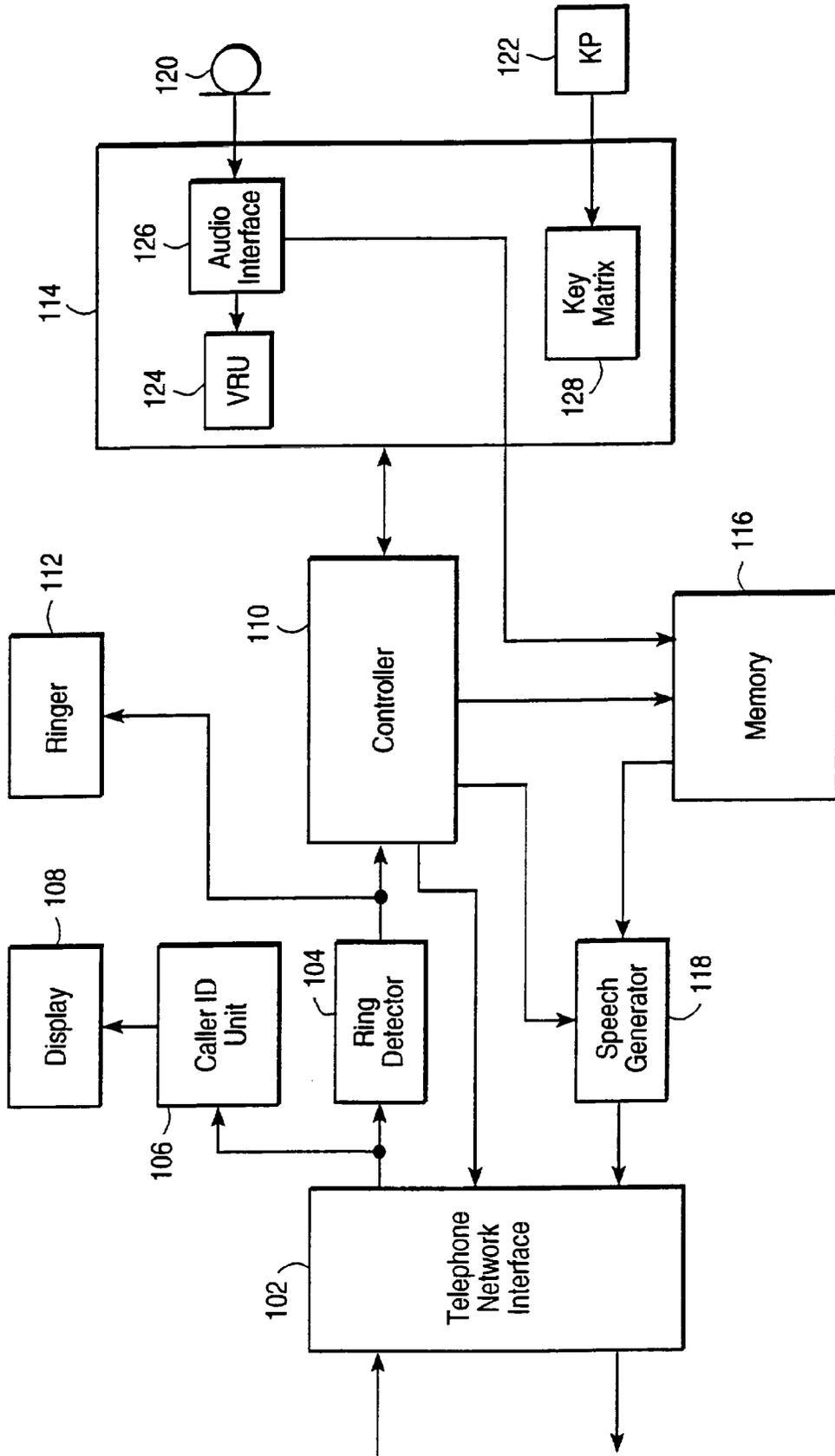


FIG. 1



100

FIG. 2

200

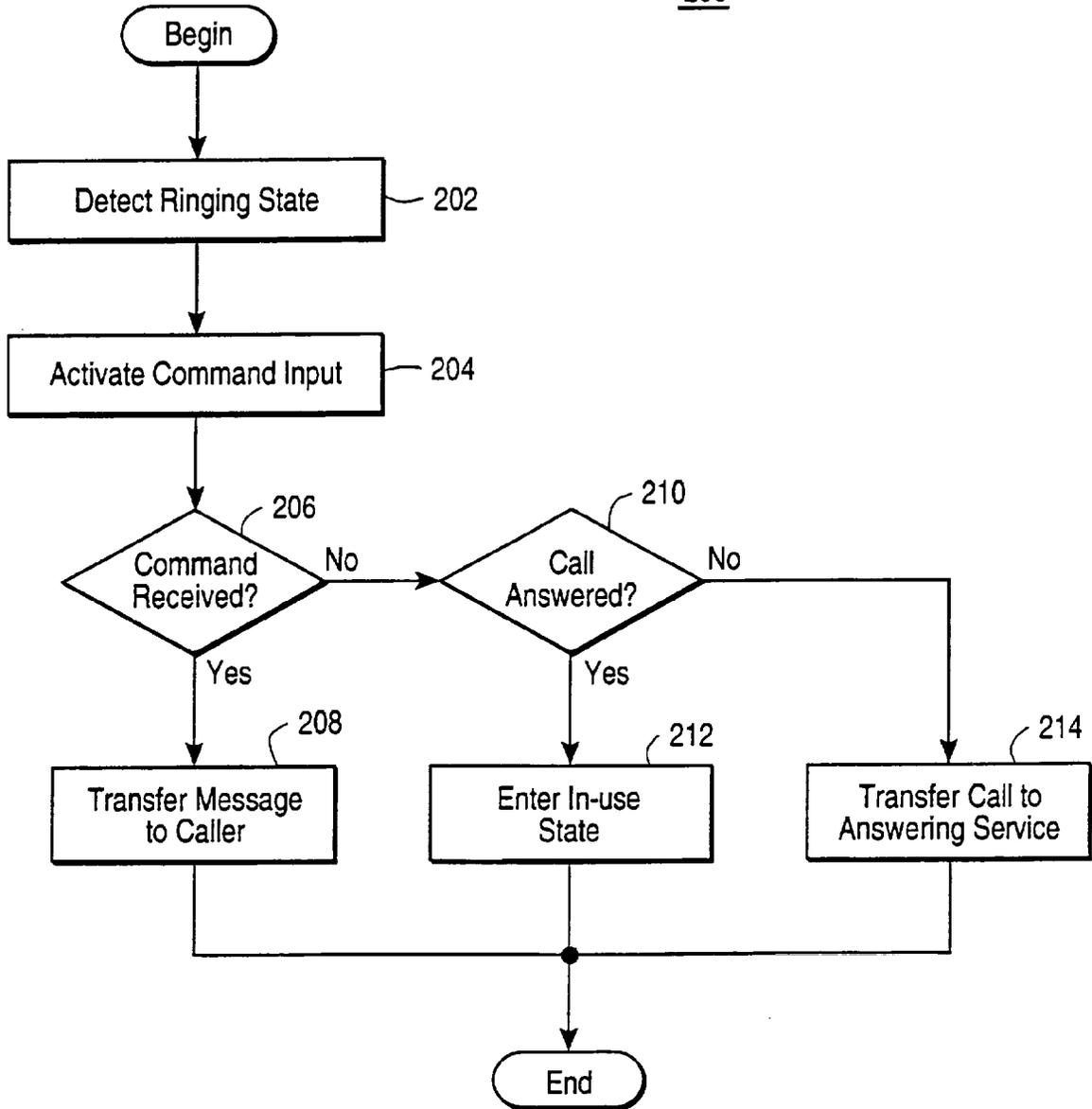


FIG. 3

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention generally relates to telephone answering devices, and in particular, to an improved method and system for selectively presenting customized audio messages to callers without answering the call or directing the call to a phone mail system.

DESCRIPTION OF THE RELATED ART

A conventional phone answering machine automatically plays a pre-recorded audio message to a caller when a called party fails to answer. A pre-recorded message is typically generic in nature, informing the caller that the called party is unavailable and that the caller may leave a message if so desired. In some instances, the answering device gives the caller the option to transfer to another destination, such as a receptionist or secretary, who can provide more information as to the whereabouts of the called party.

On occasion, a called party may be aware of an incoming call, but unable to immediately answer. For instance, the called party could be engaged in a meeting. In such instances, it may be desirable to provide a customized recorded message to the caller without actually answering the call. A customized message could provide specific information, for example, a notice that the called party will return the incoming call within a few minutes.

SUMMARY OF THE INVENTION

The present invention is embodied in a telephone answering device that permits a user to immediately generate a customized playback message in response to an incoming call without having to actually answer the call.

According to one embodiment of the present invention, the telephone device includes a ring detector, a command interface, a controller and a telephone network interface. In response to an incoming call, the ring detector alerts the called party and causes the controller to activate the

command interface. The command interface is activated for a predetermined time while the call is still ringing. While activated, the called party can select or enter a playback message. The playback message can be a pre-recorded audio message stored within the device, or a voice message spoken by the called party during the activation period. After the playback message is selected by the called party, the telephone device answers the incoming call and automatically plays the customized message to the calling party.

A voice recognition unit (VRU) can be included in the command interface so that the message playback features can be controlled by spoken commands.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is pointed out with particularity in the appended claims. However, other features of the invention will become more apparent, and the invention will be best understood by referring to the following specification and accompanying drawings, in which:

FIG. 1 illustrates a telephone device in accordance with one embodiment of the present invention;

FIG. 2 illustrates a detailed block diagram of a system for generating customized messages, which can be incorporated into the telephone device of FIG. 1; and

FIG. 3 is a flowchart diagram illustrating a method responding to incoming calls in accordance with another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The invention can be embodied by any device intended to present audio messages to callers. Thus, the embodiments discussed herein are exemplary.

Referring now to the drawings, FIG. 1 shows a telephone 50 that can incorporate a phone answering device in accordance with an embodiment of

the present invention. The telephone 50 includes a handset 52, and a base unit 54. The handset 52 includes a conventional loudspeaker and microphone transducing audio information between a user and circuitry included within the base unit 54. Communication between the handset 52 and the base unit 54 is accomplished using a conventional telephone cord 55. Alternatively, the telephone 50 can be a cordless telephone, where the handset 52 and base unit 54 each include a respective radio frequency (RF) transceiver and the cord 55 is replaced by an RF communications link.

The base unit 54 can include a built-in conventional loudspeaker/microphone 56, a keypad 58, and a display 60. The loudspeaker/microphone 56 permits the phone 50 to operate as a speaker phone, with the handset 52 remaining cradled in an on-hook position. The keypad 58 can be a conventional telephone keypad that permits a user to manually enter phone numbers or access specialized functions provided by the phone 50. The keypad 58 can include a standard touch-tone 10-digit keypad and any number of special function keys. The base unit 54 is connectable to a conventional telephone line 62 using a standard telephone jack 64. In this arrangement, the telephone 50 receives and transmits standard analog telephony signals over the line 62. Alternatively, the phone 50 can be a digital phone that directly receives digital signals over the line 62 from a digital trunk or switch. In addition, the present invention can be embodied in a wireless telephone, such as a cellular phone, that uses a conventional cellular RF link instead of the telephone line 62 and jack 64.

FIG. 2 illustrates a detailed block diagram of a system 100 that is includable in the phone 50 for generating customized playback messages. The system 100 includes a telephone network interface 102, a ring detector 104, an optional caller-ID unit 106, a caller-ID display 108, a controller 110, a ringer 112, a command interface 114, a memory 116, a speech generator 118, a microphone 120 and a keypad 122.

The telephone network interface 102 includes standard circuitry and hardware for interfacing to a conventional telephone network. The telephone

network can be a standard land line, such as the conventional telephone line 62, or a wireless telephone network, such as a cellular network, or a digital line communicating with a standard digital trunk or switch. In a conventional land line network, the telephone interface 102 can include a jack receptacle for receiving the jack 64, and can pass analog information to the ring detector 104 and the caller-ID unit 106. The telephone interface 102, likewise, passes conventional analog telephony signals to the network from the speech generator 118.

The ring detector can include conventional off-the-shelf circuitry for detecting the ring signal produced by an incoming call. Upon detecting an incoming call, the ring detector 104 generates a signal which activates the ringer 112 and sets the controller 110 into a ring state.

The caller-ID unit 106 can include commercially available circuitry for deriving caller-ID information presented by the incoming call, such as Part No. CMX602A, manufactured by MX-COM Inc., of Winston-Salem, North Carolina. The caller-ID information can be presented on the display 108 so that the called party can be alerted to the identification of the caller before entering a customized message. The display 108 can be any conventional alpha-numeric display, such as a liquid crystal display (LCD), and can be included in the display 60 of FIG. 1.

The caller ID function is important in that it alerts the called party to the identity of the caller prior to answering the phone. This permits the called party to tailor the playback message accordingly and would provide further motivation for using the on-the-fly message generation feature of the present invention.

When the system 100 is included in a digital phone, the caller identification information can be included in a conventional ring message generated by a digital switch. The caller information in the ring message would be presented at the display 108.

The ringer 112 can be any means for generating an audio signal to indicate the presence of the incoming call, such as a conventional bell ringer or an alert generating circuit coupled to a loudspeaker.

The command interface 114 can be activated by providing an active enable signal to the components of the interface 114. The duration of the enable signal can be set using a timer or countdown routine included in the controller 110.

In addition to controlling the command interface 114, the controller 110 can also perform functions associated with conventional telephones, such as responding to on-hook/off-hook conditions, responding to special function keys, such as speed dialing, controlling the network interface 102, and the like.

In the ring state, the controller 110 activates the command interface 114 for a predetermined period of time during which the called party can select to generate a customized response to the incoming call. As stated earlier, in response to the detection signal, the controller 110 enters a ring state.

The controller 110 can be a microprocessor executing a software program. The microprocessor can be any commercially available processor suitable for performing the functions disclosed herein, such as a microprocessor selected from the X86 family of processors or 8051 family of microcontrollers manufactured by Intel Corporation, any processor selected from the 68K or Power PC microprocessors manufactured by Motorola, Inc., or the C161RI microprocessor manufactured by Siemens Corp.

In the command interface 114, the called party selects or enters a customized audio message. As shown, the command interface 114 can include an audio interface 126 in communication with a voice recognition unit (VRU) 124 for recognizing spoken commands, as well as a key matrix circuit 128 communicating with keypad 122. Accordingly, the called party can enter commands using speech or by manually keying in the command. In alternative embodiments of the invention, the command interface 114 can

include either the voice interface (VRU 124 and audio interface 126) or the keypad interface alone.

The voice and keypad interfaces can be activated by selectively enabling data busses passing data from the interfaces to the other components of the system 100. The busses can be enabled by the active enable signal from the controller 110.

User commands can include an instruction and a message parameter. The instruction directs the system 100 to perform a specific function, while the parameter is a variable attribute associated with the function. For example, the user could enter a command which includes the instruction "call back" and the parameter "ten". This command would cause the system 100 to play a customized pre-recorded or synthesized message to the caller stating that the user will call back in ten minutes. Alternatively, the user could enter the instruction "record" without parameters, whereby causing the system 100 to record a voice message for immediate playback to the caller, while the call is pending.

For entering spoken commands, the user speaks into the microphone 120, which produces an electronic signal received by the audio interface 126. The microphone 120 can be a conventional microphone built into the phone base unit 54, such as the loudspeaker/microphone 56. The audio interface 126 includes conventional audio circuitry for amplifying, filtering, sampling and converting the audio input to digital signals. The digitized audio signals are then passed to the VRU 124. The digitized audio can also be transferred to the memory 116 for storing customized messages for playback. The audio interface 126, as well as some of the functions of the interface 102, ring detector 104 and the ringer 112 can be implemented using an ARCOFI Chip, Part No. PSB2163, manufactured by Siemens Corp. In such an embodiment, the ARCOFI Chip can be readily interfaced to a conventional microprocessor performing the functions of the controller 110. The ARCOFI Chip also provides an interface to the standard loudspeaker and microphone in a phone handset, such as handset 52.

The VRU 124 is configured to recognize spoken commands uttered by the called party. The VRU 124 can include a commercially available off-the-speech recognition engine, such as Phone Query™, from Dragon Systems, Inc. of Newton, MA; or Speechworks from AI Tech, Inc. of Boston, MA. Typically, the speech recognition engine is provided as software executing on a microprocessor (not shown). The microprocessor can also execute additional software routines in conjunction with the speech recognition engine, wherein the additional software routines generate control signals when the speech recognition engine identifies predetermined spoken commands. The control signals can be used to control recordation of a spoken message received by the audio interface 126, or to access pre-recorded messages stored in the memory 116.

A separate microprocessor can be used to implement the VRU 124, such as any of those listed earlier in reference to the controller 110. Alternatively, the functionality of the VRU 124 and the controller 110 can be included in software routines that are executed by a common processor.

To manually enter commands, the user enters the message parameters using the keypad 122. The key matrix circuit 128 interfaces with the keypad 122 and presents digital keyed-in information to the controller 110. The keypad 122 can be a standard touch-tone pad, such as keypad 58 shown in FIG. 1, having special function buttons dedicated to activating and controlling the customized message feature. For instance, the user could select a key which causes the controller 110 to retrieve a specific pre-recorded message from the memory 116 for playback through the speech generator 118. Alternatively, the user could also key in a command to activate the audio interface 126 so that the user can record a message for immediate playback to the caller.

When the user selects the option of recording a message on-the-fly, the audio interface is activated for a recording session having a predetermined duration. During the recording session, a digitized voice from the audio interface is temporarily stored in the memory 116. To transfer voice

data from the audio interface 126 to the memory 116, the controller 110 enables data transfers over a bus connecting the interface 126 and memory 116. In addition to storing messages generated on-the-fly, the memory 116 can also store pre-recorded messages at predetermined locations. The memory 116 can be any type of commercially-available computer memory, such as a Flash memory or RAM. The stored digitized voice can represent an audio message of predetermined duration.

Immediately after a message is selected or recorded, the controller 110 activates the speech generator 118 and answers the incoming call. Based on the instruction and message parameters entered by the user, the controller 110 accesses a message stored in the memory 116. Upon receiving the digitized voice from the memory 116, the speech generator 118 plays back the customized message to the caller. The speech generator 118 includes conventional circuitry for converting the digitized voice stored in the memory 116 to an analog audio signal suitable for transmission over the telephone network. The speech generator 118 can be implemented using a SAM chip, Part No. PSB2168, manufactured by Siemens Corp. In addition, the SAM chip can be used to interface the audio interface 126 to the memory 116. In such an embodiment of the invention, the controller 110 would be a microprocessor controlling the SAM chip.

In addition to telephones, the system 100 is includable in other devices, such as telephone switches and voice mail systems. In such embodiments of the invention, the system 100 would be a centralized resource, available to multiple users. The centralized arrangement of the system 100 would reduce the cost of the individual phones in the subscriber system. The telephones in this arrangement would act as dumb terminals, collecting voice and key commands and passing them over a conventional internal subscribe line to the centralized system. Accordingly, each telephone would include the display 108, the ringer 112, the microphone 120, and the key pad 122 and matrix 128. The remaining elements of the system 100 could reside at the centralized location. The controller 110 would include a

software routine for responding to commands received over the subscriber line.

Users could activate the system by depressing a special function key included with each phone, which in essence would place the incoming call on hold and place a conventional phone call to an extension assigned to the centralized system 100. The subscriber switch would regulate access to the centralized system in the conventional manner that it would regulate access to other extensions. After the user selects or enters the playback message, the user terminates the call to the centralized system, which causes the switch to transfer the held call to the system 100. The system 100 then plays the customized message to the incoming caller.

FIG. 3 illustrates a flowchart diagram of a method 200 for responding to incoming calls according to another embodiment of the invention. The method 200 can be implemented as a software routine executable by the controller 110.

In step 202, the ring signal presented by the incoming call is detected. In response to the ring signal, the command interface 114 is activated (step 204). As discussed early, the interface 114 can be activated by an enable signal from the controller 110. In step 206, a check is made to determine whether the called party has entered a command via the command interface 114. The command can be entered using either the voice or keypad interface. If a command requesting the generation of a custom message has been received, the method proceeds to step 208, otherwise, the method proceeds to step 210. In step 208, the called party enters or selects an audio message while the call is pending for immediate playback to the caller. The incoming call is then answered and the message is transferred to the caller. After the message has played, the controller 110 can release the call.

In step 210, a check is made to determine whether the called party answered the incoming call. This can be accomplished by monitoring the on-hook/off-hook condition of the phone. If so, the system 100 enters an in-use state in step 212 and is deactivated until the incoming call is terminated. If

the incoming call is not answered and the called party has not entered a command instructing the system 100 to generate a customized audio message, the call is transferred to a conventional answering service, such as voice mail, an answering machine, or a receptionist (step 214).

CLAIMS

1. A system (100) for responding to an incoming phone call, characterized by:

means for receiving (102) the incoming phone call;

5 means for generating (106) a user alert in response to the incoming phone call;

means for enabling (114) selective entry of a user message entered in response to the alert while the incoming call is pending; and

means for playing (118) the user message to the calling party.

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2. The system of claim 1, further comprising means (110) for releasing the call after playing the message.

3. The system of claim 1, further comprising means for displaying (108) caller identification information to the user.

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4. The system of claim 1, wherein the receiving means (102) includes means for activating (110) a user command interface for predetermining period of time following commencement of the user alert.

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5. The system of claim 1, wherein the receiving means includes a voice recognition unit (124) for recognizing at least one spoken command.

6. The system of claim 5, wherein the at least one spoken command includes a predetermined instruction and a variable parameter.

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7. The system of claim 1, wherein the receiving means includes means for manually selecting (122) the user message.

8. The system of claim 1, wherein the means for receiving includes means for recording (126) an audio user message.

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9. The system of claim 1, wherein the means for receiving includes means for storing (116) the user message.

5 10. The telephone device of claim 1, further comprising:
a key pad (122) permitting the called party to manually enter the message parameters.



Application No: GB 991999.4
Claims searched: 1 to 10

Examiner: Mark Bell
Date of search: 11 October 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.Q): H4K (KBHE)
Int Cl (Ed.6): H04M 1/64, 1/65
Other: ONLINE: WPI, PAJ, EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X, Y	GB 2318702 A MITEL CORPORATION (see page 2 lines 1 to 29)	X:1, 2, 4, 7 to 10 Y:3, 5 and 6
X, Y	EP 0763958 A2 NEC CORPORATION (see column 1 line 49 to column 2 line 8.)	X:1 to 4, 7 to 10 Y: 5 and 6
X, Y	EP 0719019 A2 ALCATEL SEL AG (see abstract)	X:1, 2, 4, 7 to 10 Y:3, 5 and 6
X, Y	WO 93/11643 A1 SIERRA SEMICONDUCTOR CORPORATION	X:1, 2, 4, 7 to 10 Y:3, 5 and 6
X, Y	US 5581604 ROBINSON ET AL	X:1, 2, 4, 7 to 10 Y:3, 5 and 6
Y	US 5446785 HIRAI	3
Y	US 5406618 KNUTH ET AL	5 and 6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



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Claims searched: 1 to 10

Examiner: Mark Bell
Date of search: 11 October 1999

Category	Identity of document and relevant passage	Relevant to claims
X, Y	US 5029198 WALPOLE ET AL (see column 3 lines 20 to 29)	X:1, 2, 4, 7 to 10 Y:3, 5 and 6
X, Y	US 5031205 PHILLIPS (see abstract)	X:1, 2, 4, 7 to 10 Y:3, 5 and 6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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(72) Inventor: **KEZUKA EMIKO**

(54) PERSONAL EQUIPMENT

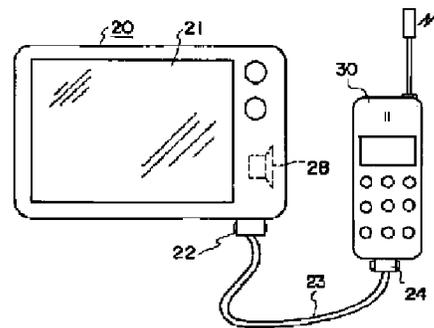
(57) Abstract:

PROBLEM TO BE SOLVED: To provide a personal equipment, in which a desired incoming call tone is selected among diversified and various incoming call tones and which easily changes the incoming call tone.

SOLUTION: A personal information terminal equipment 20 has a selection means that selects a desired tone by the user among various and diversified incoming call tone stored in a center server, a communication equipment (a portable telephone set in this embodiment) 30 that downloads music data of the incoming call tone selected by the selection means from the center server via a network, a music data memory that

stores the music data obtained from the communication equipment 30, and a tone generating circuit that generates the incoming call tone according to the music data stored in the music data memory.

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(19)



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(54) PORTABLE TERMINAL DEVICE, MUSIC INFORMATION UTILIZATION SYSTEM, AND BASE STATION

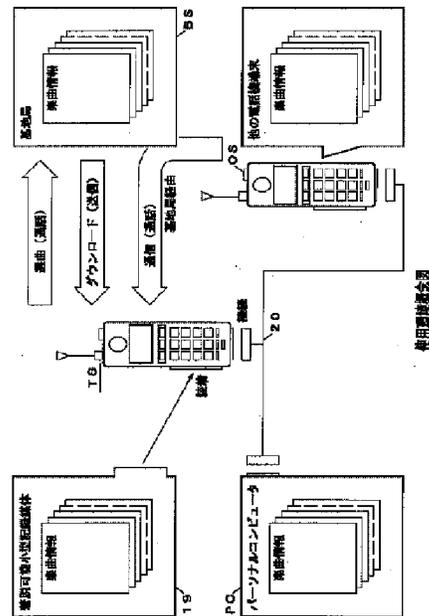
system TS is provided with various functions such as change in tempo, automatic composition, sound pitch detection, chord detection.

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(57) Abstract:

PROBLEM TO BE SOLVED: To realize various music data processing functions such as change in tempo, automatic composition, sound pitch detection, chord detection, style reproducing, format conversion of music information, audition.

SOLUTION: A portable terminal system TS in accordance with this invention has plural sound simultaneous generating function using FM sound sources, and generates melody sound at the time of information arrival, BGM sound during conversation, or the like by using desired music information downloaded in the terminal system TS through communication with a base station BS. The music information for sound generation can be obtained from the base station BS, other telephone set terminals OS, a personal computer terminal PC, or a compact recorded medium 19. It is also possible to fetch music information containing data of words and enjoy it as 'KARAOKE'. The music information is downsized into a usable mode by edition, compression, form conversion, or the like in the information source BS, the PC, and the system TS. Moreover, the



JP2001042867A 2001-02-16 SOUND GENERATION CONTROL DEVICE, AND DEVICE AND SYSTEM USING THE SAME (en)

English Abstract:

PROBLEM TO BE SOLVED: To provide a highly expandable sound generation control device for **portable terminal** device capable of facilitating tone setting, editing production, etc., and also obtaining various melody tones. **SOLUTION:** A **portable terminal** system TS has a plurality of sound simultaneous generation functions using a FM sound source, and generates melody tones indicating message arrival, BGM tones during talking, etc., by using desired **music** information **downloaded** into the terminal system TS via communications with a base terminal BS. The music information for generating sound can be fetched from information produced by a personal computer terminal PC or information of other telephone terminals OS via a communication cable 20, or from recorded information of a small type recording medium 19 mounted on the system TS, or communication information from another telephone terminal OS via the base station BS. The music information introduced into the system TS is down-sized to a usable mode by editing, compression, **format conversion**, etc., in the information source BS, PC, and the system TS.

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IPC-ADDL-CL: G10H1/00 20060101AFI20051220RMJP (20060101) Advanced-
First20051220 (A F I R M JP)
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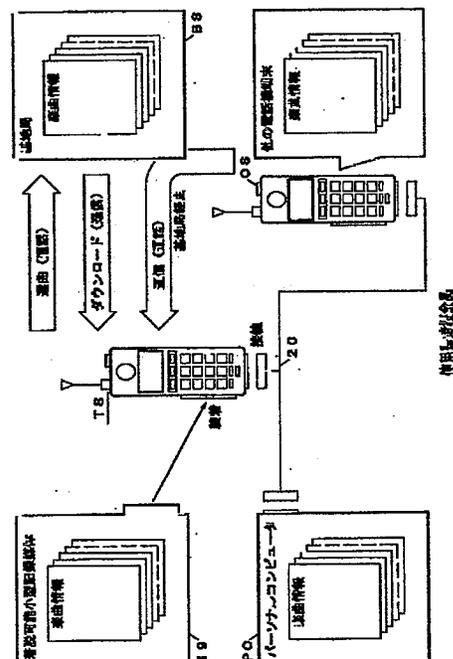
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(54) 【発明の名称】 発音制御装置並びにこれを用いた装置及びシステム

(57) 【要約】

【課題】音色の設定、編集、作成等を容易にすると共に豊かで多彩なメロディ音を得ることができる携帯用端末装置のための高拡張性発音制御装置の提供。

【解決手段】この発明による携帯用端末システムTSは、FM音源の利用による複数音同時発音機能を有し、基地局BSとの通話により端末システムTS内にダウンロードされる所望の楽曲情報を用いて、着信時のメロディ音や通話中のBGM音等を発音する。発音用の楽曲情報は、パーソナルコンピュータ端末PCで作成された情報や他の電話機端末OSの情報から通信ケーブル20を介して取り込んだり、また、システムTSに装着される小型記録媒体19に記録情報や、他の電話機端末OSから基地局BSを経由する通話情報から得ることもできる。システムTSに導入される楽曲情報は、情報源BS、PCやシステムTS内での編集、圧縮、形式変換等によって、使用可能な形態にダウンサイジングされる。



【特許請求の範囲】

【請求項1】 楽音の発音が可能な携帯用端末装置に備えられる発音制御装置であって、

演奏情報並びに音色及び効果に関する設定情報を取得する情報取得手段と、

音色に関する設定情報に基づいて設定される音色が与えられ演奏情報に対応する楽音信号を生成する音源手段と、

生成された楽音信号に対して、効果に関する設定情報に基づいて設定される効果を付与する効果付与手段と、効果が付与された楽音信号を出力する出力手段とを具備することを特徴とする発音制御装置。

【請求項2】 楽音の発音が可能な携帯用端末装置に備えられる発音制御装置であって、

楽音情報を記憶する記憶手段と、記憶された楽音情報に基づいて、所定の音色をもち所定の効果が付与された楽音信号を生成する楽音生成手段と、

携帯用端末装置とは独立して、これらの記憶手段及び楽音生成手段を制御する制御手段とを具備することを特徴とする発音制御装置。

【請求項3】 楽音情報、音声情報及び画像情報を記憶する記憶手段と、

記憶された楽音情報に基づいて、楽音情報に含まれる設定情報に対応する所定の音色乃至効果が与えられた楽音信号を生成する発音制御装置と、

記憶された音声情報及び画像情報に基づいて音声信号及び画像信号を生成する手段とを具備することを特徴とする携帯用端末装置。

【請求項4】 記憶手段に記憶される楽音情報は、記憶手段の記憶容量に対応して、汎用楽音情報フォーマットに比べてダウンサイジングされたフォーマットにて記述されていることを特徴とする請求項4に記載の携帯用端末装置。

【請求項5】 楽音の発音が可能な携帯用端末装置及び楽音情報源を有する基地局から成る楽音情報利用システムにおいて、

携帯用端末装置から送信される選択情報に応じて、対応する楽音情報を楽音情報源から選択する情報選択手段と、

選択された楽音情報について、携帯用端末装置で発音される楽音に与える音色及び効果を表わす設定情報を付与する設定情報付与手段と、

設定情報が付与された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成する発音制御装置とを具備することを特徴とする楽音情報利用システム。

【請求項6】 さらに、選択情報を送信した携帯用端末装置に対して課金作業を行う課金手段を具備することを特徴とする請求項5に記載の楽音情報利用システム。

【請求項7】 楽音の発音が可能な携帯用端末装置及び楽音情報の作成又は編集が可能な楽音情報処理装置から成る楽音情報利用システムにおいて、

作成又は編集された楽音情報を圧縮する情報圧縮手段と、

圧縮された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成する発音制御装置とを具備することを特徴とする楽音情報利用システム。

【請求項8】 楽音の発音が可能な携帯用端末装置及び楽音情報を記憶している楽音情報源から成る楽音情報利用システムにおいて、

楽音情報源に記憶されている楽音情報を携帯用端末装置内に取り込む情報取込み手段と、

取り込まれた楽音情報を編集する情報編集手段と、編集された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成する発音制御装置とを具備することを特徴とする楽音情報利用システム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、発音制御装置並びにこれを用いる装置及びシステム、より詳細には、携帯用電話機端末のような携帯用端末装置に内蔵される発音制御装置、並びに、この発音制御装置に楽曲情報等の諸情報を授与するための装置及びシステムに関する。

【0002】

【従来の技術】近年の携帯用電話機端末の発展に伴い、着信した時にメロディ音を鳴らせるものがある。このような携帯用電話機端末において再生できるメロディ音は、ブザー音を利用した単音発音の楽曲であった。また、このような楽曲情報は、基地局等よりダウンロードすることができるようになっていた。

【0003】

しかしながら、従来の携帯用電話機端末におけるこの種のメロディ音再生装置では、複数種類の楽音を同時に発音する楽曲を再生することができず、音色や効果等の各種設定を行うこともできなかった。従って、多様な楽曲を再生して楽しむことができなかった。

【0004】

【発明が解決しようとする課題】この発明の主たる目的は、このような事情に鑑み、携帯用端末装置において、FM音源等を利用して複数音を同時に発音させて、着信時のメロディ音や通話中のバックグラウンドミュージック(BGM)音等を鳴らす場合に、楽音情報の音色や効果等の設定、編集、作成等を容易に行うことができ、豊かで多様・多彩な楽曲の再生を実現すると共に、端末装置の処理機能やユーザの好みに適合した楽音を得ることができる発音制御装置を提供することにある。この発明は、また、再生される楽音と共に音声や画像を併用して多様な態様で楽しむことができる携帯用端末装置を提供することを目的とする。

【0005】

【課題を解決するための手段】この発明の第1の特徴に従うと、楽音の発音が可能な携帯用端末装置に備えられる発音制御装置であって、演奏情報並びに音色及び効果に関する設定情報を取得する情報取得手段と、音色に関する設定情報に基づいて設定される音色が与えられ演奏情報に対応する楽音信号を生成する音源手段と、生成された楽音信号に対して、効果に関する設定情報に基づいて設定される効果を付与する効果付与手段と、効果が付与された楽音信号を出力する出力手段とを具備する発音制御装置が提供される。

【0006】この発明の第2の特徴に従うと、楽音の発音が可能な携帯用端末装置に備えられる発音制御装置であって、楽音情報を記憶する記憶手段と、記憶された楽音情報に基づいて、所定の音色をもち所定の効果が付与された楽音信号を生成する楽音生成手段と、携帯用端末装置とは独立して、これらの記憶手段及び楽音生成手段を制御する制御手段とを具備する発音制御装置が提供される。

【0007】この発明の第3の特徴に従うと、楽音情報、音声情報及び画像情報を記憶する記憶手段と、記憶された楽音情報に基づいて、楽音情報に含まれる設定情報に対応する所定の音色乃至効果（「乃至」は、双方又は何れか一方つまり「及び/又は」の意味で用いられる。以下、同じ。）が与えられた楽音信号を生成する発音制御装置と、記憶された音声情報及び画像情報に基づいて音声信号及び画像信号を生成する手段とを具備する携帯用端末装置が提供される。ここで、記憶手段に記憶される楽音情報は、記憶手段の記憶容量に対応して、汎用楽音情報フォーマットに比べてダウンサイジングされたフォーマットにて記述されている情報とすることができる。

【0008】この発明の第4の特徴に従うと、楽音の発音が可能な携帯用端末装置及び楽音情報源を有する基地局から成る楽音情報利用システムにおいて、携帯用端末装置から送信される選択情報に応じて、対応する楽音情報を楽音情報源から選択する情報選択手段と、選択された楽音情報について、携帯用端末装置で発音される楽音に与える音色乃至効果を表わす設定情報を付与する設定情報付与手段と、設定情報が付与された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成する発音制御装置とを具備する楽音情報利用システムが提供される。このシステムは、さらに、選択情報を送信した携帯用端末装置に対して課金作業を行う課金手段を具備することができる。

【0009】この発明の第5の特徴に従うと、楽音の発音が可能な携帯用端末装置及び楽音情報の作成又は編集が可能な楽音情報処理装置から成る楽音情報利用システムにおいて、作成又は編集された楽音情報を圧縮する情報圧縮手段と、圧縮された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成する発音制御

装置とを具備する楽音情報利用システムが提供される。

【0010】この発明の第6の特徴に従うと、楽音の発音が可能な携帯用端末装置及び楽音情報を記憶している楽音情報源から成る楽音情報利用システムにおいて、楽音情報源に記憶されている楽音情報を携帯用端末装置内に取り込む情報取込み手段と、取り込まれた楽音情報を編集する情報編集手段と、編集された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成する発音制御装置とを具備する楽音情報利用システムが提供される。

【0011】〔発明の作用〕この発明の第1の特徴によれば、楽音の発音が可能な携帯用端末装置において、音色に関する設定情報に基づいて設定される音色が与えられ演奏情報に対応する楽音信号を生成し、この楽音信号に対して、効果に関する設定情報に基づいて設定される効果を付与するようにした発音制御装置を備えているので、FM音源等を利用して複数音を同時に発音させて、着信時のメロディ音、通話中のBGM音、任意の必要時に楽しむ音楽等を豊かで多彩なものとする事ができる。

【0012】この発明の第2の特徴によれば、所定の音色をもち所定の効果が付与された楽音信号を生成するのに、携帯用端末装置とは独立して動作する制御手段（CPU）を用いているので、携帯用端末装置本体の制御に拘束されず、余裕のある楽音信号生成処理を行うことができる。

【0013】この発明の第3の特徴によれば、楽音情報に基づいて、楽音情報に含まれる設定情報に対応する所定の音色乃至効果が与えられた楽音信号を生成すると共に、音声情報及び画像情報に基づいて音声信号及び画像信号を生成するようにしているので、再生される楽音と共に音声や画像を併用して多様な態様で楽しむことができる。また、記憶手段の記憶容量に対応して、汎用楽音情報フォーマットに比べてダウンサイジングされたフォーマットにて記述されている楽音情報を用いて楽音信号を生成するようにしているので、携帯用端末装置のデータ処理機能及び容量の許容最大限の範囲内において、つまり、装置内のメモリを圧迫しないで、良質の楽音を再生することができる。

【0014】この発明の第4の特徴によれば、携帯用端末装置及び楽音情報源を有する基地局（サーバ）により楽音情報利用システムを形成し、携帯用端末装置から送信される選択情報に応じて、対応する楽音情報を楽音情報源から選択し、選択された楽音情報について、携帯用端末装置で発音される楽音に与える音色乃至効果を表わす設定情報を付与し、設定情報が付与された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成するようにしている。従って、サーバのデータベースを有効に利用し、より豊かで多彩な楽音を得ることができる。このシステムは、さらに、選択情報を送信した携

帯用端末装置に対して課金作業を行うことにより、特定の携帯用端末装置ユーザに対して相応するサービスを提供することができる。

【0015】この発明の第5の特徴によれば、パーソナルコンピュータ端末或いはインテリジェントな電子楽器のような楽音情報処理装置と共に楽音情報を利用し、楽音情報処理装置において、所望の形態の楽音情報を作成又は編集し、携帯用端末装置の処理機能に応じたサイズに圧縮するようにしているので、携帯用端末装置の能力に合った楽音情報の音色や効果等の設定、編集、作成等を容易に行うことができる。

【0016】この発明の第6の特徴によれば、外部記憶媒体や他の電話機端末のような楽音情報源に記憶されている楽音情報を携帯用端末装置内に取り込み、取り込まれた楽音情報を編集するようにしているので、種々の形態の楽音情報を携帯用端末装置の処理能力やそのユーザの好みに適した楽音情報に加工することができる。

【0017】要するに、この発明によれば、携帯用端末装置内の発音制御装置に複数音同時発音可能な音源回路を設け、楽音発音に関する設定情報情報に基づいて音色や効果等を楽音に付与するようにしているので、着信時のメロディや通話中のBGM等として、さらには、ユーザの必要に応じて随時楽しむ音楽として、多彩且つ音感豊かな楽曲を再生することができる。また、この発明では、楽音情報を含む各種情報は、基地局、パーソナルコンピュータ端末、他の電話機端末、小型記憶媒体等の外部情報源から任意に取り込むことができ、拡張性が高くなるので、広範囲且つ多様な楽曲を着信メロディやBGM等として再生することができる。

【0018】この発明によれば、また、携帯用端末装置に取り込む情報は、楽音発音に関する設定情報を添付したり、端末装置の記憶容量に合うように必要でない情報を削除して情報圧縮したり、自機種つまり端末装置自体で利用可能なフォーマットに変換することにより、端末装置で使用可能な形態に変換することができるので、拡張性を一層高めることができる。さらに、編集手段の採用により、各種設定に関する情報が添付された楽音情報を、情報量のダウンサイジングを図りつつ、容易に取得することができる。

【0019】

【発明の実施の形態】以下、図面を参照しつつ、この発明の好適な実施例について詳述する。なお、以下の実施例は、単なる一例であって、この発明の精神を逸脱しない範囲で種々の変更が可能である。

【0020】〔端末システムの概要〕図1は、この発明の一実施例による発音制御装置が適用される携帯用電話機端末の基本的構成を表わす概略ブロック図である。端末システムTSは、端末システム用中央処理装置(本体CPU)1、端末システム用読出専用メモリ(本体ROM)2、端末システム用ランダムアクセスメモリ(本体

RAM)3、検出回路4、表示回路5、送受信回路6、オーディオ制御回路7、発音制御回路8、接続回路9、通信インターフェイス(I/F)10等を備え、これらの装置1~10は、端末システム用バス(本体BUS)11を介して互いに接続される。

【0021】この端末システムTSにおいては、端末システム全体を制御する本体CPU1は、所定のプログラムに従って、通話制御、画面制御、発音制御等、種々の制御を行う。本体ROM2には、これらの処理を遂行するために、所定の制御プログラムや制御用データが記憶されている。例えば、楽音に関しては、着信時のメロディや通話中のバックグラウンドミュージック(BGM)等を鳴らすための楽曲情報、演奏情報、設定情報、情報形式変換用の変換テーブル、情報圧縮用の圧縮テーブルをそれぞれ複数記録しており、楽音以外に関しては、所定の音声情報や画像情報等を設定情報として予め記録している。なお、設定情報とは、端末システムTSにおいて着信時、通話中或いは必要に応じた任意の時間に音響の放音又は画像の表示に関する処理を実行する条件として設定される情報をいう。この設定情報には、楽音の音色や効果(DSPを含む)に関する楽音関連の設定情報の外、音声情報、画像情報、音声及び画像の制御情報等がある。

【0022】本体RAM3は、これらの通話制御、画面制御、発音制御等の処理に際して必要なデータやパラメータ等を記憶するために用いられ、端末システムTSに追加的に導入される或いは端末システムTS内で新規に作成される複数の楽曲情報、演奏情報、設定情報を記憶することができる。

【0023】検出回路4は、携帯用電話機端末の本体表面に設けられた押しボタンスイッチ等から成る操作子12を備え、操作子12のスイッチ操作状態を検出する。これらのスイッチには、通話時に使用される通話スイッチ、着信メロディのダウンロード要求スイッチ、発音制御回路8(音源/効果回路)の設定スイッチ、各種情報の作成/編集スイッチ等が含まれる。また、表示回路5には表示部13が接続され、表示部13の液晶画面上には、各種通話情報や、発音制御に係る各種メロディ情報等、各種視認情報を表示することができる。

【0024】送受信回路6は、通信アンテナを備え、基地局(サーバ局又は中継局ともいう。)を介して他の電話機端末と交信し通話するための回路であり、楽曲情報や設定情報の要求や受取りにも用いられる。一方、オーディオ制御回路7は、通話時の音声信号や、楽音の入出力信号を制御するために設けられた回路であり、マイクロフォン(MIC)17からの入力音声を送受信回路6に送信する音声送信機能や、送受信回路6で受信した通話音声信号を通話用スピーカ15及び外部出力端子16に送出する音声再生機能のほか、発音制御回路8から受信する楽音信号を通話用スピーカ15及び出力端子16

に送出するBGM再生機能等を有している。

【0025】発音制御回路8は、着信メロディ音やBGM音等の楽音信号を制御するための一連の処理を独自に行う回路で、複数音を同時に発音することが可能である。つまり、楽音信号を合成して発音用スピーカ17やオーディオ制御回路7に送信することにより、着信メロディやBGM等の楽音を発音させる機能を有している。発音制御回路8は、また、デジタル楽音信号を他のデジタル楽音信号利用機器に送信するためのデジタル出力端子18を備えている。なお、発音用スピーカ17は、通話用スピーカ15と兼用にして1つにまとめる構成にすることができる。

【0026】接続回路9は、可搬式の着脱可能小型記憶媒体19を装着するための回路であり、装着された小型記憶媒体19から楽曲情報を含む各種情報を取り込むことができ、逆に、記憶媒体19に情報を書き込むこともできる。また、通信I/F10は、外部装置とのケーブル接続用端子を備え、この端子に接続される通信ケーブル20を介して、他の電話機端末やパーソナルコンピュータ(PC)端末と交信し、楽曲情報を含む各種情報を、これらの装置から端末システムTSに取り込んだり、端末システムTSからこれらの装置に授与することができる。

【0027】〔発音制御回路(1)〕図2は、この発明の一実施例による発音制御回路の詳細な構成を表わすブロック図である。この例では、発音制御回路8は、回路内にCPUを備えておらず、携帯用電話機端末(端末システムTS)本体に装備されている本体CPU1により動作制御される。発音制御回路8は、システムBUS11に接続されるバス接続経路を介して、楽曲情報、演奏情報、設定情報やその他情報(再生開始/停止等)を送受信する。

【0028】制御回路21は、上述のバス接続経路を介して、端末システムTS本体との双方向情報通信を行なうことができる。本体側で予め用意されたり或いは外部から受信された演奏情報や設定情報は、本体ROM2或いは本体RAM3に記録乃至格納されているが、制御回路21により、演奏情報は先入れ先出しメモリ(FIFO)22に記憶し、音色及び効果に関する設定情報は音色/効果RAM23に記憶することができる。

【0029】制御回路21は、また、本体側より指定された設定音色及び設定効果に基づいて、音色/効果RAM23内の音色設定情報及び効果設定情報(DSPプログラムを含む)を読み出し、音源回路24及び効果回路25における音色及び効果を設定する。制御回路21は、さらに、FIFO22や音色/効果RAM23の記憶許容量の限界を本体に連絡し、本体側からの情報通信の一時停止を要求する機能を有している。

【0030】FIFO22及び読出回路26は、本体ROM2乃至本体RAM3から受信した演奏情報を、順

次、資源回路に送信する演奏情報供給制御装置として機能する。すなわち、FIFO22は、受信した演奏情報を受信順に一時記憶し、読出回路26は、所定時間毎にFIFO22にアクセスし、情報があればそれを順次読み出して音源回路24に出力する。

【0031】音源回路24は、例えば、FM音源であり、複数音を同時に発音することが可能である。音源回路24は、音色/効果RAM23から受信した音色に関する設定情報に基づき発音すべき音色を設定すると共に、読出回路26から受信した演奏情報に基づき、設定されている音色に対応する楽音信号を順次合成してミキサ(MIX)27に出力する。

【0032】効果回路25は、音色/効果RAM23から受信した効果に関する設定情報に基づいて、付与すべきリバース等の効果を設定する回路であり、設定された効果をMIX27から入力される信号にDSPプログラムに従って付与し、効果を付与した後の信号を再びMIX27に出力する。

【0033】MIX27には、端末システムTS本体のオーディオ制御回路7との接続経路を介して、通話音がデジタル信号で入力される。MIX27は、音源回路24、効果回路25及びオーディオ制御回路から入力される諸信号を合計する。すなわち、MIX27への入力信号には、(1)音源回路24からの合成楽音信号SM、(2)オーディオ制御回路7からの通話音信号ST、(3)効果回路25からの効果付与後信号SEの三種類がある。

【0034】ここで、入力信号SM、STは、MIX27から効果回路25に選択的に出力されて効果が付与されるが、このように効果付与のために出力される信号SM、STは、端末システムTS本体の操作子12中の所定のスイッチを操作することにより選択的に設定される。そして、MIX27は、合成した全信号を、デジタルアナログ変換回路(DAC)28に出力すると共に、デジタル出力端子18を介してデジタル信号で出力することができる。

【0035】DAC28、振幅制御回路(VOL)29及び増幅回路(AMP)30は、アナログ出力装置を構成する。DAC28から出力されるアナログ楽音信号は、音量がVOL29により調整され、ヘッドフォン端子を介して端末システムTS本体のオーディオ制御回路7に出力され、或いは、AMP30を介して発音用スピーカ17に送信されて楽音として放音される。すなわち、合成された全信号は、VOL29からアナログ信号でオーディオ制御回路7側に出力され、AMP30からもアナログ信号にてスピーカ17に供給され楽音として放音される。

【0036】〔発音制御回路(2)〕図3は、この発明の他の実施例による発音制御回路の詳細な構成を表わすブロック図を示す。この例では、発音制御回路8は、回

路内に発音制御CPU31を備え、本体CPU1から独立して発音制御回路8の動作を制御することができる。発音制御CPU31、通信回路32、タイマ33、発音制御ROM34、発音制御RAM35、音源回路36、効果回路37、ミキサ回路(MIX)38、振幅制御回路(VOL)39等を備え、これらの装置31~39は、発音制御回路用バス(発音制御BUS)40を介して互いに接続される。

【0037】通信回路32は、次の2つの通信機能を有している：

(1)「本体BUS11との間で情報の双方向通信を行う」=本体BUS1を經由して端末システムTSの外部から受信した楽曲情報、演奏情報、設定情報等を発音制御RAM35に記録する(なお、発音制御ROM34には、発音制御のための各種テーブル等が記録されている。)。また、音色や効果等の選択、パラメータ変更、再生する楽曲情報の選択等に関する各情報(本体操作子の操作情報)を受信する。なお、受信した情報は、発音制御CPU31の動作で解釈され、各情報に合わせた処理、例えば選択された音色に関する設定を音源回路35に対して行う等の処理が実施される。

【0038】(2)「オーディオ制御回路7と情報の双方向通信を行う」=発音制御回路8の内部で合成した楽音信号等をオーディオ制御回路7に送信したり、オーディオ制御回路7から受信した通話音信号等の信号を発音制御回路8内で加工したり、また、加工した信号を再びオーディオ制御回路7へ送信したりする等の処理を行う。上述の加工には、例えば、通話音への効果付与処理や通話音声の音高/音色変換処理がある。

【0039】発音制御CPU31は、端末システムTS本体から独立して、発音制御回路8内の動作を制御し、タイマ33から発生される信号に基づいて、発音制御ROM34や発音制御RAM35内に記憶されている演奏情報を順次読み出すことにより、着信メロディやBGM等の楽音を再生する。発音制御CPU31は、また、発音制御ROM34や発音制御RAM35内の設定情報を発音制御BUS40を介して音源回路36や効果回路37等に送信して再生させ、さらに、楽音の音色や付与効果の設定を制御することもできる。

【0040】タイマ33は、所定時間毎に信号を発生する。ここで発生される信号に基づいて着信メロディ音やBGM音等の楽音の発音タイミングを制御し、発生楽音の演奏テンポを決定する。このテンポはユーザによる制御が可能である。

【0041】発音制御ROM34は、着信メロディ用やBGM用等の所定の楽曲情報、演奏情報、設定情報、情報形式変換用の変換テーブル、情報圧縮用の圧縮テーブルをそれぞれ複数記憶しており、発音制御RAM35は、追加された或いは新規に作成された複数の楽曲情報、演奏情報、設定情報を記憶することができる。

【0042】音源回路36は、この例では、FM音源であり、複数音の同時発音が可能である。発音制御ROM34や発音制御RAM35から発音制御BUS40を介して送信される音色に関する設定情報に基づいて発音音色を設定する。音源回路36は、また、発音制御CPU31およびタイマ33の制御により、発音制御ROM34や発音制御RAM35から送信される演奏情報に基づいて、設定されている音色に対応する楽音信号を順次合成し、MIX38に出力する。

【0043】効果回路37は、発音制御ROM34や発音制御RAM35から発音制御BUS40を介して送信される効果に関する設定情報に基づいて、楽音に付与する効果を設定する。効果回路37は、また、MIX38から入力される信号および通信回路32から入力される通話音信号ST等に対して効果を付与し、付与した後の信号SEを再びMIX38に出力する。

【0044】MIX38は、入力される信号を合計し、デジタルアナログ変換回路(DAC)41及びデジタル出力端子18に出力する。MIX38に入力される信号には、(1)音源回路36からの合成楽音信号SM、(2)オーディオ制御回路7からの通話音信号ST、(3)効果回路37からの効果付与後信号SEなどがある。MIX38は、効果付与のために、入力信号SM、STを選択的に効果回路37に出力し、この出力信号は端末システムTS本体側の操作子12の所定スイッチの操作により設定される。

【0045】振幅制御回路(VOL)39及び増幅回路(AMP)42はアナログ出力装置を構成し、DAC41から出力されるアナログ楽音信号の音量はVOL39により調整され、音量調整されたアナログ楽音信号は、ヘッドフォン端子からオーディオ制御回路7へ出力されると共に、更に、AMP42を介して発音用スピーカ17に送信される。

【0046】〔端末システムの使用環境〕図4は、この発明の一実施例による携帯電話機端末の使用環境の一例を表わす概念図である。第1環境では、携帯用電話機端末(端末システム)TSから送受信回路6を介して基地局(サーバ局)BSに通話を行い、所望の楽曲情報等を選曲しその送信を要求すると、対応する楽曲情報等が基地局BSから送信され、端末システムTS内にダウンロードし、この情報を利用して着信時のメロディ音や通話中のBGM音等を発音させることができる。

【0047】第2環境においては、端末システムTSは、通信I/F10に接続される通信ケーブル20を介してパーソナルコンピュータ端末PCで作成された楽曲情報等を受信し、これをメロディやBGM等として利用することができる。

【0048】また、端末システムTSは、第3環境では、接続回路9に装着される小型の外部記録媒体19に記録されている楽曲情報等を記録媒体19から導入し、

また、第4環境では、他の電話機端末OSから、基地局BSを経由して電話回線及び送受信回路6を介して、或いは、通信ケーブル20及び通信I/F10を介して、他の電話機端末OSの楽曲情報等を受信し、これらの情報を楽音発音に利用することができる。

【0049】基地局BS、パーソナルコンピュータ端末PC、外部記憶媒体19又は他の電話機端末OS等の楽曲情報源から、端末システムTSに導入される楽曲情報は、情報源BS、PCやシステムTS内での編集、圧縮、形式変換等によって、使用可能な形態にダウンサイジングされる。

【0050】例えば、これらの楽曲情報源から端末システムTS内に導入される楽曲情報(演奏情報及び設定情報を含む。)は、自機種に合ったフォーマットの場合もあり別のフォーマットの場合もある。自機種に合ったフォーマットが導入される場合は、予めこのフォーマットで作成されているか、或いは、別のフォーマットからフォーマット変換(形式変換)されたものであり、この形式変換は、基地局BS或いはパーソナルコンピュータ端末PC内にて行われる。また、別のフォーマットが端末システムTSに導入される場合には、端末システムTS内において、別のフォーマットを端末システムTSでのフォーマットに変換する。

【0051】〔情報フォーマット〕図5は、この発明の一実施例による携帯用電話機端末における自機種の情報フォーマットの例を示す。この携帯用電話機端末システムTS及びこの端末システムTSと同じフォーマットで情報処理を行う同一機種の他の電話機端末において取扱いが可能な「自機種対応の楽曲情報IA」は、図5に示すように、音色/効果を設定する設定情報SAと楽音演奏用の演奏情報MAとから構成される。各情報SA、MAは、端末システム内メモリ(RAM3)の記憶容量を圧迫せず、しかも、よりよい楽音の発音を実現することができるように、必要最小限の情報のみを記録したものであり、端末システムTS内では、これらの情報に従って発音制御が行われる。以下、このタイプの情報フォーマットを「自機種フォーマットA」という。

【0052】設定情報SAは、音色に関して、(1)音色種類を識別するための音色ナンバNA、(2)音源回路における音色を設定するための詳細な情報(音色パラメータ)DAを含んでいる。(2)の音色パラメータDAには、アルゴリズムデータAA、周波数パラメータ(Fパラメータ)FA、エンベロープパラメータ(EGパラメータ)EA等がある。

【0053】アルゴリズムデータAAは、FM音源における複数のオペレータ〔サイン波メモリ+アウトプットレベル演算器+エンベロープ(EG)波形合成器のセット〕の組合せ即ちアルゴリズムを決定するためのパラメータであり、FパラメータFAは、各オペレータ毎の、読出サイン波の周波数を決定するためのパラメータであ

り、EGパラメータEAは、エンベロープ波形(EG波形)を合成するための複数のレベル値及びレート値を設定するためのパラメータである。

【0054】また、設定情報SAには、このような音色設定用の情報NA、DA以外に、効果パラメータを設定する情報、効果回路25の内容を決定する効果プログラム(DSPプログラム)、音声情報、画像情報等がある。

【0055】演奏情報MAは、タイミングデータTM、キーナンバKN、ゲートタイムGT等から成る演奏を行うための情報を演奏順に記録したものであり、複数同時発音可能な演奏情報が記録されている。

【0056】図6は、他機種の携帯用電話機端末における従来形の情報フォーマットの例を示す。携帯用電話機端末において着信メロディ用情報として用いられている従来タイプの楽曲情報IBは、図6に示すように、記号a、b、c、…からなる記号列で表わされる演奏情報のみであり、設定情報は存在しない。以下、このタイプの情報フォーマットを「従来形フォーマットB」という。

【0057】他機種の演奏情報IBは、より詳細にいうと、所定の規則に従って、楽曲の演奏順に記号(＃、1、2、3、…)を並べたものである。例えば、数字の「1」は“ド”の音高に、数字の「2」は“レ”の音高に、…、相当するものとし、これらの数字の連続数に応じて発音音長を規定する。従って、記号列a、b、c、…により「1-1-2-1-1-1-…」が表わされる場合、この記号列は、“ド”を4分音符長発音させたのち、“レ”を8分音符長発音させ、その後、再び“ド”を4分音符長発音させる楽音を表わす。

【0058】図7は、従来より電子楽器等で使用されている汎用の楽音情報フォーマットの例を示す。従来の電子楽器等では、汎用楽音情報フォーマット〔“SMF”(Standard MIDI File)フォーマット〕に沿って、図7に示すように、音色/効果を設定するための設定情報SCと楽音演奏用の演奏情報MCとから構成される楽音情報ICが使用されている。以下、このタイプの情報フォーマットを「SMFフォーマットC」という。

【0059】設定情報SCのうち音色を設定するための情報は、(1)音色識別情報としての音色ナンバNC、(2)音色設定用詳細情報DCから構成されている。

【0060】(2)の音色設定用詳細情報DCは、図7にも示すように、端末システムTS用の楽曲情報IAとは異なり、情報量が多い。例えば、アルゴリズムデータACやFパラメータFCの外に、発音する音高によってEGのレベルを制御するレートスケールデータRSが記憶されていたり、EGパラメータECについても、その内容がより詳細な情報を含んでおり、図5の自機種フォーマットAにおける設定情報SA中のEGパラメータEAよりも、レベル値及びレベル値の数が多し。なお、このような詳細情報DC中の過多情報は、端末システムT

Sを含むシステム内において、SMFフォーマットCから自機種フォーマットAに形式変換する際に、端末システムTSにおいては必要不可欠でない情報として、圧縮(削除)されることになる。

【0061】演奏情報MCは、「デュレーションDR+イベントIV」形式の情報であり、キーオン、キーオフイベントがそれぞれデュレーションデータDRと共に記憶されるので、情報量がやや多くなっている。また、各キーオン毎にベロシティデータが記録されるが、このベロシティデータも自機種フォーマットAへの形式変換の際に圧縮(削除)される。

【0062】〔基地局との情報授受〕図8及び図9は、この発明の一実施例による端末システム及び基地局から成る第1システムにおける情報授受関係を表わす機能的ブロック図を示す。この発明では、自端末即ち携帯電話機端末システムTSは基地局BSから楽曲情報や設定情報を受信するが、これらの情報は、情報要求時に基地局BS側で必要に応じて形式変換され、受信時には端末システムTSにおいて利用可能な情報とされている。

【0063】まず、端末システムTSは、要求情報送信モジュール(S1)により、送受信回路6を介して基地局(サーバ局)BSに電話をし、所定の指示に従ってサーバ局BSのデータベースDB内の情報に対してダウンロードを要求する。具体的には、例えば、サーバ局BSとの通話中、データベースDBに蓄積されている楽曲情報、演奏情報、音色情報等が自端末システムTSの表示部13に順次表示されるので、操作子12を用いて、これらの情報の何れかに対応する番号をキー入力し、且つ、要求決定操作を行うことによって、要求するダウンロード対象情報を表わす選択情報と自端末システムTSの機種・機番及び端末システムTSの音源回路24に装備されている音源の種類を表わす識別情報をサーバ局BSに送信する。

【0064】サーバ局BSにおいては、端末システムTSから要求情報が送信されたことに応答して、選択読出モジュール(B1)により、データベースDBから要求情報に対応する楽曲情報等が選択的に読み出され、読み出された演奏情報等は、自機種フォーマットAの場合、フォーマット変換(形式変換)が不要なので、直ちに課金モジュール(B2)に手渡される。一方、読み出された演奏情報等が従来形フォーマットBのように自機種と異なるフォーマットの場合には、設定情報添付モジュール(B3)及び形式変換モジュール(B4)を介して課金モジュール(B2)に手渡される。

【0065】設定情報添付モジュール(B3)においては、読み出された自機種と異なるフォーマットの演奏情報が、例えば、従来形フォーマットBの情報のように、設定情報をもたないものであれば、設定情報を添付する。この設定情報添付により、設定情報をもたない他機種種の演奏情報であっても、端末システムTSにおいて、

音源機能を活かして効果的な音色/効果を付与した楽音再生を行うことができるようになる。設定情報添付方法には、(1)予め決められた設定情報を添付する、

(2)ユーザ選択の設定情報を添付する、(3)演奏情報に馴染む設定情報を自動検出して添付する等の方法がある。

【0066】設定情報が添付された演奏情報は、形式変換モジュール(B4)に手渡され、予め用意されている変換テーブルTBを利用して、自機種フォーマットAへの形式変換が自動的に行われる。この変換テーブルTBは、形式変換前及び形式変換後のフォーマット組合せ毎に用意され、例えば、従来形フォーマットBから自機種フォーマットAへの変換規則を記述しているテーブルであり、演奏情報を別機種フォーマット(B)から自機種フォーマットAに形式変換を行う。

【0067】なお、他機種種のフォーマットには、図9には例示されていないが、従来形フォーマットBの外にSMFフォーマットC等の場合もあり、例えば、SMFフォーマットCの情報が読み出された場合は、変換テーブルTB内のSMFフォーマットCから自機種フォーマットAへの変換規則を用いて形式変換を行う。従って、このような形式変換機能により、要求した情報が他機種(B、C等)のものであっても、自端末システムTSで発音可能な楽曲情報IAに変換され、端末システムTSでの使用を可能にする。

【0068】その後、課金モジュール(B2)においては、ダウンロードに対する課金作業が行われる。この作業においては、端末システムTSから送信された識別情報(端末の機種・機番、音源種類)を参照することにより、特定の機種あるいは特定の音源装置(サーバ局等との特定契約)を装備した端末であることが認識された場合に、課金金額を割り引きするように構成することができる。

【0069】サーバ局BSは、課金作業の後、情報送信モジュール(B5)により、端末システムTSからの選択情報に対応する自機種フォーマットAの楽曲情報や設定情報をシステムTS側に送信する。

【0070】これに対して、端末システムTSでは、情報受信モジュール(S2)により、サーバ局BSから送受信回路6を介して楽曲情報や設定情報を受信しダウンロードし、ダウンロードした情報は本体RAM3に記憶される。ここで、要求情報送信モジュール(S1)により要求してから、要求に対応する情報が基地局BSから送信され終わるまでの間、端末システムTSは、通話状態であってもよい。また、要求情報送信後に一旦通話を解除し、その後の通話処理(メールや基地局BSからの返信通話)により要求した情報を受信するようにしてもよい。

【0071】そして、設定モジュール(S3)においては、ユーザの設定操作により、受信した楽曲情報に基づ

く着信メロディ発音が可能なる状態に設定を行う。また、受信した情報は、通話時のBGMや随時の音楽等として再生するように設定することもできる。

【0072】〔パーソナルコンピュータとの情報授受〕図10は、この発明の一実施例による端末システム及びパーソナルコンピュータから成る第2システムにおける情報授受関係を表わす機能的ブロック図を示す。この発明では、自端末即ち携帯電話機端末システムTSは、パーソナルコンピュータ端末PC上で作成した楽曲情報や設定情報を受信し、これらの情報を利用することができる。楽曲情報や設定情報は、任意のフォーマットで作成することができる。例えば、操作性が良いという理由のため、従来のSMFフォーマットCに従って作成することができ、このように自機種フォーマットAと異なる場合は、送信時に自機種フォーマットAへのフォーマット変換（形式変換）が行われる。

【0073】パーソナルコンピュータ端末PCにおいて、インストールされている所定のソフトウェアを利用し、選択読出モジュール（P1）により、SMFフォーマットC又は自機種フォーマットAで情報が記録されているコンピュータ端末PC内のデータベースDPから、着信メロディやBGM等として使用したい楽曲情報や設定情報を選択すると、これに応じて、情報編集モジュール（P2）により、選択した楽曲情報や設定情報を編集する。この編集作業としては、例えば、設定情報内の音色パラメータや効果パラメータを変更又は追加したり、楽曲情報内の演奏情報から着信メロディやBGM等として使用したい部分を選択して切り出したり、選択した楽曲情報を端末システムTS側で発音されるのと同じ設定にて、つまり、圧縮された設定情報に基づく音色や効果等の設定状態における「試し発音」を行う、などがある。

【0074】一方、パーソナルコンピュータ端末PC上で楽曲情報を新規に作成する場合は、例えば、コンピュータ端末PC上にインストールされている従来のSMFタイプのシーケンサソフトウェア（楽曲情報作成ソフトウェア）等を用い、新規作成モジュール（P3）により、ユーザの手入力による新規楽曲情報を作成する。ここで作成される新規楽曲情報は、例えば、SMFフォーマットCに従う楽曲情報である。

【0075】新規作成モジュール（P3）は、また、自動作曲ソフトウェア（装置）を用いて、自動的に新規楽曲情報を作成することもできる。この場合、従来の自動作曲ソフトウェア乃至自動作曲装置を応用し、例えば、従来の自動作曲ソフトウェアで作成された1曲分の楽曲情報から、所望区間の楽曲（さびの部分等）のみを切り出す、複数トラックで構成されている楽曲情報のうち、必要最小限のトラック（メロディトラック、和音トラック等）の情報のみを切り出す、切り出した区間の楽曲情報が繰り返し再生されたときにうまく繋がるように繋

り部（区間先頭及び区間最終位置）を補正する、等々の作業を実行することができる。なお、新規作成モジュール（P3）は、さらに、着信メロディやBGM等に相当する楽曲情報を、直接、自機種フォーマットAで作成することもできる。

【0076】情報編集モジュール（P2）からの読出乃至編集がなされた情報や新規作成モジュール（P3）で新規に作成された情報のうち、情報フォーマットがSMFフォーマットCのように自機種フォーマットAでない情報については、情報圧縮モジュール（P4）及び形式変換モジュール（P5）により、情報の圧縮及び形式変換が行われる。一方、自機種フォーマットAの情報は、直ちに情報送信モジュール（P6）に手渡される。

【0077】自機種フォーマットAでない情報は、先ず、端末システムTSに記憶することができるように、情報圧縮モジュール（P4）により、予め用意された圧縮テーブルTEを使用してその内容が圧縮される。この圧縮テーブルTEは、圧縮前及び圧縮後のフォーマット組合せ毎に用意され、所定の情報圧縮規則を記述している。この情報圧縮規則に基づく処理の具体例としては、既に説明したSMFフォーマットC（図7参照）のレートスケールRSやEGパラメータEC中の過多情報のような不要情報を、自機種フォーマットAへの交換時に削減する処理の他に、複数トラック構成の演奏情報から必要なトラック（メロディトラック及び和音トラックのみ）の演奏情報を取り出したり、演奏情報中の装飾音を削除したり、演奏情報中のピッチベンドデータを音高で他に変更する、等の処理がある。

【0078】圧縮された情報は、さらに、次の形式変換モジュール（P5）により、図8及び図9の実施例（第1システム）における形式変換モジュール（B4）と同様に、変換テーブルTCを用い、例えば、SMFフォーマットCから自機種フォーマットAへの形式変換がなされる。

【0079】元々自機種フォーマットAであるモジュール（P2、P3）からの楽曲情報乃至設定情報、及び、自機種フォーマットAに圧縮・変換されたモジュール（P5）からの楽曲情報乃至設定情報は、情報送信モジュール（P6）により、端末システムTS側に送信され、通信ケーブル20及び通信I/F10を介して端末システムTS内に送り込まれる。

【0080】これに対して、端末システムTSでは、情報受信モジュール（T1）により、パーソナルコンピュータ端末PC側Sからの楽曲情報や設定情報が受信され本体RAM3内に記憶される。さらに、設定モジュール（T2）において、ユーザの設定操作により、受信した楽曲情報に基づく着信メロディ発音やBGM発音等が可能なる状態に設定を行う。

【0081】〔記録媒体及び他端末との情報授受〕図11は、この発明の一実施例による端末システム及び記録

媒体乃至他の端末機から成る第3システムにおける情報授受関係を表わす機能的ブロック図を示す。この発明では、自端末即ち携帯用電話機端末システムTSは、外部記憶媒体19や他の同一機種乃至異機種の電話機端末OSa、OSbなどから受信した情報を着信メロディやBGM等に利用することができ、この場合、自端末システムTSにて、情報圧縮、フォーマット変換（形式変換）、情報編集等を行うことができる。

【0082】着脱可能な小型外部記憶媒体19に楽曲情報、演奏情報、設定情報等を、自機種フォーマットA或いは他のフォーマット（例えば、フォーマットB、C）で記録しておき、これらの情報が記録された記憶媒体19を自端末システムTSに装着し、所望の情報（その情報が何れのフォーマットで作成されているかを表す情報が添付されている。）を、接続回路9を介して自端末システムTS内に読み出す。この読出しに当っては、自端末システムTSの操作子12における所定スイッチを操作することによって、所望情報のみを読み出すことができる。

【0083】他の電話機端末OSaから送信される情報は、基地局BSを経由し電話回線を介して送受信回路6から自端末システムTS内に取り込まれる。また、別の他の電話機端末OSbから送信される情報は、通信ケーブル20を介して通信I/F10から、自端末システムTS内に取り込まれる。これらの電話機端末OSa、OSbには、自機種フォーマットAと同一のフォーマット情報を使用する同一機種電話機端末である場合と、例えば、従来形フォーマットBやSMFフォーマットCのように、自機種フォーマットAとは異なる他のフォーマット情報を使用する異機種電話機端末である場合とがある。

【0084】他の電話機端末OSa、OSbから情報を送信する場合、送信する各情報には、その情報が何れのフォーマットで作成されているかを表す情報が添付されている。なお、受信側端末である自端末システムTSにおいて受信情報をリアルタイムで設定使用すること（即ち、自端末システムTSでの受信後、直ちに設定使用すること）を、情報送信側端末である他の電話機端末OSa、OSb側にて要求することができるように構成してもよい。また、基地局BSを通して情報を送信する場合、基地局BSにおいて情報圧縮や形式変換等を行ったのちに受信側端末（自端末）に情報を送信するように構成することもできる。

【0085】情報受信／読取モジュール（U1）は、上述のように、外部記憶媒体19から楽曲情報、演奏情報、設定情報等を読み出したり、他の電話機端末OSa、OSbから送信される同様の諸情報を取り込むと共に、読み出された情報或いは受信した情報のうち、従来形フォーマットB或いはSMFフォーマットC等の情報は、設定情報添付モジュール（U2）、情報圧縮モジュール（U3）及び形式変換モジュール（U4）の系列を介して圧縮・変換した後、情報記録／編集モジュール（U5）に手渡し、自機種フォーマットAの情報は、そのまま、情報記録／編集モジュール（U5）に手渡す。

【0086】設定情報添付モジュール（U2）、情報圧縮モジュール（U3）及び形式変換モジュール（U4）は、基本的に、図8及び図9の実施例（第1システム）並びに図10の実施例（第2システム）における設定情報添付モジュール（B3）、情報圧縮モジュール（P4）及び形式変換モジュール（B4、P5）による設定情報添付、情報圧縮及び形式変換処理と同様の処理を行う。設定情報添付モジュール（U2）による設定情報添付、従来形フォーマットBの情報のように、設定情報が添付されていない情報についてのみ実行される。このような情報圧縮及び形式変換処理は、一旦、全情報を受信して自端末システムTS内のメモリ（本体RAM3）に書き込んだ後実施する方法、受信しながらリアルタイムで圧縮・変換を実行して必要な情報のみをメモリ（本体RAM3）に格納する方法等がある。後者の方法は、メモリ容量の少ない携帯用電話機端末に対して有効である。

【0087】自端末システムTSで受信され本体RAM3に記憶された情報は、情報記録／編集モジュール（U4）により操作子12の各種スイッチを利用して編集することができる。この編集作業には、設定情報SA中の各種パラメータ（DA）の追加、削除、値変更などがある。さらに、このモジュール（U4）により、新規楽曲情報を作成するように構成することもできる。そして、設定モジュール（U5）において、ユーザの設定操作により、受信した楽曲情報に基づく着信メロディ発音やBGM発音等が可能な状態に設定を行う。

【0088】〔自端末システムでの自端末処理〕図12は、この発明の一実施例による端末システムにおける自端末処理フローの一例を示す。この自端末処理は、図8及び図9の実施例（第1システム）、図10の実施例（第2システム）並びに図11の実施例（第3システム）の場合に、自端末システムTSにおいて実行される。先ず、第1ステップTR1において、端末システムTSの電源がオンした時の初期化処理（イニシャライズ）、例えば、所定着信メロディの設定、音源回路24、36及び効果回路25、37への初期パラメータの設定、その他携帯用電話機端末に関する初期化処理を行う。この処理の後、第2～第6ステップTR2～TR6の処理ルーチンが順次実行される。

【0089】第2ステップTR2は送信処理ルーチンであり、このステップでは、通常通話時における各種情報の送信の外に、必要に応じて、図8及び図9の実施例（第1システム）の場合、選択情報と識別情報の送信等を行う。第3ステップTR3は受信処理ルーチンであり、このステップでは、受信された情報を分析して各種

処理を行い、受信情報を着信メロディ曲やBGM曲情報等として選択可能な状態にする。このステップでは、図8及び図9の実施例（第1システム）並びに図10の実施例（第2システム）の場合は、受信した情報を本体RAM3に書き込み、図11の実施例（第3システム）の場合には、受信した情報に対して設定情報添付、圧縮及び形式変換の処理を施し、それらの処理を実行した後の情報を本体RAM3に書き込む。

【0090】第4ステップTR4は選択/設定処理ルーチンであり、このステップでは、操作子12の所定スイッチの操作により、自端末システムTSの本体ROM2内に予め記録されている情報又は本体RAM3内に記憶された受信情報から、着信メロディやBGM等に使用したい情報が選択されたときの処理を行う。この場合、選択された情報中に演奏情報があれば、その演奏情報を着信メロディ曲情報やBGM曲情報等として使用可能となるように読出設定を行う。また、選択された情報中に設定情報があれば、その情報に従った各種の設定が行われ、例えば、音源回路24、36における音色パラメータPTの設定、効果回路25、37における効果パラメータPEの設定、効果回路25、37の内容を決定する効果プログラム（DSPプログラム）による効果回路プログラムの変更、音声情報や画像情報に関連する設定等々を行う。

【0091】また、図8及び図9の実施例（第1システム）の場合は、第4ステップTR4にて、操作子12の所定スイッチの操作により、ダウンロードしたい情報の選択に関する処理を行う。さらに、図11の実施例（第3システム）の場合は、第4ステップTR4にて、操作子12の所定スイッチの操作により、外部記録媒体19からの所望情報の読出指示に関する処理を行う。

【0092】第5ステップTR5は、エディット処理ルーチンであり、このステップでは、図11の実施例（第3システム）の場合、操作子12の所定スイッチの操作に基づいて情報編集処理乃至新規作成処理を行う。

【0093】この端末システムTSには自動作曲機能をもたせることができるが、この場合、第6ステップTR6の他の処理ルーチンにおいて、その他処理として、自動作曲機能の動作が実行される。この自動作曲機能としては、例えば、（1）ユーザがマイク入力したメロディを自動的に演奏（楽曲）情報に変換する機能、（2）操作子12の所定スイッチの操作により曲の雰囲気等を選択することによって、選択操作の結果に応じた演奏（楽曲）情報を自動生成する機能、（3）既に作成乃至記憶されている演奏情報に対して、その演奏情報に馴染む和音に関する演奏情報を自動生成する機能等をあげることができる。

【0094】また、この端末システムTSにはスタイル再生機能、つまり、複数のスタイル情報や演奏情報を記録しておき、それらを繋ぎあわせて楽曲として再生する

機能をもたせることができ、この場合、第6ステップTR6における他の処理ルーチンにおいて、スタイル再生機能の動作が実行される。さらに、第6ステップTR6には、音楽ゲーム機能、つまり、自機種のみで行う音楽ゲームや他機種と通信しながら行う音楽ゲームなどを実行する機能をもたせてもよい。

【0095】第2～第6ステップTR2～TR6の処理ルーチンは、次の第7ステップTR7で端末システムTSの電源がオフしたことが検出されない間は（電源がオフにならない限り）繰り返し実行され、電源がオフされたことが検出された場合に、この自端末処理は終了する。

【0096】〔基地局でのサーバ処理〕図13は、この発明の一実施例による基地局におけるサーバ処理フローの一例を示す。このサーバ処理は、図8及び図9の実施例（第1システム）並びに図11の実施例（第3システム）の場合に、基地局（サーバ局）BSにおいて実行される。まず、第1ステップBR1で所定のイニシャライズが行われた後、第2～第4ステップBR2～BR4の処理ルーチンが順次実行される。

【0097】まず、第2ステップBR2の受信処理ルーチンにおいては、図8及び図9の実施例（第1システム）の場合、次の（1）～（4）の処理を行う：

（1）端末システムTSからのダウンロード要求の通話に応答する通話処理、（2）通話応答時に端末システムTSから送信される選択情報及び識別情報を受信する受信処理、（3）受信した選択情報に従って、端末システムTS側に送信すべき情報を選択的に読み出す選択読出処理（選択読出モジュールB1）、さらに、必要に応じて行われる設定情報添付処理（設定情報添付モジュールB3）及び形式変換処理（形式変換モジュールB4）、（4）受信した識別情報に従って実施される課金処理（課金モジュールB2）。

【0098】また、第2ステップBR2の受信処理ルーチンでは、図11の実施例（第3システム）の場合、他の電話機端末OSaから電話回線を介して端末システムTSの送受信回路6に情報を送信する際の経由手段として、両端末OSa、TS間での情報の送受信に関与する経由処理が行われ、この際、必要に応じて形式変換処理が実施される。

【0099】次の第3ステップBR3の送信処理ルーチンにおいては、図8及び図9の実施例（第1システム）（第1システム）の場合、サーバ局BS内のデータベースDBから読み出され、必要に応じて自機種フォーマットAに形式変換された情報を端末システムTSに送信する処理を行い、送信時には、裸金関連情報等、その他情報を添付することもできる。また、図11の実施例（第3システム）の場合には、端末システムTSから受信した情報を他の電話機端末OSaへ送信するほか、端末システムTSで選択されたサーバ局BSにおけるデータバ

ースDB内の情報を他の電話機端末OSaに送信することもできる。

【0100】続く第4ステップBR4のその他処理ルーチンにおいては、端末システムTSからの要求に合わせて、楽曲情報、演奏情報、設定情報等の内容の一部のみを送信することもできる。例えば、設定情報中の音色に関する情報のみを送信し、効果に関する情報は送信しないなどの処理を行うことができ、また、情報のストリーミング送信（リアルタイム再生）により、楽曲情報等の「試し聞き」等を行うこともできる。

【0101】第2～第4ステップBR2～BR4の処理ルーチンは、次の第5ステップBR5でサーバ局BSの電源がオフしたことが検出されない間は繰り返し実行され、電源がオフしたことが検出されると、このサーバ処理は終了する。

【0102】〔パーソナルコンピュータでのPC端末処理〕図14は、この発明の一実施例によるパーソナルコンピュータにおけるPC端末処理フローの一例を示す。このPC端末処理は、図10の実施例（第2システム）の場合にパーソナルコンピュータ端末PCにおいて実行される。まず、第1ステップPR1で所定のイニシャライズが行われた後、第2～第6ステップPR2～PR6の処理ルーチンが順次実行される。

【0103】第2ステップPR2の選択処理ルーチンにおいては、SMFフォーマットC又は自機種フォーマットAで情報が記録されているパーソナルコンピュータ端末PC内のデータベースDPから、着信メロディやBGM等として使用したい楽曲情報や設定情報を選択する（選択読出モジュールP1）。

【0104】第3ステップPR3の新規作成処理ルーチンにおいては、従来タイプのシーケンサソフトウェア、楽曲情報作成ソフトウェア、自動作曲ソフトウェア（装置）等を用いて、SMFフォーマットC又は自機種フォーマットAに従う新規楽曲情報を作成する（新規作成モジュールP3）。

【0105】第4ステップPR4の編集処理ルーチンでは選択した楽曲情報や設定情報を編集し（編集モジュールP2）、また、第5ステップPR5の送信処理ルーチンでは、情報圧縮処理、形式変換処理及び情報送信処理を含む処理が実行される（情報圧縮、形式変換及び情報送信モジュールP4～P6）。

【0106】さらに、第6ステップPR6のその他処理ルーチンにおいては、設定情報SA内にその他情報を添付する。ここで添付されるその他情報の具体例を挙げると、効果回路の内容を決定する効果プログラム（DSPプログラム）、音声情報、画像情報等である。

【0107】第2～第6ステップPR2～PR6の処理ルーチンは、次の第7ステップPR7でパーソナルコンピュータ端末PCの電源がオフしたことが検出されない間は繰り返し実行され、電源がオフしたことが検出され

ると、このPC端末処理は終了する。

【0108】〔音声情報及び画像情報の利用例〕この発明では、既に説明したように、楽音関係以外の設定情報として、音声情報や画像情報が用いられる。例えば、音声情報には、圧縮形式の差によって、WAVE、AIF F、SOUND VQ、MP3等のフォーマットがあるが、これらの形式の音声情報を取り込むことができるように共通フォーマット化を行い、楽音情報による楽音信号の生成と併行して、案内用の音声信号を生成することができる。

【0109】また、画像情報の利用例としては、端末システムTSの表示部13に、着信時や通話相手に対応するアイコンを表示し、アイコンの動きを楽音の再生に同期するよう制御したり、楽音信号に対応する譜面を順次表示することができる。

【0110】〔種々の実施態様〕携帯用端末装置で使用可能な楽音情報のフォーマットは、自機種フォーマットAに限られるものではない。例えば、図3のような発音制御回路を搭載し、この回路のなかで、従来の電子楽器で使用されている自動演奏機能（シーケンサー）を動作させることにより、SMFフォーマットCの楽曲情報をそのまま再生できるようにすることも可能である。この場合、他の楽音情報源装置（PCなど）から携帯用電話機端末に情報を取り込む際に形式変換をしなくて済む。しかし、圧縮処理は行う方が好ましい。

【0111】実施例では、音源回路における楽音合成方式としてFM方式を採用しているが、楽音合成方式はこれに限らない。例えば、波形メモリ方式、物理モデル方式、高調波合成方式、フォルマント合成方式、「VCO+VCF+VGA」のアナログシンセサイザ方式等、種々の方式を適用することができ、これらの何れであってもよい。つまり、音源回路の楽音合成方式によって、設定情報として記録される音色に関する各種情報は異なってくるが、基本的には、従来より電子楽器で使用されている各楽音合成方式に対応する多種のパラメータ情報を採用することができる。

【0112】また、音源回路自体については、専用のハードウェアを用いて音源回路を構成するものに限らず、「DSP+マイクロプログラム」を用いて音源回路を構成するようにしてもよいし、「CPU+ソフトウェア」のプログラムで音源回路を構成するようにしてもよい。

【0113】さらに、1つの回路を時分割で使用することによって複数の発音チャンネルを形成するようでもよいし、1つの発音チャンネルが1つの回路で構成されるような形式のものであってもよい。

【0114】〔発明の効果〕以上説明したように、この発明では、第一に、楽音の発音が可能な携帯用端末装置において、音色に関する設定情報に基づいて設定される音色が与えられ演奏情報に対応する楽音信号を生成し、この楽音信号に対して、効果に関する設定情報に基づい

て設定される効果を付与するようにした発音制御装置を備えているので、FM音源等を利用して複数音を同時に発音させて、着信時のメロディ音、通話中のBGM音、任意の必要時に楽しむ音楽等を豊かで多彩なものとすることができる。

【0115】この発明では、第二に、所定の音色をもち所定の効果が付与された楽音信号を生成するのに、携帯用端末装置とは独立して動作する制御手段（CPU）を用いているので、携帯用端末装置本体の制御に拘束されず、余裕のある楽音信号生成処理を行うことができる。

【0116】この発明では、第三に、楽音情報に基づいて、楽音情報に含まれる設定情報に対応する所定の音色乃至効果が与えられた楽音信号を生成すると共に、音声情報及び画像情報に基づいて音声信号及び画像信号を生成するようにしているので、再生される楽音と共に音声や画像を併用して多様な態様で楽しむことができる。また、記憶手段の記憶容量に対応して、汎用楽音情報フォーマットに比べてダウンサイジングされたフォーマットにて記述されている楽音情報を用いて楽音信号を生成するようにしているので、携帯用端末装置のデータ処理機能及び容量の許容最大限の範囲内において、つまり、装置内のメモリを圧迫しないで、良質の楽音を再生することができる。

【0117】この発明では、第四に、携帯用端末装置及び楽音情報源を有する基地局（サーバ）により楽音情報利用システムを形成し、携帯用端末装置から送信される選択情報に応じて、対応する楽音情報を楽音情報源から選択し、選択された楽音情報について、携帯用端末装置で発音される楽音に与える音色乃至効果を表わす設定情報を付与し、設定情報が付与された楽音情報に基づいて、所定の音色乃至効果が与えられた楽音信号を生成するようにしている。従って、サーバのデータベースを有効に利用し、より豊かで多彩な楽音を得ることができる。このシステムは、さらに、選択情報を送信した携帯用端末装置に対して課金作業を行うことにより、特定の携帯用端末装置ユーザーに対して相応するサービスを提供することができる。

【0118】この発明では、第五に、パーソナルコンピュータ端末或いはインテリジェントな電子楽器のような楽音情報処理装置と共に楽音情報を利用し、楽音情報処理装置において、所望の形態の楽音情報を作成又は編集し、携帯用端末装置の処理機能に応じたサイズに圧縮するようにしているので、携帯用端末装置の能力に合った楽音情報の音色や効果等の設定、編集、作成等を容易に行うことができる。

【0119】この発明では、第六に、外部記憶媒体や他の電話機端末のような楽音情報源に記憶されている楽音情報を携帯用端末装置内に取り込み、取り込まれた楽音情報を編集するようにしているので、種々の形態の楽音

情報を携帯用端末装置の処理能力やそのユーザの好みに適した楽音情報に加工することができる。

【図面の簡単な説明】

【図1】図1は、この発明の一実施例による発音制御装置が適用される携帯用電話機端末の基本的構成を表わす概略ブロック図である。

【図2】図2は、この発明の一実施例による発音制御回路の詳細な構成を表わすブロック図である。

【図3】図3は、この発明の他の実施例による発音制御回路の詳細な構成を表わすブロック図である。

【図4】図4は、この発明の一実施例による携帯用電話機端末の使用環境の一例を表わす概念図である。

【図5】図5は、この発明の一実施例による携帯用電話機端末における自機種の情報フォーマットの例である。

【図6】図6は、他機種の携帯用電話機端末における他機種の従来形情報フォーマットの例である。

【図7】図7は、従来より電子楽器等で使用されている汎用の楽音情報フォーマットの例である。

【図8】図8は、この発明の一実施例による携帯用電話機端末及び基地局から成る第1システムにおける情報授受関係を表わす機能的ブロック図の一部である。

【図9】図9は、この発明の一実施例による携帯用電話機端末及び基地局から成る第1システムにおける情報授受関係を表わす機能的ブロック図の他部である。

【図10】図10は、この発明の一実施例による携帯用電話機端末及びパーソナルコンピュータから成る第2システムにおける情報授受関係を表わす機能的ブロック図である。

【図11】図11は、この発明の一実施例による携帯用電話機端末及び記録媒体乃至他の電話機端末から成る第3システムにおける情報授受関係を表わす機能的ブロック図である。

【図12】図12は、この発明の一実施例による携帯用電話機端末での自端末処理例を示すフローチャートである。

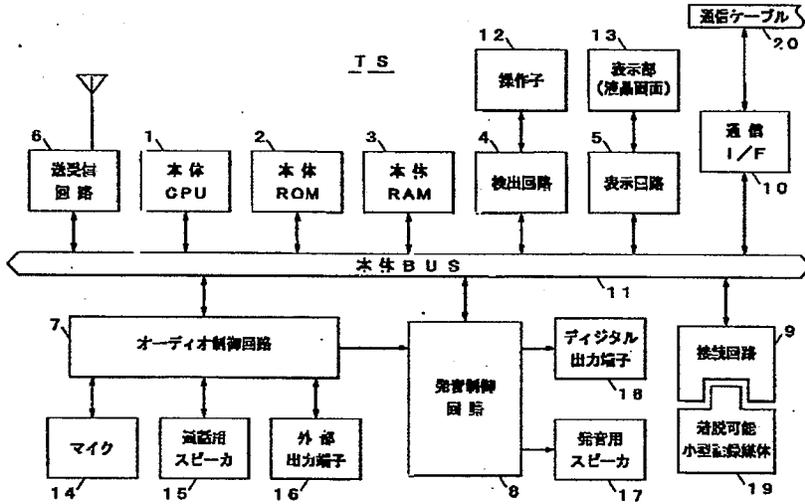
【図13】図13は、この発明の一実施例による基地局でのサーバ処理例を示すフローチャートである。

【図14】図14は、この発明の一実施例によるパーソナルコンピュータ端末でのPC端末処理例を示すフローチャートである。

【符号の説明】

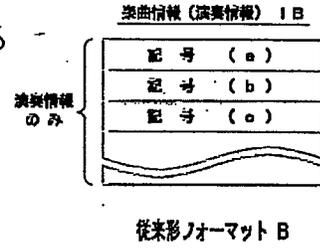
TS 携帯用電話機端末（端末システム、自機）、
BS 基地局（ベース局）、
PC パーソナルコンピュータ端末、
OS、OSa、OSb 他の電話機端末、
SM 合成楽音信号、
ST 通話音信号、
SE 効果付与後信号。

【図1】

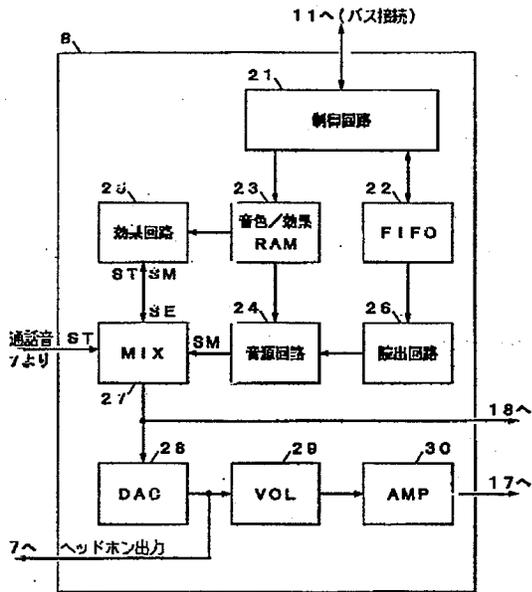


全体構成ブロック図

【図6】

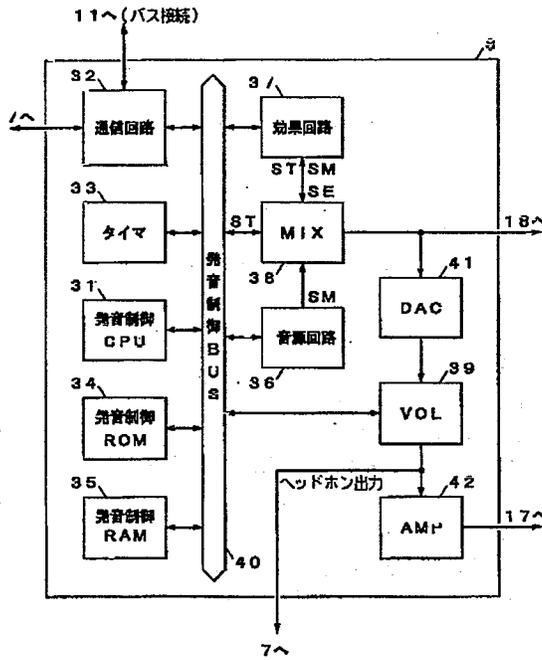


【図2】



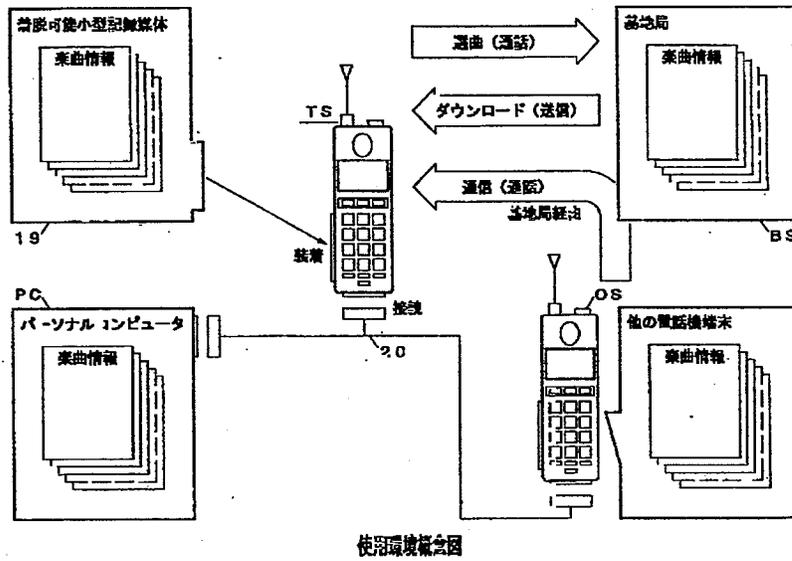
発信制御回路ブロック図例 [1]

【図3】

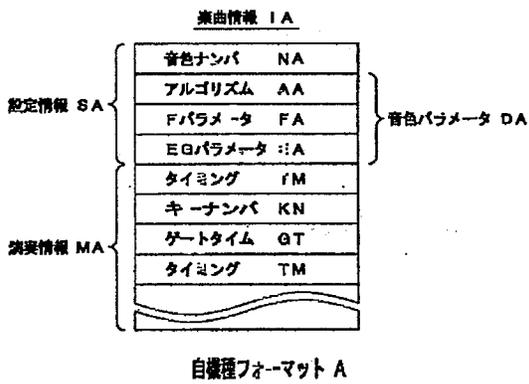


発信制御回路ブロック図例 [2]

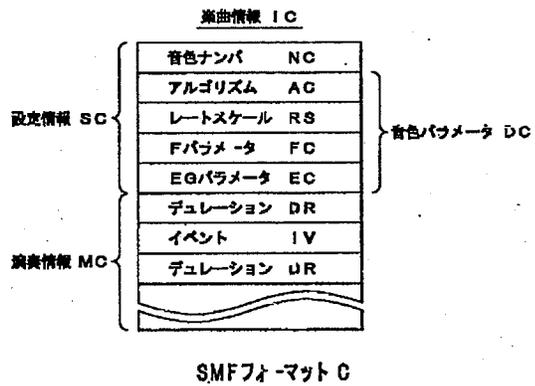
【図4】



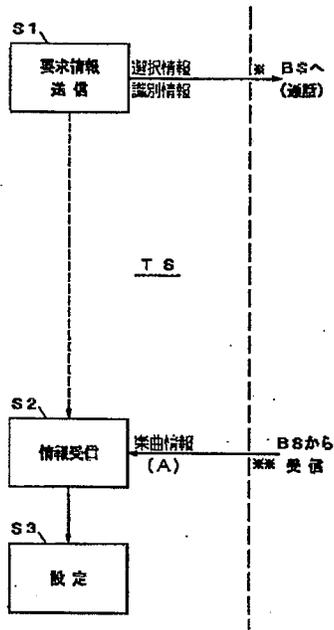
【図5】



【図7】

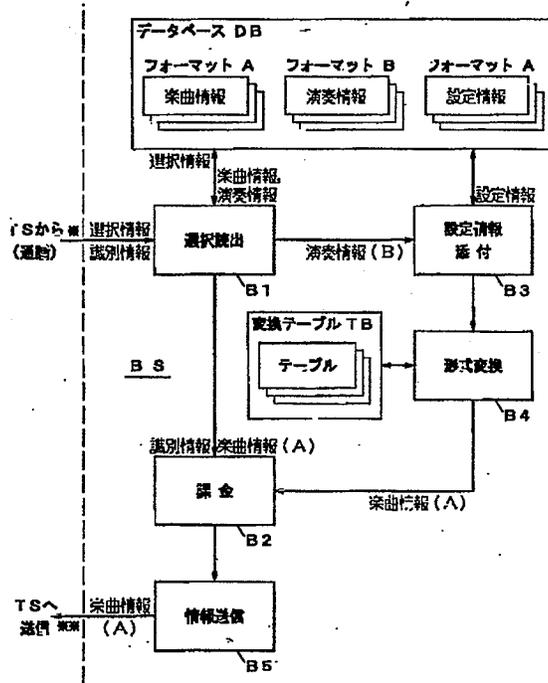


【図8】



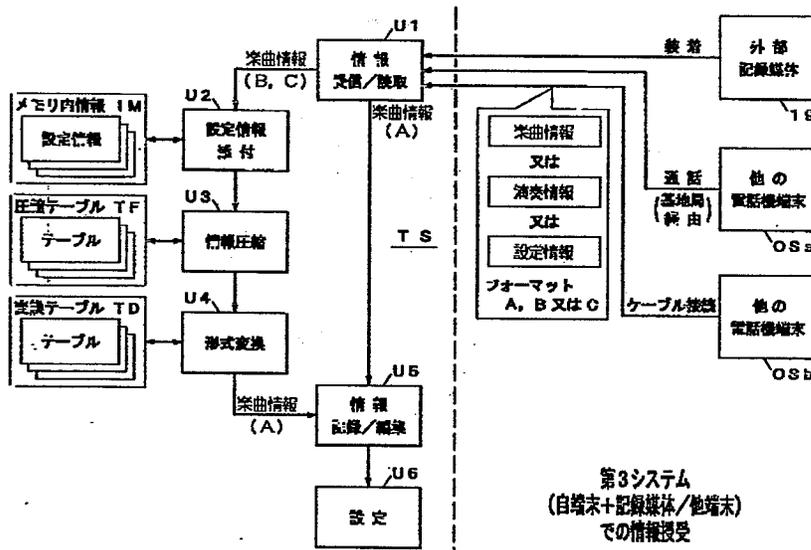
第1システム (自端末+基地局) での情報授受 [1]
(自端末側)

【図9】



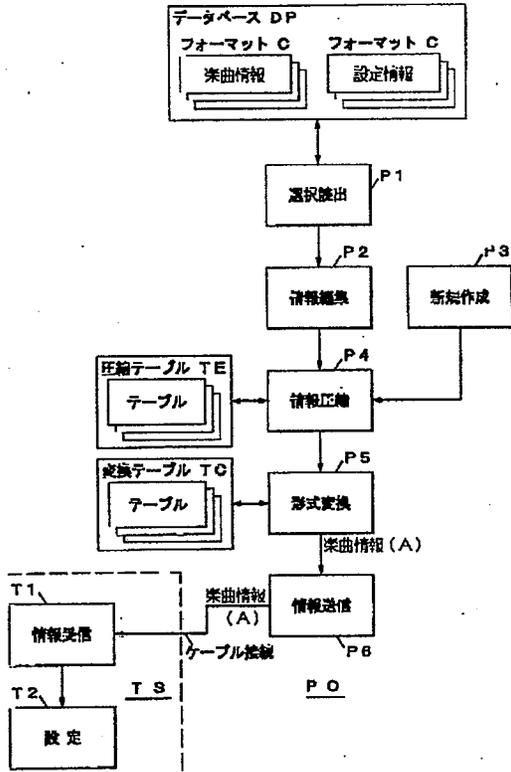
第1システム (自端末+基地局) での情報授受 [2]
(基地局側)

【図11】



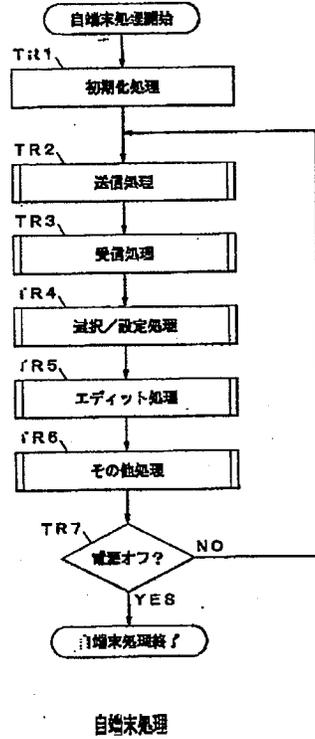
第3システム
(自端末+記録媒体/他端末)
での情報授受

【図10】

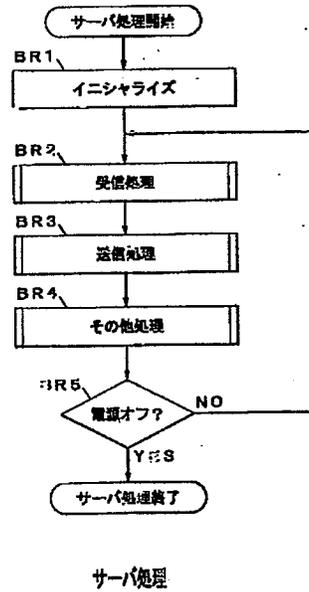


第2システム (自端末トPC) での情報授受

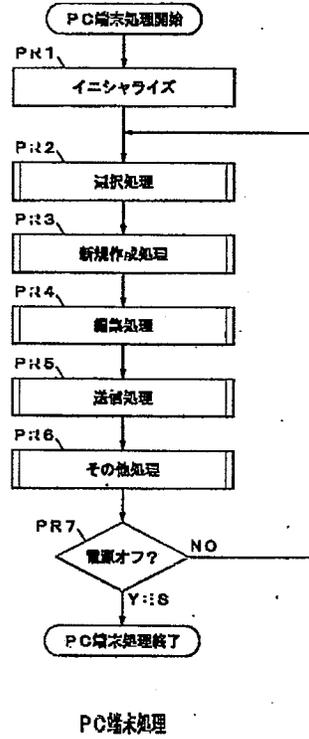
【図12】



【図13】



【図14】



フロントページの続き

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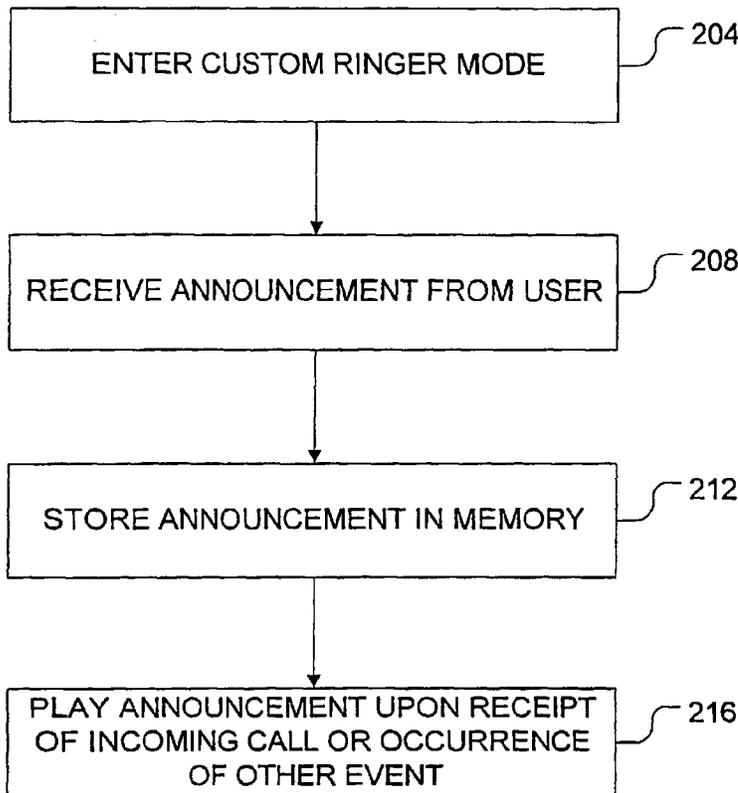
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[Continued on next page]

(54) Title: USER CUSTOMIZABLE ANNOUNCEMENT



(57) Abstract: A system and method for providing custom announcements for a communication device is provided. According to one aspect of the invention, the device enters a custom announcement mode (204) wherein the communication device accepts voice or other audio sounds spoken by the user or otherwise provided to the communication device (208, 212). The custom sounds can be used as indicators for a variety of device occurrences or other events (216) such as, an incoming call alert, browser sounds, a message indicator, a voice mail indicator, a scheduler alert, a roam call indicator, and so on. Various techniques can be used to allow the communication device to accept and store custom sounds for a variety of different events.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

DESCRIPTIONUser Customizable Announcement1. Field of the Invention

5 The present invention relates generally to telephonic systems and handsets and more specifically to a system and method for facilitating a user customizable ringer with telephone and communication systems.

2. Related Art

10 The advent of wireless personal communication devices has revolutionized the telecommunications industry. Cordless telephones, as well as Cellular, PCS, emerging satellite networks and other wireless services provide wireless personal communications to businesses and individuals at home, in the office, on the road, and virtually anywhere the wireless network reaches. Wireless telephone subscribers no longer have to stop at pay telephones along the road, or wait until they return home or to the office to check messages and return important business calls.
15 Instead, wireless subscribers carry out their day to day business from their cars, from the job site, while walking along the airport concourse, and just about anywhere their signals are accessible.

20 Additionally, the popularity of the speakerphone, for both mobile and fixed phones has grown steadily. The speakerphone feature enables users to conduct other tasks while carrying on a conversation without having to hold the instrument to their ear. In the car, the user can drive with preferably with both hands on the wheel and both eyes on the road. At home or in the office, the user can carry on other tasks while also carrying on a conversation.

25 Thus, it is no surprise that since the introduction of the cellular telephone service, the number of wireless telephone subscribers has increased steadily. Today, the number of wireless telephone subscribers is staggering and still growing rapidly. In fact, many households have multiple wireless telephones in addition to or even in place of their conventional land-line services. Additionally, the popularity of speakerphones has grown as well. Almost every office telephone includes a speakerphone feature in today's modern workplace.
30

35 With markets of this size, there is fierce competition among hardware and equipment manufacturers as well as among service providers. In an attempt to lure customers, most manufacturers and providers offer handsets with desirable features or attributes such as small size, light weight, longer battery life, speed dial, and so forth. Many recent additions to the marketplace include multi-functional handsets

that even provide pocket-organizer functions integrated into the wireless handset. Most manufacturers, however, are still scrambling to add new features to their communication devices to snare a portion of this booming market.

Summary of the Invention

5 The present invention is directed toward systems and methods for implementing a customizable announcement with an electronic device such as, for example a communication device or wireless communication handset.

 According to one aspect of the invention, a technique can be provided to allow the communication device to enter a custom announcement mode, wherein the
10 communication device accepts voice or other audio sounds spoken by the user or otherwise provided to the communication device. The custom sounds can be used as indicators for a variety of device occurrences or other events such as, for example, an incoming call alert, browser sounds, a message indicator, a voice mail indicator, a scheduler alert, a roam call indicator, and so on. Various techniques can
15 be used to allow the communication device to accept and store custom sounds for a variety of different events.

 In one implementation of the invention, a custom announcement can be stored by the user and designated for playback upon the occurrence of a predefined event. For example, the user may store a custom audio clip (e.g., his or her voice
20 saying "you have an incoming call") and designate that audio clip as the announcement to be made when an incoming call is received.

Brief Description of the Drawings

 FIG. 1 is a diagram generally illustrating an example environment of the invention as a wireless communication handset.

25 FIG. 2 is an operational flow diagram illustrating a process for storing and playback of announcements according to one embodiment of the invention.

 FIG. 3 is a block diagram illustrating an example architecture for implementing a user customizable announcement feature according to one embodiment of the invention.

30 FIG. 4 is an operational flow diagram illustrating a process for storage and playback of an announcement for a particular event according to one embodiment of the invention.

 FIG. 5 is an operation flow diagram illustrating a process for storage and playback of an announcement for an event according to an alternative embodiment
35 of the invention.

FIG. 6 is a block diagram illustrating an example architecture for accepting user-customizable announcements from an external source according to one embodiment of the invention.

FIG. 7 is a block diagram illustrating an example architecture for format conversion according to one embodiment of the invention.

FIG. 8 is a block diagram illustrating an example of format conversion according to one embodiment of the invention.

FIG. 9 is a block diagram illustrating an example processor-based system according to one embodiment of the invention.

10 Detailed Description of the Preferred Embodiments

1. Introduction and Overview

The present invention is directed toward a system and method for providing customized event announcements with an electronic device. More specifically, according to one aspect of the invention, a user customizable announcement is provided for a communication device, allowing a user to store one or more custom sounds and designate custom sounds as associated with one or more events.

For example, according to one aspect of the invention, a technique can be provided to allow the communication device to enter a custom announcement mode, wherein the communication device accepts voice or other audio sounds spoken by the user or otherwise provided to the communication device. The custom sounds can be used as indicators for a variety of device occurrences or other events such as, for example, an incoming call alert, browser sounds, a message indicator, a voice mail indicator, a scheduler alert, a roam call indicator, and so on. Various techniques can be used to allow the communication device to accept and store custom sounds for a variety of different events.

2. Example Environment

Before describing the invention in detail, it is useful to describe a simple example environment in which the invention can be implemented. One such example environment is a telephone environment, or a portable communication handset such as a cordless telephone, cellular phone or other wireless communication device. One particular application of such a device is a wireless communication handset such as, for example, a cellular, GSM, PCS, radio, or other wireless communication handset. Such handsets or communication devices provide wireless communication services and often include a keypad for control and data entry of the

device, as well as a display to provide information to the user regarding the communication or regarding information entered by the user on the keypad.

Wireless communication handsets or devices such as those that would benefit from the various features and aspects of the present invention, can be implemented in a number of different configurations with a number of different architectures. In fact, as will become apparent to one of ordinary skill in the art after reading this description, implementation of the features of the present invention is not dependent on a particular or specific architecture of the electronic device or communication device. However, to provide a backdrop for the description of the features, an example wireless communication device is described with reference to FIG. 1.

Referring now to FIG. 1, the wireless communication device 100 includes a processor 104, a speaker 106, a display 108, a keypad 110, a transceiver 122, a memory 114, a microphone 116, a power source 118, a data port 124 and an antenna 120. Wireless communication device 100 can be a handheld handset, integrated vehicle phone or other preferably wireless communication device configured to communicate with other communication devices such as, for example, a base station 112 or other communication device. Contemporary communication handsets typically include one or more processors 104 to control the operation and the features of the handset. Processor 104 typically has associated therewith computer program code running on the processor to carry out the functionality of the device.

Memory 114 such as RAM, ROM, or other memory, can be included and interfaced with the processor to store the program code and to provide other storage space for data or other information useful in executing the program code as well as in carrying out functions of the handset. In fact, the features and functionality of the present invention can be implemented using hardware, software, or a combination thereof, and such software can run on a processor such as processor 104.

Communication handsets 100 typically also include a transceiver 122. Transceiver 122 provides a transmitter to transmit voice and data information via antenna 120 to a recipient communication device such as, for example, base station 112. Transceiver 122 typically also includes a receiver to receive voice and data communication from another communication device (e.g., base station 112) and to provide the received voice and data information to the user or to facilitate internal functionality of the handset. In the case of a cordless telephone, for example, the base station may be the telephone base that is connected via the user's telephone line to a PSTN. As another example, in the case of a cellular phone, base station 112 may be the cell site base station. As yet one more example, in the case of a

satellite communication system, base station 112 may include a relay satellite and an earth station associated therewith.

User interface portions of the typical wireless communication handset 100 include a speaker 106, a display 108, a keypad 110, and a microphone 116. Microphone 116 accepts voice or other audio information from the user, converts this information to electrical signals such that they can be transmitted by the transceiver to a recipient. Likewise, speaker 106 converts electrical signals received by transceiver 122 into audio information that can be heard by a user of the wireless communication device 100.

Display 108 can be included and used to display information to the user such as, for example, call information, keypad entry display, signal presence and signal strength display, battery life display, identification of an incoming call, or any other information useful to the user. Display 108 can include any type of display, but is preferably a liquid crystal display (LCD) due to the LCD's low power consumption characteristics. Display 108 can also include other visual displays such as, for example, light emitting diode (LED) indicators or other visual indicators.

Keypad 110 can be implemented using a numeric or an alphanumeric keypad and can also include special function keys. In one embodiment, keypad 110 includes back lighting such that information on the keys can be viewed by the user in low light or dark conditions. Many electronic devices including wireless communication devices include a flip panel (not illustrated) that can be closed to conceal some or all of the keys on the keypad.

Power source 118 is used to provide power to one or more of the components of the wireless communication handset 100. Power source 118 can be implemented, for example, using rechargeable batteries such as NiCad or NiMH rechargeable batteries. Other power sources can be included in addition to or in place of batteries.

Data port 124 can be used to exchange or share data with a host computer or other device. For example, where the functionality of the telephone device includes personal organizer functionality, a user may wish to upload collected contact information to his or her laptop or desktop computer. Data port 124 can be a hard wired or wireless data port and can use any of a number of different communication standards. One such example communication standard prominent in PC interfaces is RS-232. As an additional example, in the case of a cellular telephone, data port 124 may be used to interface a hands-free kit to the handset.

The invention is described herein in terms of this example application in this example environment. Description in these terms is provided for ease of discussion only. After reading the description herein, it will become apparent to one of ordinary

skill in the art that the present invention can be implemented in any of a number of different electronic devices or architectures, including, for example, PDA's, organizers, and other devices where it is desirable to implement custom event indicator features.

5 3. Custom Event Indication Features

Having thus described an example environment in which the various features and aspects of the invention can be implemented, either individually or collectively, the invention is now described in further detail in terms of this example environment according to one or more embodiments. FIG. 2 is an operational flow diagram
10 generally illustrating a process for providing

FIG. 2 is an operational flow diagram illustrating a process for providing user customizable event announcements or ringers according to one embodiment of the invention. In a step 204, the communication device enters a custom announcement mode in which personalized sounds can be stored by the user for playback upon the
15 occurrence of one or more events of the communication device. Entry into the custom announcement mode can be accomplished, for example, at the direction of the user by keypad or keystroke entries, following instructions on a menu screen, providing a voice command, or other action causing the communication device to enter the custom announcement mode.

20 In a step 208, communication device receives the custom sound or announcement from the user. For example, in one embodiment, the communication device may prompt the user to speak or otherwise provide the custom announcement or sound that the user wishes to be stored for use in announcements.

In a step 212, the received announcement is stored in the communication
25 device. For example, in one embodiment, the received announcement is stored in memory such as general memory or in a special memory or a portion of memory designated for storing such announcements. In one embodiment, the communication device can provide for reporting and storage of multiple announcements such that more than one custom sound or announcement can be stored by the user and
30 designated for one or more events. Preferably, in this embodiment, the user can provide names for the sounds or announcements recorded such that the user can easily identify those sounds or announcements when designating particular sounds or announcements to one or more events.

In a step 216, on the occurrence of an event, the stored sound that is
35 designated as being associated with that event is retrieved and played to announce the event. For example, consider a scenario in which a user stores a sound in his

or her own voice saying "You have an incoming call," and this sound is designated as the ringer sound to announce an incoming call. In this example, when an incoming call is received the communication device retrieves this recorded announcement so that it is played to announce the incoming call in place of conventional ringer sounds.

Thus, as the above scenario illustrates, the communication device can accept, store, and play back custom sounds or announcements for one or more events. As such, the user's communication device can be customized to his or her own preferences or to suit his or her own personality. Additionally, one common problem of unidentifiable ringers, beeps, or other more conventional sounds can be avoided.

Having thus describe any general process for providing custom announcements with a communication device, more detailed scenarios are now described in accordance with one or more embodiments of the invention. FIG. 3 is a block diagram illustrating an example architecture that can be used to provide user customizable announcements according to one embodiment of the invention. The example architecture illustrated in FIG. 3 includes a CPU 282, ringer memory 284, audio processing 286, and user interface 288.

User interface 288 is provided to receive sounds from and play back sounds to the user of the communication device. For example, in one embodiment, user interface 288 includes a speaker and a microphone. More specifically, in one implementation (discussed in terms of the communication device illustrated in FIG. 1) user interface 288 can comprise speaker 106 and microphone 116 that are otherwise used for communications normally associated with the communication device. As such, the functionality of these items can be utilized in storing and providing the user customizable announcements. Alternative embodiments can use an additional or alternative speaker or microphone.

Audio processing 286 is implemented to provide the analog-to-digital and digital-to-analog conversions used to digitize the received audio for subsequent storage into memory, and to convert stored digital strings into audio clips that can be played by the user interface. CPU 282 coordinates the storage and retrieval of digital audio clips to and from ringer memory 284. CPU 282 and ringer memory 284 can be a special purpose processor and memory for handling the user customizable announcements. Alternatively, in another embodiment, CPU 282 and ringer memory 284 can be implemented using a processor and memory otherwise associated with other functions of the communication device. For example, in terms of the example environment illustrated in FIG. 1, CPU 282 and memory 284 can be implemented using processor 104 and memory 114.

FIG. 4 is an operational flow diagram illustrating a process for storing and playing back of customized announcements according to one embodiment of the invention. More particularly, the embodiment illustrated in FIG. 4 prompts the user to select an option or event for which a particular sound is being recorded, prompts the user to record that sound, and plays that sound back on the occurrence of the event.

Referring now to FIG. 4, in a step 322 the communication device prompts the user to select an event for which the customized sound is being recorded. For example, in one embodiment, the user can follow menu options to record a customizable ringer or announcement. The menu options may provide the user with a list of events for which customizable sounds can be stored. The user can highlight the event of interest, and designate that he or she wishes to record a custom sound for that event. Other implementations can be provided to prompt the user as well.

In a step 324, the communication device prompts the user to enter the customized sound or audio for that event. The prompt can be an audible prompt such as, for example, a beep, sound, a recorded or synthesized voice asking the user to provide the customizable sound, or other prompt. As a specific example, the prompt may be a synthesized voice asking the user to "please speak your customized announcement now."

The prompt can also be a visible prompt such as an indicator light or a message on a display screen of the communication device prompting the user to enter the audible announcement. For example, text may be displayed on a screen of the communication device prompting the user to enter the audio announcement.

In steps 326 and 328, the communication device receives and stores the audible announcement provided by the user. As described above with reference to FIGs. 2 and 3, in one embodiment the audible announcement is received by a microphone, digitized, and stored in memory. As stated, in this scenario the announcement being recorded is designated as associated with a particular event. As such, it is preferable that the storage is provided such that on the occurrence of that event, the processor can identify the proper audio clip to retrieve from memory and play the retrieved audio clip to announce that event.

To stop recording of the announcement, the communication device can use timers, silence detection, user input, or other techniques. Using these techniques, the communication device can determine when to stop recording the audible announcement.

In a step 332, upon the occurrence of the event for which the announcement has been designated, the communication device retrieves the stored announcement,

and plays that announcement to announce the event. In some embodiments, if the communication device is powered down or otherwise in standby mode, the communication device can be programmed to "wake-up" to play the announcement.

5 The above scenario discussed with reference to FIG. 4 can perhaps be better understood if discussed in terms of a simple specific example. As with other examples in this document, this example is provide for discussion purposes only, and should not be interpreted as limiting the invention to a particular operation described herein. In this example, a user may wish to enter an announcement alerting the user that he or she has a meeting scheduled at a particular time. For example, in the
10 example scenario, the device may be, for example, a PDA or a wireless communication handset with PDA functionality including a calendar and meeting function. The user may store meeting times and dates and other information and may designate that alarms or alerts should be generated either prior to or at the start of a scheduled meeting or other activity.

15 Thus, in this example scenario, the user may wish to customize his or her communication device such that when the alert is generated the user knows that it is his or her device and generating the alert even if the user is in a crowded room with others that may have similar devices. In this example, the user wishes to customize the meeting alert to cause the communication device to "speak" in the
20 user's own voice: "You have a meeting in five minutes." In this scenario, the user can access the communication device and indicate that he or she wishes to store a custom announcement for calendar alarms. For example, in one embodiment, the user can follow menu choices using a combination of the device display screen and keypad entries or voice command entries to direct the user to a customizable ringer
25 screen.

Following this example embodiment, the user may be presented with a screen listing events for which customizable clips can be recorded. For example, the screen may provide a listing of events such as: incoming calls, browser alerts, messages, voice mail, meeting alert, incoming roam call, and so on. Because the user wishes
30 to record a sound for a meeting alert, the user highlights the meeting alert selection on the menu and selects the highlighted event. In one embodiment, the user can also select the amount of time before a scheduled meeting that the alert should be generated.

Once the selection is made, the communication device preferably prompts the
35 user to provide the custom audio to be associated with the meeting announcement. Thus, at this time, the user can say "you have a meeting in five minutes." The communication device stores this audio clip in memory and associates this audio clip

with the meeting alert event. Thus, upon the occurrence of a designated alarm time (for example five minutes before a scheduled meeting in the example) the communication device retrieves this clip from memory and plays to the user in his or her own voice "you have a meeting in five minutes."

5 In the embodiment and specific example described above, the user selects an event for which a customized announcement is to be recorded. In an alternative embodiment, the user may be allowed to store one or more custom announcements in memory, and designate which of the stored announcements are to be used for which of a plurality of events. This embodiment is illustrated in FIG. 5. In a step 422,
10 the communication device enters the custom announcement mode. As described above, this entry can be made at the direction of the user by for example, a key selection or sequence, by following menu selections, or by a voice command. Once in the custom announcement mode, the communication device prompts the user to enter the custom audible announcement, receives the announcement and stores the
15 announcement. This is illustrated by steps 424, 426 and 428. The prompting, retrieval and storage utilized in this embodiment can, for example, follow the same or similar techniques as described above with reference to FIG. 4.

Preferably, however, at this stage the sound is not yet designated as being associated with a particular event. Thus, in this embodiment, this sound is named
20 or otherwise provided with an identification such that it can be at some point in time be associated with a particular event. This is illustrated by a step 430. In one embodiment, simple names can be provided by the communication device for the sounds or announcements that are being recorded and stored such as, for example, "announcement one," "announcement two," and so on. Alternatively, the communi-
25 cation device can allow the user to name the custom announcements that he or she recorded such that they are easier to identify by the user in designating which sounds should be associated with which events. For example, the user may be prompted to key in a name for the announcements, or to speak a name for the announcements. Thus, in this embodiment, the user can select names for the audio
30 clips that will better enable the user to identify which clips are stored in memory.

In a step 432, the communication device allows the user to designate which sounds are to be generated on the occurrence of particular events. For example, the user may be provided with the option of selecting for an event one of a plurality of custom announcements recorded by the user, or one of a plurality of standard
35 sounds or announcements (e.g. more conventional ringers or alert sounds) provided with the communication device. For example, in the embodiment described above using menu screens, the user may be presented with a screen outlining the various

events for which announcements can be played. Highlighting an event, the user can then scroll through or otherwise view the various announcements that are recorded (custom or standard) and designate one of those announcements as being associated with the event. As such, on the occurrence of the event, the designated announcement is retrieved and played to announce the event.

In one embodiment, the announcements both standard and custom can be designated as one-time only announcements on the occurrence of the event, or a repeating announcement when an event is detected. For example, a user may designate that upon the occurrence of an incoming call, he or she wishes a sound to be played and repeated at a particular interval for a particular number of repeat times, until the call is answered, until a timeout period has elapsed or for some other specified period. As an alternative example, the user may designate that for meeting alerts, he or she only wishes an announcement to be played once as an alarm for the meeting and not to repeat.

In one or more of the embodiments described above, the audio processing associated with the customizable announcements can simply be audio processing used to record and play back audible messages. Alternatively, as also eluded to above, the audio processing can include voice recognition and speech synthesis to allow the communication device to provide additional functionality including, for example, accepting voice commands from user. Additionally, speech synthesis can be used to generate audible announcements announcing or otherwise identifying the events in more detail without the need for a particular audible announcement to be recorded. For example, a speech synthesizer can receive information from a caller ID feature and take the electronic identification of the caller from the caller ID feature to speak the name of the party from which the incoming call is placed.

Similarly, in another example, the communication device can use stored information stored to provide audio details. For example, the device may use information stored about a meeting to in the announcement of that meeting. As a more specific example, the communication device may look to the meeting place, meeting time, meeting subject, or attendees. Using speech synthesis, the device can synthesize audio regarding one or more of these details and announce these details to the user upon generation of an alert.

Furthermore, the communication device can combine recorded clips with synthesized audio to provide a more custom and more detailed announcement to the user. This is best described in terms of a specific example, for example, consider that a user has a meeting at 1 p.m. in the first floor conference room with John Smith. The communication device can retrieve an audio clip that says "you have a meeting"

in the user's voice. Synthesized audio can be appended to this clip to include the information such as, for example, "at 1 p.m., with John Smith, in the first floor conference room."

5 The embodiments described above describe the customized announcements as recordable audible clips provided by the user such as, for example, his or her spoken voice, or other audible sounds. However, in an alternative embodiment, announcements can be provided to the communication device in electronic form as opposed to an audible form. For example, in one embodiment, the user may wish to interface his or her communication device with a personal computer that has
10 sounds stored there, or has software for creating custom sounds such as, for example, music, or other custom sounds or sound effects. Thus, according to one embodiment of the invention, the user can interface the communication device to his or her personal computer and transfer one or more sounds from the computer to the communication device. One example architecture for providing this functionality is
15 illustrated in FIG. 6 according to one embodiment of the invention.

Referring now to FIG. 6, the architecture illustrated in FIG. 6 includes a user interface 288, audio processing 286, CPU 282, and announcement memory 284. The architecture illustrated in FIG. 6 also includes a data I/O portion 294 used to allow an electronic device such as, for example, a personal computer 296 or other
20 device to make audio clips available to the communication device as announcements. The interface between personal computer or other device 296 and data IO 294 can be, for example, a hard wired or wireless interface.

Although any communication standard can be implemented one common standard is RS-232. Thus, in embodiments using RS-232, for example, data I/O 294
25 can interface to a com port of a personal computer. In this embodiment, software can be provided for installation on the personal computer that allows the user to setup the announcements for the communication device. That is, the software on the personal computer can be used to designate the recordation of clips and the association of particular announcements with particular events. As such, the rich
30 user interface provided by contemporary personal computers can be used by the user in designating announcements with events. Additionally, in an embodiment where the communication device includes PDA functions and interfaces to a user's computer to synchronize, for example, events and contacts, information regarding announcements or other clips can be synchronized during other synchronization
35 operations. Thus, for example, when updating his or her contacts or calendar events, the user can also update stored announcements, announcement selections, and other phone features.

In addition, the communication device can be provided with format conversion capabilities such that it can accept audio clips and a variety of alternative formats, it will convert that format to one that is compatible with the communication device. For example, a format converter may be provided to accept MP3 audio format and convert this audio input stream into audio recognized by the communication device. FIG. 7 is a block diagram illustrating an example architecture for format conversion according to one embodiment of the invention. Referring now to FIG. 7, an audio stream 444 may be provided in a particular audio format. For example, in one implementation audio stream 444 may be provided in the MP3 format. A format converter 446 converts the MP3 (or other format) audio stream into a format acceptable by the communication device. Format converter 446 may be implemented to accept multiple input formats and provide one or more output formats.

Also illustrated in FIG. 7 is composition software 448. In one embodiment, a user may utilize composition software 448, for example, at his or her personal computer, to create audio input streams. As FIG. 7 illustrates, in one embodiment, an audio stream 442 from composition software 448 can be provided to the handset as a custom announcement.

FIG. 8 is a block diagram illustrating an example of format conversion according to one embodiment of the invention. In this example embodiment, an MP3 audio stream is converted to a QCELP format. Referring now to FIG. 8, an MP3 audio stream 452 is provided to format converter 446. In this example embodiment, format converter 446 includes a decoder 454 and an encoder 456. Decoder 454 decodes the MP3 audio input stream and provides the decoded stream to encoder 456. Encoder 456 encodes the decoded stream to provide an audio stream in the QCELP format 458.

The various embodiments, aspects and features of the invention described above may be implemented using hardware, software or a combination thereof and may be implemented using a computing system having one or more processors. In fact, in one embodiment, these elements are implemented using a processor-based system capable of carrying out the functionality described with respect thereto. An example processor-based system 502 is shown in FIG. 9 according to one embodiment of the invention. The computer system 502 includes one or more processors, such as processor 504. The processor 504 is connected to a communication bus 506. Various software embodiments are described in terms of this example computer system. The embodiments, features and functionality of the invention as described above are not dependent on a particular computer system or processor architecture or on a particular operating system. In fact, after reading this

document, it will become apparent to a person of ordinary skill in the relevant art how to implement the invention using other computer or processor systems and/or architectures.

Processor-based system 502 can include a main memory 508, preferably
5 random access memory (RAM), and can also include a secondary memory 510. The
secondary memory 510 can include, for example, a hard disk drive 512 and/or a
removable storage drive 514, representing a floppy disk drive, a magnetic tape drive,
an optical disk drive, etc. The removable storage drive 514 reads from and/or writes
10 to a removable storage medium 518 in a well known manner. Removable storage
media 518, represents a floppy disk, magnetic tape, optical disk, etc. which is read
by and written to by removable storage drive 514. As will be appreciated, the
removable storage media 518 includes a computer usable storage medium having
stored therein computer software and/or data.

In alternative embodiments, secondary memory 510 may include other similar
15 means for allowing computer programs or other instructions to be loaded into
computer system 502. Such means can include, for example, a removable storage
unit 522 and an interface 520. Examples of such can include a program cartridge
and cartridge interface (such as that found in video game devices), a removable
memory chip (such as an EPROM, or PROM) and associated socket, and other
20 removable storage units 522 and interfaces 520 which allow software and data to be
transferred from the removable storage unit 518 to computer system 502.

Computer system 502 can also include a communications interface 524.
Communications interface 524 allows software and data to be transferred between
computer system 502 and external devices. Examples of communications interface
25 524 can include a modem, a network interface (such as, for example, an Ethernet
card), a communications port, a PCMCIA slot and card, etc. Software and data
transferred via communications interface 524 are in the form of signals which can be
electronic, electromagnetic, optical or other signals capable of being received by
communications interface 524. These signals are provided to communications inter-
30 face via a channel 528. This channel 528 carries signals and can be implemented
using a wireless medium, wire or cable, fiber optics, or other communications
medium. Some examples of a channel can include a phone line, a cellular phone
link, an RF link, a network interface, and other communications channels.

In this document, the terms "computer program medium" and "computer
35 usable medium" are used to generally refer to media such as removable storage
device 518, a disk capable of installation in disk drive 512, and signals on channel

528. These computer program products are means for providing software or program instructions to computer system 502.

Computer programs (also called computer control logic) are stored in main memory 508 and/or secondary memory 510. Computer programs can also be received via communications interface 524. Such computer programs, when executed, enable the computer system 502 to perform the features of the present invention as discussed herein. In particular, the computer programs, when executed, enable the processor 504 to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system 502.

In an embodiment where the elements are implemented using software, the software may be stored in, or transmitted via, a computer program product and loaded into computer system 502 using removable storage drive 514, hard drive 512 or communications interface 524. The control logic (software), when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein.

In another embodiment, the elements are implemented primarily in hardware using, for example, hardware components such as PALs, application specific integrated circuits (ASICs) or other hardware components. Implementation of a hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s). In yet another embodiment, elements are implemented using a combination of both hardware and software.

In an embodiment where the elements are implemented using software, the software may be stored in, or transmitted via, a computer program product and loaded into computer system 502 using removable storage drive 514, hard drive 512 or communications interface 524. The control logic (software), when executed by the processor 504, causes the processor 504 to perform the functions of the invention as described herein.

4. Conclusion

While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

Claims

1. A method for enabling a communication device to allow custom audio announcements, the method comprising the steps of:
accepting an audio announcement from a user;
5 storing said audio announcement;
designating said audio announcement as an announcement for a specified event; and
playing said audio announcement on the occurrence of said specified event.
2. The method of claim 1, wherein said step of accepting an audio
10 announcement from a user comprises the step of accepting an audible audio announcement from said user via a microphone or other transducer.
3. The method of claim 1, wherein said step of accepting an audio announcement from a user comprises the step of accepting an audio stream from said user via an electronic interface.
- 15 4. The method of claim 3, wherein said step of accepting an audio stream from said user via an electronic interface further comprises the step of performing format conversion on said accepted audio input stream.
5. The method of claim 1, further comprising the step of allowing said user to provide a name for said accepted audio announcement.
- 20 6. The method of claim 5, wherein said step of designating said audio announcement as an announcement for a specified event comprises the step of accepting such designation from said user, wherein said user designates by name an announcement as being associated with a specified event.
7. The method of claim 1, wherein said step of designating said audio
25 announcement as an announcement for a specified event comprises the steps of prompting a user to select an event for which an announcement is being accepted.
8. The method of claim 1, wherein said step of designating said audio announcement as an announcement for a specified event comprises the steps of prompting a user to select an event for which said announcement is being accepted.

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9. The method of claim 1, further comprising the step of providing additional audible information about said specified event when said audio announcement is played on the occurrence of said specified event.

5 10. A computer program product comprising a computer useable medium having computer program logic recorded thereon for enabling a communication device to provide custom audio announcements, said computer program logic comprising:

computer program code means for accepting an audio announcement from a user;

10 computer program code means for storing said audio announcement;

computer program code means for designating said audio announcement as an announcement for a specified event; and

computer program code means for playing said audio announcement on the occurrence of said specified event.

15 11. The computer program product of claim 10, wherein said computer program code means for accepting an audio announcement from a user comprises computer program code means for accepting an audible audio announcement from said user via a microphone or other transducer.

20 12. The computer program product of claim 10, wherein said computer program code means for accepting an audio announcement from a user comprises computer program code means for accepting an audio stream from said user via an electronic interface.

25 13. The computer program product of claim 12, wherein said computer program code means for accepting an audio stream from said user via an electronic interface further comprises computer program code means for performing format conversion on said accepted audio input stream.

14. The computer program product of claim 10, further comprising computer program code means for allowing said user to provide a name for said accepted audio announcement.

30 15. The computer program product of claim 14, wherein said computer program code means for designating said audio announcement as an announcement

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for a specified event comprises computer program code means for accepting such designation from said user, wherein said user designates by name an announcement as being associated with a specified event.

5 16. The computer program product of claim 10, wherein said computer program code means for designating said audio announcement as an announcement for a specified event comprises computer program code means for prompting a user to select an event for which an announcement is being accepted.

10 17. The computer program product of claim 10, wherein said computer program code means for designating said audio announcement as an announcement for a specified event comprises computer program code means for prompting a user to select an event for which said announcement is being accepted.

15 18. The computer program product of claim 10, further comprising the computer program code means for providing additional audible information about said specified event when said audio announcement is played on the occurrence of said specified event.

19. A system for enabling a communication device to allow custom audio announcements, comprising:
means for accepting an audio announcement from a user;
means for storing said audio announcement;
20 means for designating said audio announcement as an announcement for a specified event; and
means for playing said audio announcement on the occurrence of said specified event.

25 20. The system of claim 19, wherein said means for accepting an audio announcement from a user comprises means for accepting an audible audio announcement from said user via a microphone or other transducer.

21. The system of claim 19, wherein said means for accepting an audio announcement from a user comprises means for accepting an audio stream from said user via an electronic interface.

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22. The system of claim 21, wherein said means for accepting an audio stream from said user via an electronic interface further comprises means for performing format conversion on said accepted audio input stream.

23. The system of claim 19, further comprising means for allowing said user to provide a name for said accepted audio announcement.

24. The system of claim 23, wherein said means for designating said audio announcement as an announcement for a specified event comprises means for accepting such designation from said user, wherein said user designates by name an announcement as being associated with a specified event.

25. The system of claim 19, wherein said means for designating said audio announcement as an announcement for a specified event comprises means for prompting a user to select an event for which an announcement is being accepted.

26. The system of claim 19, wherein said means for designating said audio announcement as an announcement for a specified event comprises means for prompting a user to select an event for which said announcement is being accepted.

27. The system of claim 19, further comprising the means for providing additional audible information about said specified event when said audio announcement is played on the occurrence of said specified event.

28. A communications handset, comprising:
a microphone;
a speaker;
a keypad;
a processor; and
computer software executable by said processor and including computer program code means, said computer program code means comprising:
computer program code configured to accept an audio announcement from a user;
computer program code configured to store said audio announcement;
computer program code configured to designate said audio announcement as an announcement for a specified event; and

20

computer program code configured to play said audio announcement on the occurrence of said specified event.

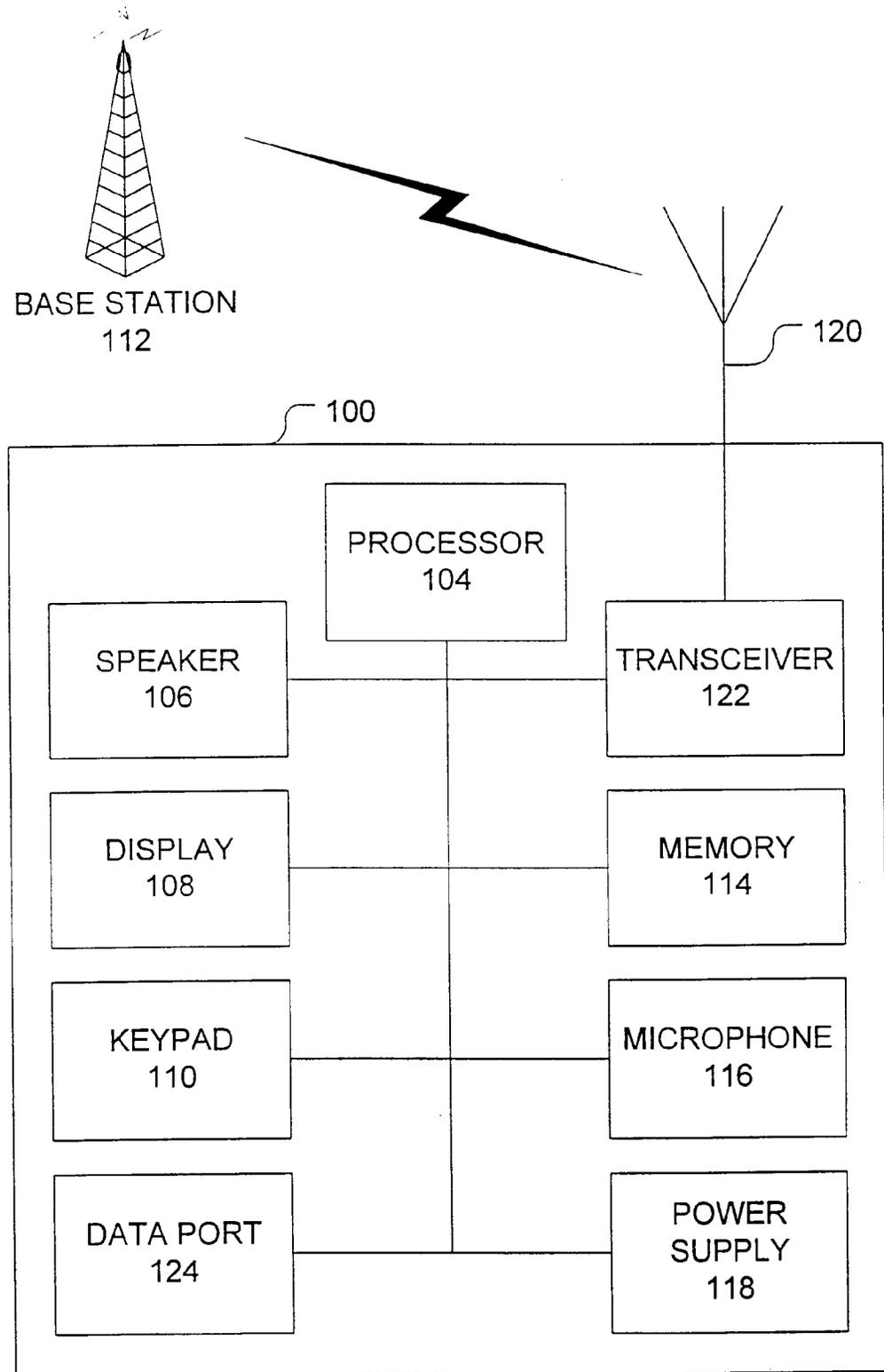


Fig. 1

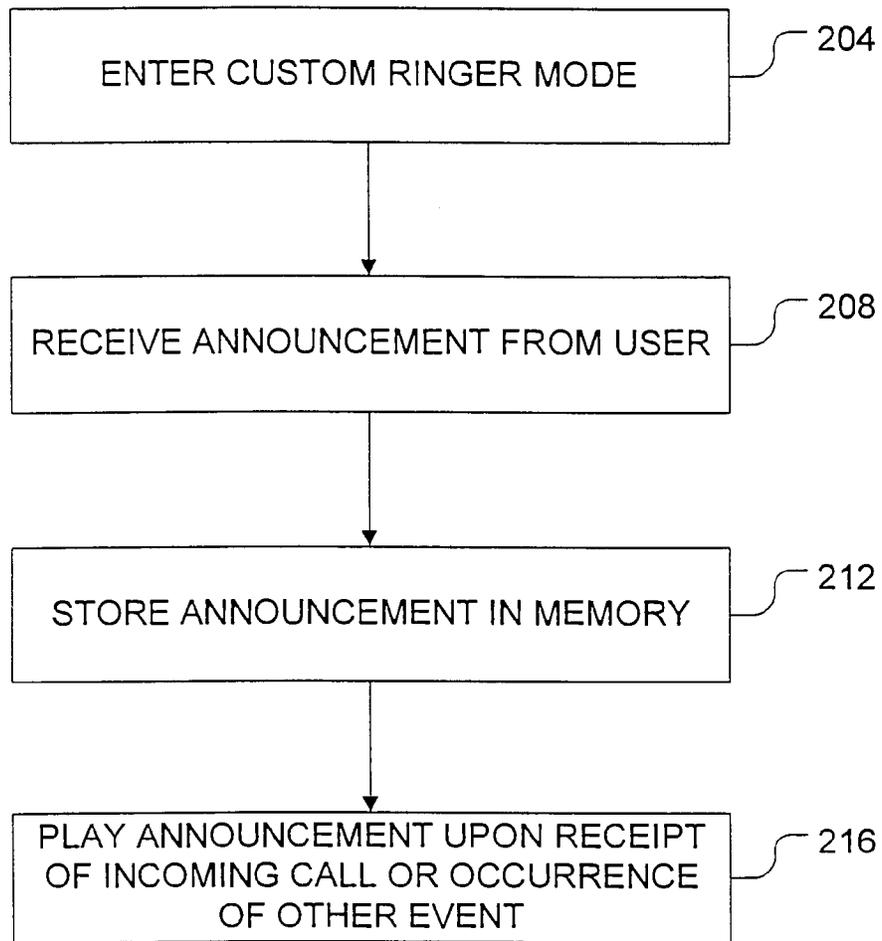


Fig. 2

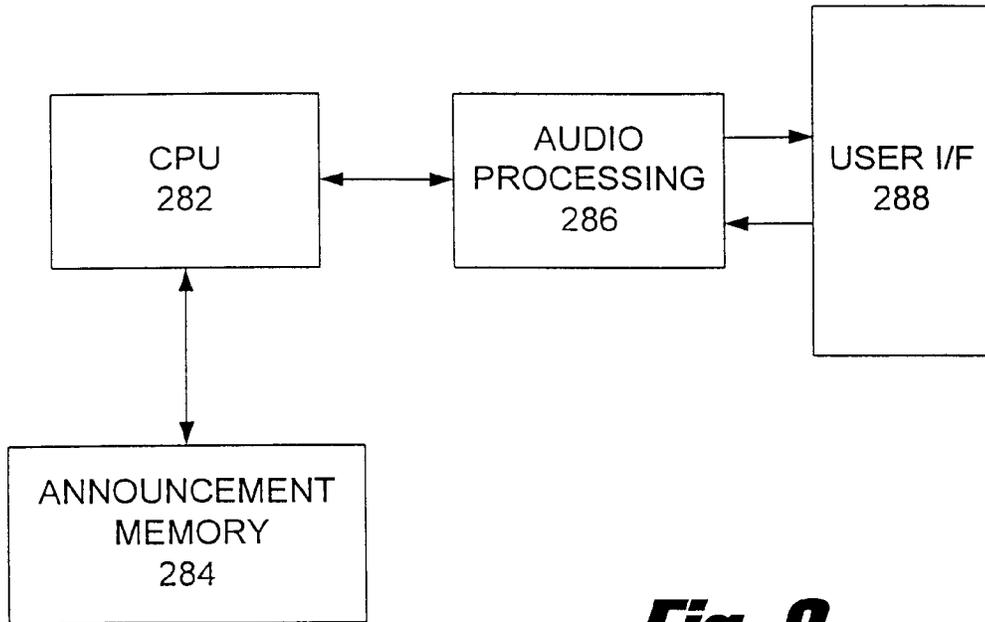


Fig. 3

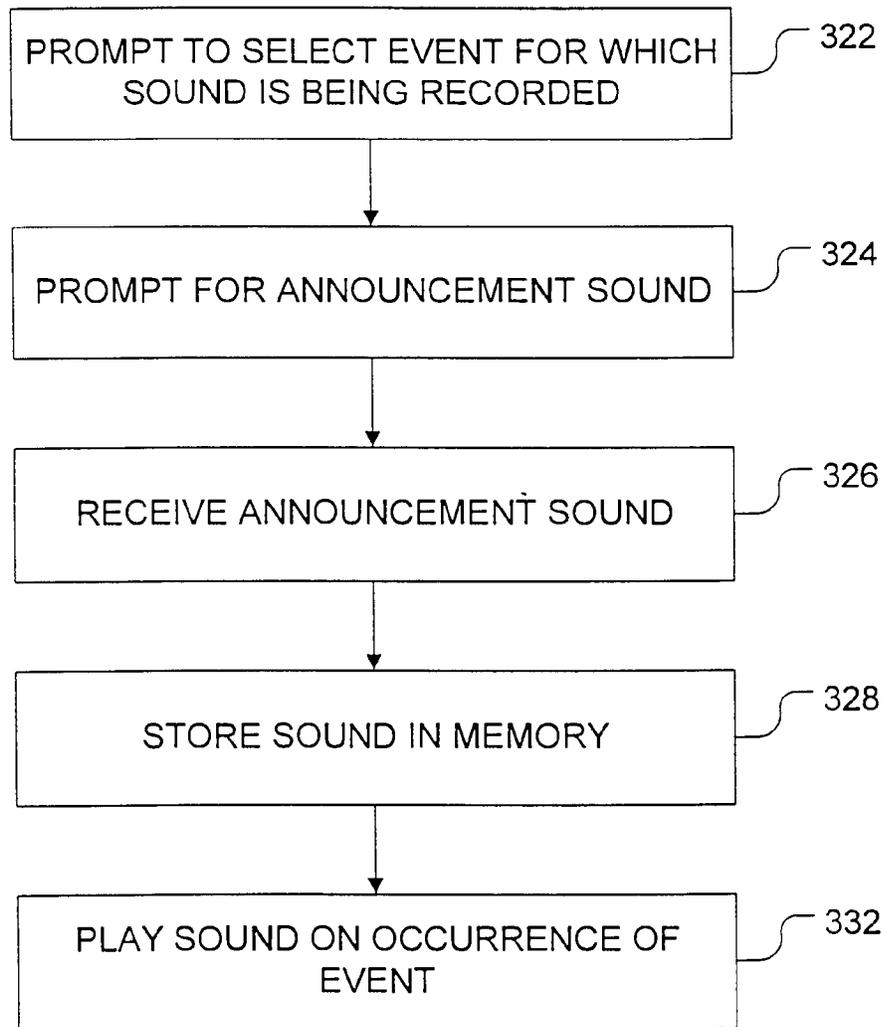


Fig. 4

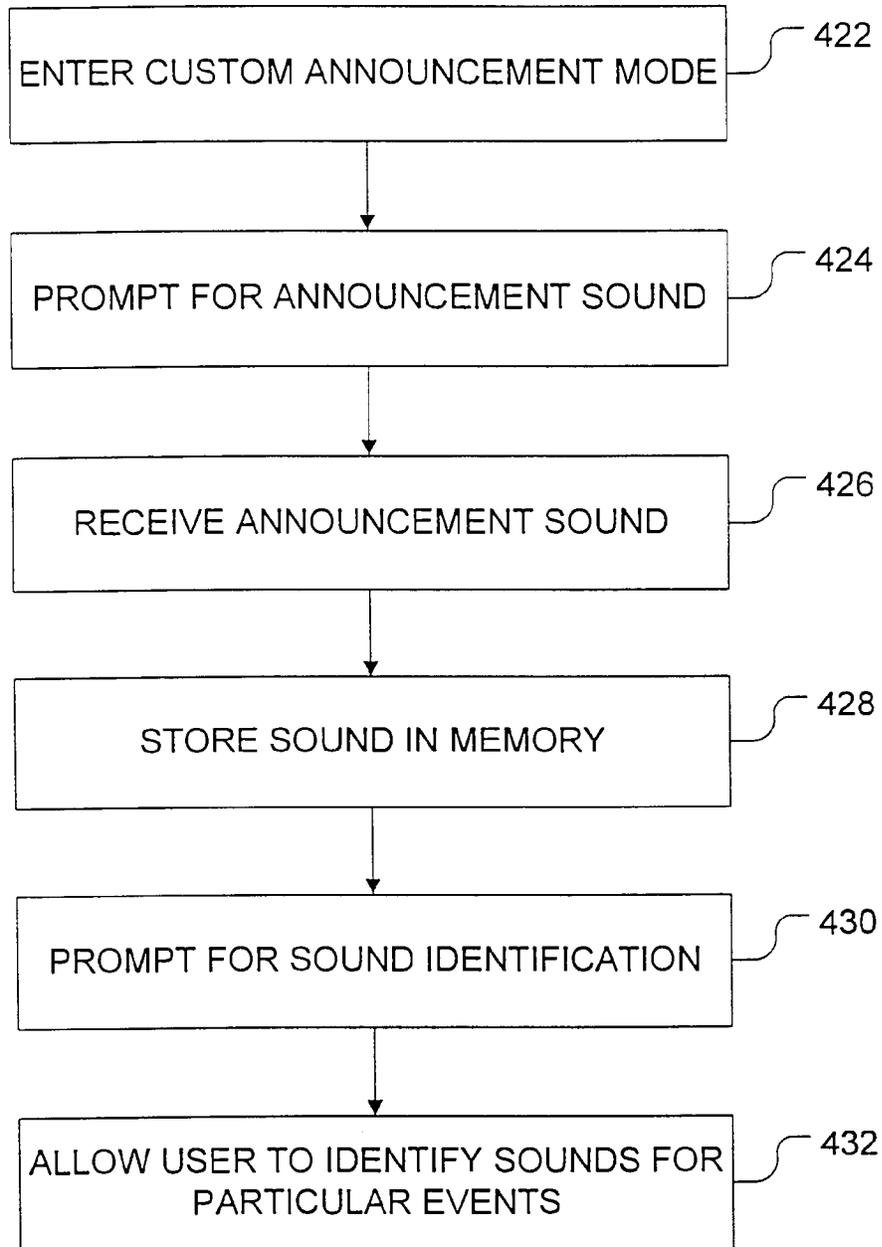


Fig. 5

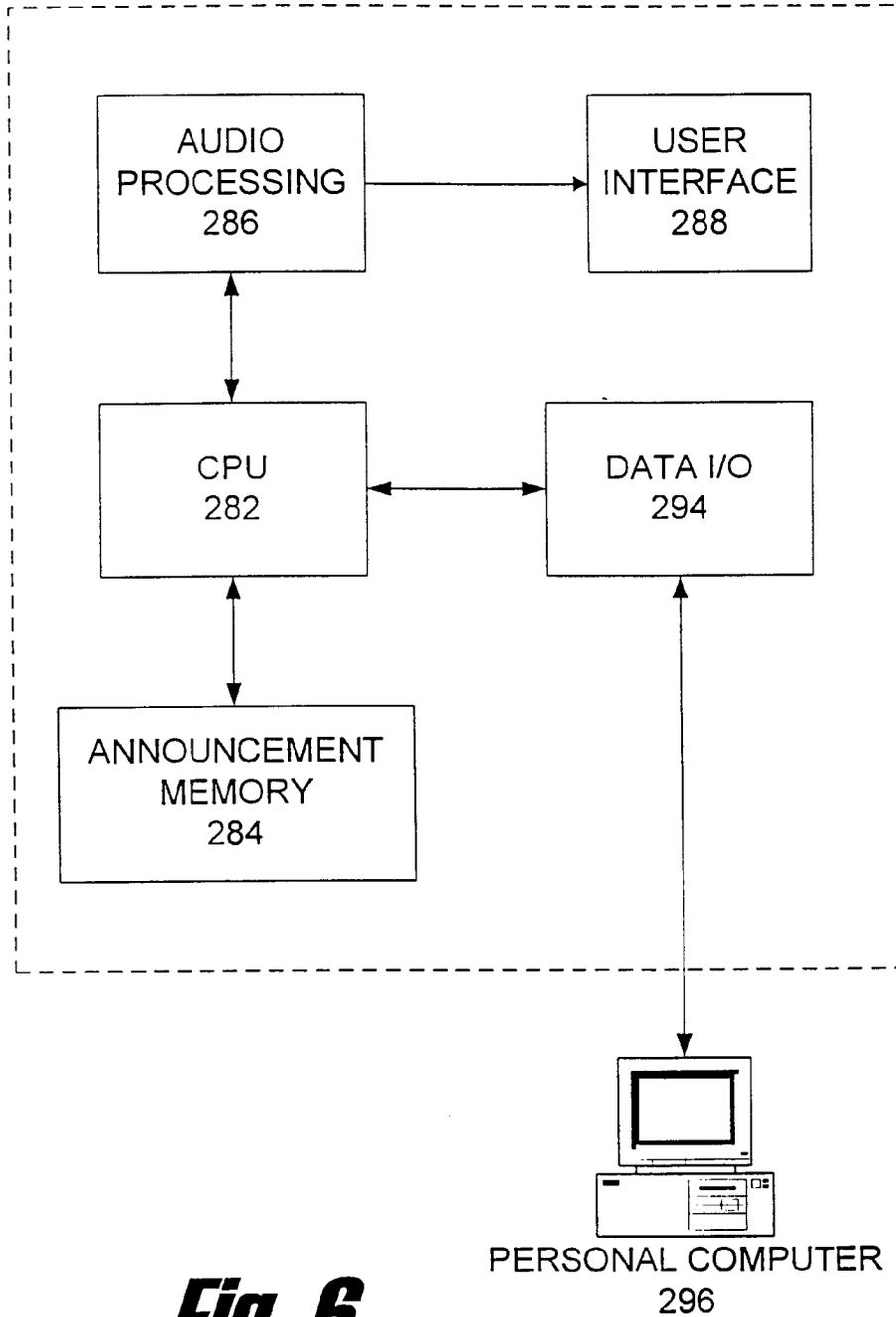


Fig. 6

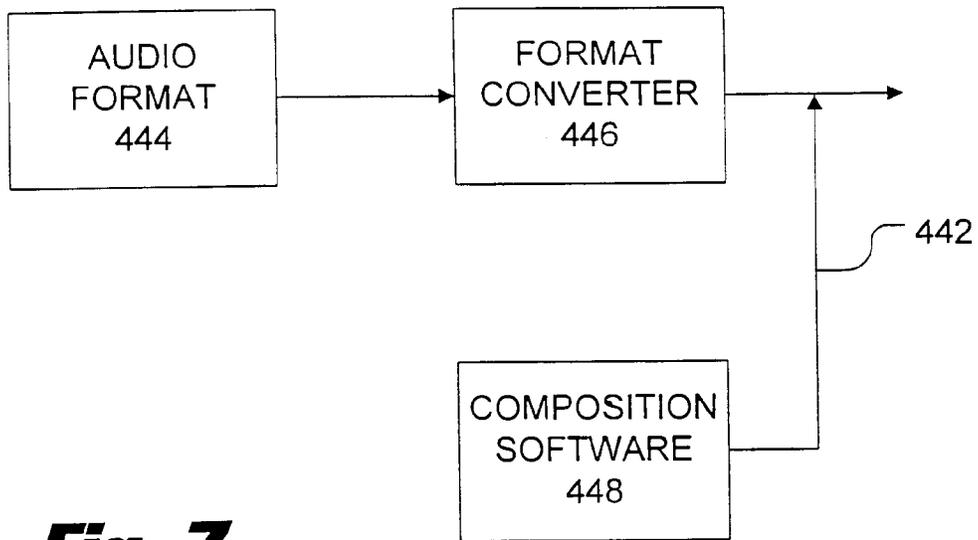


Fig. 7

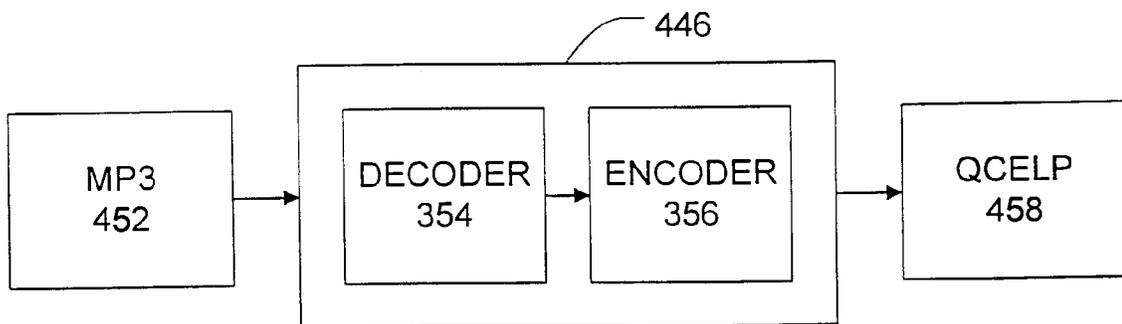


Fig. 8

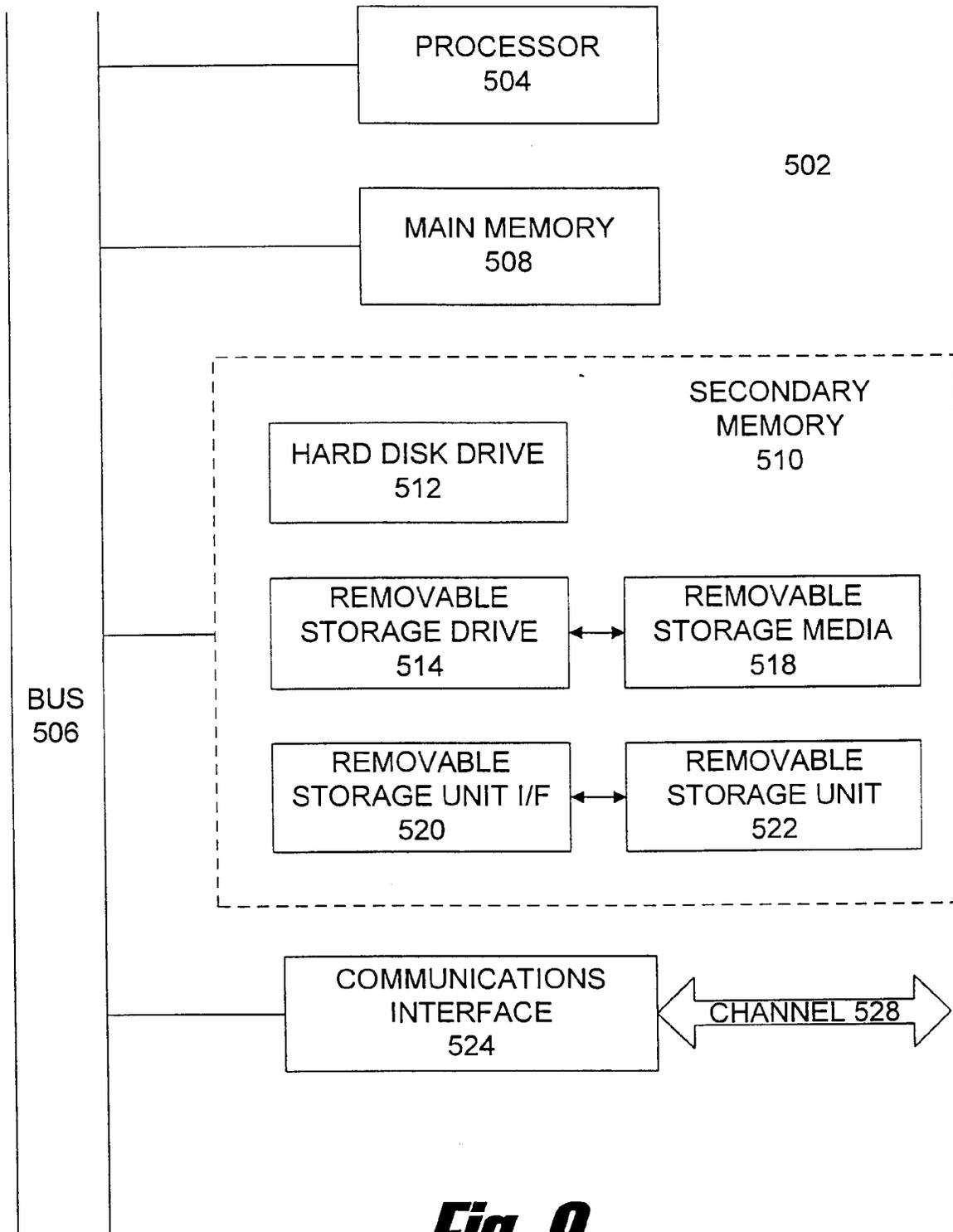


Fig. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/17141

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) :H04M 1/00, 11/02 US CL :379/372, 373, 374, 375, 376, 387, 88.16, 88.07 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 379/372, 373, 374, 375, 376, 387, 88.16, 88.07 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WEST: search terms: alert, ring, record, announce, telephone		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,598,461 A (GREENBERG) 28 January 1997; Abstract; col.1,ln.50-55; col.4,ln.47-53; col.4,ln.64-col.5,ln.1; col.6,ln.37-col.7,ln.2; col.8,ln.4-18.	1-27 --- 28
Y	US 5,559,860 A (MIZIKOVSKY) 24 September 1996; abstract; figure 2; col.2,ln.49-67; col.6,ln.15-50; col.8,ln.1-65; col.9,ln.34-45	28
A	US 5,481,599 A (MACALLISTER et al.) 02 January 1996, Abstract; col.1,ln.53-67; col.2,ln.9-12; col.2,ln.54-66; col.3,ln.33-38; col.3,ln.61-66.	1-28
A	US 5,854,826 A (KIM) 29 December 1998; Abstract, col.4,ln.12-25; col.4,ln.55-63.	1-28
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 20 AUGUST 2000		Date of mailing of the international search report 20 SEP 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer SCOTT L. WEAVER <i>James R. Matthews</i> Telephone No. (703) 308-6974

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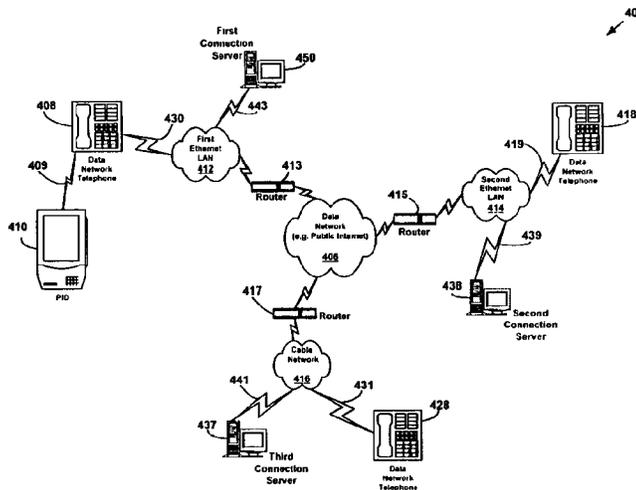
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PERSONALIZED CALL ANNOUNCEMENT ON A DATA NETWORK TELEPHONY SYSTEM



(57) Abstract: Systems and methods for providing personalized call announcement services are provided. A user provides a call announcement attribute to a first data network appliance. As part of a call setup operation with a second data network appliance located on a data network, the first data network appliance (also located on the data network) transmits the call announcement attribute to the second data network appliance. The second data network appliance plays a personalized call announcement message corresponding to the call announcement attribute received from the first data network appliance. The personalized call announcement message notifies the called party of the incoming call. In a preferred embodiment of the present invention, the user uses a portable information device to transmit the announcement message attributes to the first data network appliance. An example of a portable information device is a PDA (Personal Digital Assistant), a smart card, or a portable phone.



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Personalized Call Announcement on a Data Network Telephony System

BACKGROUND OF THE INVENTION

A. Field of the Invention

The present invention is related to providing customizable communication services on a network. In particular, the present invention relates to providing personalized call announcement functions to a user of a data network telephony system.

B. Description of the Related Art

For many years, telephone service providers on the Public Switched Telephone Network (PSTN) provided their customers nothing more than a telephone line to use to communicate with other subscribers. Over time, telephone service providers have enhanced their service by providing Custom Local Area Signaling Service (CLASS) features to their customers. Similar communication services are provided by a Private Branch Exchange (PBX), which is typically implemented in a nonresidential setting.

The CLASS features permit customer subscribers of the features to tailor their telephone service according to individual needs. Some of the more popular CLASS features are:

- *Call blocking*: The customer may specify one or more numbers from which he or she does not want to receive calls. A blocked caller will hear a rejection message, while the callee will not receive any indication of the call.
- *Call return*: Returns a call to the most recent caller. If the most recent caller is busy, the returned call may be queued until it can be completed.
- *Call trace*: Allows a customer to trigger a trace of the number of the most recent caller.
- *Caller ID*: The caller's number is automatically displayed during the silence period after the first ring. This feature requires the customer's line to be equipped with a device to read and display the out-of-band signal containing the number.
- *Caller ID blocking*: Allows a caller to block the display of their number in a callee's caller ID device.

- *Priority ringing:* Allows a customer to specify a list of numbers for which, when the customer is called by one of the numbers, the customer will hear a distinctive ring.

- *Call forwarding:* A customer may cause incoming calls to be automatically forwarded to another number for a period of time.

A customer subscriber to a CLASS feature may typically activate and/or deactivate a CLASS feature using "*" directives (e.g., *69 to automatically return a call to the most recent caller). CLASS features may also be implemented with the use of out-of-band data. CLASS feature data is typically transmitted between local Class-5 switches using the Signaling System #7 (SS7).

Local Exchange Carriers (LECs) and other similar organizations maintain CLASS offices that typically contain a database entry for each customer. The database allows specification of the CLASS features a customer has subscribed to, as well as information, such as lists of phone numbers, associated with those features. In some cases, customers may edit these lists on-line via a touch-tone interface. A list of all phone numbers that have originated or terminated a call with each customer is often included in the CLASS office database. For each customer, usually only the most recent number on this list is stored by the local Class-5 switch.

A Private Branch Exchange (PBX), is a stored program switch similar to a Class-5 switch. It is usually used within a medium-to-large-sized business for employee telephony service. Since a PBX is typically operated by a single private organization, there exists a wide variety of PBX services and features. Custom configurations are common, such as integration with intercom and voice mail systems. PBX's typically support their own versions of the CLASS features, as well as other features in addition to those of CLASS. Most PBX features are designed to facilitate business and group communications.

A summary of typical PBX features includes:

- *Call transfer:* An established call may be transferred from one number to another number on the same PBX.
- *Call forwarding:* In addition to CLASS call forwarding, a PBX number can be programmed to automatically transfer a call to another number when the first number does not answer or is busy.

- *Camp-on queuing*: Similar to PSTN call return, a call to a busy number can be queued until the callee can accept it. The caller can hang up their phone and the PBX will ring them when the callee answers.
- *Conference calling*: Two or more parties can be connected to one another by dialing into a conference bridge number.
- *Call parking*: An established call at one number can be put on hold and then reestablished from another number. This is useful when call transfer is not warranted.
- *Executive override*: A privileged individual can break into an established call. After a warning tone to the two participants, the call becomes a three-way call.

While the CLASS and PBX features have enhanced the offerings of service providers that use the PSTN, the features are nevertheless limited in their flexibility and scope. The effect to the user is that the features become clumsy and difficult to use. For example, in order to use the Call Forwarding function, the user must perform the steps at the user's own phone prior to moving to the location of the telephone to which calls will be forwarded. A more desirable approach, from the standpoint of usefulness to the user, would be to perform the steps at the telephone or other device to which calls will be forwarded.

Much of the lack of flexibility of the PSTN features is due to the inflexible nature of the PSTN system itself. One problem with the PSTN is that the terminal devices (*e.g.* telephones) lack intelligence and operate as "dumb" terminals on a network having the intelligence in central offices. Most PSTN telephones are limited in functional capability to converting the analog signals they receive to sound, converting the sound from the handset to analog signals, generating the appropriate dial tones when a key on the keypad is pressed, and ringing when there is an incoming call.

Some PSTN telephones have a display device and a display function to display specific information communicated from intelligent agents in the PSTN network using the PSTN signaling architecture. For example, some PSTN telephones have a display function to enable the Caller ID feature. Even such PSTN telephones are limited however by the closed PSTN signaling architecture, which prohibits access by the PSTN telephones to the network signaling protocols. A PSTN telephone having a display function is effectively limited to displaying text, again, as a "dumb" terminal.

The Internet presents a possible solution for distributing intelligence to telephony terminal devices. In Internet telephony, digitized voice is treated as data and transmitted across a digital data network between a telephone call's participants. One form of Internet telephony uses a telephony gateway/terminal where IP telephony calls are terminated on the network. PSTN telephones are connected by a subscriber line to the gateway/terminal at the local exchange, or at the nearest central office. This form of Internet telephony provides substantial cost savings for users. Because the PSTN portion used in Internet telephony calls is limited to the local lines on each end of the call, long distance calls may be made for essentially the cost of a local call. Notwithstanding the costs savings provided by this form of Internet telephony, it is not much more flexible than the PSTN with respect to providing enhancements and features to the basic telephone service.

In another form of Internet telephony, telephones are connected to access networks that access the Internet using a router. The telephones in this form of Internet telephony may be substantially more intelligent than typical PSTN telephones. For example, such a telephone may include substantially the computer resources of a typical personal computer.

Data network telephones and the data network (*e.g.* Internet) system in which they operate, however, lack a substantial infrastructure and service providers for providing telephone service.

It would be desirable to incorporate CLASS and PBX features into a data network telephony system that uses a data network such as the Internet.

It would be desirable to provide new features and enhancements to telephony service that accommodate and conform to users' needs.

It would also be desirable to provide features and capabilities to telephone service that create new opportunities for users and for service providers.

It would also be an advantage for a data network telephony system to provide user customization of a data network telephony system.

It would also be advantageous to allow a user to utilize information stored in a user's Portable Information Device (PID), *e.g.* a Personal Digital Assistant (PDA), to personalize an announcement message for an outgoing call.

SUMMARY OF THE INVENTION

The present invention is directed to providing personalized call announcement services on a data network telephony system.

In a first embodiment of the present invention, a system for providing personalized call announcement services in a data network telephony system is provided. The system includes a data network appliance connected to a data network, and a portable information device associated with the user. The data network appliance is operable to communicate a voice signal as voice-over-data packets on a voice-over-data channel over the data network. The data network appliances also is operable to convert voice-over-data packets communicated on the voice-over-data channel to voice signals. The portable information device stores an announcement message attribute specifying a personalized call announcement. The portable information device may transmit the announcement message attribute to the data network appliance. The data network appliance may include the announcement message attribute in a call set-up request to a called party's data network appliance to enable the called data network appliance to play the personalized call announcement to the called party. The announcement message attribute may be a user attribute from which the called data network appliance may access a database including the user attribute to identify the personalized call announcement corresponding to the user attribute. For example, the called data network appliance may download an audio clip from a web site located on the data network.

In another embodiment of the present invention, a method for providing personalized call announcement services in a data network telephony system is provided. The method includes accepting an announcement message attribute from a user at a first data network appliance and transmitting the announcement message attribute from the first data network appliance across a data network to a second data network appliance in a set-up operation for an outgoing call.

In yet another embodiment of the present invention, a method for providing personalized call announcement services on a data network telephony system is provided. A first data network appliance receives an announcement message attribute from a portable information device associated with a user. The first data network appliance transmits a call request containing the announcement message attribute across a data network to a second data network appliance, enabling the second data

network appliance to play a personalized call announcement message corresponding to the announcement message attribute.

In another embodiment of the present invention, a method for providing personalized announcement message services on a data network telephony system is provided. An announcement message attribute transmitted across a data network by a second data network appliance is received at a first data network appliance as part of a call set-up operation for an incoming call. A called party is notified of the incoming call by the first data network appliance playing an announcement message corresponding to the announcement message attribute.

In yet another embodiment, a method for providing personalized announcement services on a data network telephony system is provided. The method includes accepting at a portable information device an announcement message attribute from a user. The portable information device transmits the announcement message attribute to the first data network appliance. The method may further include the first data network appliance receiving the announcement message attribute and transmitting the announcement message attribute across the data network to a second data network appliance. The second data network appliance may receive the announcement message attribute and may notify the called party of the incoming call at the second data network appliance by playing an announcement message corresponding to the announcement message attribute.

BRIEF DESCRIPTION OF THE DRAWINGS

Presently preferred embodiments of the invention are described below in conjunction with the appended drawing figures, wherein like reference numerals refer to like elements in the various figures, and wherein:

FIG. 1 is block diagram of a network telephony system according to one embodiment of the present invention;

FIG. 2 is a block diagram showing a system for providing user mobility services on a telephony network according to an exemplary embodiment of the present invention;

FIG. 3 is a block diagram showing a system for providing user mobility services on a telephony network according to a preferred embodiment of the present invention;

FIG. 4 is a block diagram showing a system for providing user mobility services on a telephony network according to an exemplary embodiment of the present invention;

FIG. 5A is a message flow diagram showing an exemplary SIP registration operation;

FIG. 5B is a message flow diagram showing an exemplary SIP call setup operation;

FIG. 6 is a block diagram of a data network telephone according to an exemplary embodiment of the present invention;

FIG. 7 is a block diagram of a portable information device (PID) according to an exemplary embodiment of the present invention;

FIG. 8 is a stack layer diagram showing the layers of an IrDA stack;

FIG. 9 is a block diagram of a portable information device (PID) according to an alternative embodiment of the present invention;

FIG. 10 is a block and stack layer diagram illustrating the protocol stacks in an exemplary embodiment of a PID linked to a data network telephone;

FIG. 11 is block and stack layer diagram illustrating an embodiment of the present invention in which a SIP call may be established;

FIG. 12 is a flow diagram illustrating a method providing personalized call announcement functions at a caller's data network appliance, according to an embodiment of the present invention;

FIG. 13 is a flow diagram illustrating a method for providing personalized call announcement functions at a caller's data network appliance, according to a preferred embodiment of the present invention;

FIG. 14 is a flow diagram illustrating a method for providing personalized call announcement functions at a called party's data network appliance, according to an embodiment of the present invention;

FIG. 15 is a flow diagram illustrating a method for providing personalized call announcement messages at a called party's data network appliance, according to a preferred embodiment of the present invention;

FIG. 16 is a flow diagram illustrating a method for providing personalized call announcement functions at a user's PID, according to a preferred embodiment of the present invention; and

FIG. 17 is a flow diagram illustrating a method for providing personalized call announcement functions in an overall data network telephony system, according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**A. Related Applications**

The following references to patent applications are incorporated by reference herein:

- * “System And Method For Providing Telephone Service Having Private Branch Exchange Features In A Data Network Telephony System” to Schuster et al., Attorney Docket No. 99,366, filed concurrently herewith;
- * “System And Method For Providing A Wireless Data Network Telephone System” to Schuster et al., Attorney Docket No. 99,590, filed concurrently herewith;
- * “System And Method For Accessing A Network Server Using A Portable Information Devices Through A Network Based Telecommunication System” to Schuster et al., Attorney Docket No. 99,592, filed concurrently herewith;
- * “System And Method For Accessing Radio Programs Using A Data Network Telephone In A Network Based Telecommunication System” to Schuster et al., Attorney Docket No. 99,742, filed concurrently herewith;
- * “System And Method For Providing Local Information In A Data Network Telephony System” to Schuster et al., Attorney Docket No. 99,838, filed concurrently herewith;
- * “System And Method For Enabling A Portable Information Device For Use In A Data Network Telephone System” to Schuster et al., Attorney Docket No. 99,741, filed concurrently herewith;
- * “Dialing Token For Initiating A Telephone Connection In A Data Network Telephone System” to Schuster et al., Attorney Docket No. 99,375, filed concurrently herewith;
- * “Flexible Dial Plan for a Data Network Telephony System” to Schuster, et al., Attorney Docket No. 99,374, filed concurrently herewith;
- * “Personalizing a Data Network Appliance on a Data Network Telephony System” to Schuster, et al., Attorney Docket No. 99,598, filed concurrently herewith;

- * “Proximity-Based Registration on a Data Network Telephony System” to Schuster, et al., Attorney Docket No. 99,599, filed concurrently herewith;
- * “System and Method for Providing User Mobility Services on a Telephony Network” to Schuster, et al., Serial No. 09/451,388;
- * “System and Method for Providing Call-Handling Services on a Telephony Network” to Schuster, et al., Serial No. 09/470,879;
- * “Method Apparatus and Communication System for Companion Information and Network Appliances” to Wang, et al., Serial No. 09/181,431;
- * “System and Method for Controlling Telephone Service Using a Wireless Personal Information Device” to Schuster, et al., Serial No. 09/406,321;
- * “System and Method for Advertising Using Data Network Telephone Connections” to Schuster, et al., Serial No. 09/406,320;
- * “System and Method for Providing User-Configured Telephone Service in a Data Network Telephony System” to Sidhu, et al., Serial No. 09/405,283;
- * “System and Method for Accessing a Network Server Using a Portable Information Device Through a Network Based Telecommunication System” to Schuster, et al., Serial No. 09/406,322;
- * “System and Method for Interconnecting Portable Information Devices Through a Network Based Telecommunication System” to Schuster, et al., Serial No. 09/406,152;
- * “System and Method for Enabling Encryption on a Telephony Network” to Schuster, et al., Serial No. 405,981;
- * “System and Method for Associating Notes with a Portable Information Device on a Network Telephony Call” to Schuster, et al., Serial No. 09/406,151;
- * “System and Method for Providing Shared Workspace Services Over a Telephony Network” to Schuster, et al., Serial No. 09/406,298;
- * “System and Method for Providing Service Provider Configurations for Telephones in a Data Network Telephony System” to Schuster, et al., Serial No. 09/406,066;
- * System and Method for Using a Portable Information Device to Establish a Conference Call on a Telephone Network” to Schuster, et al., Serial No. 09/406,128;

- * “Multiple ISP Support for Data Over Cable Networks” to Ali Akgun, et al., Serial No. 09/321,941;
- * “Method and System for Provisioning Network Addresses in a Data-Over-Cable System” to Ali Akgun, et al., Serial No. 09/218,793; and
- * “Network Access Methods, Including Direct Wireless to Internet Access” to Yingchun Xu, et al., Serial No. 08/887,313.

B. PID-Enabled Data Network Telephony System

FIG. 1 is a block diagram showing an exemplary embodiment of a data network telephony system 100 according to the present invention. The system includes a data network 106. A first voice communication device 108 linked to a first access network 112 via connection 111 may communicate over the data network 106 by connecting via the first access network 112. A second voice communication device 118 is linked to a second access network 114 through connection 119 and may communicate over the data network 106 by connecting via the second access network 114.

The data network 106 in the system 100 typically includes one or more Local Area Networks (LANs) connected to one another or to a Wide-Area Network (WAN), such as an Internet Protocol (IP) network, to provide wide-scale data connectivity. The data network 106 may use Voice-Over-Packet (VOP) schemes in which voice signals are carried in data packets. The network 106 may also include a connection to the Public Switched Telephone Network (PSTN) to allow for voice connections using traditional circuit switching techniques. In one embodiment, the data network 106 may include one or more LANs such as Ethernet LANs and may support data transport protocols for performing Voice-over-Internet-Protocol (VoIP) techniques on the Internet. For further details regarding VoIP, see the information available through the website of the Internet Engineering Task Force (IETF) at www.ietf.org. In addition, an Internet Telephony gateway may be included within the system 100 to allow for voice connections to users connected by subscriber lines at a PSTN Central Office. Other data besides voice data, such as video data, may also be communicated over the data network 106.

The voice communication devices 108 and 118 typically include a voice input, a voice output, and a voice processing system and may be data network telephones (described further below with reference to FIG. 6), which are telephones adapted for use with a data network. The voice processing system converts voice sound to digital data signals that are communicated on a voice connection over the data network. The voice processing system also converts digital data signals received from the voice connection to voice sound. The voice communication devices 108 and 118 typically include a central processing unit and memory to store and process computer

programs. Additionally, each voice communication device typically includes a unique device address or network address, such as an IP address, in memory to uniquely identify it to the data network 106 and to permit data packets to be routed to the device. In one embodiment, the voice communication devices 208 and 118 are data network appliances. A data network appliance is a general purpose device connected to a data network. Through software, either resident on the data network appliance or downloaded via the data network, a data network appliance may be customized for specific applications, such as for voice communications. An Internet appliance is an example of a data network appliance.

A PID 110 is shown linked to the first voice communication device 108 via link 109, and may enable customizable communications over the data network 106 via the first access network 112. The PID 110 includes user attributes stored in a user information database. The user attributes may contain such information as a user identifier, schedule information, information about contacts, and other information that is associated with a user of the PID 110. The PID 110 preferably includes a user interface allowing a user to easily enter and retrieve data. In a preferred embodiment, the user interface includes a pressure-sensitive display that allows a user to enter input with a stylus or other device. An example of a PID with such an interface is a PDA (Personal Digital Assistant), such as one of the Palm™ series of PDAs offered by 3Com® Corporation. Alternatively, the PID 110 may be a form of smart card, in which the user attributes are programmed into the card with the assistance of a programming device. In such a case, the user attributes might not be easily modified by the user when the user is not in the presence of the programming device. The PID 110 may include other functionality, such as wireless phone, two-way radio, digital camera, or digital audio recording functionality, for example. To assist with customizing a call announcement and/or a data network appliance, the PID 110 preferably includes at least one call announcement attribute and/or at least one appliance customization attribute, respectively.

Link 109 is a point-to-point link, and may be entirely or partially wireless, or may be a hard-wired connection. Preferably, the link 109 is a wireless link, such as an infrared link specified by the Infrared Data Association (IrDA) (see irda.org for further information) or a radio frequency (RF) link such as the Bluetooth system (see www.bluetooth.com for further information). However, the point-to-point link can

also be a hardwired connection, such as an RS-232 or Universal Serial Bus (USB) serial port connection. An example of a serial port connection is a docking cradle or a synchronizing cable connection. For the provision of proximity-based registration of a user to a voice communication device, a wireless omnidirectional link is preferred. Link management application may be present on the PID and the voice communication devices 108 and 118 to assist with link setup, maintenance, and teardown.

In one embodiment, the voice communication devices 108 and 118 each include a handset with a receiver and transmitter similar or identical to handsets of traditional circuit-switched telephones. A console on which the handset sits may include the voice processing system, a display, and a keypad, for example.

In a preferred embodiment, a portion of each of the voice communication devices 108 and 118 utilizes an NBX 100™ communication system phone offered by 3Com® Corporation. In alternative embodiments, the voice communication devices 108 and 118 may include any device having voice communications capabilities. For example, a personal computer having a microphone input and speaker output may also be used to implement the voice communication devices 108 and 118. Other configurations are also intended to be within the scope of the present invention.

The details relating to operation of the voice communication devices 108 and 118 depend on the nature of the data network 106, the access networks 112 and 114 connecting the voice communication devices 108 and 118 to each other and/or to other network entities, and the PID 110. The access networks 112 and 114 typically include any high bandwidth network adapted for data communications, i.e. a network having greater than 64,000 bits-per-second (bps) bandwidth. The access networks 112 and 114 may link to the voice communication devices 108 and 118 using an Ethernet LAN, a token ring LAN, a coaxial cable link (*e.g.* CATV adapted for digital communication), a digital subscriber line (DSL), a twisted pair or fiberoptic cable, an Asynchronous Transfer Mode (ATM) link, an Integrated Services Digital Network (ISDN) link, or a wireless link, for example. In embodiments that may not require bandwidth greater than 64,000 bps, the access networks 112 and 114 may also include the PSTN and link the voice communications devices 108 and 118 by an analog modem. Further details regarding specific implementations are described below, with reference to FIGs. 2 through 17.

C. System for Providing Personalized Call Announcement Functions on a Data Network Telephony System

One advantage of the network telephony system 100 is that it may be used to provide personalized call announcement functions to users. In one embodiment, the PID 110 is used to register a user to a voice communication device, such as the voice communication device 108. The user may transfer personalization attributes, such as call announcement attributes or appliance customization to the voice communication device 108 through the link 109. The voice communication device 108 then sets up the call with voice communication devices associated with the communication partners selected by the PID user associated with the voice communication device 108. Similarly, the user may be called at the data network appliance to which he is registered. The transferred personalization attributes enable the user to make or receive customized calls. For example, a personalized call announcement may be invoked to replace the standard bell “ring” that is heard on a typical POTS phone. The caller’s name may be audibly announced to the called party instead, in one embodiment. As another example, if an appliance customization attribute is transmitted from the user’s PID 110 to the voice communication device 108, then the voice communication device 108 may behave in accordance with the user’s preferences. For example, if several users are registered to the same voice communication device 108, then the appliance customization attribute may be used by an application in the voice communication device 108 to play personalized ring tones for incoming calls, depending on the intended party-to-be-called. The called-user’s name may be audibly announced in one embodiment. Other possible voice communication device personalizations may include customizing speed-dial keys to a user’s preferred set, adjusting speaker volume to the user’s preferred level, or adjusting a video display in a video phone implementation.

As an alternative to using the PID 110 to transfer personalization attributes, the user may directly enter any personalization attributes into the voice communication device 108. For example, this may be done as part of a programming operation, in which input buttons or a voice response system is used in combination with a display output or audio output to place the user’s preferences into a memory within the voice communication device. These personalization attributes may be

stored in the memory of the voice communication device 108 or at another device on the data network 106, such as a registration server or storage archive, for example.

Once a call is set up, data can be transferred between the voice communication devices 108 and 118. PIDs, such as the PID 110, associated with the parties to the call may also be used to communicate information across the data network 106. For example, the PID 110 linked to the first voice communication device 108 may be able to accept and display PID data entered by a user through a user interface on the PID 110. The PID data can then be communicated across the link 109 to the voice communication device 108 for transport across the first access network 112, the data network 106, and the second access network 114 to the second voice communication device 118. The PID 110 can also receive PID data and other data across the link 109 for display on the PID 110. A voice-over-data channel for communicating voice-over-data can concurrently exist with this communication of PID data over a PID data channel, in a preferred embodiment.

According to one embodiment of the present invention, the link 109 is used only for discovery, registration, verification, and/or personalization. Discovery is a process by which it is determined that the PID 110 is proximate to the voice communication device 108 (or any other similar voice communication device). Therefore, when the user of the PID 110 comes within an effective transceiver range of the voice communication device 108, one or more transmitted signals will enable discovery, allowing the user to become registered to the voice communication device 108. Registration is a process whereby the user of the PID 110 becomes associated with a voice communication device, such as the voice communication device 108. A registration server (not shown) may store user/device associations in a registration data base, for example. The verification refers to the process of determining whether the user of the PID 110 is still proximate to the voice communication device 108. Verification may be similar to the discovery process. In alternative embodiment, verification is omitted, and when a user moves to a different device, the user becomes registered with the new proximate device and the registration with the prior proximate device is deleted. Personalization attributes may be transferred during discovery, registration, or verification, but is preferably transferred during registration.

1. Providing Personalized Call Announcement Functions on a Local Area Network

FIG. 2 is a block diagram showing a system 200 for providing personalized call announcement functions on a LAN according to one embodiment of the present invention. System 200 includes a registration server 202 having access to a registration database 204. The registration server 202 is linked to a packet-switched local area network (LAN) 206. A voice communication device 208 is also a part of the network 206. Also shown are additional voice communication devices 212, 214, 216, and 218, which may or may not be identical to each other and voice communication device 208. The voice communication devices 208, 212, 214, 216, and 218 are each preferably able to accept information from a PID 210. A user 220 is shown as having recently moved from the voice communication device 212 to the voice communication device 208. The PDA 210 is associated with the user 220. The connections shown in FIG. 2 may be entirely or partially wireless, or they may be hard-wired connections. The LAN 206, the voice communication device 208, and the PID 210 correspond respectively to the first access network 112, the voice communication device 108, and the PID 110 shown in FIG. 1.

The LAN 206 is preferably an Ethernet LAN operating according to the IEEE 802.3 specification, which is incorporated by reference herein. The voice communication devices 208, 212, 214, 216, and 218 are preferably modified Ethernet phones. An Ethernet phone is a telephone capable of communicating through an Ethernet port.

In most cases, Ethernet phones support Internet Protocol (IP), using an IP address that is either statically configured or obtained via Dynamic Host Configuration Protocol (DHCP). An exemplary Ethernet phone, such as voice communication device 208, contains two basic parts: the signaling-stack and the media-engine. While at least several different standards (e.g. SIP, H.323, MEGACO, and MGCP) and several proprietary approaches currently exist for the signaling stack, the media is almost exclusively transported via the Real Time Protocol (RTP), which itself is carried inside of User Datagram Protocol (UDP). RTP is described in H. Schulzrinne et al., "RTP: A Transport Protocol for Real-Time Applications," IETF RFC 1889, Jan. 1996, which is incorporated herein by reference. UDP is described in J. Postel, "User Datagram Protocol," IETF RFC 768, Aug. 1980, and IP is described in J. Postel, ed., "Internet Protocol," IETF RFC 791, Sept. 1981, both of which are incorporated by reference herein.

The purpose of the signaling stack in an exemplary Ethernet phone, such as the voice communication device 208, is to set up, manage, and tear down a call. During the setup phase, the location of the endpoint is discovered, communication parameters, such as the supported voice CODEC types are determined, the voice channel is established, and other parties are invited to the call if needed. Personalized call announcement attributes may also be established, such as defining an audio clip to announce the incoming call from the caller. Such an audio clip may be played after the first ring, for example. During the management phase, other parties may be invited to the call or the existing CODEC can be changed, for example. During the teardown phase, the call is terminated. The preferred call-management protocol for the present invention is Session Initiation Protocol (SIP), which is described in M. Handley et al., "SIP: Session Initiation Protocol," IETF RFC 2543, Mar. 1999, incorporated by reference herein. Alternative call-management protocols, such as the ITU-T H.323 protocol and others, may also be used to implement the present invention.

The purpose of a media engine in an exemplary Ethernet phone is to sample the voice, encode the samples, and build the RTP packets on the sending side. On the receiver side, in addition to performing the reverse operations, the media engine also typically manages a receiver buffer to compensate for network jitter. The media engine includes the features discussed with reference to the user interface of the voice communication device 108. If video is to be supported, then the media engine performs similar operations on the video data.

The user 220 is shown as being recently relocated from voice communication device 212 to voice communication device 208. In the example illustrated by FIG. 2, voice communication device 212 may be in the user's office and voice communication device 208 may in be a conference room, for example. Prior to leaving the office, the user 220 may have been registered (associated) with the voice communication device 212 in the office, so that calls were routed to that location or were processed according to attributes associated with the user being located in the office. When the user moves to the voice communication device 208 in the conference room, it would be desirable for the user to be registered with the voice communication device 208 instead of the voice communication device 212. According to one embodiment of the present invention, the user 220 is able to register

with the voice communication device 208 by using a portable information device 210 to transmit user attributes and personalization attributes to the voice communication device 208, which may then transmit all or some of the attributes to the registration server 202. The registration database 204 may then be updated with the revised user communication-location information, and in some embodiments, personalization information.

2. Providing Personalized Call Announcement Functions on a LAN using the Session Initiation Protocol

FIG. 3 is a block diagram showing an exemplary data network telephony system 300 according to a preferred embodiment of the present invention, in which SIP is used as the call-management protocol. Portions of the system 300 are similar to the system 200 illustrated in FIG. 2. The system 300 includes a SIP server 302 having access to a SIP database 304. The SIP server is shown with a link to a LAN 306, which is preferably an Ethernet LAN. SIP phones 308, 312, 314, 316, and 318 are Ethernet phones, and are also linked to the LAN 306. A PDA 310 serves as a PID to enable registration and personalization according to a preferred embodiment of the present invention. The number of SIP phones in the system 300 can be varied to meet the needs of the users of the system 300.

Also shown in the LAN 306 is a gateway 322 with a SIP client. The gateway 322 is preferably a VoIP gateway and is in communication with a PSTN central office 324, which provides PSTN service to a PSTN phone 326. The PSTN phone 326 is likely to be one of many PSTN phones serviced by the central office 324. Additional portions of a PSTN network have been omitted from FIG. 3 for increased clarity. The PSTN network is known by those having skill in the art of telecommunications. The gateway 322, the central office 324, and the PSTN 326 are optional and need not be included within the system 300.

A router 328 may also be connected to the LAN 306. The router 328 connects the LAN 306 to a data network 330, such as a public internet. The data network preferably includes connections to additional SIP-based clients, such as an additional SIP phone 332 and a personal computer 334 operating as a SIP client. SIP will be described in more detail with reference to FIGs. 3-7, 10, 13, and 15. The router 328,

the data network 330, and the SIP-based clients 332 and 334 are optional and need not be included within the system 300.

3. Local Area Network as an Exemplary Access Network

FIG. 4 is a block diagram showing one example of the data network telephony system 100 of FIG. 1 according to the present invention. The system 400 includes a local area network 412 connected to a data network 406 by a first router 413. A second local area network 414 is connected to the data network 406 by a second router 415. A cable network 416 is connected to the data network 406 by a third router 417. Those of ordinary skill in the art will appreciate that while FIG. 4 illustrates the access networks as two local area networks 412 and 414, and a cable network 416, other types of networks may be used. For example, the local area networks and the cable network may be replaced by ISDN, DSL, or any other high-speed data link.

The local area networks 412 and 414 provide data connectivity to their respective network elements. For example, the first LAN 412 provides data connectivity to at least a first data network telephone 408 and a first network telephony connection server 450. The second LAN 414 provides data connectivity to at least a second data network telephone 418 and a second network telephony connection server 438. The local area networks 412 and 414 in FIG. 4 are, for example, Ethernet LANs operating according to the IEEE 802.3 specification, which is incorporated by reference herein; however, other types of local area networks may also be used. The first local area network 412 uses the router 413 to provide the first data network telephone 408 and the first network telephony connection server 450 with access to the data network 406. For example, the router 413 may perform routing functions using protocol stacks that include the Internet Protocol and other protocols for communicating on the Internet. Similarly, the second local area network 414 uses the router 415 to provide the second data network telephone 418 and the second network telephony connection server 438 with access to the data network 406.

The first, second, and third network telephony connection servers 450, 438, and 437 provide telephony registration, location, and session initiation services for voice connections in which at least one of their members is a party. For example, a user of the first data network telephone 408 may register for telephony service with an

administrator of the first network telephony connection server 450 and receive a user identifier and a telephone device identifier. The user identifier and telephone device identifier may be sequences of unique alphanumeric elements that callers use to direct voice connections to the user. The network telephony connection servers register users by storing user records in registration databases (not shown in FIG. 4) associated with each of the network telephony connection servers, in response to receiving registration requests.

The call setup process and the user and telephone device identifiers preferably conform to requirements defined in a call-management protocol. The call-management protocol is used to permit a caller on the data network to connect to a user identified by a user identifier in a data network telephone call. A data network telephone call includes a call setup process and a voice exchange process. The call setup process includes steps and message exchanges that a caller and callee perform to establish the telephone call. The actual exchange of voice signals is performed by a voice data communications channel. The voice data communications channel incorporates other data transport and data formatting protocols, and preferably includes well-known data communications channels typically established over the Internet.

The call management protocol used in the system 400 is preferably the Session Initiation Protocol (SIP), which is described in M. Handley et al., "SIP: Session Initiation Protocol," IETF RFC 2543, Mar. 1999, incorporated by reference herein; however, any other such protocol may be used. Other protocols include H.323, MEGACO, the Media Gateway Control Protocol (MGCP), etc.

The network telephony connection servers 450, 438, and 437 may be used to provide telephony service for mobile users. For example, a user may be registered to use the first network telephone 408 (which is identified by its telephone identifier), but the user may move to a location near a second network telephone (not shown) on the first local area network 412. The user may re-register as the user of the second network telephone. The user would then become associated with the second network telephone. Calls that identify the user by the user's user identifier may then reach the user at the second network telephone. Alternatively, the user may move to a different access network.

4. Cable Network as an Exemplary Access Network

The system 400 in FIG. 4 also shows the cable network 416 connected to the data network 406 by a router 417. The cable network 416 provides data network access to its network elements, which in FIG. 4 include the third data network telephone 428 and the third network telephony connection server 437. A user of the third data network telephone 418 connected to the cable network 416 may communicate by telephone over the data network 406 with the users of the first and second data network telephones 408 and 418 connected to the first and second local area networks 412 and 414.

The cable network 416 may include any digital cable television system that provides data connectivity. In the cable network 416, data is communicated by radio frequency in a high-frequency coaxial cable. The cable network 416 may include a head-end and/or a central termination system that permits management of the cable connections to and from the users.

5. Providing Telephony Services

The third network telephony connection server 437 is preferably a SIP-based server that performs call initiation, maintenance, and teardown for the third data network telephone 428 connected to the cable network 416. The third network telephony connection server 437 may be similar or identical to the first and second network telephony connection servers 450 and 438 connected to the first and second local area networks 412 and 414.

The system 400 shown in FIG. 4 includes a data network telephony system that permits the first and second data network telephones 408 and 418 connected to the local area networks 412 and 414 to communicate through the data network 406 with the third data network telephone 428 connected to the cable network 416. The system shown in FIG. 4 preferably uses SIP in order to establish, maintain, and tear down telephone calls between users.

There are two major architectural elements to SIP: the user agent (UA) and the network server. The UA resides at the SIP end stations, (e.g. the data network telephones), and contains two parts: a user agent client (UAC), which is responsible for issuing SIP requests, and a user agent server (UAS), which responds to such

requests. There are three different network server types: a redirect server, a proxy server, and a registrar. The various network server types may be combined into a single server, such as the network telephony connection servers 450, 437, and 438. Not all server types are required to implement the various embodiments of the present invention. The communication services to be provided will determine which servers are present in the communication system. Preferred embodiments of the present invention may be carried out using proxy servers.

One example of a SIP operation involves a SIP UAC issuing a request, a SIP proxy server acting as end-user location discovery agent, and a SIP UAS accepting the call. A successful SIP invitation consists of two requests: INVITE followed by ACK. The INVITE message contains a user identifier to identify the callee, a caller user identifier to identify the caller, and a session description that informs the called party what type of media the caller can accept and where it wishes the media data to be sent. User identifiers in SIP requests are known as SIP addresses. SIP addresses are referred to as SIP Uniform Resource Locators (SIP-URIs), which are of the form *sip:user@host.domain*. Other addressing conventions may also be used.

FIG. 5A is a message sequence diagram 500 illustrating an embodiment of a registration message sequence for registering a PID 502 to a data network appliance 504 (such as a voice communication device or data network telephone), using a registration server 506. The PID 502 transmits user attributes, including a user SIP URI, as an announcement message 508 to the data network appliance 504. Personalization attributes, such as call announcement attributes and/or appliance customization attributes may also be transmitted by the PID 502 to the data network appliance 504. The data network appliance 504 formats a REGISTER request 510 that includes the user's SIP URI in the TO field, the data network appliance's SIP URI in the FROM field, and the SIP URI of the registration server 506 in the REQUEST-URI field and sends the REGISTER request to the registration server 506. The registration server registers the user's SIP URI with the IP address of the data network appliance 504 and returns a 200 OK response 512 to the data network appliance 504. The data network appliance 504 may send a confirmation message 516 to the PID 502 to confirm the registration.

The message sequence of FIG. 5A applies to the case where the SIP URI for the registration server is known. Other approaches to registration are possible, such as

broadcasting to the registration multicast address "sip.mcast.net" (224.0.1.75), and are discussed in further detail in RFC 2543. RFC 2543 refers to a "location server," which may serve as the registration server discussed in FIG. 5A.

Once the user's SIP URI is registered with the registration server 506, subsequent calls to the user's SIP URI are resolved to the address of the data network appliance 504. Thus, if a call is placed to the user's SIP URI, the data network appliance 504 will "ring," alerting the user of an incoming call. If appliance customization attributes were transmitted by the PID 502 to the data network appliance 504, then the ring may be personalized, such as by audibly announcing the user's name.

By synchronizing the user's SIP URI on the PID 502 with the data network appliance 504, the user of the PID 502 becomes registered to the data network appliance 504. This allows for true portability of the user's SIP URI, since calls are forwarded to the data network appliance where the user of the PID 502 has most recently registered. In this aspect of the present invention, the PID 502 becomes an authentication token representing the user and calls are forwarded to the correct data network appliance.

It is important to note that in many cases, a caller does not want to be connected to a particular phone, but rather to a particular person. SIP URIs may be assigned to a user and stored in the user's PID device. By synchronizing the PID with a data network appliance, the user's SIP URI is registered to the local data network appliance and the SIP network. Since every incoming SIP request preferably goes through the registration server, calls are directed to the data network appliance where the user is currently located. This permits the called party to be mobile, but still be locatable by the network.

If the user of the PID 502 moves and registers with another data network appliance, the old registration may be erased and a new registration entry, referring to the new data network appliance location, is created at the registration server. This may be useful not only in a company, but in a hotel or even a home, as well. Note that more than one user can be registered with a data network appliance by synchronizing each user's PID with the data network appliance. This allows multiple users to share the same phone during a meeting, for example. When a user is finished with a meeting, the user may sign off from the phone in the meeting room, in which

case the registration server may forward all calls to a predetermined location, such as to a voice mail address or to a default data network appliance, such as a phone at the user's desk.

FIG. 5B is a message flow diagram showing an exemplary SIP call setup operation 520. A SIP caller UAC 522 sends an INVITE message 524 to a SIP callee UAS 526. (The proxy server is not shown in this illustration). The INVITE message 524 contains session description information (UAC SDP) for the caller UAC 522. The session description information may include call announcement attributes to enable the caller to personalize the call announced played to the callee when the call is made. Alternatively, the call announcement attributes may be sent separately. In a preferred embodiment, the call announcement attributes may be sent as one or more SIP headers. The callee UAS 526 sends a 200 OK message 528 to the caller UAC 522. The 200 OK message 528 contains session description information (UAS SDP) for the callee UAS 526. The caller UAC 522 sends an ACK message 530 to the callee UAS 526 to complete the session initiation operation. If the callee UAS 526 is unable to recognize the call announcement attributes (e.g. the callee UAS 526 is unable to recognize a particular SIP header), then the call announcement attributes may be ignored, according to an embodiment of the present invention.

Redirect servers may be used to process an INVITE message by sending back the SIP-URI where the callee is reachable. Proxy servers perform application layer routing of the SIP requests and responses. A proxy server can either be stateful or stateless. A stateful proxy holds information about the call during the entire time the call is up, while a stateless proxy processes a message without saving information contained in the message. Furthermore, proxies can either be forking or non-forking. A forking proxy can, for example, ring several phones at once until somebody takes the call. Registrar servers are used to record the SIP address (called a SIP URI) and the associated IP address. The most common use of a registrar server is for the UAC to notify the registrar where a particular SIP URI can be reached for a specified amount of time. When an INVITE request arrives for the SIP URI used in a REGISTER message, the proxy or redirect server forwards the request correctly.

At the first local area network 412, the central registrar/proxy server, such as the first network telephony connection server 450, is the primary destination of all SIP messages trying to establish a connection with users on the first local area network

412. Preferably, the first network telephony connection server 450 is also the only destination advertised to the SIP clients outside the first local area network 412 on behalf of all the SIP clients residing on the first local area network 412. The network telephony connection server 450 relays all SIP INVITE messages to the appropriate final destination (or another SIP proxy), based on a database lookup using a first SIP database (not shown) associated with the first network telephony connection server 450. This allows mobile clients to be registered to their current locations.

Similarly, the second network telephony connection server 438 is the primary destination of all SIP messages trying to establish a connection with SIP clients such as the data network telephone 418, connected to the second local area network 414. Preferably, the second network telephony connection server 438 is also the only destination advertised to the SIP clients outside the second local area network 414 on behalf of all the SIP clients (*e.g.* data network telephones) residing on the second local area network 414. The second network telephony connection server 438 relays all SIP INVITE messages to the appropriate final destination (or another SIP proxy), based on a database lookup using a second SIP database. The third network telephony server 437 behaves similarly to the first and second network telephony connection servers 450 and 438. The use of three servers is for illustrative purposes only, and other server configurations may also be used.

The data network telephones 408, 418, and 428 in the system 400 preferably have pre-programmed device identifiers (*e.g.* phone numbers), represented as SIP-URI's that are of the form *sip: user@domain*. An example is *sip: 1234567890@3Com.com*. After power-up, each of the data network telephones 408, 418, and 428 sends a SIP REGISTER message to the default registrar, such as the network telephony servers 450, 438, and 437. When a call arrives at one of the network telephony servers 450, 438, or 437 for any of the registered SIP URIs, the server will forward the call to the appropriate destination. If a data network telephone is moved to a new location, all calls to the associated SIP URI will still be properly routed to that device. In other words, the system in FIG. 4 provides device mobility in the sense that calls will "follow" the data network telephone according to its SIP URI. This is especially useful if the data network telephone 408, 418, or 428 is running the DHCP (Dynamic Host Configuration Protocol) so that when the location is changed, the IP address is also automatically changed.

An advantage of the system in FIG. 4 is that once the call is established between data network telephones, the data network 406 provides data connectivity for up to a plurality of data communications channels. For example, the data network telephones 408, 418, and 428 can communicate voice signals as voice-over-data packets on a voice-over-data channel. The data network telephones 408, 418, and 428 may also be able to communicate PID data as PID data packets on a PID data channel. An example of PID data is graphical drawing data that is input into a PDA with a stylus device. Another example of PID data is a call participants' contact information, which may be passed on to the other call participants. Other data types may also be communicated. If PID data is input into the PID 410, the PID data may be communicated to and from the PID 410 across link 409 to the data network telephone 408, where the PID data may be assembled into packets and disassembled from packets as part of the process for communicating the PID data packets across the data network 406 and any access networks, such as the first Ethernet LAN 412, the second Ethernet LAN 414, and the cable network 416. For example, the PID data may be communicated to and from at least one other PID (not shown) through a network device (such as a data network telephone) located in the system 400.

6. The Data Network Telephones

The data network telephones 408, 418, and 428 are preferably telephones that include an Ethernet communications interface for connection to an Ethernet port. The exemplary data network telephones in 408, 418, and 428 support the Internet Protocol (IP), using an IP address that is either statically configured or obtained by access to a Dynamic Host Configuration Protocol (DHCP) server. In a general embodiment, the data network telephone 408, 418, and 428 are data network appliances, offering a flexible set of features and functions that may be customized through resident or downloaded software.

FIG. 6 is a block diagram showing the first data network telephone 408 connected to the local area network 412 in FIG. 4. The voice communication devices 108, 118, 208, 212, 214, 216, and 218 may be implemented using the concepts shown in FIGs. 4 and 6. The data network telephone 408 in FIG. 6 is connected to the LAN 412 by a network interface 600. The network interface 600 may, for example, be a network interface card, and may be in the form of an integrated circuit. A bus 602

may be used to connect the network interface 600 with a processor 604 and a memory 606. Also connected to the processor are user interface circuitry 608 and a PID transceiver 610. the PID transceiver may be a proximity transceiver, enabling proximity-based registration. Proximity registration is described in detail in U.S. Patent Application No. _____, filed concurrently herewith, by Guido M. Schuster, et al., and titled "Proximity-Based Registration on a Data Network Telephony System," which is incorporated by reference herein.

The PID transceiver 610 preferably includes hardware and software to enable the data network telephone 408 to communicate with a PID, such as the PID 410. Several alternatives exist for implementing the PID transceiver 610. The examples provided here are not meant to limit the scope of the present invention. Although the PID transceiver 610 preferably includes both transmitter and receiver functionality, it may instead be solely a transmitter. A first alternative PID transceiver includes an RS-232 serial connection and associated coupling hardware and mechanisms. For example, the PID interface 610 may be a docking cradle or a cradle for a PID, such as a PDA (Personal Digital Assistant), in which information may be transferred between the PID and the data network telephone 408. A second alternative for the PID transceiver 610 includes infrared circuitry for converting signals into infrared output and for accepting infrared input. A third alternative for the PID transceiver 610 includes radio frequency circuitry for converting signals into radio frequency output and for accepting radio frequency input. The second and third alternatives provide for wireless communications between the data network telephone 408 and a PID. These three alternatives are merely examples, and additional means for implementing the PID transceiver 610 between the data network telephone 408 and a PID may also be used. Additionally, more than one alternative transceiver may be included within the same data network telephone to provide redundancy in case of failure of an interface, and to improve flexibility.

The user interface circuitry 608 includes hardware and software components to provide user input and output resources for functions in the processor 604. For example a handset, display, and keypad may be included in the data network telephone 408, as may alternative user interface mechanisms. The user interface circuitry may include a display interface 624, a keypad interface 626, an audio output interface 628, and an audio input interface 630.

For some applications, the user interface circuitry 608 may only need to support sending or receiving, but not both. The user interface circuitry 608 preferably supports the sending and receiving of at least audio information. For example, in the case where the data network telephone 408 is a voice communication device, the user interface circuitry may include a microphone, a speaker, and analog interface circuitry. A videophone implementation might also include a camera and monitor. The data network telephone 408 is not limited to telephones or videophones – additional user interface types, for example, such as the ones needed for computer games, (e.g. a joystick, or virtual reality headset) are also contemplated as being within the scope of the present invention.

The audio input interface 630 may receive voice signals from a microphone or other audio input device and convert the signals to digital information. The conversion preferably conforms to the G.711 *ITU-T Standard*. Further processing of the digital signal may be performed in the audio input interface 630, such as to provide compression (e.g. using the ITU-T G.723.1 standard) or to provide noise reduction, although such processing may also be performed in the processor 604. Alternatively, the audio input interface 630 may communicate an analog voice signal to the processor 604 for conversion to digital information. The audio input interface 630 may be used to record a personalized call announcement message or a personalized incoming call message according to an alternative embodiment of the present invention. The recorded message may be stored in the memory 606, at a registration server, or at a network data storage archive, for example. In one embodiment, the recorded message is converted into digital audio data and is transmitted to a user's PID to enable the user to reuse the recorded message when registering with other data network telephones. In such a case, the digital audio data may make up at least part of the personalization attributes transmitted from a PID to a data network telephone. Video and other messages may be handled in a similar manner.

The audio output interface 628 receives digital information representing voice from the processor 604 and converts the information to sound. In one embodiment, the audio output interface 628 receives information in the form of G.711 although other processing such as decompression may be performed in the audio output interface 628. Alternatively, the processor 604 may convert digital information to

analog voice signals and communicate the analog voice signals to the audio output interface 628. The audio output interface 628 may be used to lay a personalized announcement message from a caller placing a call to the data network telephone 408, enabling the user of the data network telephone to hear the personalized announcement message, such as the caller's name. Similarly, if the data network telephone itself has been personalized (e.g., by an appliance customization message being transmitted by a user's PID), then an incoming call for the user may result in a ring that is personalized to the user's preferences.

The keypad interface 626 and the display interface 624 include well-known device interfaces and respective signal processing techniques. The user interface circuitry 608 may support other hardware and software interfaces, which may be used for personalization and other functions.

The processor 604 may consist of one or more smaller processing units, including, for example, a programmable digital signal processing engine. In the preferred embodiment, the processor is implemented as a single ASIC (Application Specific Integrated Circuit) to improve speed and to economize space. The processor 604 also may include an operating system, and application and communications software, firmware, or hardware for implementing the functions of the data network telephone 408. For example, the processor may include a personalization application to assist a user with personalizing the data network telephone 408 or an announcement message. A similar personalization application preferably exists on the user's PID. For example, a client-server configuration may be used for the pair of personalization applications of the data network telephone 408 in gathering communication partner data from a PID and to establish a conference call by connecting the conference call parties. Other applications may also be processed by the data network telephone 408. The operating system may be any suitable commercially available embedded or disk-based operating system, or any proprietary operating system.

The processor 604 preferably includes a media engine 634 and a signaling stack 636 to perform the primary communications and application functions of the data network telephone 408. The purpose of the signaling stack in an exemplary data network telephone 408 is to set up, manage, and tear down a call. During the setup phase, a user may use the keypad to enter a user identifier to call. The signaling stack 636 receives the user entry and formats a request message to send to the user

identified by the user identifier to initiate a telephone call. When the request message is sent, the location of the user identified by the user identifier is discovered, communication parameters, such as the supported voice CODEC types are exchanged, and a voice over data channel is established. Personalized Announcement attributes may also be transmitted to the called data network telephone as part of the request message, or as a separate message. During the management phase, other parties may be invited to the call if needed. During the teardown phase, the call is terminated.

The call-management protocol used in the exemplary data network telephone 408 is the SIP protocol. In particular, the signaling stack 636 implements a User Agent Client 638 and a User Agent Server 640, in accordance with the SIP protocol. Alternative call-management protocols, such as the ITU-T H.323 protocol and others, may also be used to implement the present invention.

Once the call is set up, the media engine 634 manages the communication over a data communications channel using a network transport protocol and the network interface 600. The media engine 634 sends and receives data packets having a data payload for carrying data and an indication of the type of data is being transported. The media engine 634 in the data network telephones 408 may sample the voice signals from the audio input 630 (or receive voice samples from the audio input 630), encode the samples, and build data packets on the sending side. On the receiver side, in addition to performing the reverse operations, the media engine also preferably manages a receiver buffer to compensate for network jitter.

The media engine 634 preferably includes hardware and software components for personalization 632, performing registration functions 642, voice-over-data functions 644, display data functions 646, and keypad output functions 648. The media engine 634 processes data that is received from the first local area network 412, and data that is to be sent over the first local area network 412. The media engine 634 and the signaling stack 636 may operate as a combination, in which the signaling stack is used for operations involving a call management protocol, such as SIP.

For data that is received from the first local area network 412, the media engine 634 may determine from the type of data in the packet whether packets contain sampled voice signals or data for performing other functions. For example, packet headers or trailers may contain an indication of data type. Packets containing sampled voice signals are processed by voice over data function 644. The voice over data

function 644 preferably conforms to a protocol for formatting voice signals as digital data streams. While any suitable protocol may be used, the media (voice signal) is preferably transported via the Real Time Protocol (RTP), which itself is carried inside of User Datagram Protocol (UDP). RTP is described in H. Schulzrinne et al., "RTP: A Transport Protocol for Real-Time Applications," IETF RFC 1889, Jan. 1996, which is incorporated herein by reference. UDP is described in J. Postel, "User Datagram Protocol," IETF RFC 768, Aug. 1980, and IP is described in J. Postel, ed., "Internet Protocol," IETF RFC 791, Sept. 1981, both of which are incorporated by reference herein.

Packets containing data for use in registering the data network telephone 408 with a network telephony server (or other registration server) are processed by the registration function 642. These packets may originate from a user's PID, and may be received by the data network telephone 408 through the PID transceiver 610. By registering to the data network telephone 408, a user may establish with the network telephony service provider that calls addressed to the user's user identifier may be connected to the data network telephone 408. Registration may occur when the data network telephone 408 sends a request to register to a service provider host, which may be located at a registration server. The service provider host may respond by setting the user's user identifier to correspond to the device identifier of the data network telephone 408, and by acknowledging the request with a status message to the data network telephone 408. In one embodiment, a request to register the data network telephone 408 to a default user is automatically sent during power-up of the data network telephone 408. As a result, the user becomes associated with the data network telephone 408. According to a preferred embodiment of the present invention, when a second user comes into proximity of the data network telephone 408, the second user will also be registered to the data network telephone 408.

Other features may be added to the registration function 642, or implemented as extensions to the registration function 642. For example, the data network telephone 408 may be provisioned to provide selected network telephony services by establishing a data connection with a service provider, requesting the selected services, and receiving data that ensures that the services have been successfully provisioned. Such services may include, for example, caller identification, call forwarding, voice mail, and any other service offered by the network telephony

service provider to enhance the capabilities of the data network telephone 408. One advantage of such provisioning functions is that services may be ordered for temporary use in a manner that is convenient to the user. Personalization is an example of such provisioning.

Packets containing data for display on the display device are processed by the display data function 646. The display data function 646 may be used for displaying, for example, the name(s) and user identifier(s) of the other party(-ies) to the call, the status of the telephone call, billing information, and other information

For data that is to be sent over the data network 406, the media engine 634 formats the data as data packets in accordance with a selected protocol. The placement of data into packets may also be performed elsewhere in the data network telephone 408. The selected protocol is preferably the protocol that is supported by the data network telephone that will receive the data for the particular type of data being transported. Tunneling may also be used for transport across multiple-protocol environments.

The voice-over-data function 644 formats voice samples, preferably according to the protocol used by the receiving data network telephone. A conversion process may also be undertaken. In one preferred embodiment, the voice over data function 644 formats voice samples as RTP packets.

The second and third data network telephones 418 and 428 are preferably similar or identical to the first data network telephone 408.

7. The Portable Information Device (PID)

FIG. 7 is a block diagram showing one embodiment of the PID 410. A bus 702 may be used to interconnect a processor 704, a memory 706, data storage 708, and user interface circuitry 710. A PID transceiver 700 enables the PID 410 to communicate with a data network telephone.

The PID transceiver 700 preferably includes hardware and software to enable the PID 410 to communicate with a data network appliance, such as the data network telephone 408. Several alternatives exist for implementing the PID transceiver 700. The examples provided here are not meant to limit the scope of the present invention. Although the PID transceiver preferably includes both transmitter and receiver functionality, it may instead be solely a transmitter (or a passive device to enable data

to be read by a data network appliance). A first alternative PID transceiver includes an RF-232 serial connection and associated coupling hardware and mechanisms. For example, the PID transceiver 700 may be a docking cradle or a cradle for the PID 410, such as a PDA (Personal Digital Assistant), in which information may be transferred between the PID 410 and a data network appliance. A second alternative for the PID transceiver 700 includes infrared circuitry for converting signals into infrared output and for accepting infrared input. A third alternative for the PID transceiver 700 includes radio frequency circuitry for converting signals into radio frequency output and for accepting radio frequency input. The second and third alternatives provide for wireless communications between the PID 410 and a data network appliance. These three alternatives are merely examples, and additional means for implementing the PID transceiver 700 between the PID 410 and a data network appliance may also be used. Additionally, more than one alternative transceiver may be included to provide redundancy in case of failure of an interface, and to improve flexibility.

The user interface circuitry 710 may include hardware and software components to provide user input and output resources for functions provided by the processor 704. The user interface circuitry preferably includes a display output 726, a display input 728, an audio input 730, and an audio output 731.

The display output 726 preferably receives digital information representing graphical or other data from the processor 704 and converts the information, such as text and/or images, for display on a graphical display, such as an LCD or TFT screen.

The display input 728 may receive PID data inputs from a user of the PID 410. The PID data inputs are preferably entered by the user with a stylus on a pressure-sensitive display screen. Alternately, a keyboard may be used to accept user input. Similarly, the display output 726 preferably displays the PID data on the display screen.

The audio input 730 may be used by the user to record an audio message for personalizing an announcement message or a data network appliance. For example, the user may record "Bob calling" as a personalized announcement message to be used as a call announcement attribute to be transmitted to a data network appliance, such as a data network telephone. When the user makes a call with the data network appliance, the called party may then receive this recorded announcement, informing the called party of the user's identity ("Bob"). Similarly, if the data network

appliance is to be personalized, a personalized ring notification may be recorded, such as “this call is for Bob.” When an incoming call for Bob is received at the data network appliance to which the recorded message has been transmitted as an appliance customization attribute, this personalized ring notification may be played to alert any nearby users that the call is for only a particular user (in this case, Bob). The audio input 730 may also be used to input audio PID data for transmission to a data network appliance across a data network to a second data network appliance, and finally to a second user’s PID, for example.

The audio output 731 may be included to assist the user in recording audio messages by allowing the user to play back recorded messages. Alternatively, a data network appliance may allow the user to play back a recorded message on a speaker of the data network appliance. The audio output 731 may also be used for other audio outputs, such as audio PID data.

The processor 704 includes an operating system and application/communication software, firmware, or hardware to implement the functions of the PID 410. The operating system may be any suitable commercially available operating system, or any proprietary operating system. For example, if the PID 410 is a PDA, then the operating system may be the Palm operating system from Palm Computing, or Windows-CE from Microsoft. The operating system and software may be stored on data storage 708 (or on memory 706). A personalization application 732 is preferably included to manage personalization functions. Similarly, other applications may manage the user’s schedule and contact information, or allow a user to select communication partners to be invited to a conference call initiated by the user of the PID 410. Many other applications are also possible, and further examples of applications suitable for a PID may be found at <http://www.palm.com>, <http://www.palmcentral.com>, or <http://www.tucows.com>. Although the processor 704 is shown connected to the data storage 708 through a bus 702, other configurations may also be used. Similarly, the memory 706 may be alternatively configured, and may be embedded within the processor 704.

The PID 700 operates in conjunction with the PID transceiver 610 in the data network telephone 408. The PID transceivers 610 and 700 preferably operate using radio frequency signals, such as by using the unlicensed ISM band at 2.4 GHz, according to the Bluetooth specification. Bluetooth is described in the Bluetooth

specification 1.0 and accompanying references and erratas, which may be found on the Bluetooth home page (<http://www.bluetooth.com/>) or on the Bluetooth Network (<http://www.bluetooth.net/>). Bluetooth is a short range wireless communications protocol. Alternative, infrared (IrDA), a physical-wire serial connection, or other linking technologies may also be utilized by the PID transceivers 610 and 700.

The PID 410 may be able to send data to and receive data from the data network telephone 408 across a point-to-point link, such as the point-to-point link 409. A user enters PID data at the display input 728. The PID data may be processed in the user interface circuitry 710 or it may go directly to the processor 704 or the memory 706. The processor 704 may also perform such processing functions as compression. A PID data application may be used to implement the display input, the display output, and the processing functions. The proximity transceiver 700 may be used to transmit and receive data to and from the data network telephone.

Alternatively, an additional transceiver may be dedicated to PID data transceiving. Personalization attributes may be transmitted as PID data.

As an example, a drawing application may be used to accept PID data input at the display input 728 from a user drawing with a stylus on a display screen (if one exists) of the PID 410. A drawing application could then display the drawing through the display output 726 to enable the user to see a visual representation of the drawing. If the user desires to share the drawing with a second user on the system 400, where the second user is using a second PID, the PID data from the drawing application can be transmitted through the proximity transceiver 700, allowing the data to be received by the data network telephone 408. An application in the data network telephone 408 receives the PID data across the point-to-point link, and the PID data is prepared for transmission across the data network 406, such as by the media engine 634 shown in FIG. 6. Preferably the PID data is converted to PID data packets and is communicated on a PID data channel across the first LAN 412 through the router 413 across the data network 406 and eventually to a network device at which the second PID is located. The second user may then view the drawing on a display screen on the second PID.

The point-to-point link 409 may be implemented as a serial bit stream between an application in the PID 410 and an application in the first data network telephone 408. For example, the link 409 could be an infrared or radio frequency link that is

implemented with minimal stack interpretation. However, the link 409 between PID 410 and the first data network telephone 408 can alternatively be implemented using all or parts of a specialized protocol, such as the Infrared Data Association (IrDA) protocol stack, where data is interpreted through the stack between application-layer processes at each end of the link.

FIG. 8 is a protocol diagram illustrating the layers of the IrDA protocol stack. An IrDA stack is implemented at each of the connection endpoints of an IrDA link. The required layers of an IrDA protocol stack are the physical layer 802, the IrLAP layer 804, the IRLMP layer 806 and the IAS layer 808. The physical layer 802 specifies optical characteristics of the link, encoding of data, and framing for various speeds. The IrLAP (Link Access Protocol) layer 804 establishes the basic reliable connection between the two ends of the link. The IrLMP (Link Management Protocol) layer 806 multiplexes services and applications on the IrLAP connection. The IAS (Information Access Service) layer 808 provides a directory or "yellow pages" of services on an IrDA device.

The IrDA protocol also specifies a number of optional protocol layers, these protocol layers being TinyTP 810, IrOBEX 812, IrCOMM 814 and IrLAN 816. TinyTP (Tiny Transport Protocol) 810 adds per-channel flow control to keep traffic over the IrDA link moving smoothly. This important function is required in many cases. IrOBEX (Infrared Object Exchange protocol) 812 provides for the easy transfer of files and other data objects between the IrDA devices at each end of the link. IrCOMM 814 is a serial and parallel port emulation that enables existing applications that use serial and parallel communications to use IrDA without change. IrLAN (Infrared Local Area Network) 816 enables walk-up infrared LAN access for laptops and other devices. The use of the optional layers depends upon the particular application in the IrDA device. The IrDA protocol stack is defined by such standards documents as "IrDA Serial Infrared Physical Layer Link Specification", "IrDA 'IrCOMM': Serial and Parallel Port Emulation over IR (Wire Replacement)", "IrDA Serial Infrared Link Access Protocol (IrLAP)", "IrDA Infrared Link Management Protocol (IrLMP)", and "IrDA 'Tiny TP': A Flow-Control Mechanism for use with IrLMP", and related specifications published by the IrDA and available at <http://www.irda.org/standards/specifications.asp> and is incorporated by reference herein.

In one embodiment, the data network telephones 408, 418, and 428 merely provide a data tunnel for the data channel attendant to the infrared links, while the IrDA protocol stack is implemented at endpoint PID devices, such as PID 410. Alternatively, IrDA stacks can be implemented in the data network telephones as well. By implementing additional layers of the IrDA protocol stack, the PID applications and the base applications in the data network telephones can be simplified because the IrDA protocol layers take over certain functions. For example, the IrDA protocol stack can be implemented at each PID used in a conference call, and the IrOBEX layer 812 can be used to transfer text and graphics object files, such as drawings or electronic business cards, end-to-end between PID devices connected via data network telephones and networks.

FIG 9 shows a second embodiment of the PID 410, according to the present invention. The PID 410 may be part of a more complex device, such as a portable phone. The PID 410 might also be a simple data storage object, such as a smart card or a computer-readable medium such as an optical disk. Included within the PID 410 are a data storage unit 900 and a data storage interface 902.

The data storage unit 900 contains a user information database. The user information database contains personalization information, such as personalized announcement message attributes and/or appliance customization attributes. Additionally, user attributes may also be included, such as personal address and schedule information, for example.

The data storage interface 902 provides access to the data stored in the data storage unit 900. The complexity of the data storage interface 902 will depend on what reading or modifying tasks are performed by an outside device, such as a voice communication device or other data network appliance, as compared with which tasks are performed by the PID 410. If the PID 410 is a simple computer disk or smartcard, the data storage interface may be primarily mechanical in nature, so that the PID 410 is in position to read or modify user information contained in the data storage unit 900. If the PID 410 is more complex, then the data storage interface may include circuitry, possibly for reading or modifying the stored information. Infrared, magnetic, or radio frequency technology may be used to implement that data storage interface 902, for example.

Other implementations of PIDs may be used besides those described with reference to FIGs. 7 and 9. The PID will preferably include a user information database stored in data storage or memory, and should include a means for allowing an outside device to read and possibly modify the user information contained in the user information database.

Many alternative embodiments are also made possible by utilizing the PID 410. For example, the PID 410 may store and download to the data network telephone 408 the preferences of the user about the phone operation, such as the ringer volume and tone. The PID 410 may also act as a smart card, providing authentication information for making toll calls. In another embodiment, the user of the PID 410 may program the system through the PID 410 so that, depending on the time of day, and on the datebook information in the PID 410, the phone forwarding information is dynamically updated. For example, during business hours, the default location to forward calls could be set to be the user's office, and during other hours, their cellular phone or their pager. If the PID 410 has voice playback capability, it can download voice mail and play it back off-line. On a LAN, this may be implemented as a file transfer, which is typically much faster than playing audio back. This feature would be useful if the user cannot spend too much time on the phone to check their voice mail. For example, a traveler at an airport may download their 30 minutes worth of voice mail in a few minutes, just before taking their flight, and may listen to those messages during the flight.

8. Providing User Mobility Services

FIG. 10 is a functional block diagram and protocol stack diagram illustrating an embodiment of the protocol stacks in the PID 410 and the data network telephone 408 that support link 409. In the preferred embodiment, the PID transceiver 700 in the PID 410 provides at least part of the physical layer 1000 that connects via link 409 to the PID transceiver 610 implementing a physical layer 1002 in the data network telephone 408. The data link layer 1004 in PID 410 provides data link control for link 409 in transferring data to and from a PID application client 1006. Similarly, the data network telephone 408 includes a data link layer 1012 and an application server 1008 that is configured to synchronize connection and other functions with the PID

application 1006 in PID 410. The applications 1006 and 1008 may include the personalization applications.

When the user of the PID 410 wishes to register to the data network telephone 408, the application client 1006 in the PID 410 sends the user's SIP URI across the link 409 to the data network telephone 408, where it is received by the application server 1008. The application server 1008 sends the SIP URI received from the PID 410 as a REGISTER message across connection 430 and the Ethernet LAN 412 through connection 443 to the network telephony connection server 450, which is a registration server. The network telephony connection server 450 may store the SIP URI and the IP address of the associated data network telephone 408 in a SIP registration database (not shown) so that the SIP URI is listed as being resident at the IP address of the data network telephone 408. (If the network telephony connection server 450 uses a location server for registration/location tasks, the registration information might instead be stored with such a location server). SQL (Structured Query Language) is preferred for implementing and maintaining the registration database. Once the PID 410 is registered with the network telephony connection server 450, calls to the SIP URI for the user of the PID 410 will be directed to the data network telephone 408.

FIG. 11 is a functional block and protocol stack diagram illustrating an embodiment of the present invention where a SIP connection is established from the first data network phone 408 to the second data network phone 418 through network connection 430, first access network 412, data network 406, second access network 414 and network connection 419. The routers 413 and 415 and associated connections are not shown to simplify the block diagram representation. Although only two data network telephones are shown in FIG. 11, a three-party conference call would look very similar to what is shown in FIG. 11, with the addition of an additional data network telephone. The first PID 410 and a second PID 420 are also shown for exemplary purposes, but need not be included for voice communication. Inclusion of one or more PIDs may be useful where PID data is to be communicated from one PID to a second PID.

The diagram of FIG. 11 shows how PID user data can be communicated from one PID to another PID during a call in one aspect of the present invention. The PID application 1006 in PID 410 is configured to send PID data received through the user

interface 1010 through link 409 to base applications 1008 in the first data network phone 408. In this embodiment, base applications 1008 are configured to define data channels for transport to the second data network telephone 418. As illustrated, the communication system supports the use of multiple data channels.

Multiple data channels in SIP may be defined through the Session Description Protocol described in RFC 2327, herein incorporated by reference. Included in a SIP INVITE request are options for the requested connection that describe the number and type of media streams. Each media stream is described by an "m=" line in the INVITE request. For example, a request for a connection that includes an audio stream and a bidirectional video stream using H.261 might appear as shown in Table 1.

```
v=0
o=alice 2890844526 2890844526 IN IP4 host.anywhere.com
c=IN IP4 host.anywhere.com
m=audio 49170 RTP/AVP 0
a=rtpmap:0 PCMU/8000
m=video 51372 RTP/AVP 31
a=rtpmap:31 H261/90000
```

TABLE 1.

If the called device includes functionality to receive the connection as described in Table 1, then the called device will respond to the INVITE request with a 200 OK response that includes the same option values. If the called device or party is unable or unwilling to receive such a connection, then it will respond with alternative option values for the connection. See RFC 2543 for further details regarding the negotiation of connection parameters in SIP. Other call management protocols allow for similar negotiation of connection parameters. Personalization attributes may be transmitted in this manner, or by other methods.

In FIG. 11, a first data channel for voice data and a second data channel for PID user data have been negotiated by the base applications 1008 in the first data network telephone 408 and the base applications 1100 in the second data network telephone 418. The base applications 1008 and 1100 transfer voice data between the

AUDIO applications, such as applications including G.711 encoders, in each phone via the first data channel. The base applications 1008 in phone 408 are also configured to send the PID data received via link 409 from PID 410 to the base applications 1100 in phone 418 via the second data channel. The base applications 1100 in phone 418 may be configured to forward the PID data received via the second data channel to a second PID 420 via a second link 421. The PID application 1102 in PID 420 then outputs the PID data received from phone 418 to the user interface 1104 for output to the user of PID 420.

The PID data in FIG. 11 can take a variety of forms. For example, the PID data can be a text file containing information about the user of PID 410, such as an electronic business card. The PID data can also be drawing data generated by graphical applications in the PIDs 410 and 420 whereby a user drawing on a touchscreen of the user interface 1010 in PID 410 generates corresponding PID data that is transmitted via the second data channel to PID 420 for display on the user interface 1104 of PID 420. The media description for the media stream can be defined during connection setup to establish a connection appropriate to the type of data being transferred. These examples represent just a few of the applications for this aspect of the present invention and should not be viewed as limiting the present invention.

In one embodiment, RTP data packets for two or more types of data are exchanged between the first data network telephone 408 and the second data network telephone 418 according to one of three possible methods. In the first method, one RTP data channel (or RTP stream) on UDP carries data packets in which both data types are present in a single split packets. Each such split packet contains (1) a source port number and a destination port number in the UDP portion, and (2) a special payload sequentially including each of the data types in the RTP portion. The special payload type can be defined in the SDP described above. Other information is also contained in each packet as well. In the second method for transmitting two or more data types, a separate RTP over UDP data channel is created for each of the different data types, and the RTP header indicates which type of data is contained in each packet. For example, voice data coded as G.711 might be assigned a payload type code of 0, while PID data is assigned a payload type code of 190. In the third method for transmitting two or more data types, a single RTP/UDP data channel (RTP/UDP

stream) is created that contains data packets of two or more different types. In this method, the data types are identified in a payload type field in the RTP header of each packet, enabling an underlying application to identify which data packets are voice data packets and which data packets are PID data packets, for example.

In some embodiments of the present invention, the user interface of PID may be used to perform actual dialing operations. In other embodiments, the PID may be used to detect proximity between the user and a data network telephone and to register the user to a proximate data network telephone. The user may then use the data network telephone user interface (such as a keypad) to input the user identifier or device identifier (such as a phone number) of the party the user wishes to call. In such a case, the PID would not be necessary for communications to proceed. Additional details for implementing embodiments in which a PID is used to initiate calls may be found in Dalgic, et al., "True Number Portability and Advanced Call Screening in a SIP-Based IP Telephony System," IEEE Communications Magazine, July, 1999, pp. 96-101; and U.S. Patent Application No. 09/181,431 "Method, Apparatus and Communications System for Companion Information and Network Appliances," filed on October 30, 1998, by Inventors Peter Si-Sheng Wang and Ismail Dalgic, assigned to 3Com Corporation, both of which are incorporated by reference herein.

**D. Method for Providing Personalized Call Announcement Functions on
a
Data Network Telephony System**

1. Personalized Call Announcement Functions From the Viewpoint of a Caller's Data Network Appliance

FIG. 12 is a flow diagram illustrating a method 1200 for providing personalized call announcement functions at a caller's data network appliance, according to an embodiment of the present invention. In step 1202, an announcement message attribute is accepted from an user at a first data network appliance. The user may provide the announcement message attribute by transmitting the attribute from the PID to the first data network appliance, for example. Alternatively, the user may directly enter the announcement message attribute into the first data network appliance using input capabilities existing on the first data network appliance. The announcement message attribute may be an audio recorded message, such as a user's name or the desired called party's name, for example. Other announcement message attributes may also be used. In step 1204, the announcement message attribute is transmitted by the first data network appliance across a data network to a second data network appliance as part of a set-up operation for an outgoing call. This allows the second data network appliance to play the announcement message corresponding to the announcement message attribute provided by the calling user. For example, if the announcement message attribute is a digital audio file, the second data network appliance may play the recorded message through a speaker or other audio output on the second data network appliance.

FIG. 13 is a flow diagram illustrating a method 1300 for providing personalized call announcement functions at a caller's data network appliance, according to a preferred embodiment of the present invention. In step 1302, an announcement message attribute is received from a user's PID. This announcement message attribute may have been stored in the memory of the user's PID, for example. In step 1304, a SIP INVITE request containing the announcement message attribute is transmitted across a data network to a second data network appliance. The announcement message attribute may be included as part of the session description information, for example. The second data network appliance may then play a

notification message to the called user, where the notification message corresponds to the announcement message attribute.

2. Personalized Call Announcement Functions From the Viewpoint of a Called Party's Data Network Appliance

FIG. 14 is a flow diagram illustrating a method 1400 for providing personalized call announcement functions at a called party's data network appliance, according to an embodiment of the present invention. In step 1402, an announcement message attribute is received across a data network from a data network appliance as part of a set-up operation for an incoming call to the called party at the called party's data network appliance. In step 1404, the called party is notified of the incoming call by the called party's data network appliance playing an announcement message corresponding to the received announcement message attribute.

FIG. 15 is a flow diagram illustrating a method 1500 for providing personalized call announcement messages at a called party's data network appliance, according to a preferred embodiment of the present invention. In step 1502, the called party's data network appliance receives a SIP INVITE request containing an announcement message attribute from the calling user's data network appliance. In step 1504, the called party's data network appliance plays an announcement message corresponding to the announcement message attribute, in order to notify the called party of the incoming call.

3. Personalized Call Announcement Functions From the Viewpoint of a Caller's Personal Information Device

FIG. 16 is a flow diagram illustrating a method 1600 for providing personalized call announcement functions at a user's PID, according to a preferred embodiment of the present invention. In step 1602, the PID accepts an announcement message attribute from a user. For example, if the PID includes an audio input, such as a microphone, a personalization application on the PID may allow the user to record a short audio message to be played during an outgoing call at a called party's data network appliance. Other announcement message attributes may also be used, as may other input methods. In step 1604, the announcement message attribute is

transmitted from the PID to a data network appliance. Personalization applications in the PID and in the receiving data network appliance may coordinate this step, in a preferred embodiment. The receiving data network appliance may then use the received announcement message attribute as part of a call set-up procedure to cause a personalized call announcement message to be played to a called party at the called party's data network appliance.

4. Personalized Call Announcement Functions From the Viewpoint of an Overall System

FIG. 17 is a flow diagram illustrating a method 1700 for providing personalized call announcement functions in an overall data network telephony system, according to a preferred embodiment of the present invention. In step 1702, an announcement message attribute is accepted from a user at the user's PID. In step 1704, the announcement message attribute is transmitted from the PID to a first data network appliance. In step 1706, the first data network appliance receives the transmitted announcement message attribute. In step 1708, the first data network appliance transmits the announcement message attribute across a data network to a second data network appliance as part of a set-up operation for an outgoing call from the first data network appliance. In step 1710 the second data network appliance receives the transmitted announcement message attribute as part of a call set-up operation for the incoming call to the second data network appliance. In step 1712, the called party at the second data network appliance is notified of the incoming call, according to the received announcement message attribute. For example, the second data network appliance may play an announcement message corresponding to the announcement message attribute.

While the invention has been described in conjunction with presently preferred embodiments of the invention, persons of skill in the art will appreciate that variations may be made without departure from the scope and spirit of the invention. For example, the access networks shown in FIG. 2 may comprise any other suitable type of local area network or service infrastructure.

In addition, protocols of various types are referenced throughout. While preferred and alternative embodiments may implement selected protocols, any suitable replacement protocol not mentioned, or any function not part of a protocol

used to replace a corresponding function from a protocol may be implemented without departing from the scope of the invention.

This true scope and spirit is defined by the appended claims, interpreted in light of the foregoing.

WE CLAIM:

1. A system for providing personalized call announcement services in a data network telephony system, comprising in combination:
 - a data network appliance operable to communicate a voice signal as voice-over-data packets on a voice-over-data channel over a data network, wherein the data network appliance is operable to convert voice-over-data packets communicated on the voice-over-data channel to voice signals; and
 - a portable information device associated with a user, wherein the portable information device stores an announcement message attribute specifying a personalized call announcement, wherein the portable information device is operable to transmit the announcement message attribute to the data network appliance, and wherein the data network appliance transmits the announcement message attribute to a called data network appliance associated with a called party, thereby enabling the called data network appliance to play the personalized call announcement to the called party.
2. The method of Claim 1, wherein the data network appliance is a data network telephone operating according to the Session Initiation Protocol standard.
3. The system of Claim 1, wherein the data network appliance is a data network telephone operating according to the ITU-T H.323 standard.
4. The system of Claim 1, wherein the data network appliance is a data network telephone operating according to the MEGACO standard.
5. The system of Claim 1, wherein the data network appliance is a data network telephone operating according to the MGCP standard.
6. The system of Claim 1, wherein the portable information device is a personal digital assistant.

7. The system of Claim 1, wherein the portable information device is a smart card.
8. The system of Claim 1, wherein the portable information device is a portable phone.
9. The system of Claim 1, wherein the portable information device is a portable digital music player, and wherein the announcement message attribute includes an audio clip.
10. The system of Claim 1, wherein the announcement message attribute includes a user attribute, and wherein the called data network appliance is operable to access a database including the user attribute to identify the personalized call announcement corresponding to the user attribute.
11. The system of Claim 1, wherein the call announcement attribute includes a network address corresponding to a real-time content server, and wherein a real-time data channel is established with the real-time content server to enable real-time content to be played to the called party.
12. The system of Claim 11, wherein the data network appliance establishes the real-time data channel.
13. The system of Claim 11, wherein the called data network appliance establishes the real-time data channel.
14. A method for providing personalized call announcement services in a data network telephony system, comprising in combination:
 - accepting an announcement message attribute from a user at a first data network appliance; and
 - transmitting the announcement message attribute from the first data network appliance across a data network to a second data network appliance in a setup operation for an outgoing call.

15. The method of Claim 14, wherein the announcement message attribute includes a user attribute, and wherein the first data network appliance accesses a database including the user attribute to identify a personalized call announcement.
16. The method of Claim 14, wherein the announcement message attribute includes a user attribute, and wherein the second data network appliance accesses a database including the user attribute to identify a personalized call announcement to play to a called party.
17. The method of Claim 14, wherein the user directly enters the call announcement attribute into the data network appliance.
18. The method of Claim 14, wherein the user transmits the call announcement attribute from a portable information device to the data network appliance.
19. The method of Claim 14, wherein the portable information device is a personal digital assistant.
20. The method of Claim 14, wherein the first and second data network appliances are data network telephones operating according to the Session Initiation Protocol standard.
21. The method of Claim 14, wherein the first and second data network appliances are data network telephones operating according to the ITU-T H.323 standard.
22. The method of Claim 14, wherein the first and second data network appliances are data network telephones operating according to the MEGACO standard.
23. The method of Claim 14, wherein the first and second data network appliances are data network telephones operating according to the MGCP standard.

24. A method for providing call announcement personalization services on a data network telephony system, comprising in combination:
- receiving at a first data network appliance an announcement message attribute from a portable information device associated with a user; and
 - transmitting an call request containing the announcement message attribute from the first data network appliance across a data network to a second data network appliance, enabling the second data network appliance to play a personalized call announcement message corresponding to the announcement message attribute.
25. The method of Claim 24, wherein the first and second data network appliances are data network telephones operating according to the Session Initiation Protocol standard.
26. The method of Claim 24, wherein the first and second data network appliances are data network telephones operating according to the ITU-T H.323 standard.
27. The method of Claim 24, wherein the first and second data network appliances are data network telephones operating according to the MEGACO standard.
28. The method of Claim 24, wherein the first and second data network appliances are data network telephones operating according to the MGCP standard.
29. The method of Claim 24, wherein the portable information device is a personal digital assistant.
30. The method of Claim 24, wherein the portable information device is a smart card.
31. The method of Claim 24, wherein the portable information device is a portable phone.

32. The method of Claim 24, wherein the portable information device is a portable digital music player.
33. A method for providing personalized announcement message services on a data network, comprising in combination:
- receiving at a first data network appliance an announcement message attribute transmitted across a data network by a second data network appliance in a setup operation for an incoming call; and
 - notifying a called party of the incoming call by playing an announcement message corresponding to the announcement message attribute.
34. The method of Claim 33, wherein the first and second data network appliances are data network telephones operating according to the Session Initiation Protocol standard, and wherein the announcement message attribute is included within a SIP Invite request.
35. The method of Claim 33, wherein the first and second data network appliances are data network telephones operating according to the ITU-T H.323 standard.
36. The method of Claim 33, wherein the first and second data network appliances are data network telephones operating according to the MEGACO standard.
37. The method of Claim 33, wherein the first and second data network appliances are data network telephones operating according to the MGCP standard.
38. The method of Claim 33, wherein the step of notifying the called party includes accessing a content server located on the data network, wherein the content server is operable to provide content to be played by the first data network appliance to notify the called party of the incoming call.
39. The method of Claim 38, wherein the content server is a web server, and wherein the content is a digital data stream.

40. A method for providing personalized call announcement services on a data network telephony system, comprising in combination:
- accepting at a portable information device an announcement message attribute from a user; and
 - transmitting the announcement message attribute to a first data network appliance.
41. The method of Claim 40, further comprising:
- receiving at the first data network appliance the announcement message attribute transmitted by the portable information device;
 - transmitting the announcement message attribute from the first data network appliance across the data network to a second data network appliance in a setup operation for an outgoing call;
 - receiving at the second data network appliance the announcement message attribute transmitted by the first data network appliance; and
 - notifying the called party of the incoming call at the second data network appliance by playing an announcement message corresponding to the announcement message attribute.

FIG. 1

100

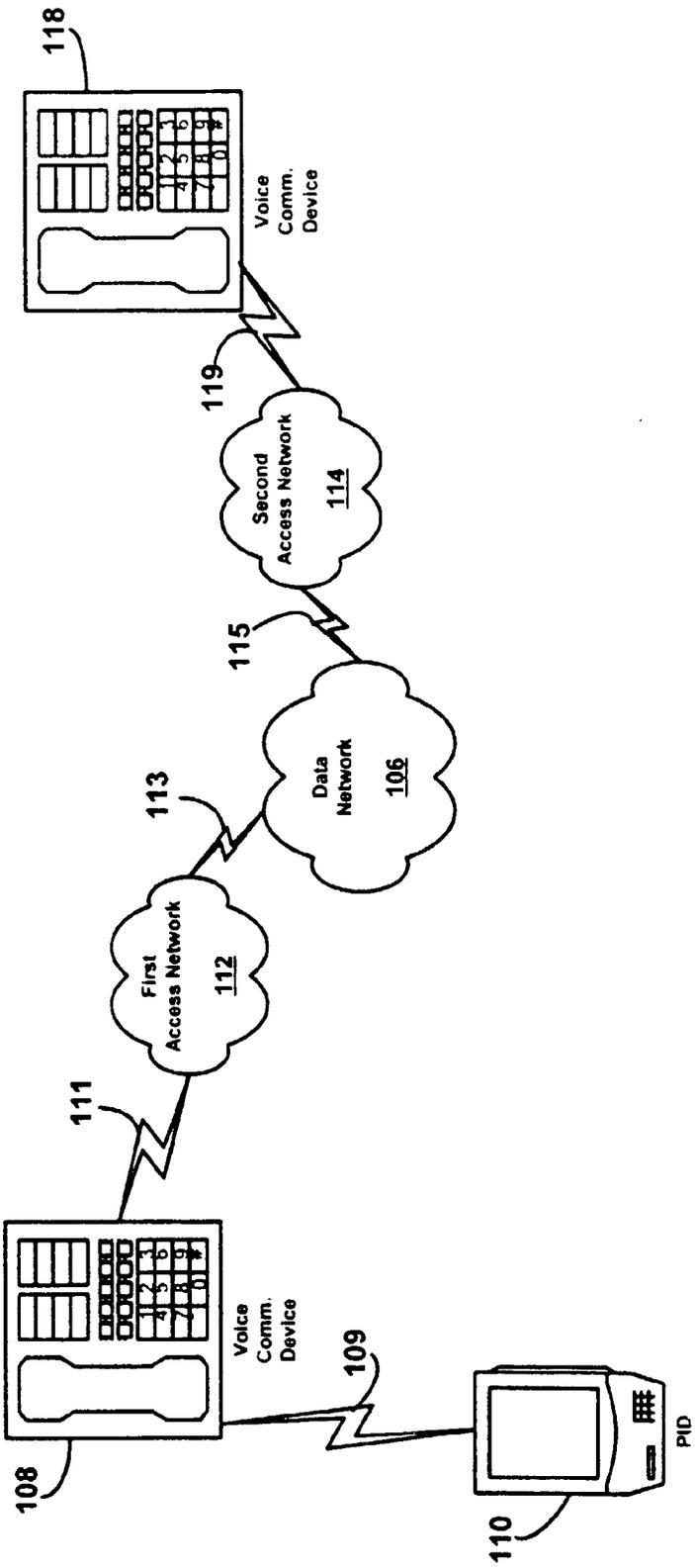


FIG. 2

200

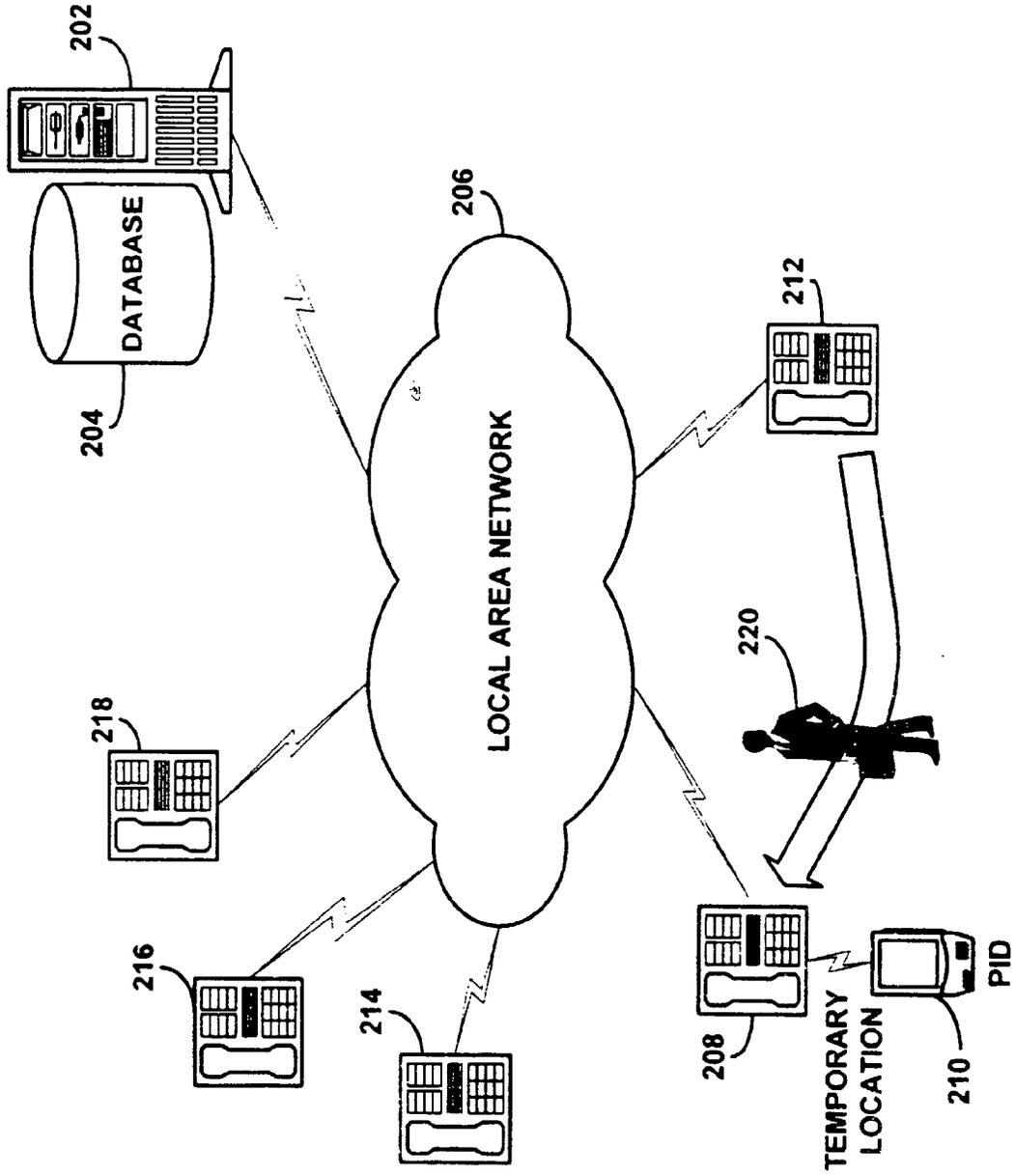


FIG. 3

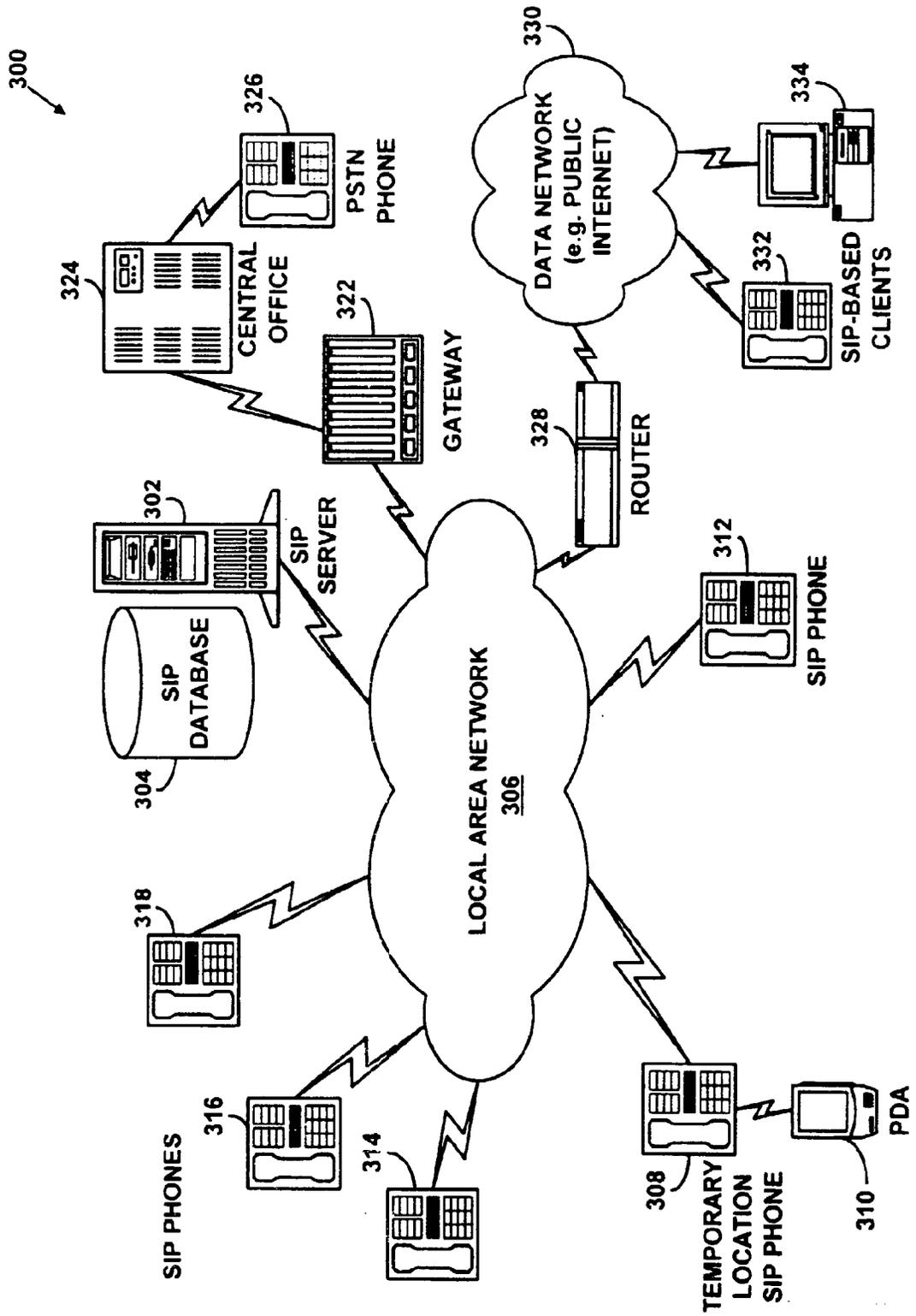


FIG. 4

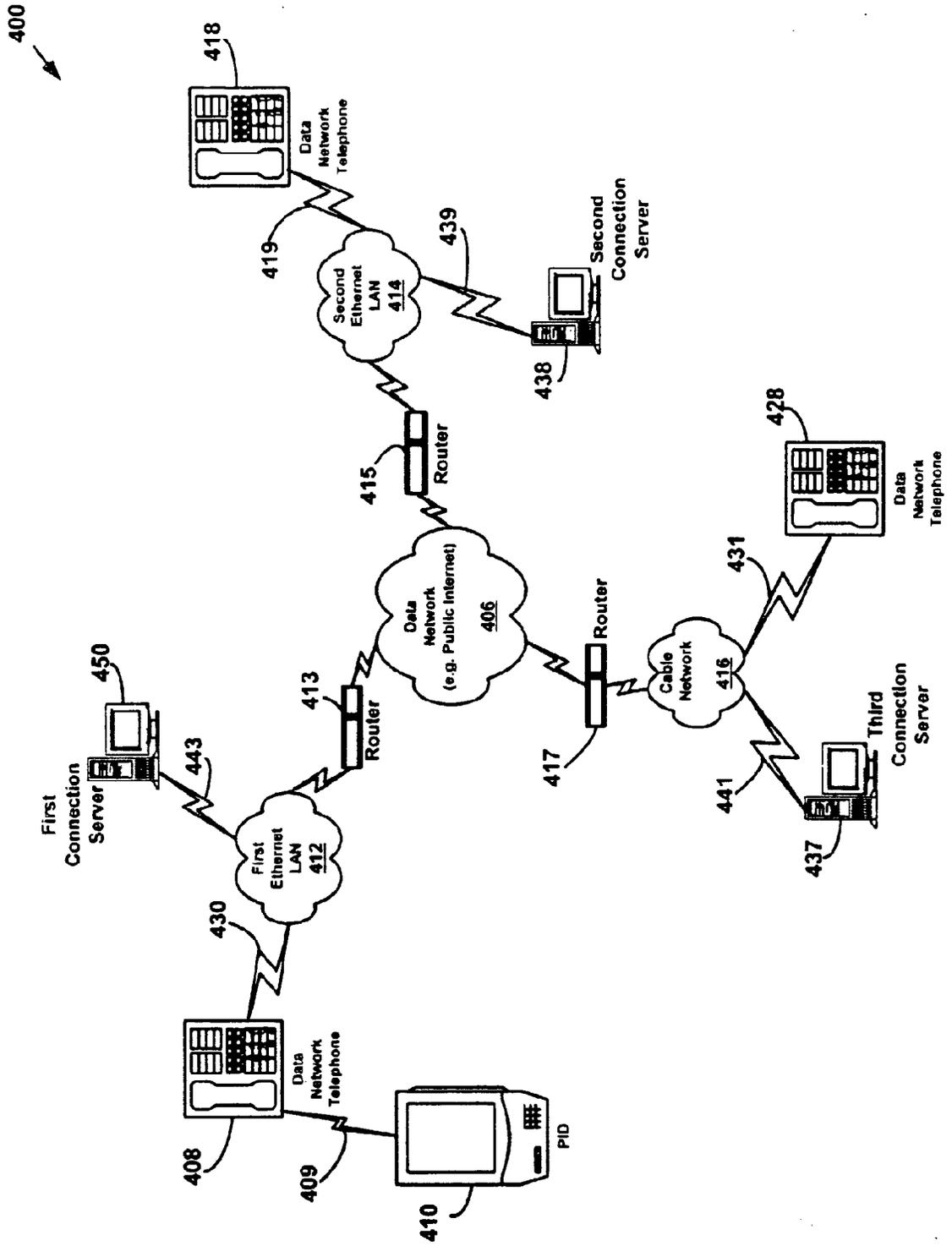


FIG. 5A

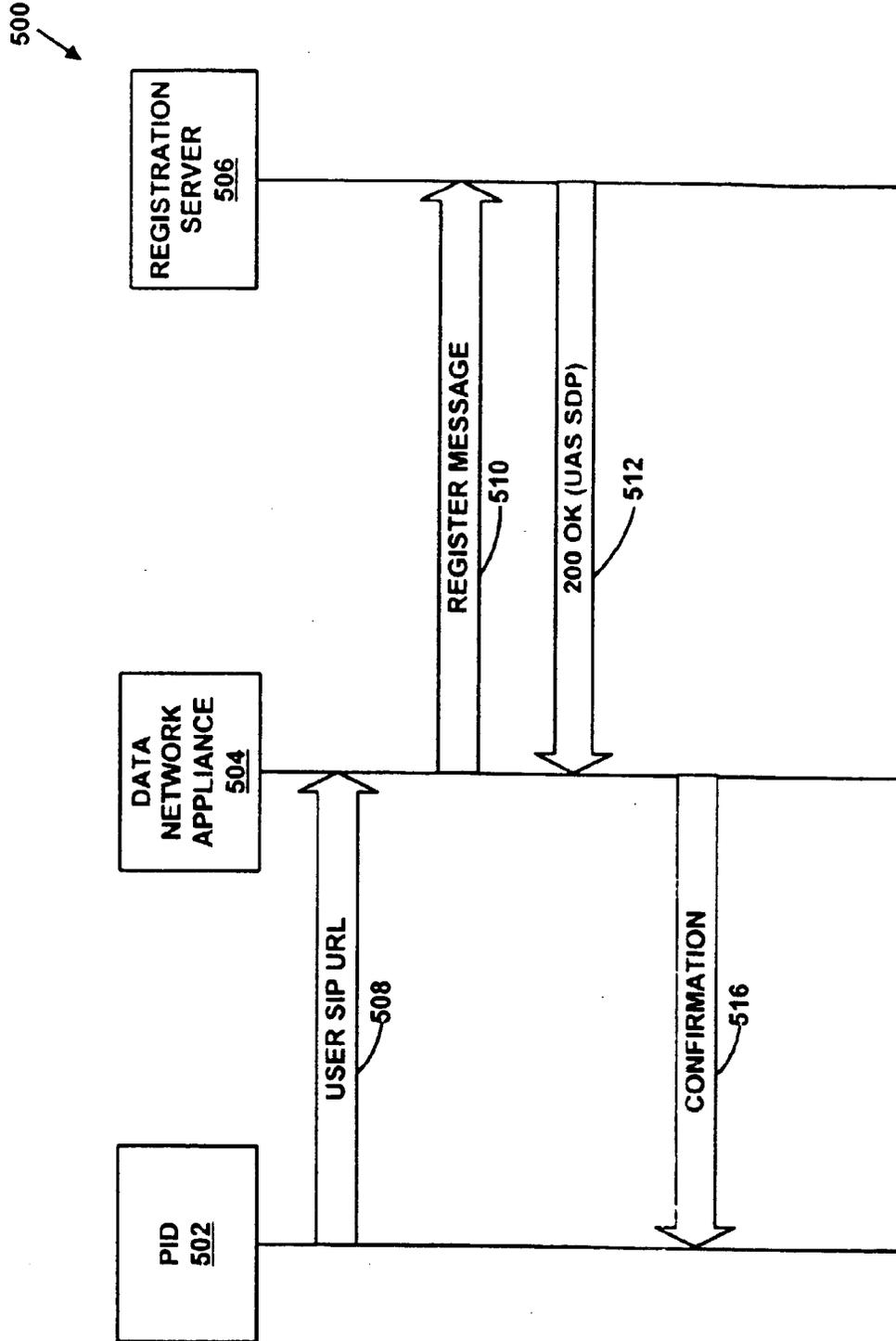


FIG. 5B

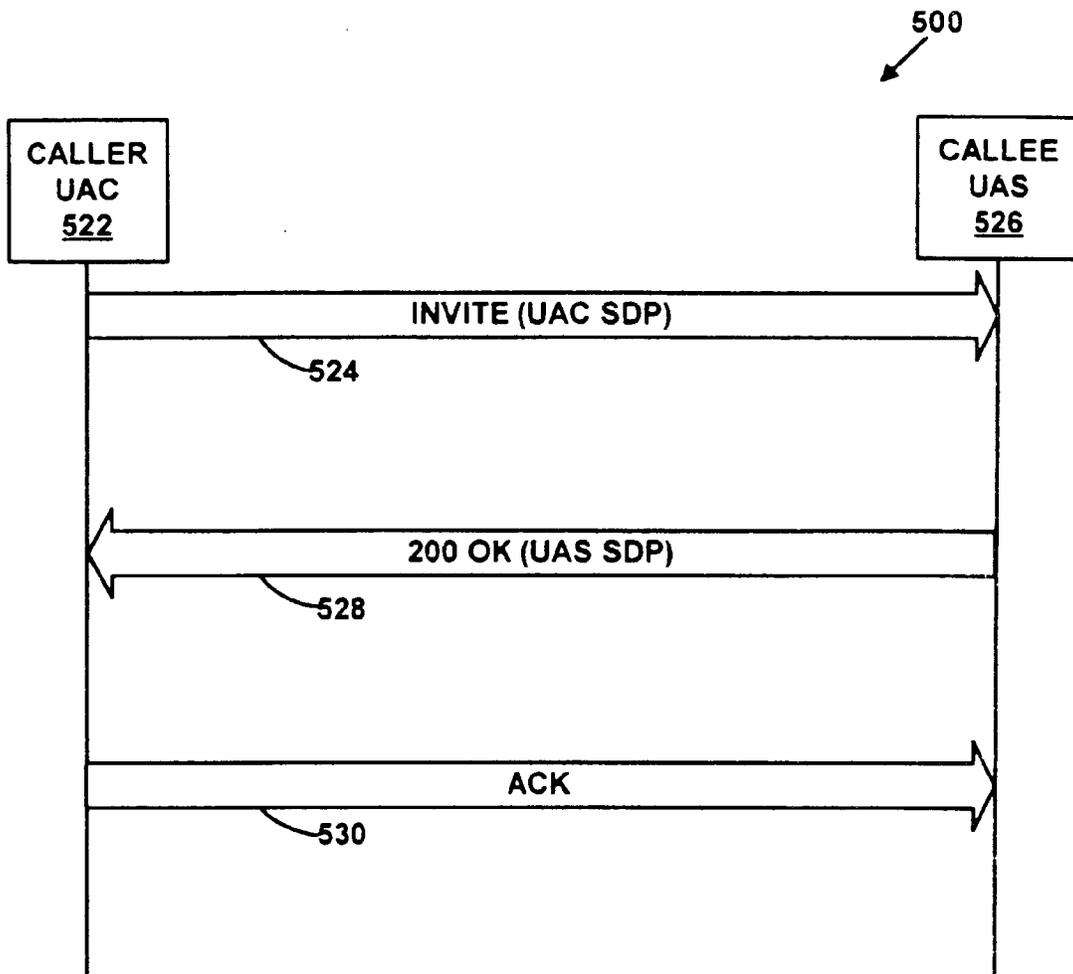


FIG. 6

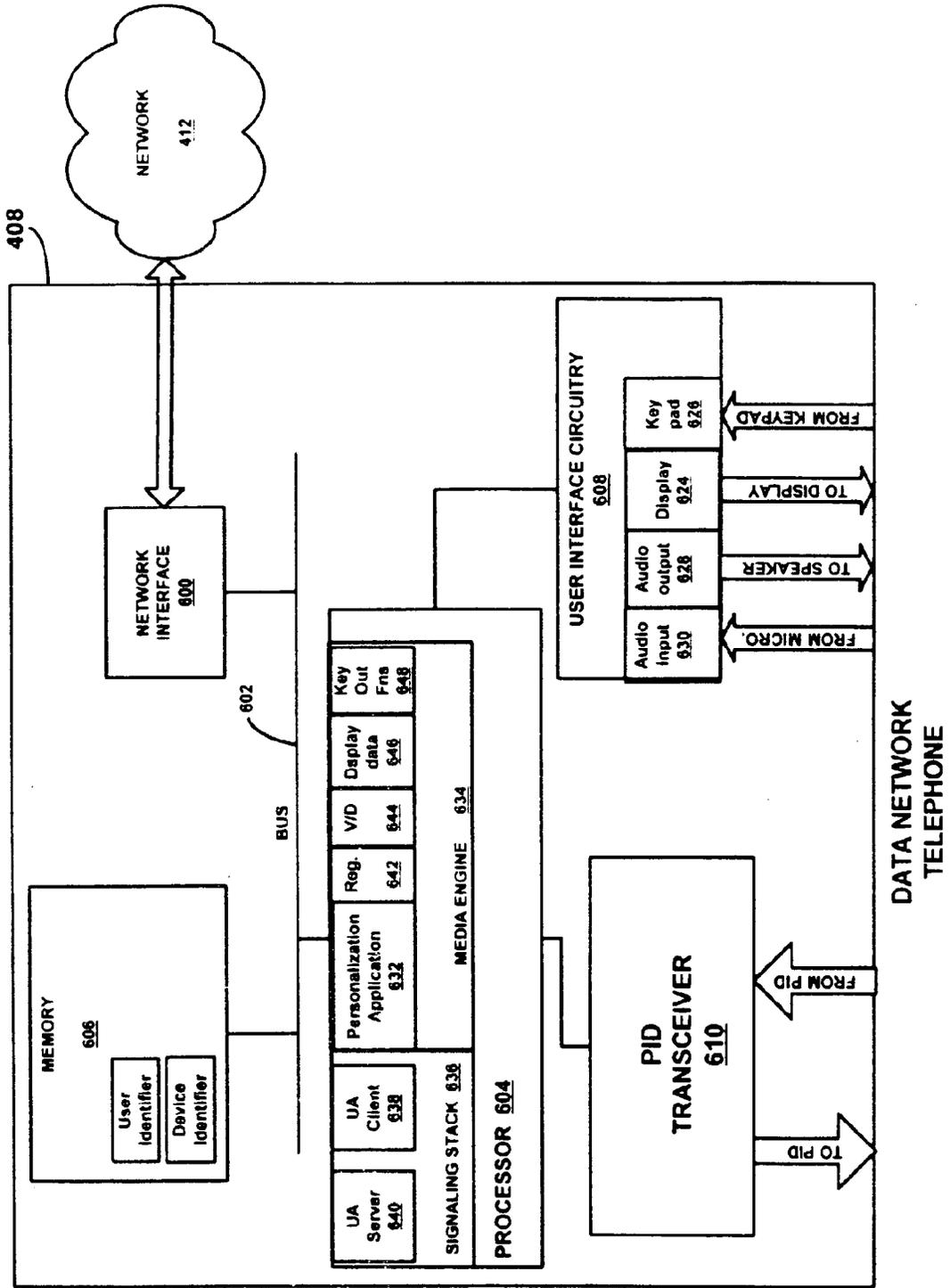
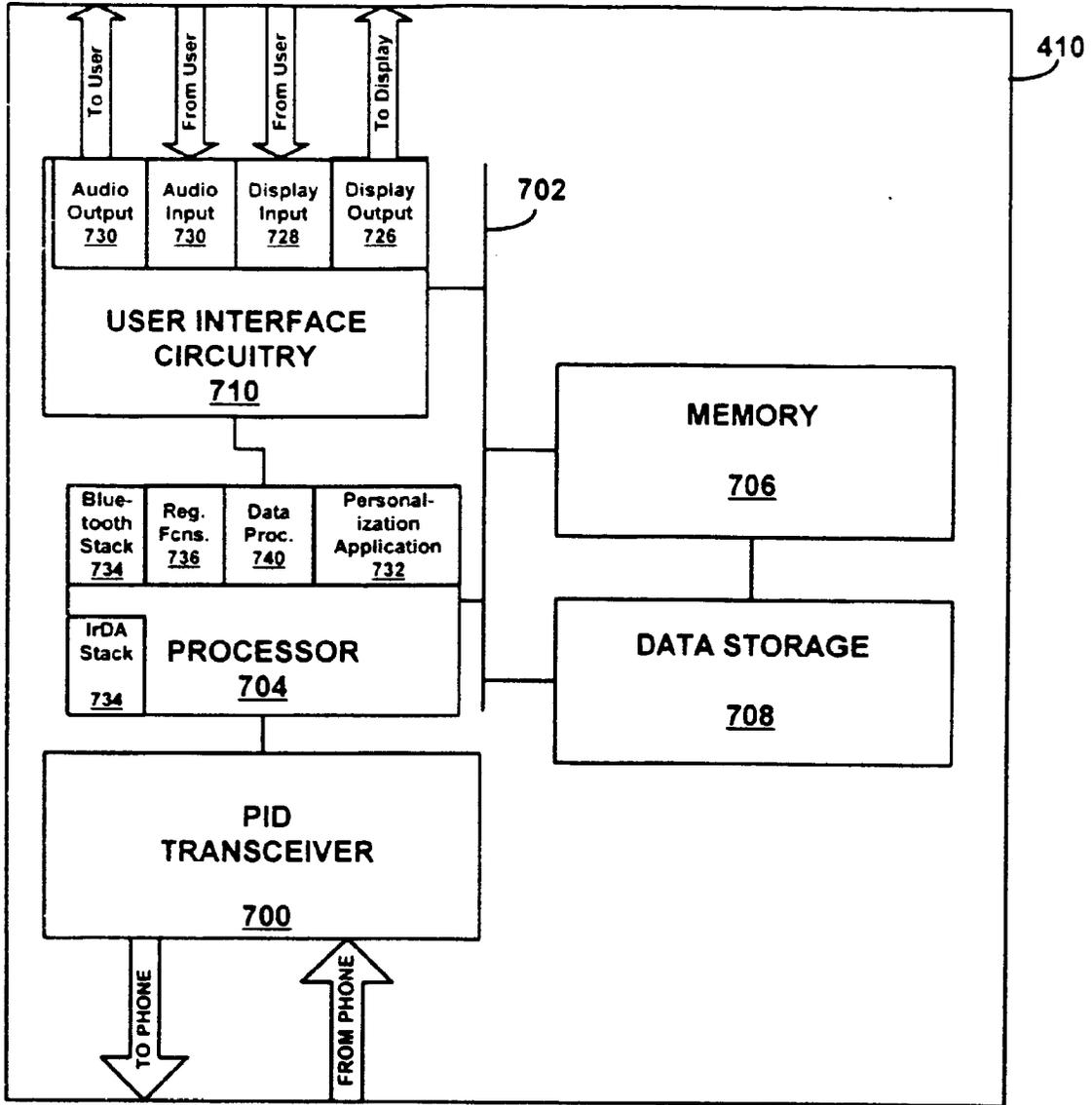


FIG. 7



PID

FIG. 8

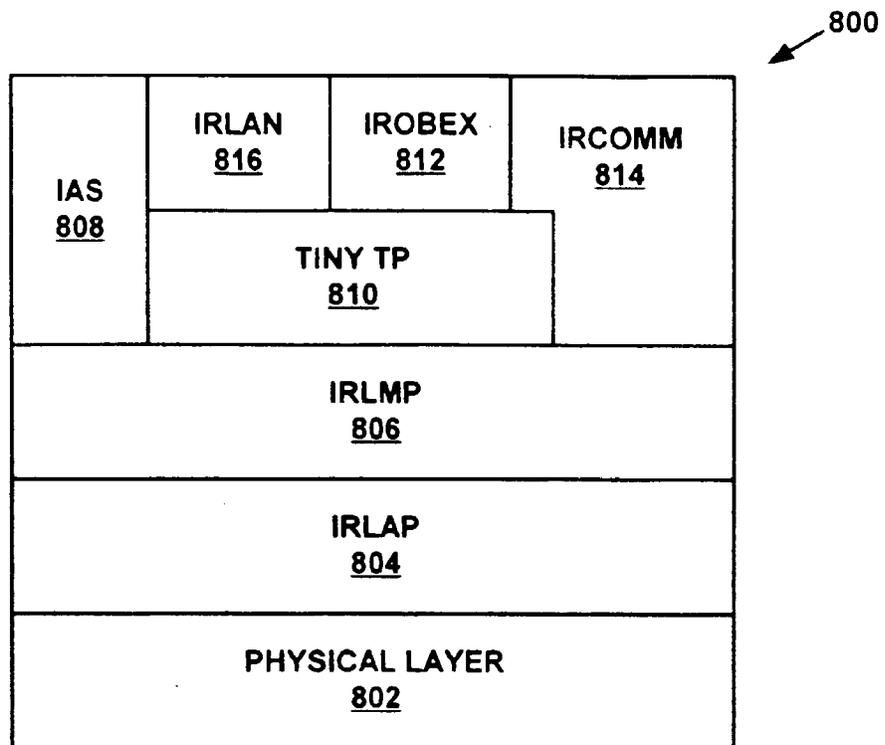
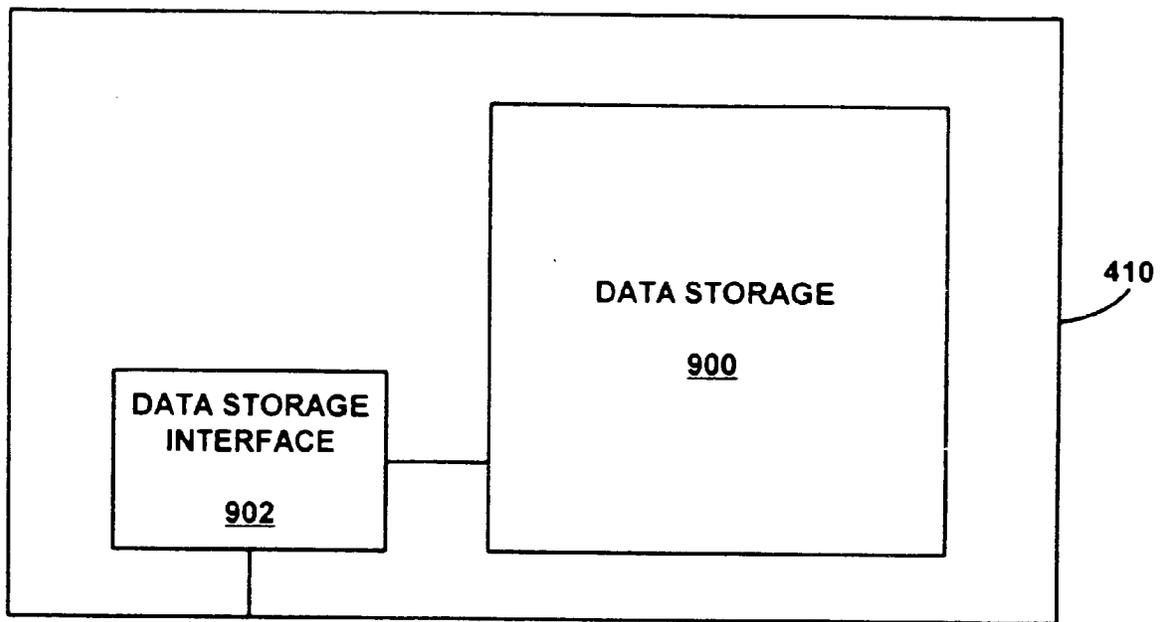


FIG. 9



PID

FIG. 10

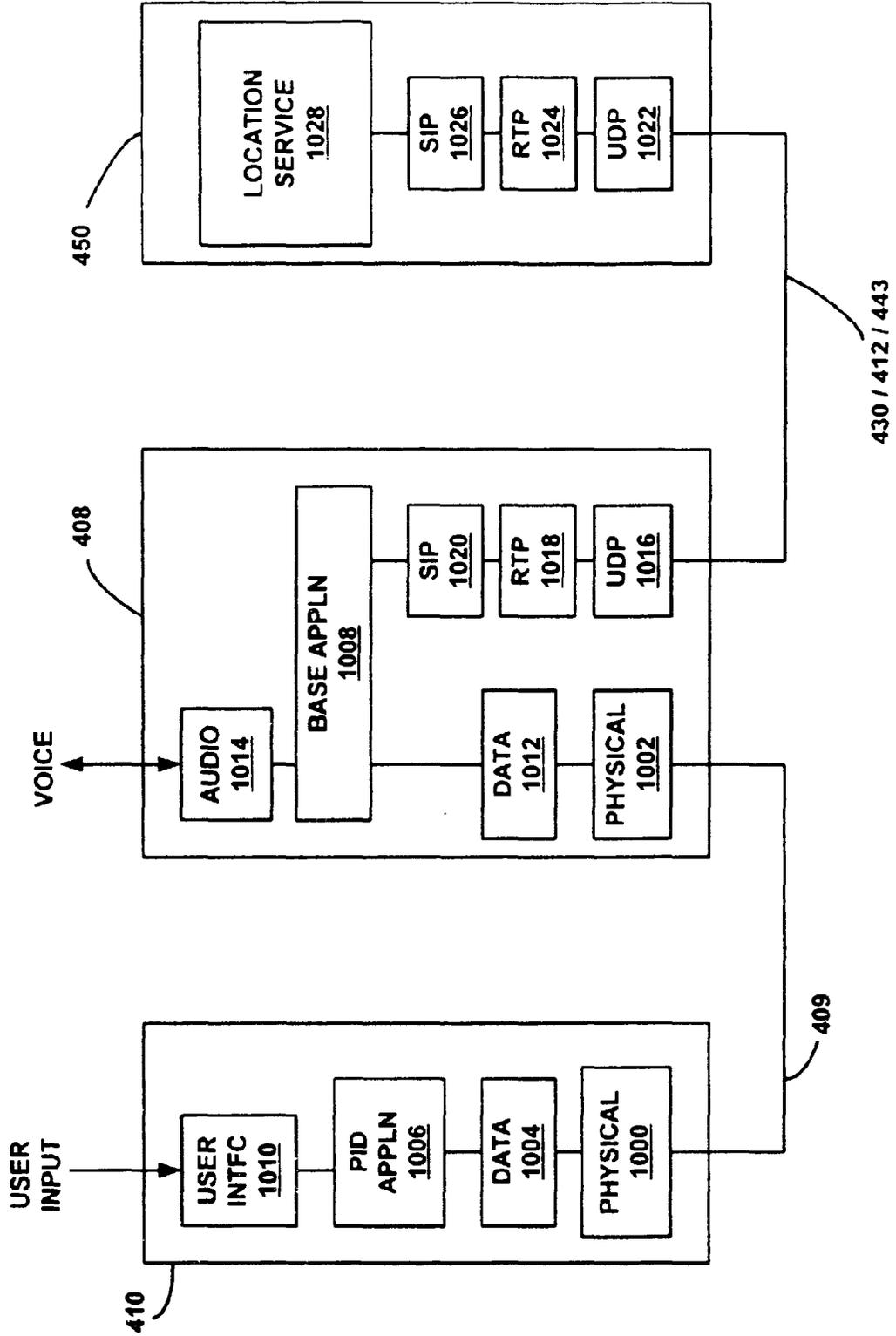


FIG. 11

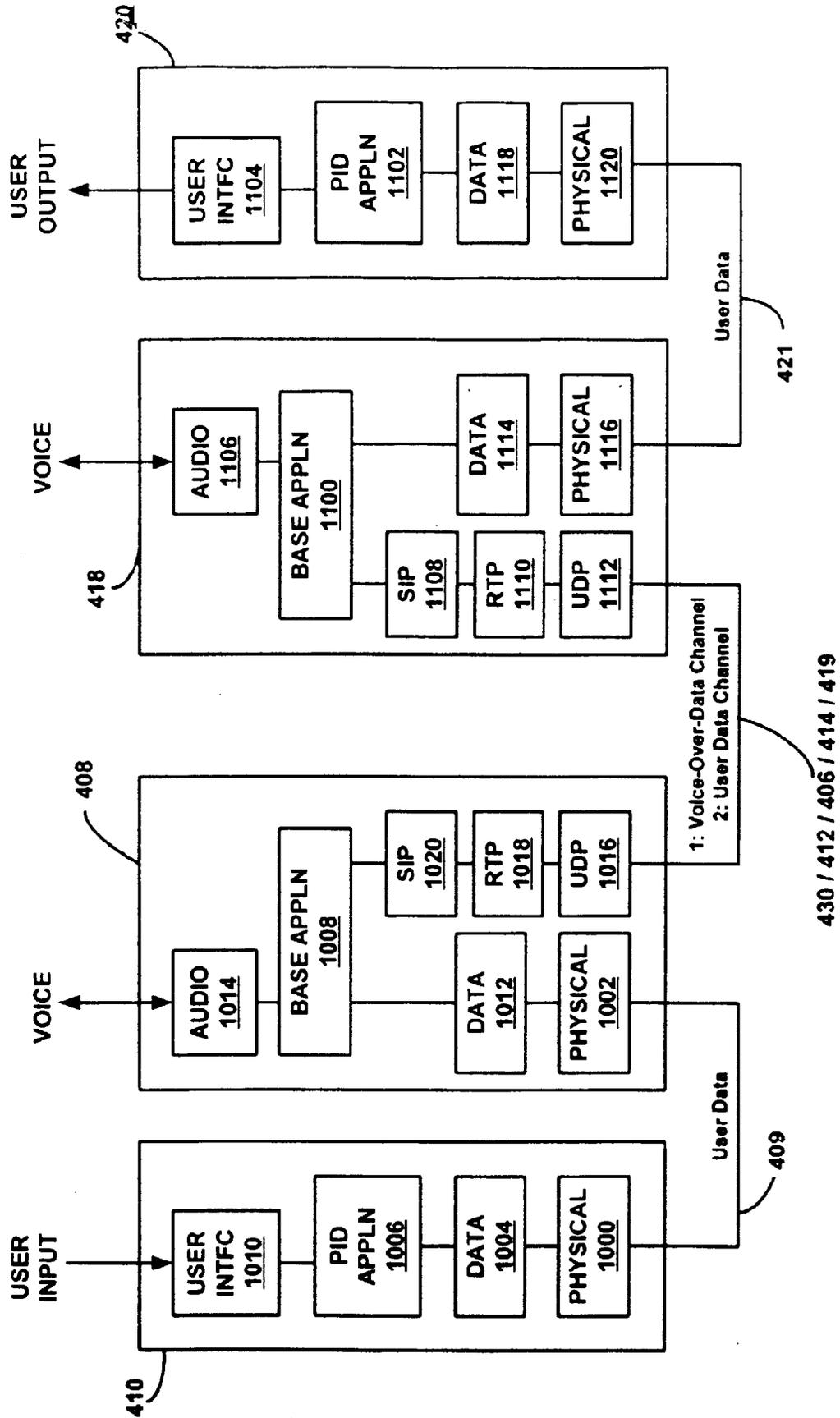


FIG. 12

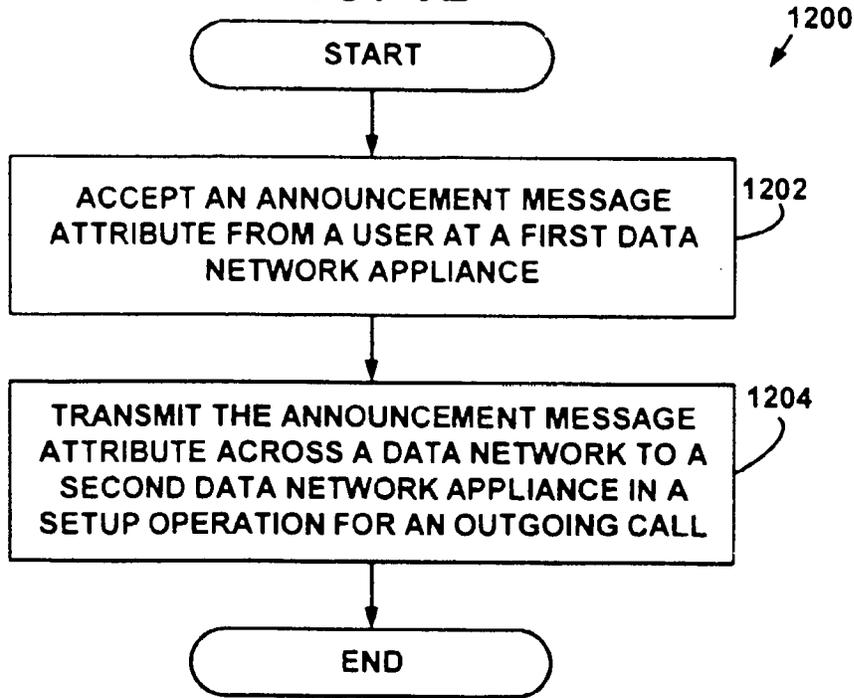


FIG. 13

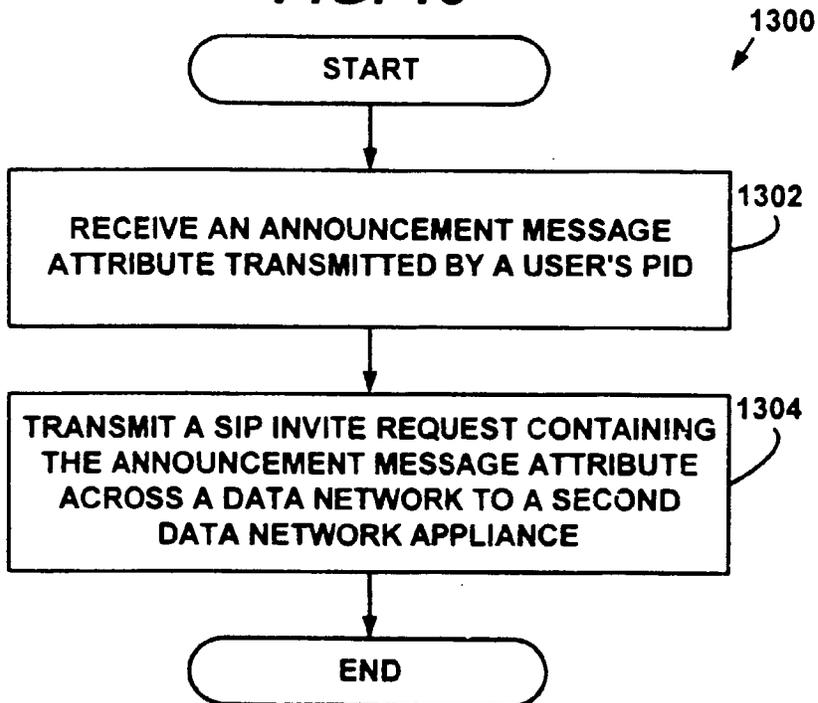


FIG. 14

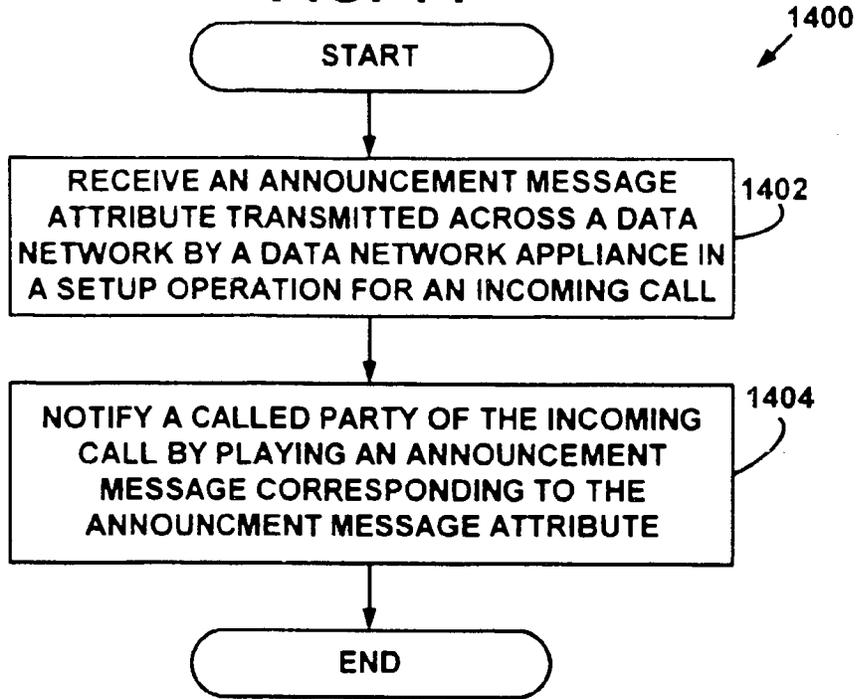


FIG. 15

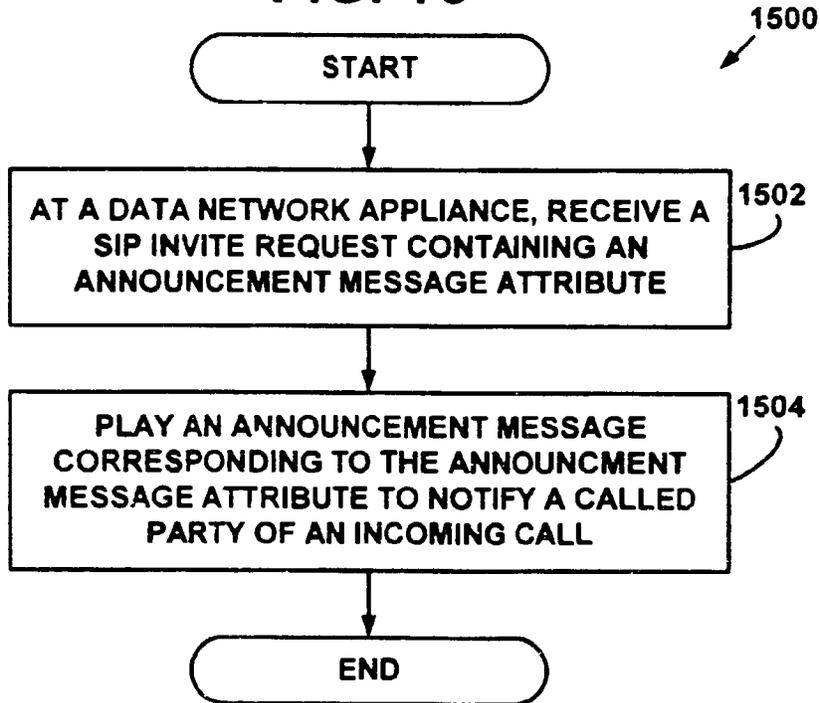


FIG. 16

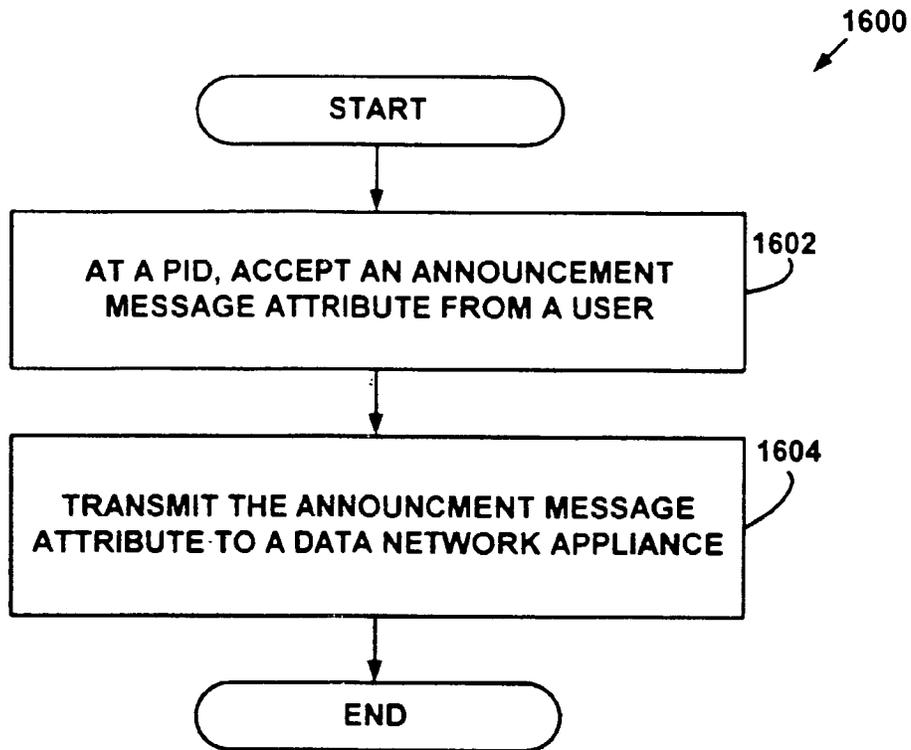
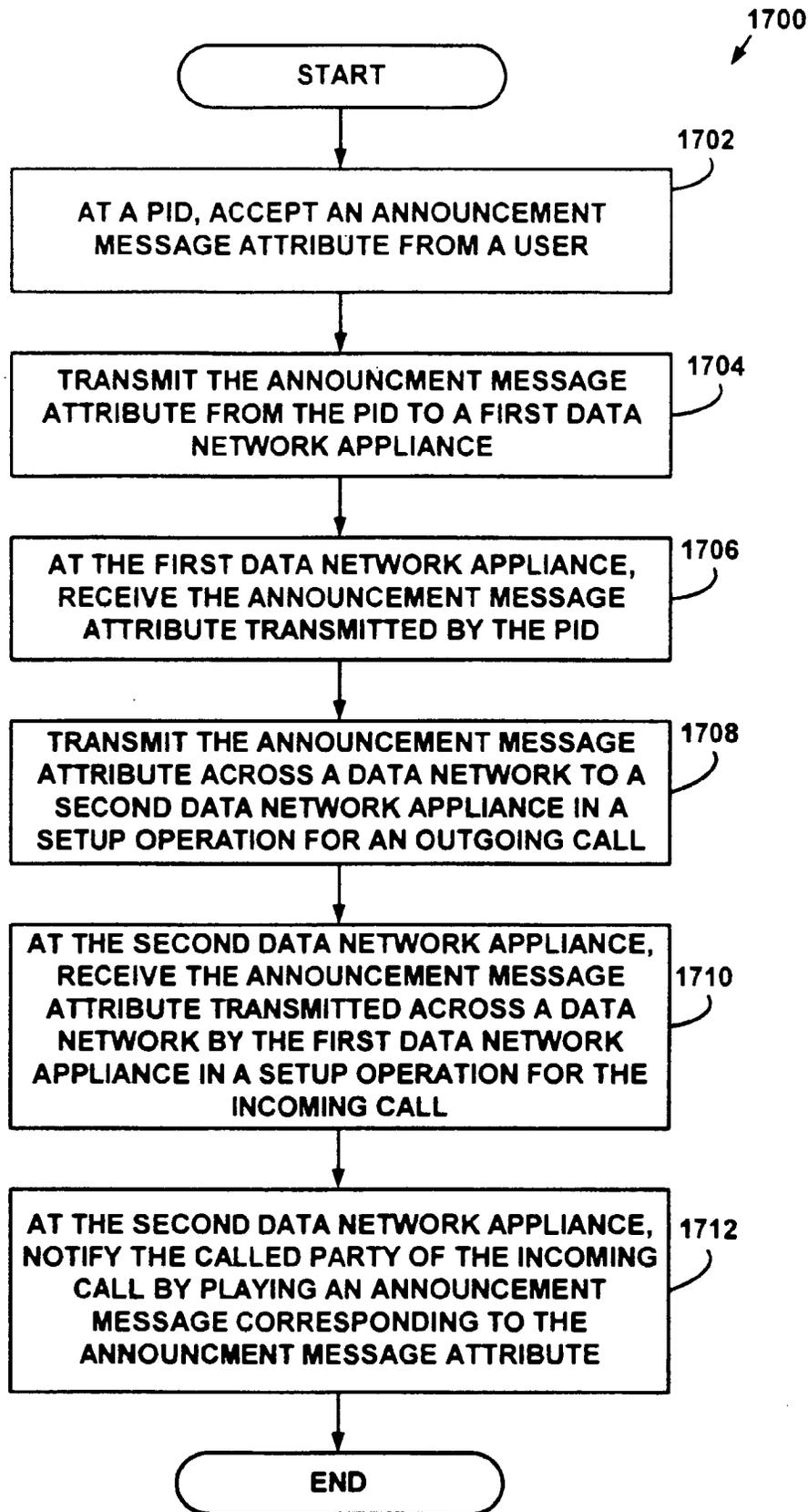


FIG. 17



Please Direct All Correspondence to Customer Number 20,995

TERMINAL DISCLAIMER UNDER 37 CFR § 1.321

Applicant	:	Michael E. Shanahan
App. No.	:	12/128,991
Filed	:	May 29, 2008
For	:	METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES
Examiner	:	Beamer, Temica M
Art Unit	:	2617
Conf No.	:	1294

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

Disclaimer by Assignee

The assignee of the above-identified application, Premorphic Mobile LP (“Assignee”), hereby disclaims the terminal part of the term of any patent granted on the above-identified application that would extend beyond the earliest expiration date of the full statutory term of any patents listed below and any patents issuing from any patent application listed below, which are hereinafter referred to as the “Listed Properties”:

- U.S. Patent Application No. 12/335,300
- U.S. Patent No. 7,319,866
- U.S. Patent No. 7,295,864
- U.S. Patent No. 7,289,798
- U.S. Patent No. 7,257,395
- U.S. Patent No. 6,496,692

Assignee hereby agrees that any patent granted on the above-identified application shall be enforceable only for and during the period that such patent is commonly owned with any patents in the Listed Properties or any patents issuing from any patent application in the Listed Properties.

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This agreement extends to any patent granted on the above-identified application and shall be binding on Assignee, its successors, or assigns.

Assignee does not disclaim the terminal part of any patent granted on the above-identified application that would not extend beyond the expiration date of the full statutory term of any patent(s) issuing from the Listed Properties. Accordingly, if the actual term of any patent(s) issuing from the Listed Properties is shortened to anything less than the full statutory term - for example, if one of these patents: expires for failure to pay a maintenance fee; is held unenforceable; is found invalid; is statutorily disclaimed in whole; is terminally disclaimed under 37 CFR § 1.321(a); has all claims canceled by a reexamination certificate; etc. - Assignee does not hereby disclaim the portion of the term of any patent issuing from the above-captioned application that corresponds to that shortened period.

Right of Assignee and Ownership

In accordance with 37 CFR § 3.73(b), Assignee represents that it is the owner of a 100 percent interest in the above-identified application and the commonly owned Listed Properties. The Assignee represents that, to the best of Assignee's knowledge and belief, title is in the Assignee seeking to take action.

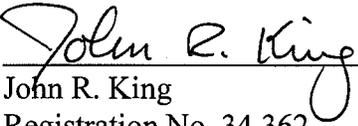
Empowerment of Attorney

Pursuant to 37 CFR § 1.321(a) the undersigned attorney of record is empowered to act on behalf of the Assignee by virtue of a Power of Attorney. This Terminal Disclaimer is also accompanied by the \$80 fee set forth in 37 CFR § 1.20(d). The Commissioner is hereby authorized to charge any deficient fee to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR LLP

Date: September 26, 2011



John R. King

Registration No. 34,362

Attorney of Record

Customer No. 20,995

(949) 760-0404

Electronic Patent Application Fee Transmittal

Application Number:	12128991
Filing Date:	29-May-2008
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Filer:	John R. King/Amy Durrant
Attorney Docket Number:	PREMM.001A2C5

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with \$0 paid	191 2252	1	280	280

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Statutory or terminal disclaimer	2814	1	80	80
Total in USD (\$)				540

Electronic Acknowledgement Receipt

EFS ID:	11052613
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	20995
Filer:	John R. King/ThuyQuyen Nguyen
Filer Authorized By:	John R. King
Attorney Docket Number:	PREMM.001A2C5
Receipt Date:	26-SEP-2011
Filing Date:	29-MAY-2008
Time Stamp:	18:47:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$540
RAM confirmation Number	22183
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR

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

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

Charge any Additional Fees required under 37 C.F.R. Section 1.93 (Patent application and reexamination processing fees)

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		PREMM-001A2C5_response.pdf	522290 a8367ca3c7961ee9acc5264b32973031617df318	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:					
2		PREMM-001A2C5_ids.pdf	103369 18409ecaace640ef9b2a2e11c02ca095d30e5cb3	yes	2
Multipart Description/PDF files in .zip description					
		Document Description	Start	End	
		Transmittal Letter	1	1	
		Information Disclosure Statement (IDS) Form (SB08)	2	2	
Warnings:					
Information:					
3	Foreign Reference	PREMM-001A2C5_REF10.pdf	593065 d39d026c159ad809eb2467ac5494fec184689a36	no	18
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4	Foreign Reference	PREMM-001A2C5_REF11.pdf	28669 6c898fe7fe7cef5e3a0b4e42e653092b9212bd6f	no	1
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8	Foreign Reference	PREMM-001A2C5_REF15.pdf	2728402 f233df8389799c657f3882c0f5b625ed9086821	no	70
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9	Non Patent Literature	PREMM-001A2C5_REF16.pdf	394386 cc862714a4e54ee40c77d7f4018649d1fe5eea01	no	4
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11	Non Patent Literature	PREMM-001A2C5_REF18.pdf	924070 48d4a78ce7d047166e95145c214e43135b818970	no	20
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12	Terminal Disclaimer Filed	PREMM-001A2C5_termdisc.pdf	91216 ac633c2a76e43917ad61a5be8aac8944e380243c	no	2
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13	Fee Worksheet (SB06)	fee-info.pdf	33364 a35e137f17743568a403106757e0d0f3502dfc69	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			8487027		

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

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

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/128,991	Filing Date 05/29/2008	<input type="checkbox"/> To be Mailed
---	---	----------------------------------	---------------------------------------

APPLICATION AS FILED – PART I			OTHER THAN SMALL ENTITY			
	(Column 1)	(Column 2)	SMALL ENTITY <input checked="" type="checkbox"/>	OR		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A		N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (j), or (m))</small>	N/A	N/A	N/A		N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A		N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	minus 20 =	*	X \$ =	OR	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =		X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$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).					
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>						
			TOTAL		TOTAL	

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

APPLICATION AS AMENDED – PART II					OTHER THAN SMALL ENTITY			
	(Column 1)	(Column 2)	(Column 3)		SMALL ENTITY	OR		
AMENDMENT	09/26/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)
	Total <small>(37 CFR 1.16(i))</small>	* 32	Minus	** 32 = 0	X \$30 =	0	OR	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	* 4	Minus	***4 = 0	X \$125 =	0	OR	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>						OR	
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						OR	
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE

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

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

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/128,991	05/29/2008	Michael E. Shanahan	PREMM.000GEN

CONFIRMATION NO. 1294

POA ACCEPTANCE LETTER

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614



Date Mailed: 05/20/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/11/2011.

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.

/mteklemichael/

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
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P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/128,991	05/29/2008	Michael E. Shanahan	MES/0 10 CONT 1

CONFIRMATION NO. 1294

POWER OF ATTORNEY NOTICE

39550
KALIKO & ASSOCIATES, L.L.C.
400-B Lake Street
RAMSEY, NJ 07446



Date Mailed: 05/20/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 05/11/2011.

- 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).

/mtekle michael/

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

Please Direct All Correspondence to Customer Number 20,995

CHANGE OF CORRESPONDENCE ADDRESS

Applicant : Shanahan, Michael E.
App. No : 12/128,991
Filed : May 29, 2008
For : METHODS AND APPARATUSES FOR PROGRAMMING USER-
DEFINED INFORMATION INTO ELECTRONIC DEVICES
Examiner : Beamer, Temica M
Art Unit : 2617
Conf. No. : 1294

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

Dear Sir:

Please change the Correspondence Address for the above-identified patent application to the address associated with Customer Number: 20,995

Respectfully submitted,

KNOBBE MARTENS OLSON & BEAR LLP

Dated: May 11, 2011



Karen J. Lenker
Registration No. 54,618
Agent of Record
Customer No. 20,995
(949) 760-0404

**STATEMENT UNDER 37 CFR § 3.73(b)
ESTABLISHMENT OF ASSIGNEE**

Applicant	:	Michael E. Shanahan
App. No.	:	12/128,991
Filed	:	May 29, 2008
For	:	METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES
Examiner	:	Beamer, Temica M
Group Art Unit	:	2617
Conf. No.	:	1294

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

Dear Sir:

This document is being filed with a copy of a Power of Attorney signed by the Assignee. This Statement sets forth the chain of title of the above-identified application.

Premorphic Mobile LP, a Corporation, is the Assignee of the entire right, title, and interest of the above-referenced application by virtue of:

A chain of title, in reverse order, from the inventor(s) to the current Assignee as shown by the following recorded assignments:

1. Assignment from Premorphic Research, Inc. to Premorphic Mobile LP recorded in the United States Patent and Trademark Office on March 25, 2011, at Reel 026022, and Frame 0633.
2. Assignment from Twenty Year Innovations, Inc. to Premorphic Research, Inc. recorded in the United States Patent and Trademark Office on March 18, 2011, at Reel 025982, and Frame 0819.
3. Assignment from Michael E. Shanahan to Twenty Year Innovations, Inc. recorded in the United States Patent and Trademark Office on March 9, 2011, at Reel 025923, and Frame 0977.

The undersigned is an agent of Customer Number 20,995 and is authorized to act on behalf of the Assignee. Please recognize or change the correspondence address for the above-identified application to **Customer No. 20,995.**

Appl. No. : 12/128,991
Filed : May 29, 2008

Docket No. PREMM.001A2C5
Customer No. 20,995

Respectfully submitted,
KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: May 11, 2011

By: Karen J. Lenker
Karen J. Lenker
Registration No. 54,618
Agent of Record
Customer No. 20,995
(949) 760-0404

11221230

051111

**REVOCATION & GENERAL POWER OF ATTORNEY
and
CHANGE IN CORRESPONDENCE ADDRESS**

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

Dear Sir:

The undersigned is an empowered representative of the Assignee and hereby appoints the registrants of Knobbe, Martens, Olson & Bear, LLP, **Customer No. 20,995**, as attorneys and agents to represent the Assignee before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned to the Assignee according to the USPTO assignment records or assignment documents supplied with an accompanying Statement Under 37 CFR § 3.73(b). This appointment is to be to the exclusion of the inventor(s) and his attorney(s) in accordance with the provisions of 37 CFR § 3.71.

Submission of this paper in connection with any matter of the below named assignee, together with a statement under 37 CFR 3.73(b), shall serve to revoke any previous powers of attorney in that matter.

Attached is a Statement Under 37 CFR § 3.73(b), signed by a registrant of Knobbe, Martens, Olson & Bear, LLP, setting forth a full chain of title for the subject application owned by the Assignee named below.

Please recognize or change the correspondence address for the application identified in the attached Statement to **Customer No. 20,995**.

By:



Date:

5/11/11

Name:

Marcus S. Muller

Title:

CEO

Assignee Premorphic Mobile LP

Address: 4828 South Broadway Street
Suite 360
Tyler, Texas 75703

Electronic Acknowledgement Receipt

EFS ID:	10071803
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	39550
Filer:	Karen J. Lenker/Lori Larson
Filer Authorized By:	Karen J. Lenker
Attorney Docket Number:	MES/0 10 CONT 1
Receipt Date:	11-MAY-2011
Filing Date:	29-MAY-2008
Time Stamp:	19:19:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Change of Address	PREMM_001A2C5- ChangeofAddress.pdf	29136 <small>04e737d6c564ea1e8a43357d1dbbf529e8e ce64a</small>	no	1

Warnings:

Information:

2	Assignee showing of ownership per 37 CFR 3.73(b).	PREMM_001A2C5-373.pdf	52309	no	2
			13da213aa116168cc50acdb42cb6a02f7111cfff		

Warnings:

Information:

3	Power of Attorney	PREMM_000GEN-POA.PDF	350231	no	1
			a4f66357a4195eda92dc67164d9ffd7bdcff2e56		

Warnings:

Information:

Total Files Size (in bytes):			431676		
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/128,991	05/29/2008	Michael E. Shanahan	MES/0 10 CONT 1	1294
39550	7590	04/28/2011	EXAMINER	
KALIKO & ASSOCIATES, L.L.C. 400-B Lake Street RAMSEY, NJ 07446			BEAMER, TEMICA M	
			ART UNIT	PAPER NUMBER
			2617	
			MAIL DATE	DELIVERY MODE
			04/28/2011	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. 12/128,991	Applicant(s) SHANAHAN, MICHAEL E.	
	Examiner TEMICA M. BEAMER	Art Unit 2617	

-- 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 01 October 0938 and 21 October 2010.
- 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) 1-32 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) 1-32 is/are rejected.
- 7) Claim(s) _____ 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 _____ 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) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimers filed on 10/12/2010 and 10/13/2010 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent Nos. 7,555,317 and 7,149,509 have been reviewed and are accepted. The terminal disclaimers have been recorded.

Double Patenting

2. Claims 1-32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 7,319,866, claims 1-30 of U.S. Patent No. 7,295,864, claims 1-34 of U.S. Patent No. 7,289,798, claims 1-46 of U.S. Patent No. 7,257,395 and claims 1-9 of U.S. Patent No. 6,496,692. Although the conflicting claims are not identical, they are not patentably distinct from each other because all inventions are drawn to a method of allowing a wireless device to browse and download data files to the wireless device for subsequent use of the files by the user of the device.

3. Claims 1-32 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-47 of copending Application No. 12/335,300. Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions are drawn to a

Art Unit: 2617

method of allowing a wireless device to browse and download data files to the wireless device for subsequent use of the files by the user of the device.

4.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TEMICA M. BEAMER whose telephone number is (571)272-7797. The examiner can normally be reached on Monday-Thursday (alternate Fridays) 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

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

/Temica M. Beamer/
Primary Examiner, Art Unit 2617

Index of Claims 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE							
Final	Original	08/30/2010	04/25/2011						
	1	✓	✓						
	2	✓	✓						
	3	✓	✓						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
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	23	✓	✓						
	24	✓	✓						
	25	✓	✓						
	26	✓	✓						
	27	✓	✓						
	28	✓	✓						
	29	✓	✓						
	30	✓	✓						
	31	✓	✓						
	32	✓	✓						

Application Number 	Application/Control No. 12/128,991	Applicant(s)/Patent under Reexamination SHANAHAN, MICHAEL E.

Document Code - DISQ	Internal Document – DO NOT MAIL
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TERMINAL DISCLAIMER	<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> DISAPPROVED
Date Filed : 10/21/10	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:
Denise L. Boyd

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.

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)

MES/010 CONT 1

In re Application of: SHANAHAN, Michael E.

Application No.: 12/128,991

Filed: 5/29/2008

For: METHOD AND APPARATUS FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

The owner*, TWENTY YEAR INNOVATIONS, INC., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term prior patent No. 7,555,317 as the term of said prior patent is defined in 35 U.S.C. 154 and 173, and as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

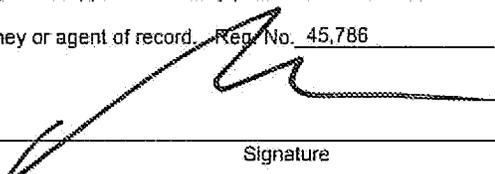
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner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

Check either box 1 or 2 below, if appropriate.

1. For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

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

2. The undersigned is an attorney or agent of record. Reg. No. 45,786



Signature

10/21/10
Date

SCOTT H. KALIKO
Typed or printed name

201-962-3570
Telephone Number

- Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Michael E. Shanahan
Application No. : 12/128,991 Confirmation No.: 1294
Filed : May 29, 2008
Title : METHODS AND APPARATUSES FOR PROGRAMMING
USER-DEFINED INFORMATION INTO
ELECTRONIC DEVICES
Examiner : Temica M. Beamer
Group Art Unit : 2617

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

October 21, 2010
Ramsey, New Jersey

TERMINAL DISCLAIMER

Sir:

Submitted herewith is a Terminal Disclaimer to obviate a double patenting rejection over a "Prior" patent. The Terminal Disclaimer submitted herewith is for patent no. 7,555,317. A previous Terminal Disclaimer was submitted on October 13, 2010, for patent no. 7,149,509, both of these patents were listed in the September 2, 2010 office action submitted by the Examiner. Please note that the terminal disclaimer fee was previously paid on October 13, 2010. Applicant believes that no fee is due at this time.

Respectfully submitted,

Dated: 10/21/10



Scott H. Kaliko
Attorney for Applicant
Registration No. 45,786
KALIKO & ASSOCIATES, L.L.C.
400 B Lake Street
Ramsey, NJ 07446
Direct: 201-962-3570
Fax: 201-962-3572

Electronic Acknowledgement Receipt

EFS ID:	8671435
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	39550
Filer:	Scott Howard Kaliko
Filer Authorized By:	
Attorney Docket Number:	MES/0 10 CONT 1
Receipt Date:	21-OCT-2010
Filing Date:	29-MAY-2008
Time Stamp:	12:52:24
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		DISCLAIMER.pdf	1116539 <small>495676cfc437b791782ff0ff460283ab7a838893</small>	yes	4

Multipart Description/PDF files in .zip description			
Document Description		Start	End
Miscellaneous Incoming Letter		1	1
Terminal Disclaimer Filed		2	2
Miscellaneous Incoming Letter		3	4

Warnings:

Information:

Total Files Size (in bytes):	1116539
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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

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

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

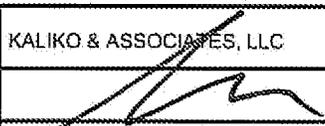
New International Application Filed with the USPTO as a Receiving Office

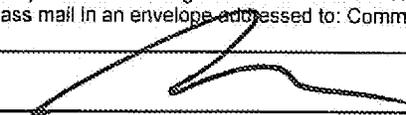
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will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

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

TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	12/128,991	
	Filing Date	5/29/2008	
	First Named Inventor	MICHAEL SHANAHAN	
	Art Unit	2617	
	Examiner Name	TEMICA BEAMER	
Total Number of Pages in This Submission	4	Attorney Docket Number	MES/010 CONT 1

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

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	KALIKO & ASSOCIATES, LLC		
Signature			
Printed name	SCOTT H. KALIKO		
Date	10/21/2010	Reg. No.	45,786

CERTIFICATE OF TRANSMISSION/MAILING	
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:	
Signature	
Typed or printed name	SCOTT H. KALIKO
Date	10/21/2010

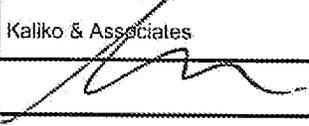
This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours 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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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.

TRANSMITTAL FORM <i>(to be used for all correspondence after initial filing)</i>	Application Number	12/128,991
	Filing Date	05/29/2008
	First Named Inventor	SHANAHAN, Michael E
	Art Unit	2617
	Examiner Name	BEAMER, Temica M
Total Number of Pages in This Submission	Attorney Docket Number	MES/010 CONT 1

ENCLOSURES (Check all that apply)				
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC		
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences		
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)		
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information		
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter		
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address	<input type="checkbox"/> Other Enclosure(s) (please identify below):		
<input type="checkbox"/> Express Abandonment Request	<input checked="" type="checkbox"/> Terminal Disclaimer			
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund			
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____			
<input type="checkbox"/> Reply to Missing Parts/ Incomplete Application	<input type="checkbox"/> Landscape Table on CD			
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<table border="1" style="width: 100%;"> <tr> <td>Remarks</td> </tr> <tr> <td>Transmittal - 1 pg Terminal Disclaimer - 1 pg</td> </tr> </table>		Remarks	Transmittal - 1 pg Terminal Disclaimer - 1 pg
Remarks				
Transmittal - 1 pg Terminal Disclaimer - 1 pg				

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Kaliko & Associates		
Signature			
Printed name	Scott H. Kaliko		
Date	10/13/10	Reg. No.	45,786

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:			
Signature			
Typed or printed name		Date	

This collection of information is required by 37 CFR 1.5. 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 2 hours 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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**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**Docket Number (Optional)
MES/010 CONT 1

In re Application of: SHANAHAN, Michael E

Application No.: 12/128,991

Filed: 05/29/2008

For: METHOD AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

The owner*, Twenty Year Innovations, Inc., of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term prior patent No. 7,149,509 as the term of said prior patent is defined in 35 U.S.C. 154 and 173, and as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 and 173 of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

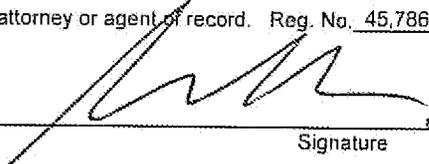
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner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

Check either box 1 or 2 below, if appropriate.

1. For submissions on behalf of a business/organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the business/organization.

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

2. The undersigned is an attorney or agent of record. Reg. No. 45,786



Signature

Date

Scott H. Kaliko
Typed or printed name

201-962-3571
Telephone Number

- Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

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

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

Electronic Patent Application Fee Transmittal

Application Number:	12128991			
Filing Date:	29-May-2008			
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices			
First Named Inventor/Applicant Name:	Michael E. Shanahan			
Filer:	Scott Howard Kaliko/Cynthia Cummings			
Attorney Docket Number:	MES/0 10 CONT 1			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Statutory disclaimer	2814	1	70	70
Total in USD (\$)				70

Electronic Acknowledgement Receipt

EFS ID:	8616061
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	39550
Filer:	Scott Howard Kaliko/Cynthia Cummings
Filer Authorized By:	Scott Howard Kaliko
Attorney Docket Number:	MES/0 10 CONT 1
Receipt Date:	13-OCT-2010
Filing Date:	29-MAY-2008
Time Stamp:	13:15:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$70
RAM confirmation Number	11205
Deposit Account	
Authorized User	

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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
		225			

1	Miscellaneous Incoming Letter	mes010con1.pdf	403190	no	1
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Information:					
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3	Fee Worksheet (PTO-875)	fee-info.pdf	29927	no	2
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Warnings:					
Information:					
Total Files Size (in bytes):			892098		

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New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

Document code: WFEE

United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/128,991	05/29/2008	Michael E. Shanahan	MES/0 10 CONT 1	1294
39550	7590	09/02/2010	EXAMINER	
KALIKO & ASSOCIATES, L.L.C. 400-B Lake Street RAMSEY, NJ 07446			BEAMER, TEMICA M	
			ART UNIT	PAPER NUMBER
			2617	
			MAIL DATE	DELIVERY MODE
			09/02/2010	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.

DETAILED ACTION

Double Patenting

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

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

Art Unit: 2617

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

2. Claims 1-32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-81 of U.S. Patent No. 7,149,509.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions allow a user to connect to a remote database and browse and download selected data files.

Claims 1, 6, 14, 17, 22 and 30 of the present application correspond to claims 1, 15, 46, 51, 58, 60, 65 and 75 of U.S. Patent No. 7,149,509.

Claims 7 and 23 of the present application correspond to claims 12, 14, 73 and 81 of U.S. Patent No. 7,149,509.

Claims 8 and 24 of the present application correspond to claims 5, 20, 29, 39 and 55 of U.S. Patent No. 7,149,509.

3. Claims 1-32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-94 of U.S. Patent No. 7,555,317.

Although the conflicting claims are not identical, they are not patentably distinct from each other because both inventions allow a user to connect to a remote database and browse and download selected data files.

Art Unit: 2617

Claims 1, 6, 14, 17, 22 and 30 of the present application correspond to claims 1, 12, 64 and 86 of U.S. Patent No. 7,555,317.

Claims 2-4, 15, 18, 19, 20 and 31 of the present application correspond to claims 9, 10, 71, 72 and 83 of U.S. Patent No. 7,555,317.

Claims 7 and 23 of the present application correspond to claims 14-16, 73 and 87-89 of U.S. Patent No. 7,555,317.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TEMICA M. BEAMER whose telephone number is (571)272-7797. The examiner can normally be reached on Monday-Thursday (alternate Fridays) 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

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

/Temica M. Beamer/
Primary Examiner, Art Unit 2617

Index of Claims 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

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

CLAIM		DATE									
Final	Original	08/30/2010									
	1	✓									
	2	✓									
	3	✓									
	4	✓									
	5	✓									
	6	✓									
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	29	✓									
	30	✓									
	31	✓									
	32	✓									

Search Notes 	Application/Control No. 12128991	Applicant(s)/Patent Under Reexamination SHANAHAN, MICHAEL E.
	Examiner TEMICA M BEAMER	Art Unit 2617

SEARCHED			
Class	Subclass	Date	Examiner
455	414.1, 415, 418, 419, 566, 567	8/30/2010	TMB

SEARCH NOTES		
Search Notes	Date	Examiner
WEST text search	8/30/2010	TMB

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet

1

of

11

Complete if Known

Application Number	Not Yet Assigned
Filing Date	05/29/2008
First Named Inventor	Michael E. Shanahan
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	116236-00016

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1	US- 4,866,766	09/12/1989	Mitzlaff	
	2	US- 4,868,561	09/19/1989	Davis	
	3	US- 5,220,420	06/15/1993	Hoarty, et al.	
	4	US- 5,247,347	09/21/1993	Litteral, et al.	
	5	US- 5,253,275	10/12/1993	Yurt, et al.	
	6	US- 5,262,875	11/16/1993	Mincer, et al.	
	7	US- 5,341,474	08/23/1994	Gelman, et al.	
	8	US- 5,414,444	05/09/1995	Britz	
	9	US- 5,414,751	05/09/1995	Yamada	
	10	US- 5,428,606	06/27/1995	Moskowitz	
	11	US- 5,440,336	08/08/1995	Buhro, et al.	
	12	US- 5,442,749	08/15/1995	Northcutt, et al.	
	13	US- 5,452,354	09/19/1995	Kyronlahti, et al.	
	14	US- 5,461,666	10/24/1995	McMahan, et al.	
	15	US- 5,479,510	12/26/1995	Olsen, et al.	
	16	US- 5,481,599	01/02/1996	MacAllister, et al.	
	17	US- 5,483,580	01/09/1996	Brandman, et al.	
	18	US- 5,483,581	01/09/1996	Hird, et al.	
	19	US- 5,485,370	01/16/1996	Moss, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	1 ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	20	EP 0851649 A2	07/01/1998	Nokia Mobile Phones Ltd.		
	21	JP 09205471	05/05/1997	Nippon Denki Ido Tsushin		
	22	WO 99/28897	06/10/1999	Voquette Networks Ltd.		
	23	WO 99/43136	08/26/1999	Ericsson, Inc.		
	24	WO 98/11487	03/19/1998	Audible, Inc.		
	25	WO 00/38340	06/29/2000	Kim, et al.		

Examiner
Signature

/Temica Beamer/

Date
Considered

08/30/2010

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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	Not Yet Assigned
		Filing Date	05/29/2008
		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
		Attorney Docket Number	116236-00016
Sheet 2	of 11		

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	26	US- 5,486,686	01/23/1996	Zdybel, Jr., et al.	
	27	US- 5,487,671	01/30/1996	Shapiro, et al.	
	28	US- 5,490,210	02/06/1996	Sasso	
	29	US- 5,490,251	02/06/1996	Clark, et al.	
	30	US- 5,499,288	03/12/1996	Hunt, et al.	
	31	US- 5,508,733	04/16/1996	Kassatly	
	32	US- 5,510,777	04/23/1996	Pilc, et al.	
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	34	US- 5,517,605	05/14/1996	Wolf	
	35	US- 5,524,141	06/04/1996	Braun, et al.	
	36	US- 5,526,620	06/18/1996	Hallsten	
	37	US- 5,528,281	06/18/1996	Grady, et al.	
	38	US- 5,530,852	06/25/1996	Meske, Jr., et al.	
	39	US- 5,533,115	07/02/1996	Hollenbach, et al.	
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		Country Code ³ *Number ⁴ *Kind Code ⁵ (if known)				
	45	WO 00/36857	06/22/2000	Oy Radiolinja AB		
	46	WO 01/41403	06/07/2001	Shanahan		
	47	CA 2,436,872	10/09/2007	Twenty Year Innovations		

Examiner Signature	/Temica Beamer/	Date Considered	08/30/2010
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Substitute for form 1449/PTO <h2 style="text-align: center; margin: 0;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="text-align: center; font-size: small;">(Use as many sheets as necessary)</p>	<h3 style="text-align: center; margin: 0;">Complete if Known</h3> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Application Number</td> <td>Not Yet Assigned</td> </tr> <tr> <td>Filing Date</td> <td>05/29/2008</td> </tr> <tr> <td>First Named Inventor</td> <td>Michael E. Shanahan</td> </tr> <tr> <td>Art Unit</td> <td>Not Yet Assigned</td> </tr> <tr> <td>Examiner Name</td> <td>Not Yet Assigned</td> </tr> <tr> <td>Attorney Docket Number</td> <td>116236-00016</td> </tr> </table>	Application Number	Not Yet Assigned	Filing Date	05/29/2008	First Named Inventor	Michael E. Shanahan	Art Unit	Not Yet Assigned	Examiner Name	Not Yet Assigned	Attorney Docket Number	116236-00016
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		Number-Kind Code ² (if known)			
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	90	US- 5,793,980	08/11/1998	Glaser, et al.	
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	92	US- 5,799,063	08/25/1998	Krane	
	93	US- 5,828,956	10/27/1998	Shirai	
	94	US- 5,835,495	11/10/1998	Ferriere	
	95	US- 5,842,124	11/24/1998	Kenagy, et al.	
	96	US- 5,870,683	02/09/1999	Wells, et al.	
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	104	US- 5,933,328	08/03/1999	Wallace, et al.	

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		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
Attorney Docket Number	116236-00016		
Sheet	6	of	11

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	105	US-	5,940,752	08/17/1999	Henrick	
	106	US-	5,940,775	08/17/1999	Kim	
	107	US-	5,943,046	08/24/1999	Cave, et al.	
	108	US-	5,948,059	09/07/1999	Woo, et al.	
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	First Named Inventor	Michael E. Shanahan
	Art Unit	Not Yet Assigned
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Attorney Docket Number	116236-00016	
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	124	US- 6,035,189	03/07/2000	Ali-Vehmas, et al.	
	125	US- 6,058,161	05/02/2000	Anderson, et al.	
	126	US- 6,073,003	06/06/2000	Nilssen	
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	139	US- 6,167,130	12/26/2000	Rosen	
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 8

of 11

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	143	US- 6,219,413	04/17/2001	Burg	
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	145	US- 6,226,532	05/01/2001	Kim, et al.	
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	189	US- 7,319,866	01/15/2008	Shanahan	
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Examiner Signature	/Temica Beamer/	Date Considered	08/30/2010
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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 2 hours 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, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.B./

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Complete if Known	
		Application Number	Not Yet Assigned
		Filing Date	05/29/2008
		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
Sheet 11	of 11	Attorney Docket Number	116236-00016

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	195	Canadian Office Action issued by the Canadian Patent Office on Sept. 19, 2006, in connection with Canadian App. No. 2,436,872 (2 pages)	
	196	Canadian Office Action issued by the Canadian Patent Office on Sept. 28, 2005, in connection with Canadian App. No. 2,436,872 (2 pages)	
	197	Canadian Office Action issued by the Canadian Patent Office on Dec. 29, 2004, in connection with Canadian App. No. 2,436,872 (2 pages)	
	198	Canadian Office Action issued by the Canadian Patent Office on Apr. 21, 2004, in connection with Canadian App. No. 2,436,872 (3 pages)	
	199	Canadian Office Action issued by the Canadian Patent Office on March 31, 2005, in connection with Canadian App. No. 2,492,727 (3 pages)	
	200	International Search Report of the International Searching Authority mailed Mar. 20, 2002, issued in connection with International Patent Appln. No. PCT/US00/32920 (3 pages)	
	201	International Preliminary Report on Patentability issued Mar. 25, 2002, issued in connection with International Patent Appln. No. PCT/US00/32920 (6 pages)	
	202	Written Opinion of the International Searching Authority mailed Nov. 21, 2001, issued in connection with International Patent Appln. No. PCT/US00/32920 (7 pages)	
	203	SGS Thompson Microelectronics ST 5092 Datasheet, June 1997, pp. 1-29	

Examiner Signature	/Temica Beamer/	Date Considered	08/30/2010
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 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 2 hours 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, 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 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.B./


UNITED STATES PATENT AND TRADEMARK OFFICE

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

BIB DATA SHEET
CONFIRMATION NO. 1294

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO. MES/0 10 CONT 1	
12/128,991	05/29/2008	455	2617		
APPLICANTS Michael E. Shanahan, Nyack, NY; ** CONTINUING DATA ***** This application is a CON of 11/633,142 12/02/2006 PAT 7,555,317 which is a CON of 10/600,975 06/20/2003 PAT 7,149,509 which is a CON of 09/518,846 03/03/2000 ABN which claims benefit of 60/169,158 12/06/1999 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 06/13/2008					
Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No 35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Verified and Acknowledged <u>/TEMICA M BEAMER/</u> Examiner's Signature	<input type="checkbox"/> Met after Allowance Initials	STATE OR COUNTRY NY	SHEETS DRAWINGS 13	TOTAL CLAIMS 32	INDEPENDENT CLAIMS 4
ADDRESS KALIKO & ASSOCIATES, L.L.C. 400-B Lake Street RAMSEY, NJ 07446 UNITED STATES					
TITLE Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices					
FILING FEE RECEIVED 905	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit		



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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
12/128,991	05/29/2008	Michael E. Shanahan	MES/0 10 CONT 1

CONFIRMATION NO. 1294

POA ACCEPTANCE LETTER

39550
KALIKO & ASSOCIATES, L.L.C.
500 NORTH FRANKLIN TURNPIKE
RAMSEY, NJ 07446



Date Mailed: 03/15/2010

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 03/01/2010.

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.

/mtekle michael/

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



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: Twenty Year Innovations, Inc.

Application No./Patent No.: 12/128,991

Filed/Issue Date: May 29, 2008

Title: **METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES**

Twenty Year Innovations, Inc., a Corporation

(Name of Assignee)

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

states that it is:

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

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

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

OR

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

1. From: Michael E. Shanahan To: Twenty Year Innovations, Inc.

The document was recorded in the United States Patent and Trademark Office at Reel 015027, Frame 0049, or for which a copy thereof is attached.

2. From: _____ To: _____

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

3. From: _____ To: _____

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

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

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

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

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

Signature

Date

Kevin McCarthy

2/23/10
President

Printed or Typed Name

Title

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



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: 39550

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: 39550

OR

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

Assignee Name and Address:

Kevin McCarthy, Twenty Year Innovations, Inc.
 3054 E. Tremont Avenue
 Bronx, NY 10461

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	2/25/10
Name	Kevin McCarthy	Telephone	917-319-1600
Title	Twenty Year Innovations, Inc., President		

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.

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	12/128,991
Filing Date	May 29, 2008
First Named Inventor	Michael E. Shanahan
Art Unit	2617
Examiner Name	Dwayne D. Bost
Attorney Docket Number	MES/010 CONT 1

Total Number of Pages in This Submission 3

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> CD, Number of CD(s) _____	
	<input type="checkbox"/> Landscape Table on CD	
<input type="checkbox"/> Certified Copy of Priority Document(s)	Remarks	
<input type="checkbox"/> Reply to Missing Parts/ Incomplete Application	Statement Uner 37 CFR 3.73(b)	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	Power of Attorney	

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Kaliko & Associates LLC		
Signature			
Printed name	Scott H. Kaliko		
Date	2/23/10	Reg. No.	45,786

CERTIFICATE OF TRANSMISSION/MAILING

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

Signature			
Typed or printed name	Cynthia F. Cummings	Date	2/23/10

This collection of information is required by 37 CFR 1.5. 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 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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UNITED STATES 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
12/128,991	05/29/2008	Michael E. Shanahan	116236-00016

CONFIRMATION NO. 1294

MISCELLANEOUS NOTICE

27614
MCCARTER & ENGLISH, LLP NEWARK
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102



Date Mailed: 02/16/2010

A communication which cannot be delivered in electronic form has been mailed to the applicant.



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 DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/128,991	05/29/2008	Michael E. Shanahan	116236-00016

CONFIRMATION NO. 1294



*OC000000040088520

27614
 MCCARTER & ENGLISH, LLP NEWARK
 FOUR GATEWAY CENTER
 100 MULBERRY STREET
 NEWARK, NJ 07102

Cc: KALIKO & ASSOCIATES, L.L.C.
 500 NORTH FRANKLIN TURNPIKE
 RAMSEY, NJ 07446

Date Mailed: 02/12/2010

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed 12/23/09 is acknowledged. However, the request cannot be granted at this time for the reason stated below.

- The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(b) has not been received.
- The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- The signature(s) of _____, a co-inventor in this application, has been omitted. The Power of Attorney will be entered upon receipt of confirmation signed by said co-inventor(s).
- The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.

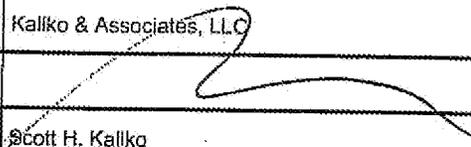
Questions relating to this Notice should be directed to the Application Assistance Unit.

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

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TRANSMITTAL FORM	Application Number	12/128,991
	Filing Date	05/29/2008
	First Named Inventor	Michael E. Shanahan
	Art Unit	2617
	Examiner Name	Dwayne D. Bost
	Attorney Docket Number	MES/010 CONT1
(to be used for all correspondence after initial filing)		
Total Number of Pages in This Submission	2	

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input checked="" type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> CD, Number of CD(s) _____	
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> Landscape Table on CD	
<input type="checkbox"/> Reply to Missing Parts/ Incomplete Application	<input type="text" value="Remarks"/>	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT			
Firm Name	Kalko & Associates, LLC		
Signature			
Printed name	Scott H. Kalko		
Date	12/22/2009	Reg. No.	45,786

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:			
Signature			
Typed or printed name	Cynthia F. Cummings	Date	12/22/2009

This collection of information is required by 37 CFR 1.5. 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 2 hours 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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**POWER OF ATTORNEY
OR
REVOCATION OF POWER OF ATTORNEY
WITH A NEW POWER OF ATTORNEY
AND
CHANGE OF CORRESPONDENCE ADDRESS**

Application Number	12/128,991
Filing Date	05/29/2008
First Named Inventor	Michael E. Shanahan
Title	Methods And Apparatuses for Programming Usa
Art Unit	2617
Examiner Name	Dwayne D. Bost
Attorney Docket Number	MES/010 CONT1

I hereby revoke all previous powers of attorney given in the above-identified application.

A Power of Attorney is submitted herewith.

OR

I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

39550

OR

I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified application to:

The address associated with the above-mentioned Customer Number.

OR

The address associated with Customer Number:

OR

Firm or Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the:

Applicant/Inventor.

OR

Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on _____

SIGNATURE of Applicant or Assignee of Record

Signature

Name

Title and Company

Date

Telephone

Kevin T. McCarthy
KEVIN T. MCCARTHY
TWENTY YEAR INNOVATIONS, INC
12/22/2009

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

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

Electronic Acknowledgement Receipt

EFS ID:	6700349
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	27614
Filer:	Scott Howard Kaliko/Cynthia Cummings
Filer Authorized By:	Scott Howard Kaliko
Attorney Docket Number:	116236-00016
Receipt Date:	23-DEC-2009
Filing Date:	29-MAY-2008
Time Stamp:	14:13:56
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	mes010cont1transmittalpow.pdf	418024 afecf40105119b4081af9d81ee911f332d8fca9d	no	1

Warnings:

Information:

2	Miscellaneous Incoming Letter	mes010cont1power.pdf	474222	no	1
			c9361751170be1431d636fae0d5755be340458ed		

Warnings:

Information:

Total Files Size (in bytes):	892246
-------------------------------------	--------

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

Table with 4 columns: APPLICATION NUMBER (12/128,991), FILING OR 371(C) DATE (05/29/2008), FIRST NAMED APPLICANT (Michael E. Shanahan), ATTY. DOCKET NO./TITLE (116236-00016)

CONFIRMATION NO. 1294

PUBLICATION NOTICE

27614
MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102



Title:Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices

Publication No.US-2008-0287115-A1
Publication Date:11/20/2008

NOTICE OF PUBLICATION OF APPLICATION

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

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

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

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

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

Office of Data 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

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY. DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 12/128,991, 05/29/2008, 2617, 905, 116236-00016, 32, 4

CONFIRMATION NO. 1294

UPDATED FILING RECEIPT



27614
MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102

Date Mailed: 08/12/2008

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

Applicant(s)

Michael E. Shanahan, Nyack, NY;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/633,142 12/02/2006
which is a CON of 10/600,975 06/20/2003 PAT 7,149,509
which is a CON of 09/518,846 03/03/2000 ABN
which claims benefit of 60/169,158 12/06/1999

Foreign Applications

If Required, Foreign Filing License Granted: 06/13/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 12/128,991

Projected Publication Date: 11/20/2008

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices

Preliminary Class

455

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

**Response To Notice To File Missing Parts Of Application
Filing Date Granted (PTO-1533)(Small Entity)**

Docket No.
116236-00016

In Re Application Of: **Michael E. Shanahan**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
12/128,991	May 29, 2008	Not yet assigned	27614	2617	1294

Invention: **METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES**

Mail Stop Missing Parts

COMMISSIONER FOR PATENTS:

This is a response to the Notice to File Missing Parts of Application - Filing Date Granted (PTO-1533) mailed on June 16, 2008.
Date

Enclosed herewith for filing are the following:

- A copy of the Notice to File Missing Parts of Application - Filing Date Granted (PTO-1533). **(REQUIRED)**
- An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and Filing Date.
- A properly signed oath or declaration in compliance with 37 CFR 1.63.
- An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date.
- A verified English translation of the non-English language application papers as originally filed. It is requested that this translation be used as the copy for examination purposes in the United States Patent and Trademark Office.
- _____ verified small entity declaration(s)
 - is/are attached.
 - was/were filed on _____
- A separate request for refund.
- Other (list):

Transmittal Letter

**Response To Notice To File Missing Parts Of Application
Filing Date Granted (PTO-1533) (Small Entity)**

Docket No.
116236-00016

In Re Application Of: **Michael E. Shanahan**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
12/128,991	May 29, 2008	Not yet assigned	27614	2617	1294

Invention: **METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES**

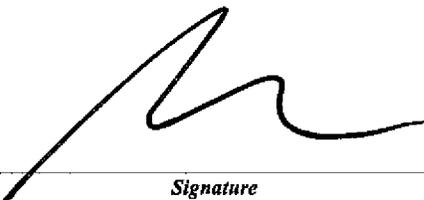
TO THE COMMISSIONER FOR PATENTS:

Mail Stop Missing Parts

The fee of **\$65.00** is to be paid as follows:

- A check in the amount of the fee is enclosed.
- The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. **503571**
- If an additional extension of time is required, please consider this a petition therefor and charge any additional fees which may be required to Deposit Account No. **503571**
- Payment by credit card. Form PTO-2038 is attached.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.



Signature

Dated:

8/5/08

Scott H. Kaliko
Registration No. 45,786
McCarter & English, LLP
Four Gateway Center
100 Mulberry Street
Newark, NJ 07102
Tel: (973) 639-7980
Fax: (973) 461-4744

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on

(Date)

Signature of Person Mailing Correspondence

Typed or Printed Name of Person Mailing Correspondence

CC:

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated below next to my name;

I believe I am an original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHODS AND APPARATUSES FOR PROGRAMMING
USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

the specification of which

is attached hereto

was filed on _____ as
Application Serial No. _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I do not know and do not believe that the invention was ever patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application.

I do not know and do not believe that the invention was in public use or on sale in the United States of America more than one year prior to this application.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known by me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority
Claimed

(Number)

(Country)

(Filing Date)

Yes No

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below.

60/169,158 December 6, 1999
(Application Serial No.) (Filing Date)

09/518,846 March 3, 2000
(Application Serial No.) (Filing Date)

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known by me to be material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status) (patented, pending, abandoned)
--------------------------	---------------	---

Send correspondence to: Michael E. Shanahan
P.O. Box 381
Nyack, N.Y., 10960

Direct telephone calls to: Michael E. Shanahan
(914) 261-1160

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

Full name of first inventor Michael E. Shanahan

First inventor's signature



6/20/03
Date

Residence 783 Route 9W South

Nyack, New York, 10960

Citizenship United States

Post Office Address P.O. Box 381 Nyack N.Y., 10960

Electronic Patent Application Fee Transmittal

Application Number:	12128991			
Filing Date:	29-May-2008			
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices			
First Named Inventor/Applicant Name:	Michael E. Shanahan			
Filer:	Scott Howard Kaliko/Judy Traina			
Attorney Docket Number:	116236-00016			
Filed as Small Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:	266			

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				65

Electronic Acknowledgement Receipt

EFS ID:	3730503
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	27614
Filer:	Scott Howard Kaliko/Judy Traina
Filer Authorized By:	Scott Howard Kaliko
Attorney Docket Number:	116236-00016
Receipt Date:	05-AUG-2008
Filing Date:	29-MAY-2008
Time Stamp:	14:04:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$65
RAM confirmation Number	9022
Deposit Account	503571
Authorized User	

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

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

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

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

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

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

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	transletter_001.pdf	29905	no	1
			311340d4a2a16426e196f78a0ea1efb0da671d5e		

Warnings:

Information:

2	Applicant Response to Pre-Exam Formalities Notice	responsetonotice_001.pdf	96397	no	3
			b84d0ceba674125a881269fbd106f42e9219edc		

Warnings:

Information:

3	Oath or Declaration filed	decl_001.pdf	112641	no	3
			36937bf05123f5021e5f1c10c4320b1d0016f4cb		

Warnings:

Information:

4	Fee Worksheet (PTO-06)	fee-info.pdf	8198	no	2
			5edf42f06eedaa2604bda7e41d80acba44053638		

Warnings:

Information:

Total Files Size (in bytes): 247141

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Customer No. 27614
Confirmation No. 1294

Re: Our file: 116236-00016
Applicant: Michael E. Shanahan
Serial No.: 12/128,991
Filed: May 29, 2008
For: Methods and Apparatuses for Programming User-Defined
Information Into Electronic Devices

Examiner: Not Yet Assigned
Art Unit: 2617

Sir:

Enclosed for filing in the United States Patent and Trademark Office is the following:

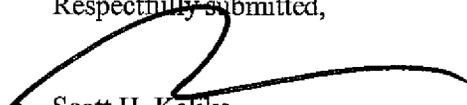
1. Response to Notice to File Missing Parts (3 pages)
2. Fully Executed Declaration and Power of Attorney (3 pages)
3. Transmittal Letter (1 page)

CONDITIONAL PETITION

If any extension of time is required for the submission of the above-identified items, Applicant requests that this be considered a petition therefor. Please charge any additional charges or any other charges relating to this matter, or credit any overpayment, to the Deposit Account of the writer, **Account No. 503571**.

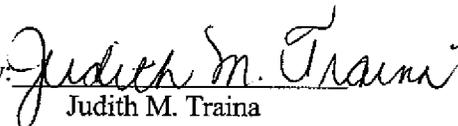
Respectfully submitted,

August 5, 2008
Date


Scott H. Kaliko
Registration No. 45,786
McCarter & English, LLP
Four Gateway Center
100 Mulberry Street
Newark, NJ 07102
Tel: (973) 639-7980
Fax: (973) 461-4744

CERTIFICATE OF ELECTRONIC FILING

I hereby certify that this correspondence is being electronically filed with the U.S. Patent and Trademark Office (via EFS-Web) on August 5, 2008.

By: 
Judith M. Traina



UNITED STATES PATENT AND TRADEMARK OFFICE

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

Table with 4 columns: APPLICATION NUMBER (12/128,991), FILING OR 371(C) DATE (05/29/2008), FIRST NAMED APPLICANT (Michael E. Shanahan), ATTY. DOCKET NO./TITLE (116236-00016)

CONFIRMATION NO. 1294

FORMALITIES LETTER



27614
MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102

Date Mailed: 06/16/2008

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 oath or declaration is unsigned.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- 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 notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$65 for a small entity

- \$65 Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/bto/

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

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 12/128,991, 05/29/2008, 2617, 840, 116236-00016, 32, 4

CONFIRMATION NO. 1294

27614
MCCARTER & ENGLISH, LLP
FOUR GATEWAY CENTER
100 MULBERRY STREET
NEWARK, NJ 07102

FILING RECEIPT



Date Mailed: 06/16/2008

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

Applicant(s)

Michael E. Shanahan, Nyack, NY;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 11/633,142 12/02/2006
which is a CON of 10/600,975 06/20/2003 PAT 7,149,509
which is a CON of 09/518,846 03/03/2000 ABN
which claims benefit of 60/169,158 12/06/1999

Foreign Applications

If Required, Foreign Filing License Granted: 06/13/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 12/128,991

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **

Title

Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices

Preliminary Class

455

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

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

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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.

UTILITY PATENT APPLICATION TRANSMITTAL <small>(Only for new nonprovisional applications under 37 CFR 1.53(b))</small>	Attorney Docket No.	116236-00016
	First Inventor	Michael E. Shanahan
	Title	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
	Express Mail Label	

APPLICATION ELEMENTS <small>See MPEP chapter 600 concerning utility patent application contents.</small>	ADDRESS TO: Commissioner for Patents P. O. Box 1450 Alexandria VA 22313-1450
--	---

1. **Fee Transmittal Form** (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. **Applicant claims small entity status.**
See 37 CFR 1.27.
3. **Specification** [Total 38]
Both the claims and abstract must start on a new page
(For information on the preferred arrangement, see MPEP 608.01(a))
4. **Drawing(s)** (35 U.S.C. [Total Sheets 13])
5. Oath or Declaration [Total Sheets 1]
 - a. Newly ~~executed~~ ^{unexecuted} (original or copy)
 - b. Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
 - i. **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. **Application Data Sheet.** See 37 CFR 1.76
7. **CD-ROM or CD-R** in duplicate, large table or Computer Program *(Appendix)*
 - Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
(if applicable, items a. - c. are required)
 - a. Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. CD-ROM or CD-R (2 copies); or
 - ii. Paper
 - c. Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. **Assignment Papers** (cover sheet & document(s))
Name of Assignee _____
10. **37 CFR 3.73(b) Statement** **Power of Attorney**
(when there is an assignee)
11. **English Translation Document** *(if applicable)*
12. **Information Disclosure Statement** (PTO/SB/08 or Copies of foreign patent documents, publications, & other information)
13. **Preliminary Amendment**
14. **Return Receipt Postcard** (MPEP 503)
(Should be specifically itemized)
15. **Certified Copy of Priority Document(s)**
(if foreign priority is claimed)
16. **Nonpublication Request** under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
17. Other: **Transmittal Letter (2 sheets)**

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

Continuation Divisional Continuation-in-part (CIP) of prior application No.: 11/633,142

Prior application information: Examiner Temica M. Beamer Art Unit: 2617

19. CORRESPONDENCE ADDRESS

The address associated with Customer Number: 27614 OR Correspondence address below

Name				
Address				
City	State	Zip Code		
Country	Telephone	Email		

Signature 	Date <u>5/22/08</u>	Registration No. (Attorney/Agent) 45,786
Name (Print/Type) Scott H. Kaliko		

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Michael E. Shanahan
 Serial No.: Not Yet Assigned
 Filed: 05/23/2008
 Title: METHODS AND APPARATUSES FOR PROGRAMMING USER-
 DEFINED INFORMATION INTO ELECTRONIC DEVICES

Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22213-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97 and 1.98, and in accordance with MPEP §§ 2001 and 2002, applicant hereby makes the documents listed below of record in the above-identified application.

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International Preliminary Report on Patentability issued March 25, 2002, issued in connection with International Patent Application No. PCT/US00/32920 (copy included)

International Written Opinion of the International Searching Authority mailed November 21, 2001, issued in connection with International Patent Application No. PCT/US00/32920 (copy included)

SGS Thompson Microelectronics ST 5092 Datasheet, June 1997, pp. 1-29

Related Cases

Applicant again draws the Examiner's attention to the following related cases that share a common specification with this case. These cases may be considered to have claims substantially similar to, and

thus are material to, the patentability of the claims in this case. Furthermore, the cases below have rejected over the same or similar prior art as this case.

U.S. Patent No. 6,496,692
 U.S. Patent No. 7,149,509
 U.S. Patent No. 7,257,395
 U.S. Patent No. 7,289,798
 U.S. Patent No. 7,295,864
 U.S. Patent No. 7,319,866
 U.S. Patent Application No. 09/518,846 (abandoned)
 U.S. Patent Application No. 10/354,232 (abandoned)
 U.S. Patent Application No. 10/603,285 (pending rejection)
 U.S. Patent Application No. 11/633,122 (pending)
 U.S. Patent Application No. 11/006,474 (abandoned but we are petitioning to revive)
 U.S. Patent Application No. 11/633,142 (pending)
 U.S. Patent Application No. 11/633,135 (pending)
 U.S. Patent Application No. 12/027,484 (pending)

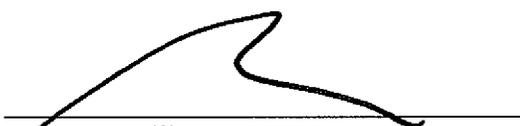
It is respectfully requested the Examiner fully consider these and any associated documents during the examination of this application, make them of record, and indicate his or her consideration of the documents by initialing the enclosed Citation List adjacent the citation of each document, and print them on any patent that may issue on this application. It is requested that a copy of the initialed Citation form be returned to the applicant's undersigned Attorney.

As this application was filed after June 30, 2003 copies of cited patents and applications are not required, and are therefore not included.

Respectfully submitted,

Date

5/29/08


 Scott H. Kaliko
 Attorney for Applicant
 Registration No. 45,786

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 851 649 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
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(21) Application number: 97660144.3

(22) Date of filing: 16.12.1997

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(30) Priority: 30.12.1996 FI 965265

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(54) Programming of a telephone's ringing tone

(57) The present invention relates to a method for programming a ringing tone of a telephone, wherein, in the telephone, the ringing tone is stored in a ringing tone memory and reproduced by means of sound reproduction devices as a response to an incoming call. In the method, the ringing tone is transformed into characters containing specifications of notes and the characters are sent to the telephone, e.g., in a short message. In the telephone, the received characters are modified into such a form that they can be stored in a memory.

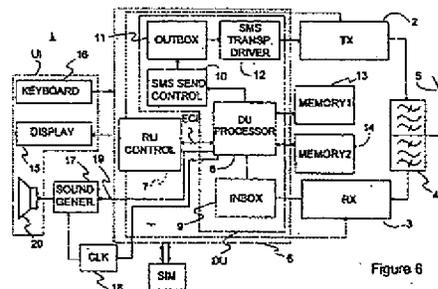


Figure 6

Description

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[0001] The present invention relates to a method for programming a telephone's ringing tone, wherein, in the

telephone, the ringing tone is stored in a ringing tone memory and reproduced by means of sound reproduction means as a response to an incoming call. The invention also relates to a mobile station and a mobile communications system, which comprises a mobile communications network and at least one mobile station for wireless communication and the system having means for transmitting and receiving speech, a memory for storing a ringing tone and means for reproducing the ringing tone as a signal of an incoming call.

[0002] Mobile phones have originally had ringing tones similar to ordinary telephones, which have mainly resembled the ringing of a clock. When a mobile phone of a specific make and model had one fixed ringing tone problematic situations occurred, when two users in the same space had the same type of mobile phone and, thus, the same kind of ringing tone, in which case it was confusing as to whose phone was actually ringing. This problem has been solved by making the ringing tone dependent on either the user's own telephone number or the telephone number of a caller. However, the ringing tones produced on the basis of two almost identical telephone numbers may sound so much alike, that it is difficult to distinguish one ringing tone from the other. In addition, by producing a ringing tone on the basis of a telephone number, ringing sound effects with different tones are mainly achieved, which may even annoy the user, i.e., the user is not allowed to select a ringing tone to his/her liking.

[0003] This problem has been solved further as mobile phones have become more advanced. Currently, mobile phones normally have several pre-stored ringing tones from amongst which the user may select the preferred ringing tone. In addition to ordinary ringing tones, melodies from familiar pieces of music have been implemented as ringing tones by means of modern technology, and they are also amongst the ringing tones to choose from. With the enormous increase in the use of mobile phones, it has turned out that even as many as ten different ringing tones in a mobile phone are not enough to solve the problem of several mobile phone users thinking that it is their phone ringing, when someone else's phone is ringing. In addition, it may be that the user does not like any of the pre-stored ringing tones. Ordinary telephones, which have a limited number of different types of ringing tones, often present a similar problem.

[0004] This situation has been improved by enabling ringing tones to be programmed by means of a user interface of a telephone or other communication device. One solution has been presented in Patent US 4 866 766, wherein a user can input in a telephone different kinds of parameters, which define a ringing tone sequence, in the form of a pulse, such as frequency, pulse length, the number of pulses in a group, period between pulses, the number of pulse groups etc. These parameters are input as different numbers. Another kind of solution has been presented in Publication WO 92/03891, wherein a ringing tone of a paging device can be programmed by switching on or illuminating specific pixels on a matrix display. The position of the pixels in the vertical direction corresponds to a specific pitch of a note (E, F, G, A, H, C, D) and the duration of a note is determined according to the successive pixels. Another corresponding solution has been presented in Publication EP 684 591 A1, wherein it is possible to program, on a display of a paging device, a ringing tone so that the pitch of a note is displayed on the display as a letter symbol (DO, RE, MI, FA, SO, LA, TI) and the duration of a note can be modified as a sequence of a number of the same letter symbols. Due to the defects of the solutions presented above, regarding the programming of a ringing tone, a solution has been presented in Finnish Patent Application 960858, submitted on 23 February 1996, wherein it is possible, e.g., to program a ringing tone as notes by inputting the notes graphically on a staff, displayed on a display, directly in the form of graphic notes.

[0005] However, the programming of ringing tones through a user interface has its disadvantages. A user has to take the trouble to input different kinds of parameters, characters or notes in different ways. In addition, in many of the examples presented above, the user is supposed to have a knowledge of music theory in order to produce a specific melody in his/her telephone.

[0006] To facilitate the programming of a ringing tone, a solution has been presented in Patent US 4 868 561, wherein an owner of a paging device can obtain a new ringing tone for the paging device by air. This is accomplished so that the owner of the paging device phones a paging system operator, informs the identifier of the paging device (telephone number) and selects a desired ringing tone from a catalogue he/she already has and informs the paging system operator the identifier of the ringing tone in question. In this case, a paging transmitter first prepares the paging device for the changing of the ringing tone by sending the paging device a message of the changing of the ringing tone and, after that, the paging transmitter sends a ringing tone sequence, whereupon the paging device replaces the ringing tone sequence stored in the memory with the new ringing tone sequence received by air.

[0007] A disadvantage of the solution for programming a ringing tone, as presented above, is that a user must separately contact a paging transmitter that operates different ringing tones, and the user can only obtain those ringing tones found at the paging transmitter and in the user's catalogue, and the identifier of which is thus known to him/her. In addition, the paging device cannot simultaneously receive a paging message, because the transmission of a ringing tone sequence keeps the channel engaged at that moment. Correspondingly, a disadvantage is that only the paging system operator is capable of implementing the programming, i.e., transmitting the ringing tone sequence by air. In addition, the paging device (its ringing tone memory) must first be prepared for the changing of the ringing tone, which requires an additional transmission.

[0008] Another solution concerning sending audio over the air has been disclosed in publication WO 96/06417, which discloses a paging system in which the transmitter may include an audio composition in a paging message sent to a pager. Upon receipt of the message at the pager, the pager provides a normal audio alert and when the user reads the message, the message data is shown on the display and the audio composition that was included in the message is reproduced by an audio transducer for enhancing the presentation of information by blending audio and visual information. The publication does, however, not suggest programming of the audio alert, i.e. the ringing tone of the pager.

[0009] The present invention comprises a device and a method therefor, for programming a ringing tone, which increases the possibility of programming a ringing tone. In the method, the ringing tone is sent to a mobile station in the form of a ringing tone message including an identifier identifying the message as a ring tone and, in reception, the ringing tone message is identified on basis of the ring tone identifier, whereafter it is modified into a suitable form for a ringing tone generator and memory. The ringing tone is preferably transmitted by means of wireless communication. In this case, the ringing tone can be sent directly to the receiving device without any pre-warming and without first preparing the ringing tone memory for the incoming ringing tone. The ringing tone can be sent as a mobile data call through a voice channel or apart from the voice channel. Apart from the voice channel, the ringing tone can be sent as characters in a short message, in USSD (Unstructured Supplementary Service Data) or by means of an off-line infrared link, e.g., of IrDa type. The USSD has been specified in more detail in GSM specifications, e.g., in the following documents: TS GSM 02.04, TS GSM 02.30, TS GSM 02.90, TS GSM 03.38, TS GSM 03.40. A mobile station according to the present invention has means for detecting a ring tone identifier in the message and for modifying a received ringing tone message for a ringing tone generator and a ringing tone memory. Correspondingly, the mobile station according to the present invention may have means for modifying a ringing tone, stored in a ringing tone memory, so that it can be sent to a second mobile station. For transmission the mobile station has means for adding a ring tone identifier in the message. The ringing tone is preferably sent as note data, in which case, in reception, the note data are modified into notes that specify the ringing tone.

[0010] The present invention concerns a mobile communications systems with mobile stations and a mobile station for wireless communication, which have means for transmitting and receiving speech, a memory for storing a ringing tone, and means for reproducing the ringing tone as a signal of an incoming call, and being characterised in that they comprise means for modifying the ringing tone, stored in the memory, into characters and for sending said characters, and means for sending said characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

[0011] Also the present invention concerns a mobile communications system with mobile stations and a mobile station for wireless communication, which have means for transmitting and receiving speech, a ringing tone memory for storing a ringing tone, and means for reproducing the ringing tone as a signal of an incoming call, being characterised in that they comprise means for receiving messages with characters, means for detecting a ringing tone identifier in a received message informing the message is a ringing tone, means for receiving a ringing tone as characters, and means for modifying said characters into a form for being stored in the ringing tone memory.

[0012] Further the present invention concerns a method for programming a ringing tone of a telephone, wherein a ringing tone is stored in a memory and reproduced by means of sound reproduction means as a response to an incoming call, and the method being characterised in that the ringing tone is modified into characters and sent to the telephone as characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

[0013] Yet the present invention concerns a terminal for data transmission, the terminal comprising a ringing tone memory for storing a ringing tone and means for transmitting the ringing tone, characterised in that it comprises means for transforming the ringing tone into characters and for sending said characters, and means for sending said characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

[0014] In a first embodiment of the invention, a ringing tone is sent as characters in a short message. When the ringing tone is sent to a mobile station in a short message, the message does not keep a voice channel engaged and, thus, a user can be talking on the mobile station at the same time. The short message is stored in a memory on a transmission channel, in which case the ringing tone will be transmitted to the mobile station even if the mobile station is engaged or switched off during transmission.

[0015] A ringing tone can also be sent in a short message from a computer through the Internet. Thus, users of a mobile station can send ringing tones to each other. The ringing tone is preferably sent as note data in the form of characters in a short message. A receiving mobile station receives the short message as an ordinary short message, no pre-warming of the incoming message is required. The short message has a predetermined identifier on the basis of which the receiving mobile station identifies it as a ringing tone and stores it in a ringing tone memory. In addition, in a mobile station according to the present invention, it is preferably possible to program by oneself ringing tones by means of a user interface, in which case users can send each other ringing tones programmed by themselves or other ringing tones stored in the mobile station's memory. Thus, the received ringing tone, stored in the memory, can also be modified by means of the user interface.

[0016] The invention simplifies the programming of a ringing tone, when a user of a mobile station does not have to perform operations in order to obtain a new ringing tone, i.e., it is neither necessary to program the ringing tone by means of a user interface nor to prepare the mobile station for receiving the ringing tone, but they can be received directly by means of wireless communication. In addition, the invention increases the possibilities of programming a ringing tone, when the user can receive ringing tones from a second user. As the ringing tone message includes a ringing tone identifier, reception of the ringing tone is easy, as the mobile station will itself identify the received message as a ringing tone without necessity of the user to be involved.

[0017] In the following, the invention will be discussed in detail by referring to the enclosed drawings, in which

Figure 1

illustrates the flow of a short message from a mobile station to a second mobile station,

Figure 2

illustrates connections of a mobile communications system to a short message service centre

Figure 3

illustrates a user interface of an ordinary mobile station,

Figure 4a

illustrates segmenting of a message into frames in transmission,

Figure 4b

illustrates reconstruction of a message in reception,

Figure 5

illustrates a structure of a short message frame,

Figure 6

illustrates implementation and operation of a mobile station, according to the present invention, when transmitting a ringing tone and receiving a short message ,

Figure 7a

illustrates notes produced on a display of a mobile station according to the present invention, and

Figure 7b

illustrates an example of a display of a mobile station for producing a ringing tone.

[0018] In order to understand the first embodiment of the invention, the transmission and reception of a short message

will be discussed in the following.

[0019] In digital mobile communications systems, as in the GSM system, in addition to calls and data transmission, it is also possible to send short text messages, so-called short messages. In the GSM system, this is known as the SMS (Short Message Service). By means of a mobile station, text messages can be both received from and transmitted to a second mobile station. One of the advantages of the short message service of the GSM system is also that a short message can be sent or received at the same time as an ordinary circuit-coupled communication is open, e.g., during a call. Thus, the transmission of a short message does not keep the mobile station engaged in case of a possible incoming call.

[0020] The advantage of short messages as compared to telephone calls is that they can be sent to a receiver although the receiver cannot be contacted at the time the message is being transmitted. This has been implemented by dividing the transmission of the short message, from a first mobile station to a second mobile station, into two parts as illustrated in Figure 1: from a transmitting mobile station MS1 to a SM-SC (Short Message Service Centre), wherein the short message is stored and sent further to the actual destination, i.e., to a receiving mobile station MS2, as soon as contacted. In Figure 2, the connection of the short message service centre SM-SC to a mobile communications system has been illustrated in more detail. In the following, the transmission and flow of short messages between different interfaces will be discussed by referring to Figures 1 - 5.

[0021] Figure 2 illustrates the structure of a mobile communications system and connections for transmitting short messages. Mobile stations MS are connected to base stations BTS by means of radio communication. The base stations BTS are further connected, through a so-called Abis interface, to a base station controller BSC, which controls and manages several base stations. The entity formed by a number of base stations BTS (typically, by a few dozen base stations) and a single base station controller BSC, controlling the base stations, is called a base station system BSS. Particularly, the base station controller BSC manages radio communication channels and handovers. On the other hand, the base station controller BSC is connected, through a so-called A interface, to a mobile services switching centre MSC, which co-ordinates the formation of connections both from and to mobile stations. A further connection is made, through the mobile service switching centre MSC, to outside the mobile communications network. The aforementioned short message service centre SM-SC is coupled to the mobile services switching centre MSC.

[0022] When a user wants to send a short message by means of the mobile station MS1 (Figure 1), he/she writes or retrieves from the memory a message to be transmitted (using a user interface of the mobile station) and gives the phone number of a mobile station MS2, i.e., an identifier of the mobile station MS2, whereto the message is going to be transmitted. In addition, the mobile station should have the contact information, i.e., the phone number of the short message service centre SM-SC. Normally, this has been stored in the memory of the mobile station, in which case it is not necessary to separately input the phone number in connection with the sending of each short message. Thus, when sending a short message, the message goes from the mobile station MS to the base station BTS, and from there, through the base station controller BSC and the mobile services switching centre MSC, further to the short message service centre SM-SC. The short message is stored at the short message service centre SM-SC, wherefrom it will be sent further to the receiving mobile station MS2, in which case the route of the message is the same as in transmission, but in the opposite direction. The short message service centre SM-SC will be informed whether or not the mobile station MS2 has received the short message. Thus, it can re-send the short message, if the mobile station MS2 has not received it for some reason.

[0023] In addition, short messages can be sent from a PC. In this case, the mobile services switching centre MSC is in connection with a server GTW (Gateway), which is in connection with the Internet. In this case, the PC that is in connection with the Internet can download from the Internet, for the transmission of the short message, a WWW page (World Wide Web), which can be found, e.g., at the server GTW. On this WWW page, the user inputs the telephone number of the receiving mobile station MS2 and the message to be transmitted, whereupon the message can be sent from the PC, in which case it goes through the Internet and the server GTW to the mobile services switching centre MSC and further to the short message service centre SM-SC, wherefrom the message is further directed to the receiving mobile station MS2 through the mobile communications network.

[0024] By means of the short message service SMS of the GSM system, it is possible to send, at a time, a message the

maximum length of which is 160 characters. The characters are seven-bit ASCII (American National Standard Code for Information Interchange) characters and, therefore, the maximum length of a message in bits is 1,120 bits, i.e., 140 bytes. Ordinary mobile stations, as the one illustrated in Figure 3, have a small display and an advanced keyboard by means of which it is possible to write short messages, i.e., input different types of alpha-numeric characters. The received message is displayed on the display of the mobile station, which enables alpha-numeric characters to be displayed, as illustrated in Figure 3.

[0025] As is well known, transmissions in the GSM system have been divided into frames. When the length of a message to be transmitted exceeds the permissible maximum length of a frame FR, the message M must be segmented into parts M1 - M4, and sent in several frames FR1 - FR4, as illustrated in Figure 4a. In reception, the mobile station reconstructs the message M, divided into several frames FR1 - FR4, as illustrated in Figure 4b. At a radio interface (Figure 2), the maximum length of a frame is normally 168 or 184 bits and, therefore, a short message, the maximum length of which is 1,120 bits, must be segmented into several frames. Figure 5 illustrates a frame, a so-called LAPDm frame (Link Access Protocol for the Dm channel), to be transmitted at a radio interface, which has normally been divided into three fields. The first field is an address field ADD, which contains the address of the destination of the message (i.e., a receiving mobile station identifier), given in several bytes. In the GSM system, signalling messages are also transmitted within corresponding LAPDm frames. In radio communication, there can simultaneously be two message flows independent of each other: signalling messages and short messages. These two different flows are separated from each other by means of a link identifier, a so-called SAPI (Service Access Point Identifier) to be added to the address field ADD. Its value can be 3, indicating signalling, or 0, indicating a short message. The second field is a control field CTRL, which contains the sending frame and receiving frame numbers N(S) and N(F). The third field is a data field INFO, containing the actual information, which contains a maximum of 168 bits of information, i.e., the contents of the actual short message.

[0026] The transmission of each ringing tone has been identified by means of a specific character code, i.e., an identifier, in which case the receiving mobile station can process the received message directly into a ringing tone, as specified. The identifier has preferably been implemented by using ASCII characters in an information field of the short message transmission frame, i.e., in a field INFO (Figure 5), which contains the actual short message in characters. The identifier is an identifier agreed on in advance or an identifier formed in some other way, which both the transmitting and receiving device know to signify a ringing tone, e.g. a series of numbers 120 at the beginning of the short message. Because the ringing tone is transmitted in a short message, it can also be received by means of an ordinary mobile station, which does not support this type of ringing tone programming service, but is capable of transmitting and receiving short messages. By placing the ringing tone identifier in the field INFO, there is also the advantage that in an ordinary mobile station, which does not support this type of ringing tone programming service, but is capable of transmitting and receiving short messages, both the ringing tone identifier and the ringing tone in characters are displayed to a user. In addition, by means of this type of ordinary mobile station it is also possible to transmit a message, such as mentioned above, by first writing, on the message, the identifier of the ringing tone in question in characters, and the rest of the information, i.e., the ringing tone in characters, correctly divided. The reception of such a transmission by means of a mobile station, according to the present invention, will produce a fully received ringing tone.

[0027] Alternatively, the identifier of a short message containing a ringing tone is formed as a specific bit code in the address or control field of the short message (See Figure 5). Also in this case, the transmitted ringing tone can be received by an ordinary mobile station in characters, but the ringing tone cannot be stored in a ringing tone memory. In this case, this kind of ringing tone cannot be sent by means of the ordinary mobile station, although a user could input the characters otherwise correctly, unless it is changed so that it, by a specific command, adds said bit code, because otherwise the ordinary mobile station cannot inform the ringing tone identifier.

[0028] Instead of a ringing tone identifier being indicated as a character code in a short message (in data field INFO), it can be indicated in an address field ADD of the short message, in which case it is given in bits. A specific byte in the address field of the transmission frame of the short message is a so-called TP-Data-Coding-Scheme, which has been specified in the GSM specification GSM 03.40 and 03.38. The four least significant bits of the byte can be freely used, whereupon they can be used to indicate, according to the present invention, that the short message contains a ringing tone, e.g., by giving said bites b3 - b0, wherein b0 is the least significant bit of the byte, a value of 0000 or some other

value agreed on.

[0029] When the ringing tone is indicated in this way, it does not take the space reserved for the character length of the short message (max. 160 characters).

[0030] The ringing tone can be changed into characters and included in the short message as characters in the form of notes in the following way.

[0031] Notes in characters:

C, D, ..., G, A, H

Notes from A to G of a lower octave

c, d, ..., g, a, h

Notes from A to G of a higher octave

raises the preceding note a semitone (e.g., high)

b flattens the preceding note a semitone (e.g., dull)

[0032] Duration:

no character

basic length

- preceding note: half the basic length

+ preceding note: double the basic length

. preceding note: 1.5 times the basic length

.. preceding note: 1.75 times the basic length

[0033] A length character may be cumulative, e.g., a single character always contributes to the effect of the character preceding it. For example, C+ means three times the basic length, C--- means 0.125 of the basic length.

[0034] Rests:

; rest; as long as the basic length

, rest; half the basic length

[0035] Other rests can be input by using characters modifying the length of a note together with rest characters.

[0036] As presented above, a ringing tone produced by notes can be coded in characters, which can be sent in a short message, whereupon, in reception, the received characters can be processed into the transmitted ringing tone, which can be stored in a ringing tone memory and reproduced when the phone rings. Thus, the method is particularly suitable for a device, wherein the ringing tone can be programmed as notes through a user interface or it has been pre-stored in a ringing tone memory as notes.

[0037] In addition to the specifications presented above, other factors related to a ringing tone and its specification can also be specified as characters, e.g., in the following way:

:ACD :X

,wherein X is an optional number (integral number), repeats a note sequence ACD X times, twice if X is missing

/X ACD /

,wherein X is an optional number (integral number), reduces the length of notes inside characters "/", e.g., by dividing by number X. Third notes, according to this specification, would be marked "/3 ACD /"

§

Inputs sharp and flat notes, e.g., for all notes inside parentheses, in which case it is not necessary to separately input character # or b for these notes.

(:)

Specifies repetitions, e.g., so that (5CD:2E:F) is played CDE CDE CDF CD CD.

!

Switches on/off a "staccato" music mode, e.g., until the following character, increases the length of a note by an appropriate percentage and reduces the proportion of a rest, thus accomplishing a fragmentary style without changing the overall time. In a computer simulation, increasing the length of a note by 50-60 % or even by 70 % sounds good still.

?

Switches on/off a separate notes function, e.g., until the following character, increases the length of a note for a minimum period of time and a rest lasts for the rest of the time producing music, where two same notes one after another can be heard as separate notes, unlike a "flowing" music mode, wherein preceding notes would be heard as a single note. A rest between notes must have the same duration. Notes that are shorter than the specified rests cannot be heard as separate notes. In a computer simulation, rests between notes that last for about 30 ms sound good by means of the separate notes function.

Raises a default octave. If the default octave is 1, raises it to 2, otherwise 1.

"

Lowers a default octave. If the default octave is 3, lowers it to 2, otherwise 3.

If it is assumed that there are 4 octaves in use, it is possible to use, as presented above, two octaves simultaneously by means of capital and small letters C..H, c..h.

X

raises all following notes X by one degree, wherein X is an integral number. Flattens, if X is a negative number.

[0038] Number (alone)

Specifies a tempo, beats per minute, e.g., how many notes of the basic length per minute.

[0039] Empty space to be ignored.

[0040] In addition, a ringing tone can be combined with some other message through a user interface, for example:

* a flashing light when the phone is ringing - switches the light on/off.

[0041] In the following, the implementation of a mobile station, according to the present invention, and its and operation in transmitting and receiving a ringing tone as a short message will be discussed in more detail by referring to Figure 6.

[0042] In Figure 6, there is a block diagram of the implementation of a mobile station according to the present invention. The mobile station is preferably a mobile station, which has circuits and a user interface that enable a ringing tone to be programmed. A mobile station 1 comprises, for communication using radio communication, a radio unit RU (the reference has not been marked in the figure), which comprises a transmitter branch 2, known from an ordinary mobile station, (comprising blocks implementing coding, interleaving, ciphering, modulating, and transmitting), a receiving branch 3 (comprising receiving, de-modulating, de-ciphering, de-interleaving, and implementing blocks) and, for transmission using radio communication, a duplex filter 4 that distinguishes between a received and transmitted message, as well as an antenna 5. The mobile station has a main control circuit 6 that controls its operation. Furthermore, the main control circuit 6 comprises still a RU controller 7 that carries out control functions of an

ordinary mobile station. In addition, the mobile station main control circuit 6 comprises blocks 8 - 12 for sending ringing tones as a short message according to the present invention. Thus, the blocks 8 - 12 can be said to form a data processing unit DU of the mobile station, which can also be formed in full by programming the main control circuit (processor) 6. The controls of the radio unit RU and the mobile stations' data processing unit DU do not have to be integrated into the main control circuit but, instead, they could also be implemented apart from each other, so that the RU control circuit 7 is on the radio unit's side, and on the data processing unit's side, there is the DU processor 8, which is in connection with the RU control circuit 7 for establishing communication between the radio unit and the data processing unit.

[0043] In the implementation illustrated in Figure 8, a first memory 13 is coupled to the main control circuit 6. The first memory can be a volatile memory, e.g., RAM, wherein the main control circuit stores in-use data. In addition, the mobile station has a second memory 14, which is preferably a permanent memory 14, wherein short messages, ringing tones and other data essential for the functioning of the mobile station, and any other data which a user wants to store permanently, are stored. Alternatively, the short messages can be stored off-line in a memory of an intelligent card, coupled to the mobile station, wherefrom there is a connection to the main control circuit 6. This type of intelligent card is known, e.g., from the GSM mobile communications system, as a SIM card (Subscriber Identity Module), which usually has storage, e.g., for storing telephone numbers.

[0044] The mobile station's user interface comprises a display 15, and for inputting data, a keyboard or other input device 16, such as a touch display.

[0045] In the case where the data processing unit DU and the radio unit RU are implemented as functionally independent units, both of them should, however, have either common or separate memories 13, 14, and a user interface UI. Communication between the units would be established by means of a connection between the DU processor 8 and the RU control circuit 7 which, in this connection, is referred to as an external control interface ECI.

[0046] In the following, we will discuss the operation of the mobile station, when transmitting ringing tones. By means of the user interface UI, the desired ringing tone is retrieved from the memory, in which case, on the basis of 16 commands from input devices, the control circuit 7 retrieves the ringing tone from the memory 14. When the user enters, by means of the input devices, a command to send the ringing tone, the DU processor 8 forms, from the ringing tone, a line of characters so that it places at the beginning of the line the ringing tone identifier, e.g., a series of numbers 120 (unless the identifier is given in the address field), then transforms the ringing tone into characters, e.g., to ASCII characters as presented above, and places the characters after the identifier. As presented above, a short message is sent by air in bits or as binary characters in frames. The DU processor 8 transforms the ASCII characters into binary characters. One way of implementing this transformation will be discussed later. Hence, the DU processor 8 comprises, for the processing of the characters, character transformation functions, which have been implemented programmably and stored in the memory 14, wherefrom the DU processor 8 retrieves the program and performs the functions according to the program. The DU processor 8 transfers the line of characters formed to a SMS transmission controller 10, which adds to the message address information, i.e., the information on the destination on the basis of the user input information. Thus, this type of SMS transmission controller is a kind of bit and/or character generator. The transformation of the ringing tone into characters is preferably implemented as an application program, stored in the memory 14, which is used by means of the DU processor 8.

[0047] When the address information has been added at the SMS transmission controller 10, the message is transferred into an inbox 11, which tries to send the message, and which has a buffer, wherein the message is stored in case the transmission fails. If the transmission fails, the inbox 11 re-tries to send the message. When the DU controller 8 notices that the radio unit RU is ready to send the message, the message is transferred to a message transfer running circuit 12, which adds to the message information relating to the mobile communications system in question, such as validity information (which indicates in which direction the message is going, i.e., from a mobile station to a message service centre or vice versa), processes the address information into a form required by the mobile communications system, and adds to the message the address of the message service centre, as well as the short message identifier (SAPI), and forms from the information to be transmitted, e.g., a digital signal for a transmitter 2, and sends the message to the radio transmitter branch 2 of the radio unit RU. In the case where the ringing tone identifier is placed in bits in the address field ADD, the running circuit 12 adds to the message the identifier in question. The transmitter branch 2 codes

the signal according to the specifications of the mobile communications system, and forms, on the basis of the signal it receives from the running circuit 12, the frames to be transmitted, which the transmitter sends using radio communication to the short message service centre SM-SC, wherefrom they are sent further to the receiver (see Figure 1). In the transmitter branch 2, the message is processed according to the mobile communications system, e.g., coding, interleaving, ciphering, burst forming, modulating, and transmission.

[0048] Operations according to blocks 8, 10 - 12 could also be carried out by means of a PC, which has a connection to a short message service centre, e.g., through the Internet. The operations 8, 10 - 12 could be carried out programmably by means of a computer processor, and different kinds of ringing tones can be stored in the computer's memory. In this case, it can be assumed that the block 12 is coupled to the computer outport or modem, wherefrom the Internet can be contacted and, thus, the message can be sent to the short message service centre, which transmits the short message to a receiving mobile station, as presented in Figure 2.

[0049] In the following, we will discuss the operation of the mobile station in receiving a ringing tone as a short message. When a communicator receives a ringing tone as a short message, the message first arrives at the radio unit RU. There, at a receiving branch 3, the processing of the message takes place according to the mobile communications system, such as reception, demodulating, de-ciphering, de-interleaving, and decoding. If the received frame identifier (SAPI) indicates that the message is a short message, it will be transferred into a destination box 9 of the data processing unit, which can be a memory for storing the message. The received short message can be stored in a memory located in the SIM card or in the mobile station's permanent memory 14. If the received message is an ordinary short message, the DU processor 8 will report the short message received. If the message has an identifier, which indicates that it is a ringing tone, the DU processor 8 will perform a transformation of the binary characters into ASCII characters and further the transformation of the ASCII characters into a ringing tone and store the ringing tone in the permanent memory 14. A person skilled in the art will understand that alternatively, the user may first be asked whether to accept or reject, i.e. whether to store in the permanent memory or not, the received ringing tone. In addition, error checking can be added to the transformation so that the DU processor checks whether the received sequence has any errors. If there are no errors, the ringing tone sequence is stored in the ringing tone memory 14 as a ringing tone, in which case the reception of the short message will be displayed to a user as a received ringing tone. If there were errors, the ringing tone sequence is not stored in the ringing tone memory, but only in the short message memory 14 as an ordinary short message. When the ringing tone has been successfully received, the DU processor 8 can launch the application for programming the ringing tone and displaying the ringing tone on the display as notes and to present the ringing tone as notes on the display 15 (if the mobile station has such an application).

[0050] In the following, we will discuss one way of transforming ASCII characters into binary characters. The ASCII characters can be presented as hexadecimal, which can be easily further transformed into binary numbers. In the following, we will present how the word "Calling" is transformed into a binary number. In the following, two numbers, in a hexadecimal form, correspond to the ASCII character, separated by a space, and each of the hexadecimal characters can be presented in four bits, i.e., in the following, each ASCII character is presented by means of 8 bits.

As ASCII characters:

C a l l i n g

In the hexadecimal form:

43 61 6C 6C 69 6E 67

In the binary form:

0100 0011 0110 0001 0110 1100 0110 1100 0110 1001 0110 1110 0110 0111

[0051] In the actual transmission, the characters are sent one after another without spaces, i.e., as an unbroken bit sequence. Thus, for each ASCII character, there is a specific hexadecimal and binary form, in which case the examples presented above for specifying notes by means of ASCII characters can be transformed into binary characters.

[0052] When the note specifications have been transformed into a ringing tone message in a binary form, it can easily be sent in an infrared signal by means of an infrared link or in USSD, wherein it can also be sent as characters as in

SMS. As is well known, it is possible to implement, in a mobile station, an infrared link for transmitting and receiving an infrared signal. Thus, in addition to radio parts 2 - 5, a mobile station, as illustrated in Figure 6, could have an infrared transmitter and receiver similarly connected to a main control circuit 6. For sending a ringing tone in the USSD, the necessary modifications can be implemented in transmission and reception blocks 2 and 3.

[0053] Another alternative for sending a ringing tone as characters is to first convert it into a MIDI form (Musical Instrument Data Interface), which is a well known communications language for instruments. This could be implemented by arranging, in a mobile station, a MIDI converter. The MIDI converter would preferably be located in the DU processor 8 which, in this case, in reception, would convert the characters, received in MIDI, into an appropriate form for the telephone's ringing tone generator and memory. Similarly, in transmission, the MIDI converter would convert the ringing tone into characters in accordance with the MIDI form. The MIDI converter would enable ringing tones to be composed, e.g., by means of computer-based composition programs supporting the MIDI form and, thus, the transmission of the produced melody from a computer to a mobile station, e.g., in a short message.

[0054] In the following, we will discuss, as an example, one way of implementing the application presented above for programming a ringing tone by means of a user interface, i.e., a way of programming ringing tones in a telephone as notes by referring to Figure 7b. In this exemplary implementation, a staff is produced on the display 15 of the mobile station, whereon, by means of a menu and keys 30a and 30b, displayed on the display, desired notes can be selected and placed in the desired place on the staff, displayed on the display, by means of a cursor moved by keys. The display illustrated in Figure 7b can be implemented in a mobile station with a larger display or, equally, a graphic staff can be implemented on a display of the size of an ordinary mobile station, e.g., on a matrix-type liquid crystal display.

[0055] In this exemplary implementation, from the menu to be displayed on the display through keys, the desired clef can be selected and, always at the place indicated by the cursor, a note can be placed, the duration and pitch of which (i.e., the position on the staff) can be changed by means of the keys 30a and 30b, and the menu. For example, to modify the duration of a note, a duration menu is accessed through the keys 30b, wherein, through the browse key 30a, an eighth note, a quarter note, a half note or a whole note or, correspondingly, an eighth rest, a quarter rest, a half rest or a whole rest can be selected on the staff. These notes have been illustrated in Figure 7a. Similarly, to modify the pitch of a note (the position of the note on the staff in the vertical direction), the position of the note on the staff can be raised by pressing the browse key 30a in one direction (the key pointing upwards), and the position of the note on the staff can be lowered by pressing the browse key 30a in the other direction (the key pointing downwards). In this way, it is possible to produce any desired note, e.g., rest, c, d, e, f, g, a, h, c^1 , d^1 , e^1 , f^1 , g^1 , a^1 , h^1 , c^2 , d^2 , e^2 , f^2 , g^2 , a^2 , or h^2 . Sharp (cis, dis, eis, fis, gis, ais, his, cis^1 , dis^1 , ..., cis^2 , dis^2 , ..., his^2) and flat (ces, des, es, fes, ges, as, b, ces^1 , des^1 , ..., ces^2 , des^2 , ..., b^2) notes can also be produced through the browse key 30a, in which case on the display, in front of the note, a symbol indicating either a sharp or flat note is produced, which have also been illustrated in Figure 7a. In this way, it is possible to produce, on the staff, the desired notes and rests one after another, e.g., so that the melody has a maximum of 60 successive notes. An example of a display of a mobile station, when it is in a melody-producing mode, has been illustrated in Figure 7b, which shows a staff, a clef, different notes, as well as a cursor (arrow), which indicates the place of the note, the length (duration) and pitch of which can be changed, in the same way as when selecting a note as presented above. On the staff, illustrated in Figure 7b, the third note and the fourth note from the left are examples of sharp (raised) notes.

As an alternative to producing tones on a staff by means of keys and a menu, the notes could be displayed as icons on the display, wherefrom they could be dragged and released (i.e., placed) in the desired place on the staff by means of a pointer moved by a so-called spin wheel or track ball. The use of the spin wheel or track ball could be avoided by using a touch display, in which case the icons in question could be placed on the staff by means of a finger or a pen.

[0056] In addition, by means of the user interface, a tempo could be set, e.g., beats per minute bpm, at which tempo the produced ringing tone (the melody written on the staff) is reproduced. In this case, the length of a fourth note in milliseconds is $t=1000.60/\text{tempo}$, in which case, if the tempo is 150 bpm, the length of the fourth note is 400 ms or 0.4 seconds. The tempo can be set in numbers, e.g., between 50...999 bpm. The tempo is preferably set by selecting, from the menu, a tempo command in which case the desired tempo can be input onto the display through keys.

[0057] As an alternative, the notes could be displayed on the display as letter symbols and/or programmed through an ordinary keyboard of a telephone comprising twelve keys (keys 0 - 9, * and #). In this case, each tone (a note or a rest)

can be produced through a specific key or as a combination of two keys. In this case, the pressing of one or two keys corresponds to a specific tone, the corresponding note of which can be displayed on the mobile station's display as a response to the pressing of the key (either as a letter symbol or as a note on a stave), as presented above, or the tone can be reproduced, as a response to the pressing of the key, through a speaker of the mobile station, in which case a user can hear it. The duration of the pressing of the key or, in the case where two successive presses are executed, e.g., the duration of the latter press is proportional to the length of the tone. In addition, the programming of a ringing tone could be implemented by inputting, through a user interface, characters, e.g., in a similar way as presented above for transforming the ringing tone for a short message.

[0058] In the following, we will discuss how to produce a ringing tone in a telephone by referring to Figure 6. A central unit 6 receives in a short message (or from a user interface UI, which comprises a keyboard 16 and/or a display 15, according to the methods presented above) tones (notes) selected by a user are received and stored in a memory 14 as a whole melody. When a call is coming in, according to the specifications of mobile communications systems, a message from a base station arrives first at the mobile station. This message is received from an antenna 5 to a receiver 3 of the mobile station, wherefrom the message arrives at the central unit 6. As a response to this, the central unit 6 gives a sound generator 17 a control signal 19. On the basis of the control signal, the sound generator 17 generates the ringing tone, which is a sequence of sounds with a specific frequency based on the melody specified by the notes. The central unit 6 produces the control signal by reading, from the memory 14, the ringing tone stored therein. Thus, the control signal 19 contains the information for the sound generator 17 specifying what kind of ringing tone it should produce for a ringing tone reproduction device 20, which can be a buzzer, a speaker or some other transformer that transforms the electric signal into sound. When a user answers the phone by pressing an answering key, the user interface UI gives a signal to the central unit 6 which, as a response to the pressing of the key, stops giving the sound generator the ringing tone control signal 19, whereupon the ringing tone stops.

[0059] As a sound generator 17, it is possible to use, e.g., a commercially available Codec ST5090 circuit, manufactured by SGS-Thomson, which includes a sound generator, which is capable of producing sounds between 15.6 Hz...3,984 Hz at 15.6 Hz intervals, i.e., 256 sounds each having a different frequency. The sound frequency is produced on the basis of an 8-bit signal, which indicates a number between 0 - 256, in which case number 1 of the control signal corresponds to step 1 of the sound generator, i.e., to a frequency of 15.6 Hz and, correspondingly, number 2 corresponds to a frequency of 31.2 Hz, etc. The tones presented above can thus be reproduced as sounds, e.g., according to the following frequencies (not necessarily exact values, order of magnitude given) and by means of the following control signals (bytes), brought to the sound generator, of which some have been presented below and the rest can be concluded by persons skilled in the art according to the principle presented above:

a = 880 Hz corresponding to step 56 of the sound generator, i.e., control byte '00111000' (more accurately, $56 \times 15.6 \text{ Hz} = 873.6 \text{ Hz}$), ais = 932 Hz, b = 988 Hz corresponding to the sound generator's step 63 or control byte '00111111' (more accurately, $63 \times 15.6 \text{ Hz} = 982.8 \text{ Hz}$), $c^1 = 1,047 \text{ Hz}$, $cis^1 = 1,109 \text{ Hz}$, $d^1 = 1,175 \text{ Hz}$, $dis^1 = 1,245 \text{ Hz}$, $e^1 = 1,319 \text{ Hz}$, $f^1 = 1,397 \text{ Hz}$, $fis^1 = 1,480 \text{ Hz}$, $g^1 = 1,568 \text{ Hz}$, $a^1 = 1,760 \text{ Hz}$, $ais^1 = 1,865 \text{ Hz}$, $h^1 = 1,976 \text{ Hz}$, $c^2 = 2,093 \text{ Hz}$, $cis^2 = 2,217 \text{ Hz}$, $d^2 = 2,349 \text{ Hz}$, $dis^2 = 2,489 \text{ Hz}$, $e^2 = 2,637 \text{ Hz}$, $f^2 = 2,793 \text{ Hz}$, $fis^2 = 2,960 \text{ Hz}$, $g^2 = 3,136 \text{ Hz}$, $gis^2 = 3,322 \text{ Hz}$ and $a^2 = 3,520 \text{ Hz}$ corresponding to the sound generator's step 226 or control byte '11100010' (more accurately, $226 \times 15.6 \text{ Hz} = 3,525.6 \text{ Hz}$).

[0060] The frequencies corresponding to tones c - a² and to their raised and flattened tones, have preferably been pre-defined in the mobile station (or, at least, the tones necessary for producing the ringing tone), e.g., stored in the memory 14. One byte is stored in the memory 14 for each tone or sound to be produced, in which case, if the melody is formed of 60 tones, 60 bytes will be stored in the memory. The central unit 6 retrieves these bytes from the memory 14 (12) and controls the sound generator 17 to produce the melody as the ringing tone. Said known codec circuit also has a clock entry and an internal clock signal generator which, in Figure 6, has been illustrated as an off-line clock generator 18, which controls the operation of the sound generator 17 according to a specific clock tempo. This clock tempo can be fixed, so that the tempo of the sound generator is set to, e.g., 150 bpm. The tempo can be specified in a short message or changed through the user interface. The set tempo is stored in the memory 14, and the sound generator 17 is controlled to generate sound at the set tempo on the basis of a signal it receives from the clock generator 18.

[0061] The central unit 6 identifies characters (or characters produced through the user interface UI) or pressing of

keys and processes them to a frequency corresponding to the character or press of the key in question, and stores, in the memory 14, the signal corresponding to the frequency in question, which is taken to the sound generator 17, when the ringing tone is reproduced.

[0062] Another method for producing a control signal for the sound reproduction device 20 is to use, as the sound generator, a counter, e.g., a 16-bit counter, so that it counts downwards from 65,535 to 0. When a sound is produced, the counter is released to count downwards from a pre-set figure. When the counter reaches 0, a pulse is produced, and the counter re-begins to count downwards from a pre-set figure. A sound is formed of a number of pulses. The counter counts from 65,535 to 0 in 1/18 seconds, in which case, a pulse wave corresponding to 18 Hz is produced. If, in this case, 4,096 is given to the counter as the pre-set figure (in which case, it counts from 4,096 to 0), a pulse wave having a frequency of $65,535/4,096.18 = 288$ Hz is produced. In this way, pulse waves with different frequencies between 18 Hz - 1.18 MHz can be produced. Pulse waves, produced in this way, can be used as a pulse-width modulation to be input into a sound reproduction device, such as a buzzer, which vibrates according to the pulse wave.

[0063] As is well known, a user may select, from current telephones, through a user interface, the ringing tone, stored in a ringing tone memory, he/she wants to be reproduced when the telephone rings.

[0064] The present invention enables new ringing tones to be obtained for a telephone quickly and in a simple way. It is not necessary for a user to program a ringing tone through a user interface or to take the telephone to a service outlet where a ringing tone would be loaded electronically. Neither is it necessary to prepare a ringing tone memory of the telephone, but ringing tones can be received directly by means of wireless communication. Similarly, the user can him/herself send ringing tones to a second mobile station. In addition, ringing tones can be transmitted to a mobile station, in a short message, from a computer which is in connection with a short message service centre, e.g., through the Internet.

[0065] This paper presents the implementation and embodiments of the present invention with the help of examples. It is obvious to a person skilled in the art that the present invention is not restricted to details of the embodiments presented above, and that the invention can also be implemented in another form without deviating from the characteristics of the invention. The embodiments presented should be considered illustrative, but not restricting. Thus, the possibilities of implementing and using the invention are only restricted by the enclosed patent claims. Consequently, the various options of implementing the invention as determined by the claims, including the equivalent implementations, also belong to the scope of the invention.

Claims

1. A mobile communications systems, which comprises a mobile communications network and at least one mobile station (MS) for wireless communication, the system having - means (TX, RX) for transmitting and receiving speech, - a memory (14) for storing a ringing tone, and - means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises means (8, 10 - 12) for modifying the ringing tone, stored in the memory (14), into characters and for sending said characters, and means (8) for sending said characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

- means (TX, RX) for transmitting and receiving speech,
 - a memory (14) for storing a ringing tone, and
 - means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises (8, 10 - 12) for modifying the ringing tone, stored in the memory (14), into characters and for sending said characters and means (8) for sending said characters with a ringing tone identifier identifying the transmission as a ringing transmission.

2. A mobile communications system, which comprises a mobile communications network and at least one mobile station (MS) for wireless communication, the system having - means (TX, RX) for transmitting and receiving speech, - a ringing tone memory (14) for storing a ringing tone, and - means (20) for reproducing the ringing tone as a signal of

an incoming call, **characterised** in that it comprises - means (9) for receiving messages with characters, - means (8) for detecting a ringing tone identifier in a received message informing the message is a ringing tone, - means for receiving a ringing tone as characters, and - means (8) for modifying said characters into a form for being stored in the ringing tone memory (14).

- means (TX, RX) for transmitting and receiving speech,
- a ringing tone memory (14) for storing a ringing tone, and
- means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises
- means (9) for receiving messages with characters,
- means (8) for detecting a ringing tone identifier in a received message informing the message is a ringing tone,
- means for receiving a ringing tone as characters, and
- means (8) for modifying said characters into a form for being stored in the ringing tone memory (14).

3. A mobile station (MS) for wireless communication, which has - means (TX, RX) for transmitting and receiving speech, - a ringing tone memory (14) for storing a ringing tone, and - means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises means (8, 10 - 12) for modifying the ringing tone, stored in the memory (14), into characters and for transmitting said characters, and means (8) for sending said characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

- means (TX, RX) for transmitting and receiving speech,
- a ringing tone memory (14) for storing a ringing tone, and
- means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises (8, 10 - 12) for modifying the ringing tone, stored in the memory (14), into characters and for transmitting said characters, and means (8) for sending said characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

4. A mobile station (MS) for wireless communication, the mobile station having - means (TX, RX) for transmitting and receiving speech, - a ringing tone memory (14) for storing a ringing tone, and - means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises - means (9) for receiving messages with characters, - means (8) for detecting a ringing tone identifier in a received message informing the message is a ringing tone, - means for receiving a ringing tone as characters, and - means (8) for modifying said characters into a form for being stored in the ringing tone memory (14).

- means (TX, RX) for transmitting and receiving speech,
- a ringing tone memory (14) for storing a ringing tone, and
- means (20) for reproducing the ringing tone as a signal of an incoming call, **characterised** in that it comprises
- means (9) for receiving messages with characters,
- means (8) for detecting a ringing tone identifier in a received message informing the message is a ringing tone,
- means for receiving a ringing tone as characters, and
- means (8) for modifying said characters into a form for being stored in the ringing tone memory (14).

5. A method for programming a ringing tone of a telephone, wherein a ringing tone is stored in a memory (14) and reproduced by means of sound reproduction means (20) as a response to an incoming call, **characterised** in that the ringing tone is modified into characters and sent to the telephone as characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

6. A method according to claim 5, **characterised** in that a ringing tone is sent to a telephone as characters containing specifications of notes.

7. A method according to claim 5, **characterised** in that, in a telephone, upon receiving a message and detecting a ringing tone identifier in the message, a ringing tone is received as characters and the characters are modified into such a form that they can be stored in a memory.

8. A method according to claim 5, **characterised** in that the characters are sent in a short message.

9. A terminal for data transmission, the terminal comprising a ringing tone memory (14) for storing a ringing tone and means for transmitting the ringing tone, **characterised** in that it comprises means (8, 10 - 12) for transforming the ringing tone into characters and for sending said characters, and means (8) for sending said characters with a ringing tone identifier identifying the transmission as a ringing tone transmission.

10. A terminal according to claim 9, **characterised** in that it comprises means for establishing a connection to a short message service centre of a mobile communications system and means (8, 10 - 12) for transmitting said characters in a short message through the short message service centre (SM-SC).

Drawing

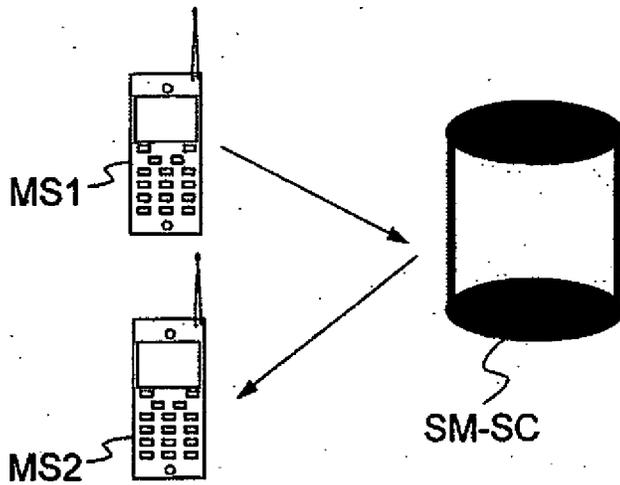


Figure 1

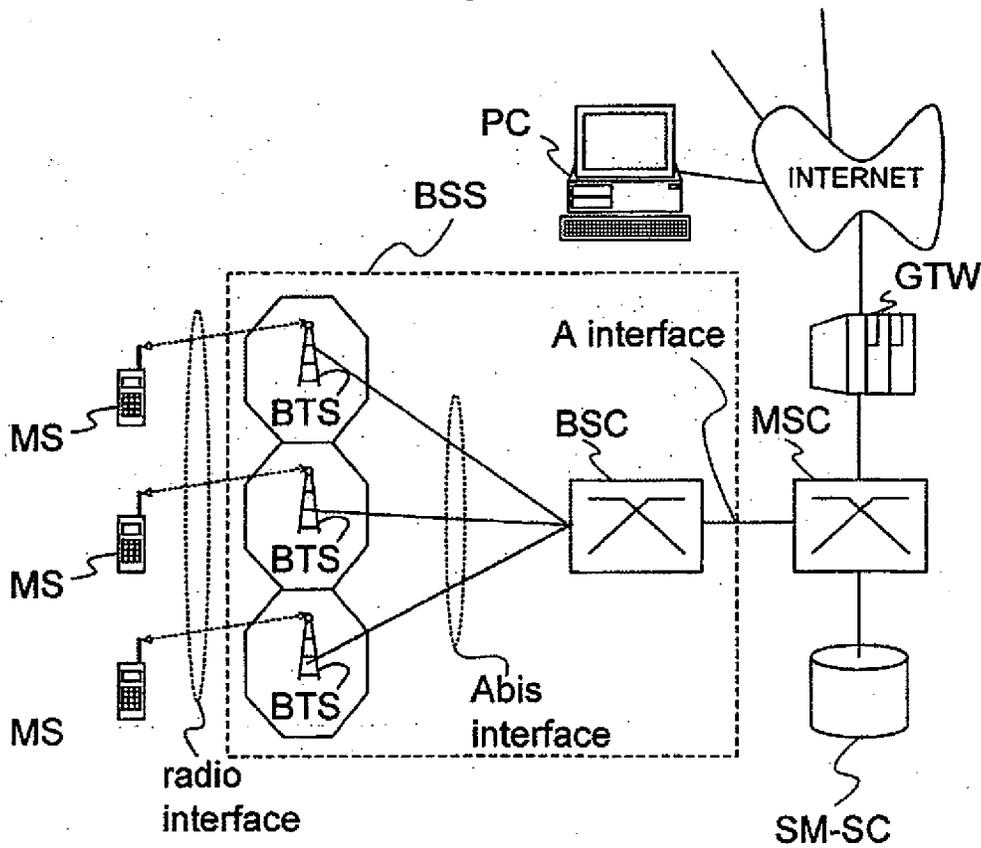


Figure 2

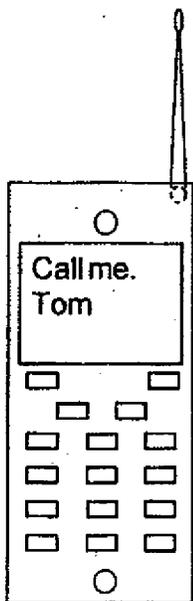


Figure 3

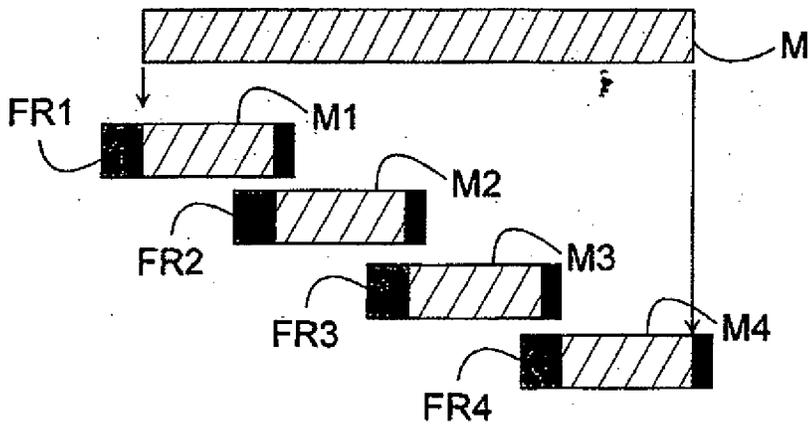


Figure 4a

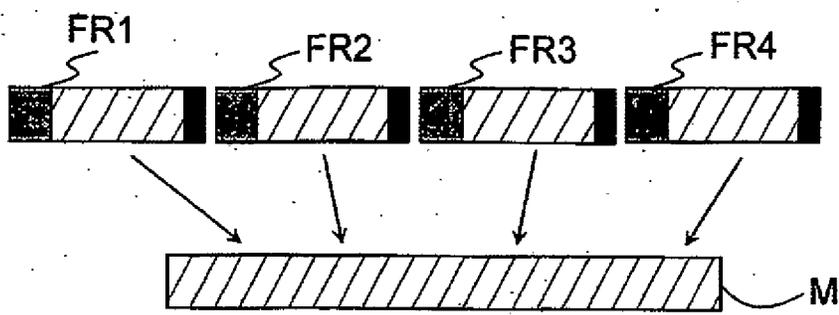


Figure 4b

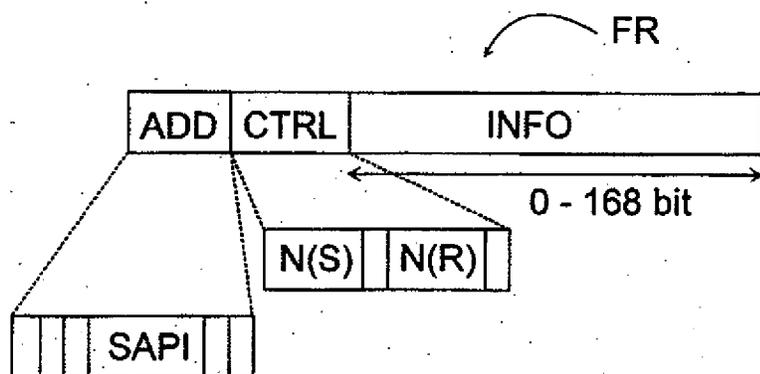


Figure 5

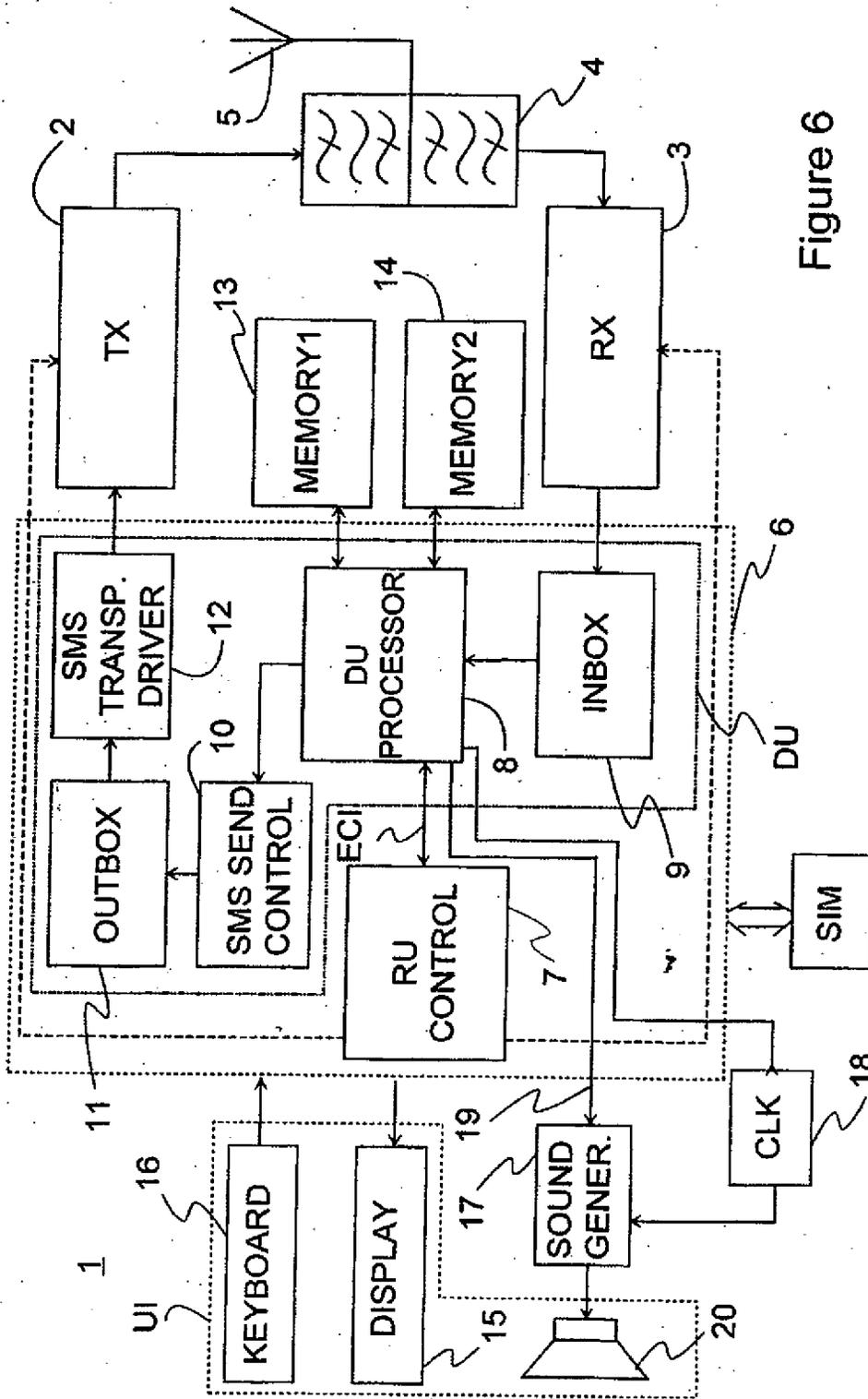


Figure 6

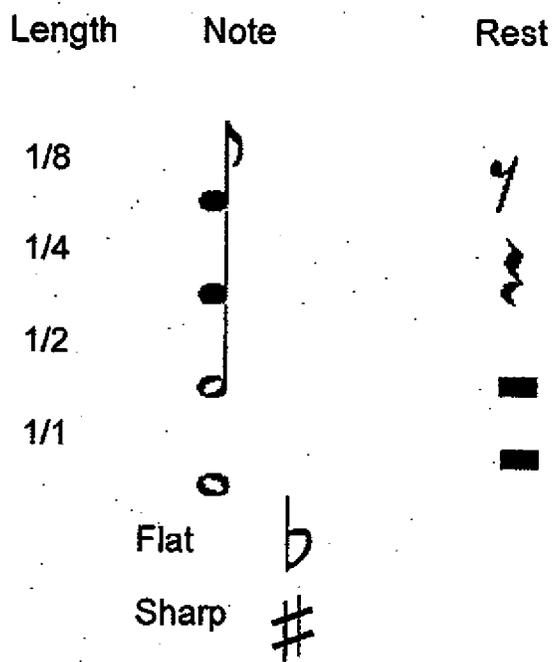


Figure 7a

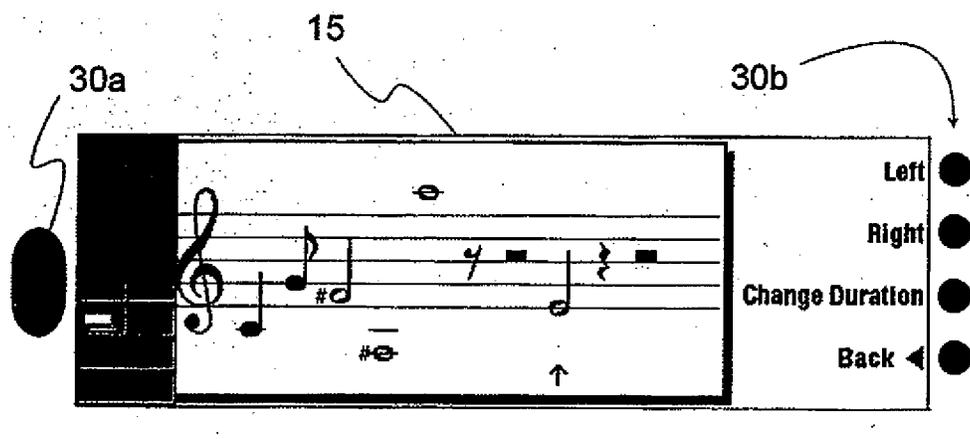


Figure 7b

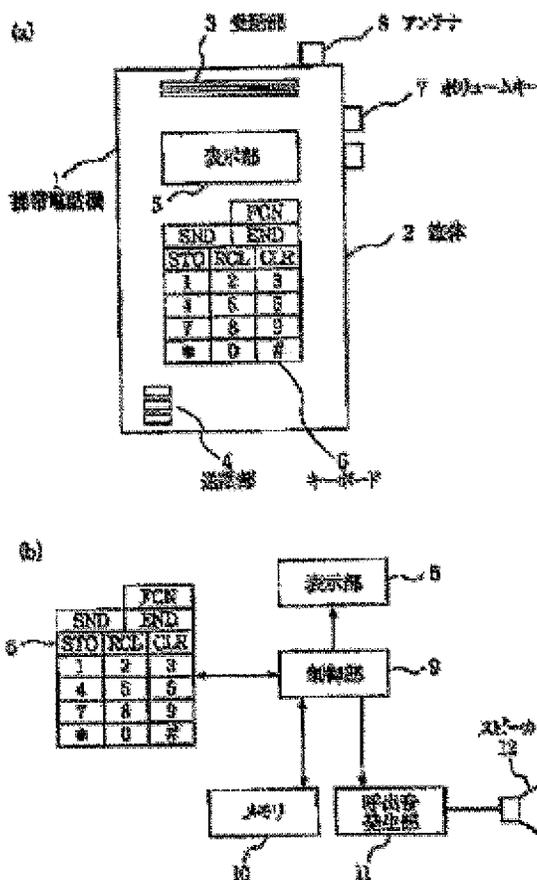
PORTABLE RADIO TELEPHONE SET

Publication number: JP9205471
Publication date: 1997-08-05
Inventor: TAMURA HIDEO
Applicant: NIPPON DENKI IDO TSUSHIN KK
Classification:
 - international: **H04M1/00; H04Q7/38; H04M1/00; H04Q7/38; (IPC1-7): H04M1/00; H04Q7/38**
 - European:
Application number: JP19960012005 19960126
Priority number(s): JP19960012005 19960126

Report a data error here

Abstract of JP9205471

PROBLEM TO BE SOLVED: To identify a call tone from a musical interval of another user upon the receipt of an incoming call by designating call tone patterns each consisting of plural selected tone scales and a ring time pattern in advance and storing the patterns. **SOLUTION:** A call tone pattern consists of a combination of data of musical interval, a ring tone time and a silent time for one period of a call tone. The user selects musical scales, ring and silent times among e.g. 4 kinds of combinations through a prescribed combined operation of plural function keys such as "*", "# keys and a ten-key on a key board 6 of the portable telephone set 1 to generate a desired call tone pattern. Plural call tone patterns are generated optionally and a 2-digit registration number is given to them and registered in a memory 10, and designates and sets one of them. Upon the receipt of an incoming call, a control section 9 reads designated tone color pattern data from the memory 10 and give the data to a call tone generating section 11 and allows a speaker 12 to sound the call tone.



Data supplied from the esp@cenet database - Worldwide

(51) Int.Cl. ⁶	識別記号	序内整理番号	F I	技術表示箇所
H 0 4 M	1/00		H 0 4 M	1/00 B
H 0 4 Q	7/38		H 0 4 B	7/26 1 0 9 L

審査請求 有 請求項の数 3 O L (全 6 頁)

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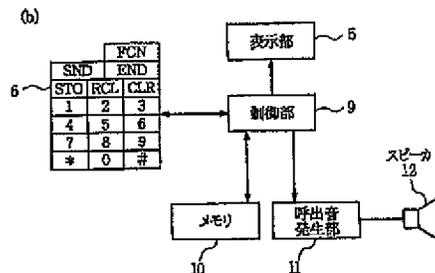
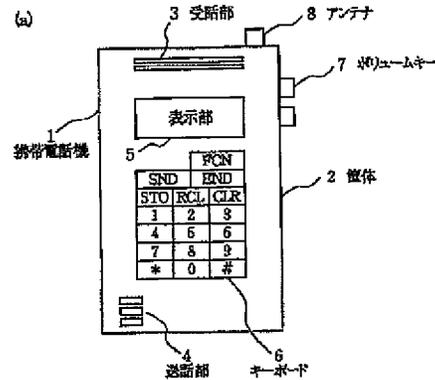
(74) 代理人 弁理士 京本 直樹 (外2名)

(54) 【発明の名称】 携帯無線電話機

(57) 【要約】

【課題】 着信時、他の利用者の呼出音と識別を明確にする。

【解決手段】 この携帯電話機1は、呼出音の音色パターンデータを入力するキーボード6と、キーボード6から入力された呼出音の音色パターンデータを記憶するメモリ10と、この携帯電話機1に着信があった時、メモリ10から音色パターンデータに従って呼出音を合成する呼出音発生部11と、呼出音発生部11で合成された呼出音を発生するスピーカ12と、この携帯電話機1全体を制御する制御部9とを有し、さらにメモリ10が記憶する呼出音の音色パターンデータは、あらかじめ定められた4種類の音程のデータと、呼出音の1周期での複数の鳴動時間と複数の消音時間とのデータとで構成されている。



【特許請求の範囲】

【請求項1】 複数の呼出音の音色パターンデータを発生して登録するデータ発生・登録手段と、登録された前記複数の呼出音の音色パターンデータのの一つを選択して記憶する記憶手段と、着信時に前記記憶手段に記憶された呼出音の音色パターンデータに基づいて呼出音を発生する呼出音発生手段とを備えることを特徴とする携帯無線電話機。

【請求項2】 複数の呼出音の音色パターンデータを入力するキーボードと、前記キーボードから入力された呼出音の音色パターンデータを記憶するメモリと、着信が有った時に前記メモリから音色パターンデータに従って呼出音を合成する呼出音発生部と、前記呼出音発生部で合成された呼出音を発生するスピーカと、この携帯無線電話機全体を制御する制御部とを有することを特徴とする携帯無線電話機。

【請求項3】 前記メモリが記憶する前記複数の呼出音の音色パターンデータは、あらかじめ定められた4種類の音程のデータと、呼出音の1周期での複数の鳴動時間と複数の消音時間とのデータとで構成されることを特徴とする請求項2記載の携帯無線電話機。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は携帯無線電話機に関する。

【0002】

【従来の技術】従来の携帯無線電話機は、予め設定された複数の呼出音のパターンの一つが利用者によって選択され、着信時にその選択された呼出音で利用者に通報していた。(特開平3-213033号公報参照)

【発明が解決しようとする課題】この従来の携帯無線電話機は、予め設定された複数の呼出音のパターンから一つを利用者によって選択するようになっていて、利用者が多ければ多いほど、着信時自分の呼出音かどうか判らない場合があり、また、呼出音を限られた固定パターンからしか選択できないという問題点があった。

【0003】

【課題を解決するための手段】本発明の携帯無線電話機は、複数の呼出音の音色パターンデータを発生して登録するデータ発生・登録手段と、登録された前記複数の呼出音の音色パターンデータのの一つを選択して記憶する記憶手段と、着信時に前記記憶手段に記憶された呼出音の音色パターンデータに基づいて呼出音を発生する呼出音発生手段とを備えている。

【0004】本発明の携帯無線電話機は、複数の呼出音の音色パターンデータを入力するキーボードと、前記キーボードから入力された呼出音の音色パターンデータを記憶するメモリと、着信が有った時に前記メモリから音色パターンデータに従って呼出音を合成する呼出音発生部と、前記呼出音発生部で合成された呼出音を発生する

スピーカと、この携帯無線電話機全体を制御する制御部とを有し、さらに、前記メモリが記憶する前記複数の呼出音の音色パターンデータは、あらかじめ定められた4種類の音程のデータと、呼出音の1周期での複数の鳴動時間と複数の消音時間とのデータとで構成されている。

【0005】

【発明の実施の形態】次に、本発明について図面を参照して説明する。

【0006】図1は本発明の一実施の形態を示し、(a)は本実施の形態の正面外観図、(b)は本実施の形態における呼出音発生部分を示すブロック図である。

【0007】図1の(a)及び(b)において、本実施の形態の携帯電話機1は、複数の呼出音の音色パターンデータを入力するキーボード6と、キーボード6から入力された呼出音の複数の音色パターンデータを記憶するメモリ10と、携帯電話機1に着信が有った時、メモリ10から音色パターンデータに従って呼出音を合成する呼出音発生部11と、呼出音発生部11で合成された呼出音を発生するスピーカ12と、携帯電話機1全体を制御する制御部9とを有し、さらに、メモリ10が記憶する呼出音の音色パターンデータは、あらかじめ定められた4種類の音程のデータと、呼出音の1周期での複数の鳴動時間と複数の消音時間とのデータとで構成されている。

【0008】図2は本実施の形態における複数の呼出音の作成とその登録の手順を示すフローチャートである。

【0009】次に、本実施の形態における複数の呼出音の作成とその登録の方法について、図1、図2を参照して説明する。

【0010】呼出音を作成する場合には、キーボード6の“FUNキー”を押下し(S21)、次に“STOキー”を押下し(S22)、次に、呼出音の4種類の音程(周波数)の一つを選択するために“1”～“4”のキーの内の一つを選択する(S23)。次に、再び“FUNキー”を押下し(S24)、次に“*キー”を押下した後(S25)、呼出音の4種類の鳴動時間(ON時間)を設定するために“1”～“4”のキーの内の一つを選択する(S26)。

【0011】次に、“#キー”を押下した後(S27)、呼出音の4種類の消音時間(OFF時間)を設定するために“1”～“4”のキーの内の一つを選択する(S28)。

【0012】以上で呼出音パターンデータが作成されたことになったので、この作成した呼出音パターンデータをメモリ10に登録するために、まず、“STOキー”を押下し(S29)、作成した呼出音パターンデータの登録番号として“1”～“9”のキーの一つ又は2桁を押下し(S30)、最後に再び“STOキー”を押下(S31)することによって一つの呼出音パターンデータのメモリ10への登録動作が完了する。

【0013】他の呼出音パターンデータを作成する場合には、上記の内、S23での音程設定（周波数設定）、S26での鳴動時間設定（ON時間設定）及びS28での消音時間設定（OFF時間設定）を可変することにより、最大 $4 \times 4 \times 4 = 64$ 種類の呼出音パターンデータの作成が可能である。

【0014】図3は本発明の形態における作成登録した呼出音の一つを選択して使用設定する手順を示すフローチャートである。

【0015】次に、本実施の形態における着信時に使用する呼出音の設定について図1及び図3を参照して説明する。

【0016】まず、キーボード6の中の“FNUキー”を押下し（S41）、呼出設定コードとして例えば“45”とすると、“4”キーの押下後（S42）、“5”キーを押下し（S43）、上記呼出音パターンデータ作成時のそれぞれの呼出音に対する登録番号（“1”～“9”）の内一つの番号キーを選択して押下する（S45）ことによって、選択した呼出音パターンデータがメモリ10の呼出音設定エリアに記憶される。

【0017】本実施の携帯の携帯電話機1に着信があると、制御部9はメモリ10内の呼出音設定エリアの中の呼出音パターンデータを読出して呼出音発生部11に送り、呼出音発生部11では、受信した呼出音パターンデータに基づいて呼出音を発生し、スピーカ12にて拡声、報知させる。

【0018】

【発明の効果】以上説明したように本発明は、複数の呼出音の音色パターンデータを発生して登録するデータ発

生・登録手段と、登録された前記複数の呼出音の音色パターンデータの一つを選択して記憶する記憶手段と、着信時に記憶手段に記憶された呼出音の音色パターンデータに基づいて呼出音を発生する呼出音発生手段とを備えることにより、利用者固有の呼出音を報知させることができるので、他の利用者の呼出音と明確に識別することができる効果がある。

【図面の簡単な説明】

【図1】本発明の一実施の形態を示し、(a)は本実施の形態の正面外観図、(b)は本実施の形態における呼出音発生部分を示すブロック図である。

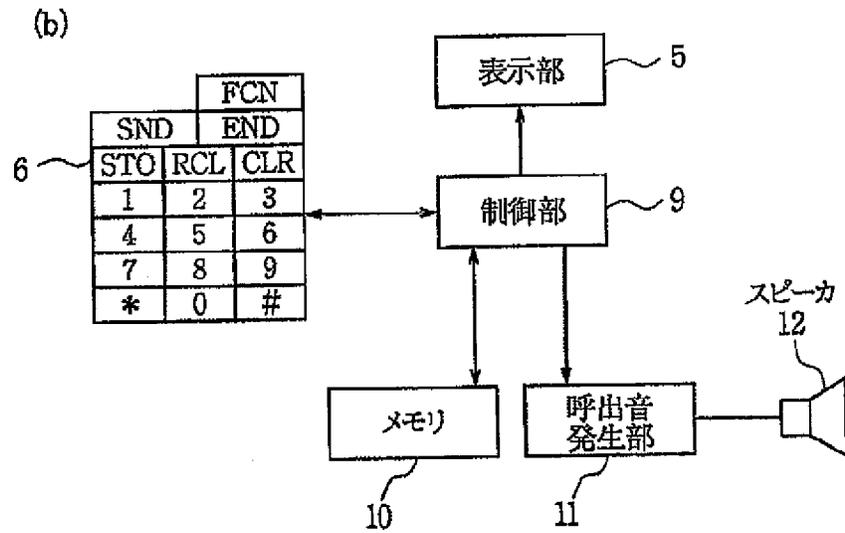
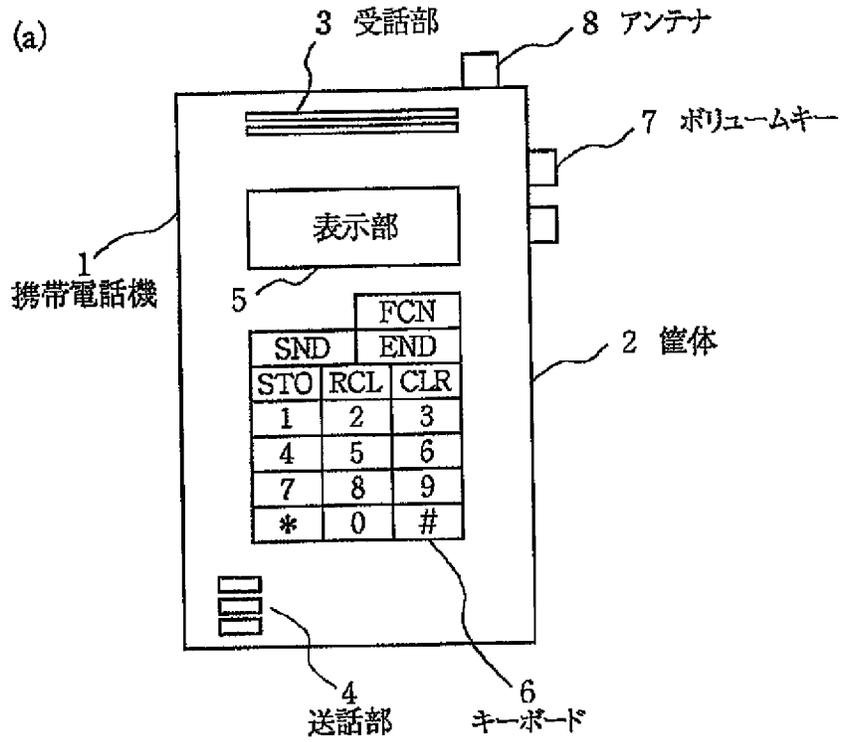
【図2】本実施の形態における複数の呼出音の作成とその登録の手順を示すフローチャートである。

【図3】本実施の形態における作成・登録した呼出音の一つを選択して使用設定する手順を示すフローチャートである。

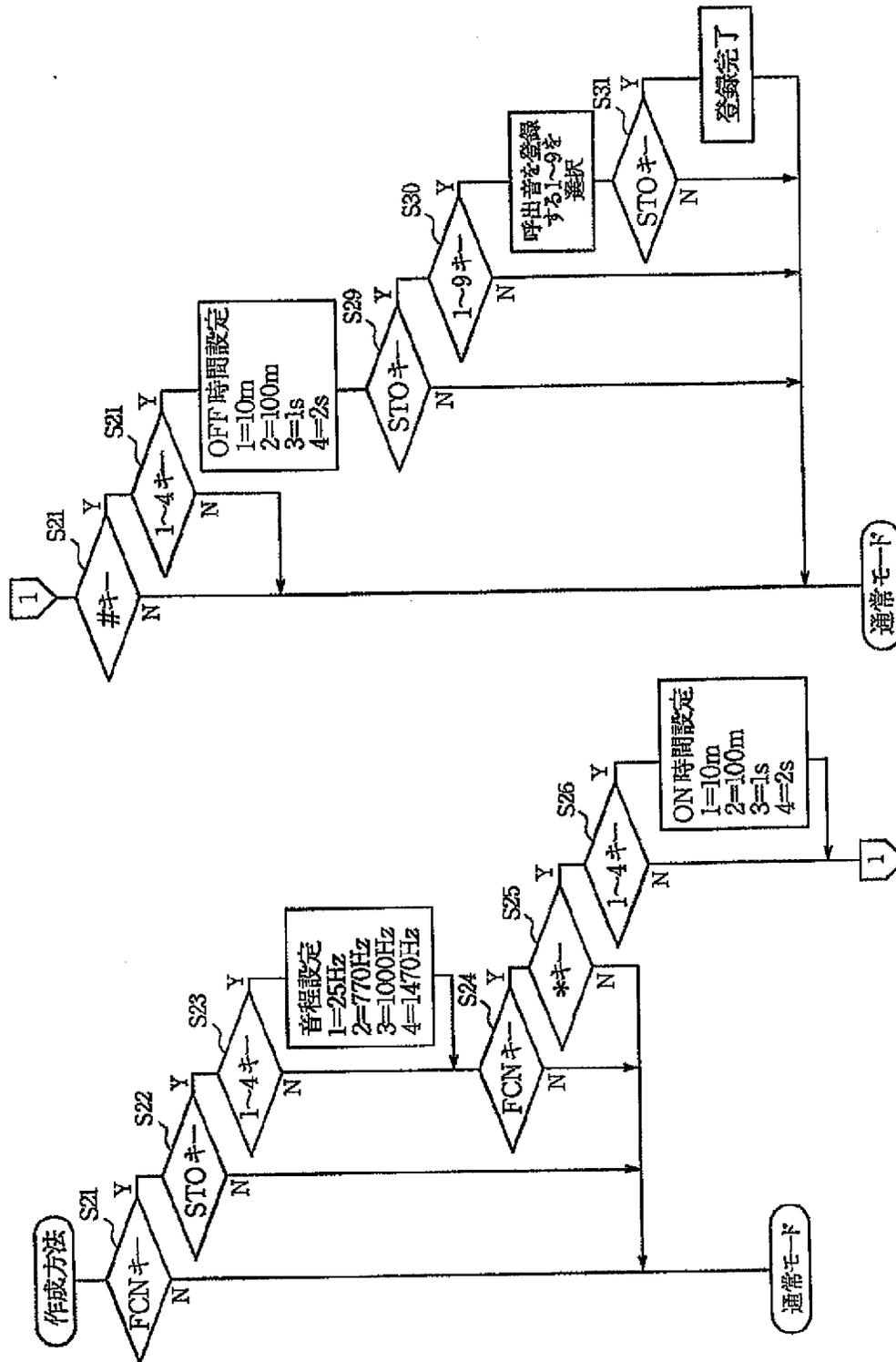
【符号の説明】

- | | |
|----|---------|
| 1 | 携帯電話機 |
| 2 | 筐体 |
| 3 | 受話部 |
| 4 | 送話部 |
| 5 | 表示部 |
| 6 | キーボード |
| 7 | ボリュームキー |
| 8 | アンテナ |
| 9 | 制御部 |
| 10 | メモリ |
| 11 | 呼出音発生部 |
| 12 | スピーカ |

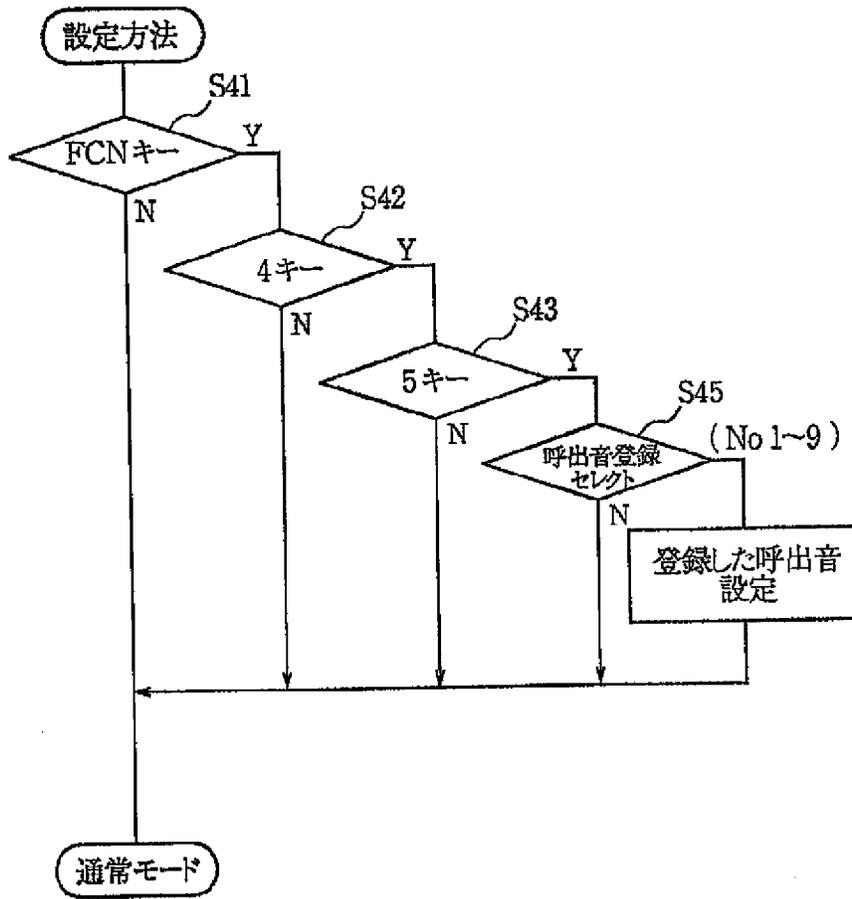
【図1】



【図2】



【図3】

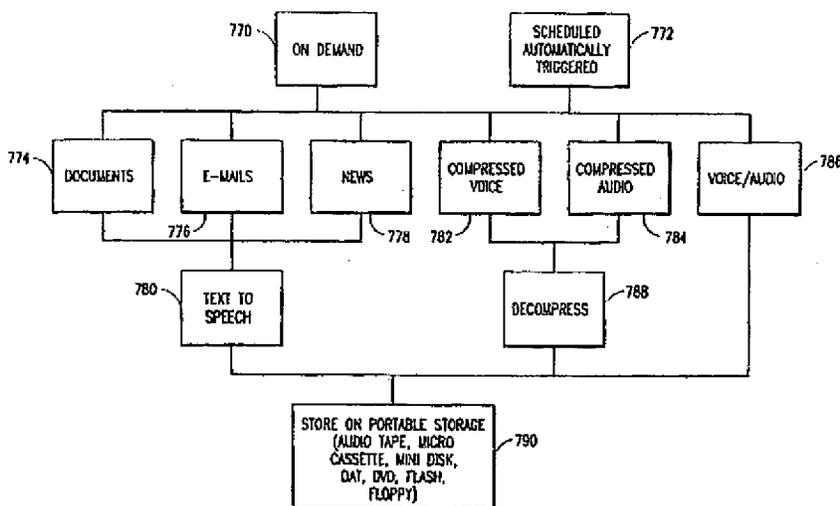




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(54) Title: A PERSONAL AUDIO SYSTEM



(57) Abstract

The present invention is a computerized audio system for downloading selected data as audio segments to a portable audio storage means. The computerized audio includes a processing unit which selectively retrieves data across a network, via a communication link. The processing unit then converts the selected data to analog signals and stores the analog signals on a portable storage device as audio segments. Such an arrangement allows an individual the flexibility of listening to selected data at any location or time through the use of audio system that can play the portable storage device.

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A PERSONAL AUDIO SYSTEM

FIELD OF THE INVENTION

5 The present invention relates to a computerized audio system and, more specifically, to a computerized audio system which can automatically and selectively retrieve and store information in an audio format on an affordable portable storage device, such as a cassette
10 tape and Mini Disk to be played at a later time and place.

BACKGROUND OF THE INVENTION

15 Audio programs are known to be distributed through various channels, such as radio channels which provide audio broadcasting. Other examples of audio distribution system can be found in U.S. Patent No. 4,124,773 which discloses an audio storage and distribution system, and
20 U.S. Patent No. 4,789,863 which discloses a Pay-Per-View entertainment system. Recently, the Internet has become another channel for on-demand audio distribution. This has been accomplished through the use of Real-Time Streaming Protocol (RTSP), such as those designed by
25 RealNetworks Inc., located in Seattle, WA. RSTP allows for streaming of audio in real-time and live channels across the Internet.

30 As the Internet continues to grow, WEB sites have begun to provide a larger selection of audio programs, such as news, sports, entertainment and educational programs, examples of which can be found at www.timecast.com and www.audionet.com. Individuals can thus access a WEB site, via the Internet, and select and

receive audio programs, which are then played on a sound system in their personal computer (PC). A drawback of such an Internet delivery system is that the individual must be connected to the Internet to listen to such audio
5 programs.

Audio programs from the Internet are also less customized than those provided by a textual source, i.e., in a text format. The Internet provides a much wider
10 selection of information in text formats. For instance, news clipping services, such as www.individual.com, www.pointcast.com and the like, deliver customized news in text formats. However, as with audio programs, an individual must be connected to the Internet to view such
15 textual programs.

In addition to textual programs gathered across the internet, WEB pages documents, electronic mail (E-mail) has become another popular way of receiving information
20 and communicating with others, across a network.

One approach to ease the task of reading textual documents, E-mail, programs, etc. is to convert such textual data to a speech format. This allows the textual
25 data to be played on a sound system of a personal computer (PC) or the like. Text-to-Speech algorithms developed by companies such as Dragon Systems, Inc., Newton, MA; Lernout & Hauspie (L&H) Speech products, Burlington, MA; Microsoft and others, enable conversion
30 of textual data files to speech. The converted files can be played on the sound system of a PC. Other speech synthesis apparatuses are described in U.S. Patent No. 5,396,577 which discloses a speech synthesis apparatus for rapid speed reading.

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Such Text-to-Speech technology are known to be employed in E-mail servers. This allows individuals to call the server and listen to their E-mail. The drawback
5 is the cost-involved when accessing the E-mail server from outside the home, particularly if an individual wishes to listen to E-mail through a cellular phone.

There are also other computer based integrated
10 messaging systems which integrate mail from a plurality of mail servers to handle messages of different media types, such as text and voice. Examples of such systems can be found in U.S. Patent No. 5,333,266 which discloses a method and apparatus for message handling in computer
15 systems, and U.S. Patent No. 4,659,877 which discloses a verbal computer terminal system.

However, the above described systems and methods of
accessing information provide an inflexible, time
20 consuming and costly way of obtaining and reading or listening to information. That is, individuals must access the information source, i.e., WEB server, E-mail server and so forth, from a PC, TV-PC (which integrates the broadcast and Internet content), Network Computer
25 (NC), Set-Top system, or the like and manually select information to be viewed or listened on the PC. although some of the information is automatically being "pushed" to the user's PC, using channels such as BackWeb and PointCast, the user still has to either view or listen to
30 it on a computerized system such a PC. This requires that the individual spend an enormous amount of time at the PC, time which can be better spent elsewhere. With regard to the above message systems, they provide a

limited source of information (i.e., messages) and are often costly to access from outside the home.

Conventional low cost portable and non-portable
5 audio systems (e.g., tape cassette player), such as found in cars, homes, etc., are already employed to listen to audio programs, such as music, audiobooks, training programs and so forth stored on audio cassette
10 tapes. Audio cassette tapes are known to be used in conjunction with computers to store and load programs. For instance, U.S. Patent No. 4,315,323 discloses a cassette recorder system for loading programs. However, there is currently no method of automatically and
15 selectively storing information, such as E-mail and other data retrieved across a network, onto such portable storage devices as audio segments.

There is a need to provide a computerized audio system that can selectively retrieve and store
20 information onto a portable audio storage devices (e.g., an audio cassette tape) which can be played on conventional audio systems (i.e., a cassette player, or a Mini Disk player). There is also a need to provide more flexible, time efficient and cost effective means to
25 listen to selected information retrieved from various sources, such as a WEB and ftp servers, E-mail server, local storage device, cable and satellite stations, radio stations, digital radio System and so forth.

30 It is an objective of the present invention to provide a low cost computerized audio system that can selectively retrieve and store information in an audio format onto an affordable portable audio storage device for later playback.

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It is a further object of the invention to store such information onto low cost, conventional portable audio storage devices, such as a cassette tape
5 Recordable Mini Disk and Recordable CD, which can be played at any place or time through the use of conventional audio systems.

Another object of the present invention is to
10 provide a portable audio storage device, e.g., an audio cassette or a Mini Disk which stores personal documents, E-mail or the like in an audio format which can be played in a car, on a train or any place with the use of a conventional audio cassette, or mini disk player.

15

It is another object of the present invention to store personalized audio information onto conventional tape cassettes or a mini disk in a manner that enables an individual to employ conventional cassette or mini disk
20 player functions, such as the SKIP function, to selectively access and play the information.

It is also an object of the present invention to provide a computerized audio system which automatically
25 retrieves selected information from any remote location, such as the Internet, cable TV, radio or satellite communication, and stores such selected information onto a portable storage device as audio.

30 Another object of the present invention is to provide a computerized audio system which can automatically upload and transmit information, such as an E-mail reply, from an audio cassette, or a digital solid state audio storage.

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It is another object of the present invention to provide a remote controlled audio system for playing the personalized audio information stored on a portable storage device and, more specifically, a remote controlled audio system in a motor vehicle which allows a vehicle operator to drive safely while listening to the audio information and remotely controlling the audio system, such as using the SKIP function.

10

SUMMARY OF THE INVENTION

The present invention is a computerized audio system for downloading selected data as audio segments to a portable audio storage means, such as an audio cassette. The computerized audio system includes a processing unit which selectively retrieves data across a network, via a communication link, or from internal or external storage. The processing unit then converts the selected data to analog signals and stores the analog signals on a portable storage device as audio segments. The selected data can be in a text, voice or audio format and may correspond to various information, such as electronic mail (E-mail) in text or audio format, documents, news, educational materials, audio programs, music, entertainment programs, audiobooks or any type of information that can be converted, if necessary, and played in audio form.

30 Such an arrangement provides a low cost system that employs affordable and commercially available components and allows an individual the flexibility of listening to selected data at any location or time through the use of

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an audio system that can play the portable storage device.

Although it is preferred that the audio segments are
5 stored on conventional audio cassettes, the present
invention may also be employed with other known portable
audio storage devices. For instance, the present
invention may store selected audio segments onto a
10 Recordable Mini Disk (MD), Digital Tape (DAT), Recordable
Compact Disk (CD), Recordable Video Disk (DVD), a FLASH
memory card or equivalent. It is also preferred that the
computerized system is a personal computer (PC), Network
Computer (NC), PC-TV (which integrates TV and PC
15 functionality), or Set-Top system. In this case, the
computerized system can also be configured with an
ability to mute the computer speakers to eliminate noise
when recording the audio segments onto the portable
storage means.

20 In addition to recording selected data on portable
storage means, the computerized audio system can also
store various types of codes on portable storage means.
Such codes may include a code to mark each audio segment,
to identify each audio segment and to provide security
25 (e.g., identifying the source from which the audio
segments were originally copied, or using a Serial Copy
Management System to allow only first-generation digital
copies to be made of premastered software.).

30 The present invention also provides a computerized
audio system that can automatically receive audio
segments according to predetermined criteria from a
remote source, such as a server, or automatically prepare
audio segments according to predetermined criteria or on-

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demand. That is, the computerized audio system can be automated to retrieve selected data from a variety of data sources, i.e., WEB server, E-mail server, internal storage device, etc. and to download selected data onto
5 the portable storage means. For example, the computerized audio system can automatically and selectively download E-mail, or documents in an audio format onto an audio cassette, or as a digital audio format onto a Recordable Mini Disk.

10

The present invention also provides a computerized audio system that can automatically receive audio segments in digital audio formats (such as RealAudio) which are designed to be played on a computerized system
15 (such a PC), and automatically process and reformat them to be stored on a conventional portable storage device such as cassette tape or Mini Disk so a conventional storage device player can play them as audio.

20 The present invention also downloads audio segments onto the portable audio storage unit in a manner which allows use of conventional functions, such as the SKIP operation of conventional tape cassette, or Mini Disc players and audio systems. For instance, this is
25 accomplished by inserting silence segments or an equivalent thereof onto a magnetic audio cassette tape, or writing different audio segments to different sections or tracks in a Mini Disk to enable an individual to skip between audio segments stored thereon. Furthermore, in an
30 alternative embodiment, voice messages associated with the audio segments can be recorded on the same portable storage device storing the audio segments being played.

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The computerized audio system can also upload recorded voice messages (i.e., E-mail replies) stored on the same portable storage means with the audio segments. Such voice messages can be stored in corresponding
5 relationship to an audio segment. Once retrieved the computer audio system can then automatically forward the voice messages to an appropriate destination.

The present invention also provide a remote
10 controlled personal portable audio system which includes a portable storage device player, such as a tape player or a Mini Disc player and a remote controller which enables a vehicle operator to drive safely whiled listening to stored personalized audio information and
15 remotely controlling the portable storage device player to perform functions (e.g., the SKIP function) to selectively access and play the audio information. The present invention further includes transmitting the audio to an external audio system, such as a car stereo to be
20 heard through the car speakers.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and
25 appreciated more fully from the following detailed description taken in conjunction with the drawings in which:

Fig. 1A illustrates a first embodiment of a
30 computerized audio system with a computerized system (i.e., a personal computer) interconnected to an audio system (e.g., a cassette or Mini Disc recorder), in accordance with the present invention;

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Fig. 1B illustrates a personal audio system for playing a portable storage means, i.e., an audio cassette for storing customized audio segments of Fig. 1A of the present invention;

5

Fig. 1C illustrates an alternative embodiment of the computerized system of Fig. 1A of the present invention;

Fig. 1D illustrates an alternative embodiment of a personal audio system of Fig. 1B installed in a motor vehicle and operated with a remote control;

10

Fig. 2 is a block diagram of a personal audio system to record a portable storage means of Fig. 1A;

15

Fig. 3A is a schematic view of the use of a magnetic head to record audio segments onto an audio cassette as performed by the computerized audio system of Fig. 1A;

20

Fig. 3B is a graph which illustrates a typical behavior of the magnetic head of Fig. 3A;

Fig. 4A is a schematic view of an audio tape cassette format for storing audio segments of the present invention;

25

Fig. 4B is a flow diagram of data flow as performed in the present invention shown with various security means along the data pathway;

30

Fig. 5A is a schematic view of a second embodiment of the components of a computerized audio system of the present invention;

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Fig. 5B is a block diagram of the components of a computerized audio system of Fig. 5A;

5 Fig. 5C and 5D are schematic diagrams of a computerized audio system of Fig. 5B;

Fig. 6A schematically illustrate a third embodiment of computerized audio system of Fig 1A;

10

Fig. 6B schematically illustrates a fourth embodiment of computerized audio system of Fig. 1A;

15 Figs. 6C and 6D are exploded block diagrams of computerized audio system of Fig. 6B;

Fig. 6E illustrates a fifth embodiment of a computerized audio system;

20 Fig. 7A is a schematic illustration of various modes of operation of a computerized audio system of the present invention;

25 Fig. 7B is a flowchart illustration of a preferred operation of a computerized audio system of the present invention;

30 Fig. 7C is a flow diagram of a preferred operation of an electronically controlled cassette version of a computerized audio system of the present invention;

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Fig. 7D is a flow diagram of a preferred operation of a voice controlled cassette version of computerized audio system of the present invention;

5 Fig. 7E is a flow diagram of a storage operation of user responses, such as a voice comment, on a portable storage means, in this case a Mini Disk.

10 Fig. 8A illustrates an alternative embodiment of a modified portable storage means of Fig. 1A;

Fig. 8B is an exploded view of the modified portable storage means of Fig. 8A;

15 Fig. 8C schematically illustrates the storage format of the modified portable storage means of Fig. 8A; and

Figs. 8D and 8E are block diagrams each illustrating an alternative embodiment of an audio system of Fig. 1A.

20

DETAILED DESCRIPTION OF THE PRESENT INVENTION

Before proceeding with a detailed description of the present invention, it is well to define certain terms to
25 be used herein. The term "data" refers at a minimum to data in text format, data in audio format, voice data or any data capable of being stored in an audio format on a portable audio storage device, such as a cassette tape, Mini Disk (MD), compact disc (CD), DVD, digital audio
30 tape (DAT), digital memory (i.e., Flash EEPROM), or equivalent and can be audibly played and listened on an appropriate audio system. It is important to understand that such data can be in any format retrievable by a computerized system (e.g., a personal computer). Such

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data may relate to electronic mail (E-mail) in text or audio format, documents, html pages, news, educational materials, audio programs, music, entertainment programs, audiobooks or any type of information that can be
5 converted, if necessary, and played in audio form.

An "audio segment" will hereinafter refer to data which are stored onto a portable audio storage device in a format which can be audibly played. This may require
10 data to be converted to such format prior to storage. The format of the audio segment is dependent on the original format of the data (i.e., digital, analog, text, voice, audio, etc.), the particular type of portable
15 audio storage device and the audio system for playing the storage device. For instance, data in the form of textual E-mail can be converted to audio segments for storage on a conventional audio cassette tape. In this case, the E-mail data is converted to speech using a
20 Text-to-Speech converter (i.e. converted from digital text data to voice data) for storage digitally onto a Mini Disk or further converted to analog voice signal for storage onto analog magnetic cassette tape, or analog input of a Mini Disk.

25 Turning to a detailed description of the present invention with reference to Fig. 1A, a first embodiment of computerized audio system 10 includes an audio system 100 for recording audio segments onto a portable storage means 200 (e.g., an audio cassette). Computerized audio
30 system 10 also includes a computerized system 600 for automatically retrieving selected data (locally or remotely) and transmitting the selected data to audio system 100, across a communication link 104, for storage as audio segments on portable storage means 200.

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Computerized audio system 10 can thus automatically and selectively retrieve data from a remote or local storage device and, subsequently, store the selected data as audio segments on portable storage means 200. Portable
5 storage means 200 can later be played at any time or place, preferably through the use of an audio cassette, or Mini Disk player 200.

Audio system 100 includes a recorder 110, operating
10 keys 106, communication port 102, and portable storage means 200 for storing audio segments. Recorder 110 can be activated either automatically by computerized system 600 or manually (via operating keys 106) to store audio segments on portable storage means 200. Portable storage
15 means 200 can be an ordinary size audio cassette, Mini Disk, microcassette, a special cassette as described later in Fig. 7A or any portable audio storage device that is capable of storing audio segments that can be audibly played.

20

Accordingly, the present invention enables a user to make better use of time by listening to selected information, such as E-mail, news, documents, and so forth, at any location and time with the use of
25 conventional audio systems. The present invention further provides an affordable system which employs low cost components, such as the commonly available audio cassette or Mini Disk, audio recorder, communication components and computerized system means (e.g., PC), all
30 of which are commercially available at affordable prices.

Furthermore, the audio format in which audio segments are stored on portable storage means 200 enables the user to save additional time by skipping and repeating audio segments in a random sequential manner using common

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functions provided on audio system 100 (e.g., Automatic Music Search (AMS) of a cassette player, or track skip in a Mini Disk)

5 Referring to Fig. 1B, portable storage means 200 can be played on another personal audio system 500 (e.g., a cassette or Mini Disk player), such as a playback deck of personal audio system 500 or on a detachable audio system 100 (Fig. 1A). A listener 540 can control the operation
10 of personal audio system 500 (i.e., PLAY, REWIND, SKIP, MARK, RECORD, etc.) through the use of a remote control 510, a voice command, or manual controls. Personal audio system 500 and remote controller 510 can be incorporated into a motor vehicle, as shown in Fig. 1B.

15

For instance, remote controller 510 can be an integral part of a wheel system 530, installed within the steering wheel 530, or positioned at any location preferably within reach of the vehicle operator to
20 provide a remote controller arrangement that is easy and safe to use. Remote controller 510 preferably includes keys and communication means for controlling the operation of personal audio system 500. Communication means can be an electrical cable or wireless
25 communication, i.e., Radio Frequency (RF) or Infra Red (IR) transmission. A listener 540 can thus play audio segments stored on portable storage means 200, or skip between different audio segments using the remote controller 510 to control the personal audio system 500.

30

Fig. 1C illustrates an alternative embodiment of computerized system 600 which can take the form of a cable set-top system. Computerized system 600 includes a

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television set 654, and a set-top box 650 for providing interconnection to a network across a communication link 652. Step-top box 650 may include a processor unit (not shown) which can be configured to selectively retrieve
5 data across a network and to convert (if necessary) the selected data to audio segments for storage onto portable storage means 200, 210 or 220 in audio system 100. For instance, conventional cable box step-tops are known to provide a programming option to preset the time and
10 channel for recording. A PC-TV which integrates the capabilities of a TV and the Internet enables the user to retrieve textual information as well as digital audio formats segments and convert them to audio. An appropriate audio system 100 can be selected to record
15 selected data onto audio cassette 200, Mini Disc (MD) or recordable CD 210, a floppy disk 220 or equivalent.

Fig. 1D illustrates an alternative arrangement for remotely controlling another personal audio system 100
20 with remote controller 510, such as an RF, IR or wired remote controller. In this embodiment, the remote commands are received via remote control link 512. This causes personal audio system 100 to retrieve audio segments from portable storage means 200 and play them.
25 The remote command signals can be transmitted using a link 512, such as RF transmission. The audio segments produced by the portable personal audio system 100 can be played on a regular audio system 500, such as a car stereo. The audio signals can be transmitter using a link
30 such as RF transmission 514 (Fig. 2) or through the use of a cassette adapter, such as in U.S. Patent No. 4,734,897 which discloses a cassette adapter for a playback device. The personal audio system 100 can contain a microphone input to receive audio signals 516

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to be recorded on storage mean within the personal audio system 100, or marking means to electronically mark audio segments for later use . Referring to Fig. 2, computerized system 600 includes a processing unit 620
5 for managing the internal operations, such as selecting, retrieving, aggregating, converting, and transmitting data for storage. In particular, processing unit 620 (i) selects and retrieves data to be stored according to predetermined criteria or on-demand, (ii) converts data
10 from Text-to-Speech formats depending on the format of the retrieved data, (iii) converts data to an audio format (i.e., audio segment) according to a format of the data and a format employed by portable storage means 200, (iv) compresses and decompresses audio segments (if
15 necessary), (v) manages communication processes of computerized system 600, and (vi) controls the operations of storing data on portable storage means 200 as audio segments. Processing unit 620 can be a 80x86 or a Pentium processor manufactured by Intel Corporation, or a RISC
20 processor such as SH3 of Hitachi, ARM- Advanced RISC Machines ARM or equivalent.

It important to understand that processing unit 620 can be configured to automate the process of accessing
25 and retrieving selected data, across communication link 610 or from internal storage 602 according to predetermined criteria. Such predetermined criteria may include a particular type of information, such as E-mail, documents, news, education programs, music, etc.; a
30 particular data source, such as a WEB site (e.g., www.pointcast.com); a particular topic, such as sports, technology, etc.; and so forth. Such an arrangement eliminates the need for manual access and retrieval of selected data. This processes can be timed to start

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automatically in the morning before the user commutes to work, so the user can better utilize his commuting time.

Processing unit 620 can organize all data according to a user selection and automatically reformat and convert it
5 to an audio format suitable for storage on portable storage means 200.

Computerized system 600 also includes local storage unit 602 to store programs or subroutines, such as
10 communication software (e.g., web browser), compression/decompression software, text-to-speech software and so forth. Local storage unit 602 may also store data in text, audio or other format. Local storage
unit 602 can be a hard disk, optical disk, flash memory
15 card, random access memory (RAM) or the like.

A communication port 622 provides interconnection (via communication link 610) across a network through the use of a regular telephone modem, ISDN modem, Cable
20 modem, satellite modem, Ethernet, Digital Subscriber Line/Asymmetric Digital Subscriber Line (DSL/ADSL) or other serial communication means. Communication port 622 enables processing unit 620 to retrieve or download selected data, such as E-mail, news, educational
25 programs, and so forth. Computerized system 600 can thus retrieve selected data through the Internet, Intranet, TV, Cable TV 650 (Fig. 1C), satellite receiver, optical link, Digital Subscriber Line/Asymmetric Digital Subscriber Line DSL/ADSL, radio, or paging network. It
30 should be noted that data can also be retrieved from internal storage 602 of computerized system 600.

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It is preferred that computerized system 600 is a personal computer (PC) with sound capabilities such as Sound Blaster card of Creative Labs as an audio port 616.

However, computerized system 600 can also be any
5 electronic personal computer such as Window CE based computers (such as Windows CE PDAs offered by NEC, Hewlett-Packard, Philips and others , electronic personal organizer, such as Pilot manufactured by U.S. Robotics, USA; a Set-top system, such WebTV developed by WebTV
10 Networks, Palo Alto, CA (denoted by reference number 650 as shown in Fig. 1C); PC-TV such as NC TV of Network Computer, Inc. CA and FUNAI Japan, which integrates the broadcast and Internet content, or cable modem.

15 In operation, upon a user request or according to an occurrence of a predefined event, computerized system 600 selectively retrieves data according to predetermined criteria, from external links 610 or internal storage
20 602. Computerized system 600 then prepares and aggregates the data. The preparation may include converting data to audio segments with an appropriate format depending on the format of the data (e.g., converting text to speech).

25 For instance, in the case that portable storage means 200 is a magnetic tape (i.e., analog device), data in text formats can be converted from text to speech using Text-To-Speech (TTS) algorithms, such as one developed by Lernout & Hauspie Speech Products
30 Burlington, MA. The TTS algorithm is performed by processing unit 620 of computerized system 600 to convert data in textual format to audio segments for storage on portable storage means 200. Thereafter, the aggregated data is then transmitted as audio segments to audio

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system 100, across communication link 104. Recorder 110 receives the audio segments and stores them on portable storage means 200.

5 Referring to Figs. 1A and 2, a preferred audio system 100 includes a housing, recorder 110 with portable storage means 200 for storing audio segments; audio interface 124 and local control means 140. Audio system 100 also includes communication port 102 which is
10 connected to computerized system 600, across communication link 104 (e.g. an electrical or optical cable) to allow transmission of audio segments and commands therebetween. Communication link 104 can be stereo audio cables 104A and control cable 104B.
15 Communication link while implemented for digital transmission can utilize the same cable by multiplexing the different signals. Audio system 100 may also include other input means 104, such as a remote control interface to allow receipt of command transmissions, such as RF
20 remote control signal 5i2 (Fig. 1D), or audio commands 5i5.

Audio system 100 can take the form of a Walkman, portable MD recorder, microcassette tape recorder, a
25 special hand held device or the like. Audio storage means 200 can be a magnetic audio cassette tape (such as described in Fig. 1A), a solid state memory such as Flash EEPROM memory manufactured by Intel Corporation, Recordable Mini Disk such as manufactured by Sony
30 Corporation, or the like. Recorder 110 can be tape cassette recorder/player, Mini Disk system, or the like. If storage means 200 is a Recordable Mini Disk computerized audio system 600 can provide either a

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digital, or analog audio format through communication link 104 to audio system 100.

Control means 140 can be a microprocessor integrated circuit (IC), such as an 80C51 manufactured by Intel Corporation, USA, a digital signal processor (DSP), such as 320C2xx manufactured by Texas Instruments, or the like. Control means 140 controls the operation of audio portable storage means 200, across control lines 120A. While implemented with a tape recorder, the control lines 120A can include signals such as MOVE-TO-BEGINNING-OF-STORAGE, START-RECORDING, STOP-RECORDING, STOP, REVERSE-DIRECTION-OF-RECORDING and so forth. The status of portable storage means 200 is monitored by control means 140 using status lines 120B. Status lines 120B can include signals, such as CASSETTE-INSERTED, MOTOR-ON, END-OF-TAPE and MOTOR-DIRECTION. If portable storage means 200 is a MD, the Local Control will monitor the track number, the remaining storage space available, and the readiness of the MD to store information, and will control the track number, RECORD and STOP functions.

Local control means 140 is connected to computerized system 600, via control port 102B and control link 140B. Control link 140B can be discrete logical lines, RS232, optical link, parallel port, Universal Serial Bus (USB) or other digital format. Control link 140B is connected to communication port 612 of computerized audio source 600.

30

Recorder 110 is connected to an audio interface 128, across audio line 124. Audio interface 128 is connected to audio port 616 of computerized system 600, across audio link 104A. Audio link 104A includes at least one

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audio output from computerized system 600. Audio link 104A can also include an additional audio link connected back from audio system 100 to computerized source 600. This allows audio segments (e.g., recorded voice
5 messages, marks, etc.) to be uploaded from portable storage means 200 to computerized system 600. That is, such a link allows a user to record voice messages, such as an E-mail reply on portable storage means 200; upload such messages to computerized source 600; store them on
10 local storage 602, or attach them to E-mail replies as voice mail. Audio input/output 126 and 130 comprises routing means to transfer signals from audio link 104A, across audio interface 128, through link 124 to the recorder 110.

15

Referring still to Fig. 2, the present invention may employ an optional audio output 130 which enables the speakers to be connected to audio system 100. Audio Interface 128 may include another external audio input
20 126, such as a microphone to enable recording of voice on portable storage means 200. Audio Interface 128 may also include an analog-to-digital (A/D) converter, such as a 3054 CODEC manufactured by National, or ATRAC for MD. Audio Interface 128 may also be connected to a
25 transmitter 132, such as an RF transmitter to transmit audio 514 to a remote audio player, such as a car stereo. Local control means 140 can also be employed to disable or mute external audio output 130 to external speakers. This enables the user to replay and store audio content
30 on portable storage means 200, even in situations where acoustical noise is undesirable, such as in the office or during the night.

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It should be noted that computerized system 600 can generate audio segments (i.e., data in audio format) in higher speed than real time and send the high speed audio to be stored on personal audio system 100. Recorder 110
5 stores the audio segments in a relative rate. For example, if computerized system 600 generates audio segments at double speed, recorder 110 will record the audio segments at double speed so that the recording time will be halved, but the audio segments can be played at
10 normal speeds to produce normal speed audio. If storing means 200 is a magnetic tape, recording in double speed means that the hubs of the recorder 110 will turn twice the speed of the normal speed.

15 In the event that selected data is in a compressed format, computerized system 600 converts the data to audio using a matched decompression algorithm. For example, computerized system 600 may employ compression and decompression algorithms, such as an G.723, or Real
20 Audio CODEC algorithms designed by Real Networks, Washington, USA; CODEC algorithms of Voxware Princeton, New Jersey USA; or other available CODECs. Computerized system 600 then converts audio to suitable formats to be recorded on storage means 200, transmits the decompressed
25 audio segments to audio system 100 for storage on portable storage means 200.

In the event that portable storage means 200 is digital memory means, such as Flash EEPROM, computerized
30 system 600 transmits the audio segments in digital format (either text, compressed voice or compressed audio) via control link 104B to audio system 100, and causes the audio segments to be stored on portable storage means

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200. Upon a user command, audio system 100 converts the digital data to analog audio signals and plays audio segments stored on portable storage means 200.

5 In case portable storage means 200 is a digital storage device, local control means 140 begins by retrieving the audio segments. The audio segments are then converted to voice or audio through the use of decompression or TTS algorithms and, then, played through
10 the use of audio interface 128. Audio interface 128 includes CODEC circuitry for converting digital signals to analog signals. In the alternative, an audio transmitter 134 can be connected to audio interface 128 to transmit the audio signals as FM modulated RF signals
15 preferably within the band of 88-108 MHz and with a radiating power lower than allowed by FCC Regulation, Part 15. This will allow the user to hear the audio with the use of a regular FM radio receiver.

20 In an alternative embodiment, portable storage means 200 may be a combination of both an audio cassette tape and digital memory (i.e., flash EEPROM). In this case, the audio cassette tape is preferably used for storing long audio segments typically received from computerized
25 system 600. The digital memory is preferably used to store shorter personal messages of the user and shorter audio segments received from computerized system 600.

Computerized system 600 can retrieve E-mail in text
30 format or in voice format. E-mail in text format is converted to speech using a Text-To-Speech algorithm (as described above). The user can listen to the converted voice version of the E-mail, using audio system 100 and, moreover, mark E-mail to be deleted, replied, filed, or

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forwarded by using the remote control (as described above). The user can also record a voice reply to a received E-mail, or record a new E-mail. Such replies are stored in portable storage means 200. Audio system 100
5 can keep track of each E-mail message as it is being played. Each mark made by the user is correlated to the E-mail currently being played. Similarly, the user can record short messages by operating remote control 510 (as shown in Fig. 1B), and speaking into a microphone
10 connected to audio input 126 of audio system 100. The voice messages are then recorded on portable storage means 200.

Audio system 100 can also play documents or other
15 text content converted to voice in a similar way, where the user can add vocal footnotes, while the voice format of the document (i.e., the audio segments) is being played. Similarly, the user can record synchronized
20 messages on every audio segment that is played. If using a Mini Disk as portable storage means 200, comments in voice format will be recorded in different tracks and will be indexed according to the audio content being played before the user initiates the recording operation. An alternative way to implement such a feature is
25 discussed below with reference to Figs. 8A through 8E.

Local control means 140 can compress the voice messages prior to storage onto portable storage means 200, or convert the voice messages to text through the
30 use of Voice Recognition algorithms, such developed by L&H, and then store the converted messages as a text file. In any event, stored messages can be transmitted by control means 200 to computerized system 600 through a

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understand that VOX operated tape recorders usually
continue recording for several seconds after audio input
signal stops. However, in order to provide a long enough
silence segment between each audio segment (i.e.,
5 typically of at least about 4 seconds) as required by
most of tape players with Automatic Music Search (AMS)
function), an intentional silence segment is inserted
between each audio segment. Since the recording process
can stop before an appropriate silence period required
10 for the silence detection of a tape player is recorded, a
silence segment or an equivalent thereof from a
computerized audio source can be intentionally inserted
instead. Such a method utilizes the voice activated
feature of a VOX recorder to provide for a continuous
15 recording of audio segments and intentional silence
segments.

It has been discovered that such a silence segment
may be a high frequency audio signal which is delivered
20 to the input of the tape recorder between each audio
segment. Such a signal is delivered both to the Voice
detection circuitry (VOX) which detects the signal and
continues the recording and to magnetic head input wires
902. A magnetic flux is produced in the input frequency
25 and conducted in a core 900 of the head. A magnetic
field is induced near the gap of core 904 to magnetic
domains 908 of magnetic tape 850. At a given gap width
and a given tape speed 910 and if the frequency of the
input signal is high enough 914 (i.e., typically higher
30 than 16 kHz) (Fig. 3B), the magnetic domains 906 are
condensed so that there is no relation between the input
signal current and the manner in which the magnetic
domains are arranged on tape 906. That is to say,
magnetic head is unable to record such high frequency

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signals to magnetic tape 850 or, in other words, tape 906 is unable to pick up the domain changes. As a result, an equivalent of a silence segment is recorded onto tape 906, preferably between each audio segment. As shown in 5 Fig. 3B, there is shown a cutoff point 918 in the transfer function of the combination of the head and tape to produce effectively a "silence" segment.

Alternatively, very narrow pulses can be sent to the 10 tape recorder input to create the same phenomena of injecting input signal that operates the VOX. These signal will not be detected while being played on a tape recorder using a silence detector to skip to the next 15 silence segment. Preferably a "silence" signal injected by a computerized system 600, will be a combination of low amplitude and high frequency spectral components.

Although the above example describes an 20 implementation of storing audio segments on an audio cassette tape in a manner to respond to a search function of a tape player, the same concept may also be employed for other types of portable storage means 200, such as 25 recordable MD, recordable CD and so forth. For instance, audio segments can be selectively stored or organized on different storage sectors or tracks to respond to a search function of a MD player.

Fig. 4A illustrates describes an intentional 30 automatic silence segments insertion method on audio tape 850, of the present invention. Computerized system 600 (Fig. 1A) can organize audio segments such as 854 and 860 in a way that they are separated from one another by silence segments such as 856 with minimal duration

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required for blank/silence detection in a tape.
Computerized system 600 automatically inserts a silence
segment of several seconds, typically 4 seconds between
each E-mail message, each document, each chapter of an
5 audio program, or as periodic silence intervals defined
by a user (i.e., typically 30-60 seconds), or in any
other selective manner. For example, the insertion of
these silence segments can be accomplished by recording
10 "No signal" or a "silence signal" as described with
reference to Fig 3A and 3B through the use of a VOX tape
recorder. The insertion of such silence segments enables
a user to employ the SKIP function of audio system 100
(Fig. 1B) to skip to a previous or subsequent silence
15 segment. It will be appreciated that the automatic
silence insertion procedure of the present invention
automates the process of storing customized audio
programs on portable storage means 200 in a manner which
enables use of the SKIP function of audio system 100. If
20 MD or recordable CD is used, different audio segments
will be stored in different tracks to enable use of the
SKIP function of audio system 100.

In another embodiment, computerized system 600 can
record codes on portable storage means 200. Such codes
25 can be stored as segment codes indicated by reference
numerals 852 and 858 to identify the sequential number of
a specific audio segment, and to enable identification of
a specific audio segment if retrieval is required (i.e.,
such as when an E-mail is replayed). Segment codes 852
30 and 858 can be formatted in multi-tone (i.e., dual-tone
modulation multi-frequency (DTMF)), multiphase, or pulse
modulation.

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Computerized system 600 can also record a security code denoted by reference numeral 851. Security code 851 can be used as an electronic signature to identify the audio source, thereby enabling the tracking of the audio duplication source. That is to say, security code 851 can be retrieved to identify the source of the original selected data (i.e., a publisher) or the duplication source (i.e., computerized system 600). Security code 851 can be a serial number code which identifies the audio source or the user who retrieved the audio segments. It can contain the duplication number of the content stored thereon and other relevant information. Security code 851 can be formatted in multi-tone (such as DTMF), multiphase, or pulse modulation if a magnetic tape is used. Security codes 851 can be stored as a hidden file on portable storage means 200 at several places and at fixed or random locations. If a digital storage 200 is used, such as MD, the code can also contain a serial number. Computerized audio system 600 can then use a Serial Copy Management System to allow only first-generation digital copies to be made of premastered software.

Audio system 100 can also be employed to mark audio segments stored on portable storage means 200 with security codes 851. If portable storage means 200 is a digital solid state memory, audio segments can be stored in an encrypted format and opened only by playing the audio segments on a specific type of audio system 100 having an appropriate decryption scheme.

Fig. 4B illustrates data security means for computerized audio system 10 of the present invention.

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Data security can be provided at several layers. A secured communication link 610 can be provided between a server 740 (i.e., the data source) and computerized system 600. Data received across communication link 610, 5 can be encrypted to allow only specific software employing a specific user key, identifier or decryption scheme to have access to the data. Such encryption software can be an RSA which is a public-key cryptosystem for both encryption and authentication developed by RSA 10 Data Security, Inc. Computerized system 600 can thus store the received data in an encrypted format which can only be accessed through the use of specific software using a specific user key, identifier or decryption scheme.

15

In addition to the above security arrangements, computerized system 600 may include software which allows only a limited number of storing operation to be performed with respect to specific data. Computerized 20 system 600 may also be configured to require a special request for additional copies. Computerized system 600 may also be configured to trace and record the number of storing operations performed on specific data, and report such information to the original data source, such as an 25 Internet server. This would allow a data source (i.e., remote server) to lock out storing capabilities of computerized system 600, via remote control, in cases which copyright laws are violated. Another layer of security is to store security data on storage means, as 30 described in Fig 4a.

Figs. 5A and 5B illustrate a second embodiment of the present invention with audio system 100 having an electronic control. In particular, audio system 100 is

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connected to an audio control unit 150, which is controlled by computerized system 600. The function of audio control unit 150 is similar to that of local control means 140 and audio interface 128 (as described in Fig. 2), except that, in this case, it is located in a separate package. Alternatively, this functionality can also be integral to computerized system 600.

Audio control unit 150 is connected to audio system 100, across an audio link 124 and provides an audio link between an audio interface of a computerized system 600, audio system 100 and a control link 120, used for controlling audio system 100. Audio control unit 150 can be connected to an external power source 142 (or obtain power from computerized system 600 using link 104) and speakers 132 through a speakers link 130. Local control means 140 (Fig. 5B) receives control commands from a computerized system 600, through control link 104B and converts them to specific controls for audio system 100 (as described in Fig. 2). Audio interface 128 can control the routing of an audio signal at least sent to audio system 100 for recording and can also control signals sent back for storing recorded audio on computerized system 600. Audio interface 128 can also take the form of an audio interface, as shown in Fig 5C.

Referring to Fig. 5C, audio signals are received at audio interface 128, via an audio link 104A and through audio lines 104E1, 104E2 (used for stereo audio signals), connected at an initial state through lines 156A and 156B, to speakers link 130. This is accomplished through the use of Dual Port Dual (DPDT) through electronically controlled switches 152, such as an DPDT relay. Upon

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receiving a recording command from computerized audio system control link 104B, a change routing command is provided to DPDT switch 152 through change port 154. As a result, switch 152 changes position and connects the
5 audio through an optional dynamic range matching block 158, such as an attenuator. The audio is then passed through a mono-stereo selector 162 to output lines 164A, 164B, through an audio link 124, through lines 164A, 164B and finally to audio system 100 for storage. Audio
10 output 130 to external speakers is disconnected while recording so that undesirable noise is eliminated. Alternatively (Fig 5D), two types of audio signals from computerized system 600 can be connected to audio control
15 signal(104A3) and Line-Out signal(104A4). While the storing operation is taking place, Speakers-Cut is disconnected from the speakers. Line-Out is always connected to audio system 100 across line 124 to take advantage of a better Signal-To-Noise Ratio on this line.

20

Fig. 6A illustrates a third embodiment of the present invention. Recorder unit 100 can be connected to computerized system 600 through the use of an audio cable 104a only. Recorder unit 100 has Voice Operated (VOX)
25 capability. A portable storage means 200 is inserted into recorder 100 and set to the starting point. Recorder 100 can then be set to RECORD mode. Recorder 100 waits in this position, as long as there is no audio being transmitted through audio input 102. Computerized
30 system 600 sends audio through an audio link 104A to recorder unit 100 according to the recording process described in Fig 7B. A VOX function in recorder unit 100 detects the audio and starts the audio storing operation

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on portable storage means 200. Recorder unit 100 can be
a tape recorder with voice operated (VOX) recording
capability, and portable storage means 200 can be a
conventional audio cassette tape. Such an arrangement
5 requires some manual preparation, such as rewinding the
tape to the beginning, pressing a record key, rewinding
the tape at the end of the recording process, and
disconnecting the speakers for avoiding undesirable noise
while recording.

10

Figs. 6B and 6C illustrate a fourth embodiment of
the present invention which includes an additional audio
switch 176 which disables external speaker noise while
the recorder is connected. Input audio switch 176 is
15 connected to the audio output of computerized system 600
and the speaker output of switch 174 is connected to
speakers 132. When recorder link 104A is connected to
recorder output of switch 172, speaker output 174 is
disconnected to prevents them from producing any noise or
20 sound, during the recording process. The audio switch
can include three stereo switched phone jacks. Input
phone jack 170 receives audio plug 104A1 to bring audio
segments from computerized system 600. Input phone jack
170 is connected to input contact pads 172A of recorder
25 phone jack 172. Switched contact pads 172b from jack 172
are connected to input connecting pads 174A of speaker
phone jack 174. Accordingly, recorder audio plug 104A2
can be inserted to phone recorder jack 172 to disconnect
the audio from speaker phone jack 174 and, thus, to
30 disable the speakers. Such a switch 176 can be
implemented electronically and can be implemented inside
of computerized system 600.

Fig. 6D illustrates an output control of computerized audio system 10. In particular, computerized system 600 includes two audio outputs from a sound board or card 190 installed therein. The audio outputs include a line out 192 connected to an audio recorder and an independent controllable speaker output 194 which can be switched off while recording is in session. Sound card 190 can be a Sound Blaster card of Creative Labs, which provides "line out" and "speaker output" features. However, such sound cards are dependent, meaning that their output amplitudes correlate to one another, and a gain control 184 of amplifier 182 determines the common gain of both outputs 194 and 192. Amplifier 188 amplifies the signal sent to speakers output only and thus power control 188 of amplifier 186 controls its output only. As a result, the present invention provides an independent control of these outputs, by controlling independent gain or alternatively independent control of connection to the outputs, thereby enabling silencing of the speaker output 194 while "line out" 192 is operating.

Fig. 6E illustrates a fifth embodiment of the present invention. A personal audio system 660, such as an audio tape recorder, is assembled in computerized system 600. Portable storage means 200, can be inserted into personal audio system 660 to store or retrieve audio segments. Such an arrangement is easier to use and does not require external wiring, thereby providing a system that is more reliable and takes up less space.

As shown in Fig. 6E, computerized audio system 10 employs computerized system 600 to deliver off-line selected audio segments. That is, computerized system

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600 can process the selected audio segments (as described in Fig. 6E) and digitally store them on storage means 662 through the use of recording apparatus 660. Storage means 662 can be a Recordable Mini Disk (MD), a
5 Recordable CD (i.e., an CDR650/74 developed by 3M Corp.), or re-Recordable CD such as Philips CDR870 recorder, Philips Digital Compact Cassette (DCC) or a floppy disk 664. Recording apparatus 660 can
10 respectfully be a MD, CD-RW Re-Writable recording device (i.e., DVD), floppy disk drive, or flash card, connected to a computerized system 600. Once download of audio segments have been completed, storage means 662 can be removed from recording apparatus 660 and inserted and
15 played on another audio system, such as a car stereo, or a portable Walkman like device. It will be appreciated that using present invention for automatic off-line or on-demand retrieval, customization and storage of text converted to speech, or personal audio selection stored
20 MD or Re-Recordable CD as described in Figs. 7A and 7B will be used as an enhanced productivity tool for people on the go.

Fig. 7A illustrates a flow diagram of an operation
25 of computerized audio system 10. Computerized audio system 10 can be initiated on-demand (Step 770), upon a user request, or automatically (Step 772) as described in more detail in Fig 7B. The user can automatically select and retrieve data, such as documents 774, E-mail 776,
30 news 778 and so forth. Data in text format is converted to speech 780 (e.g., digital speech can be stored on digital storage means such as Recordable MD). If the storage means employs an analog input format the digital

speech is further converted to analog speech signal 790).

5 The user can also select and retrieve audio formats
such as compressed voice 782 or compressed audio 784,
which are then decompressed (Step 788). Digital audio
can be stored on digital storage means such as Recordable
MD (such as Aiwa AM-F5 portable recorder). If the
10 storage means employs an analog input format the digital
audio signal is further converted to analog audio signal
790) The user can further select and retrieve voice and
audio in wave or analog signal formats 786).
Computerized system 600 can be automated to retrieve
selected data according to predetermined criteria.

15
Once the selected data is retrieved, computerized
system 600 downloads the selected data as audio segments
for storage on portable storage means 200 (Step 790). It
should be understood that the audio segments can be
20 stored on portable storage means 200, such as an audio
cassette tape, microcassette, Mini Disk (MD), CD-RW,
Digital Audio Tape (DAT), DVD, Compact Disk, DCC, Floppy
disk Flash memory 790 or equivalent. Any portable memory
storage unit can be employed so long as data can be
25 downloaded and replayed at another location.

Fig. 7B is a flow diagram of a typical sequence of
operations for storing customized audio on a personal
audio system. Computerized system 600 can be configured
30 to begin the downloading and recording process of Fig. 1A
(i) at a prespecified time period, i.e., 9:00 am (Step
702) (ii) upon retrieval of the selected data (i.e.,
receipt of an E-mail) (Step 704), (iii) at the request to

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start by a user (Step 706). Once initiated, computerized system 600 selectively retrieves data from external link 610 or internal storage (Step 708), which is processed to extract relevant data according to user's definition of content to be stored (Step 710).

Once the selected data is retrieved, the storage of the selected data is dependent on the type of portable storage means 200. If audio system 100 employs a digital portable storage means 200 (as described in Fig. 2), digital data is reformatted (Step 713) according to storage means (i.e., if data is text it is being converted to digital speech using TTS algorithm, in case MD further processes can be used, such as ATRAC 4.5 data reduction) the selected data is transmitted to audio system 100 as audio segments and stored on digital portable storage means 200 (Step 714). If portable storage means 200 is an analog storage, such as a magnetic tape, or MD with analog input, the selected data is further processed according to the data format. If the selected data is in text format (Step 716), then it is converted to a speech format through the use of Text-To-Speech algorithms performed by computerized system 600 (Step 718). If the selected data is in a compressed format (Step 720), then it is decompressed to audio or voice (Step 722). In the event the selected data is modulated (Step 724), then the audio is demodulated to an audio format (Step 726). Accordingly, the format of the audio segments is dependent on the format of the data and the format employed by portable storage means 200.

In any event, computerized system 600 can also inserts intentional automatic segments of silence between

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each audio segment (Step 728) to enable skipping (i.e., SKIP operation) between segments when played on audio system 100, or add codes as required. If the audio segments are stored on a MD through the use of analog recording, each audio segment is stored in different track to allow a user to employ conventional search functions (e.g., the SKIP function) to browse through the audio segments. When the audio segments are being played (Step 730) and downloaded onto portable storage means 200 (Step 732), the external speakers of computerized system 600 can also be switched off or into a MUTE mode to avoid noise.

Fig. 7C provides a flow diagram of an operation for storing selected audio segments on a portable storage means 200 (e.g., an audio cassette) through the use of audio system 100, such as a tape recorder with electronic control (as described in Fig. 2). Initially, audio system 100 detects an insertion of portable storage means 200 therein (Step 760) and then fast rewinds the cassette to the beginning (Step 762). When portable storage means 200 is rewound to the beginning, audio system 100 automatically terminates the rewind operation (Step 764) and awaits the download of the audio segments (Step 766). When the audio segments are ready for download, audio system 100 begins recording the audio segments on portable storage means 200, preferably according to the process shown in Fig. 7B (Step 768). If portable storage means 200 reaches the end before all audio segments are stored, audio system 100 reverses the portable storage means 200 direction to continue downloading of the remaining audio segments on an opposite side. When portable storage means 200 reaches the end of the second

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side, the recording process is terminated (Step 770). If portable storage means 200 is not at the beginning, audio system 100 fast rewinds the portable storage means to the beginning (Step 774). Although the above storage method is described for audio cassette tapes, it can be modified to apply to other types of portable storage means 200.

Similarly, if portable storage means 200 is a MD, Computerized system 600 detects if the MD is ready for recording. When the data is ready to be recorded to the MD, computerized system 600 transmits a command to cause audio system 100, in this case a MD player, to start recording each new audio segment on a different track of portable storage means 200. When portable storage means 200 has reached full capacity, computerized system 600 stops recording. Preferably, for the case of E-mail, computerized system will store the E-mail in voice format in a last-in-first-out (LIFO) manner. That is, the most recent E-mail is stored in the first track of portable storage means 200 to be played, and so on accordingly to the order the E-mail was received.

Fig. 7D illustrates a flow diagram of an operation for storing selected data as audio segments through the use of audio system 100, i.e., a tape recorder, with Voice Operated Control (VOX) (as described in Fig. 6A). Initially, portable storage means 200 (i.e., an audio cassette) is inserted into a tape recorder (Step 740). Audio system 100 has a microphone input connected to the audio output of computerized system 600, to receive downloaded audio segments. Portable storage means 200 is rewound to the beginning (Step 744). A user can then manually initiate recording, i.e., by pressing the RECORD

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button on audio system 100 (Step 746). Audio system 100
waits to receive the audio segments due to the VOX
function. Once computerized system 600 has prepared the
selected data as audio segments for download (Step 748),
5 computerized system 600 starts playing the audio segments
(Step 750). The VOX of audio system 100 detects the
audio segments and begins recording them on portable
storage means 200. When portable storage means 200
reaches the end (Step 754), audio system 100 stops the
10 recording operation (Step 758). Throughout this process,
computerized system 600 inserts intentional silent
segments or the equivalent thereof between each audio
segments, which enables a user to later employ the SKIP
function when portable storage means 200 is played.

15

Reference is now made to Figs. 8A, 8B, 8C, 8D and 8E
which illustrate an alternative embodiment of
implementing the present invention with the use of a
modified audio cassette (i.e., portable storage means).

20

Fig. 7E is a flow diagram of a storage operation of
user responses, such as a voice comment, on the same
portable storage means 200, in this case a Mini Disk,
that stores the audio segments. A user begins by playing
25 the audio, i.e., the audio segments, stored on portable
storage means 200 through the use of a personal audio
system, such a Mini disk player (Step 910). If there are
any audio segments that have not been played, the
personal audio system plays them (Step 912). As each
30 audio segment is being played, the user can initiate a
RECORD operation to stop the playing of audio segments
and to store a user response associated with the most
recent or last audio segment (N) being played (Step 918).

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At this time, the personal audio system stores an identifier onto a comment or response allocation table (stored on portable storage means 200) that associates the user response with the last audio segment (N) being played. The user can then record a voice message, can mark the audio segment being played for future reference and so forth (Step 920). The user responses are stored on a new track on portable storage means 200. Once the recording operation is completed, the personal audio system resumes playing from the consecutive audio segment (Step 924). When all audio segments have been played, the personal audio system updates the comment allocation table. The personal audio system can compress the user responses while recording or after finishing the playing/recording process (Step 928).

It should be understood, that the personal audio system (i.e., audio system 200) can be detachably connected to computerized system 600 of the present invention. Upon a user request, the personal audio system uploads the comments allocation table, user responses related to audio segments and audio segment identifiers, such as header of E-mail played which contains the address of the sender and subject in text format, to computerized system 600. The feature of the present process is that a user can listen to audio segments, such as E-mail in voice format, record voice comments (e.g., user responses) related to specific E-mail heard, upload the user responses and send them automatically to the destination (e.g., the sender's address).

Fig. 8A illustrates a modified cassette 800 which includes a cassette shell 804, magnetic audio reels 802

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with hubs, and a magnetic audio magnetic tape 850
connected between the reels. There is provided cassette
control 810 (810a, 810b) located in cassette shell 804 in
a manner so as not to disturb audio magnetic tape 850. A
5 cable 812 is connected between cassette control 810 and a
control/microphone unit 814. Modified cassette 800
enables a user to store marks (i.e., mark audio segments)
or vocal messages thereon. The stored marks or vocal
messages can typically be in response to audio segments
10 played from audio magnetic tape 850, such as E-mail
replies. Control unit 814 may include a power supply
connected to cassette control 810, a key for marking or a
record command, or an electronic mark generator which
produces a mark code, such as DTMF signal. Control unit
15 814 may also include a microphone for recording the vocal
messages.

Referring to Figs. 8B and 8C, there is shown audio
magnetic tape 850 of modified cassette 800 and an
20 internal recording magnetic head 816 (Magnetic head 818
belongs to the tape deck and is shown as a reference
only). Audio magnetic tape 850 includes a side A with
two tracks of audio (i.e., side A-R and side A-L) and a
side B with two tracks of audio (i.e., side B-R and side
25 B-L). Side A can be used to store information described
in Fig. 4A, such as a code segment 852, an information
segment 854, a silence segment 856. Side B may be
employed to store a duplicate copy of information code
862, and a recorded segment 860. Recorded segment 860 can
30 be a recorded voice message or code markings. Segment
code 862 and recorded segment 860 can be stored on
different tracks 850A, 850B (as shown in Fig. 8C) or on
the same track.

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In operation, as the audio segments on modified cassette 800 is played on a tape player, a user can initiate an operation to record a mark or a voice message related to a current audio segment being played. The record operation stops the movement of cassette 800. The tape player detects the operation and automatically switched the direction of the tape movement. Internal recording head 816 of cassette 800, located on control board 810A, begins to record voice messages received from external microphone 814 on an inner side of the tape. A magnetic head of the tape player 818 is shifted and, thus, not affected by the voice being recorded. This prevents electric-acoustical feedback while recording the voice messages.

It will be appreciated that a user can use the same audio cassette both for listening to audio information and to store responses thereto. The present invention enables correlation between segments recorded 860 and segments played 854. Although the above example describes a manner of storing both audio segments and user responses on an audio cassette tape, such an arrangement may also be applied to Recordable MD, Recordable CD and so forth using the same principles of the present invention.

Fig. 8D illustrates a block diagram of modified cassette 800. Modified cassette 800 includes RECORD command input means 870, code marking means 874, and a microphone input 872 connected to cassette control 810, via a cable 812. Cassette control 810 receives voice signals from microphone 872 or mark code signal 874,

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which is amplified by an amplifier 878. Upon receiving a record command 870, cassette control 810 enables recording 876, by transmitting the amplified signal to a recording magnetic head 816A. Recording magnetic head
5 816A then records the amplified signals on magnetic tape 850 of modified cassette 800.

A magnetic pick-off head 816B converts a magnetic signal on a magnetic tape 850. The signal is amplified
10 by an amplifier 886. A segment code is detected by a detector means, such as a DTMF detector and enables a routing of the code signals to be recorded on the tape, via amplifier 882 and magnetic head 816A. Upon receiving
15 a record command 870, a change direction control 888 causes the tape player to change the direction of the tape rotation. A direction control 888 can be a mechanical break, such as a solenoid that stops the rotation of the tape hubs by friction momentarily and causes the direction change of the tape player. Side B
20 (850A, 850B) of the tape is now recording the segment code, user mark or user vocal message. Once recording is completed, recording direction control 888 changes the rotation direction again and the tape player continues playing the audio segments on side A.

25

Fig. 8E illustrates another embodiment of modified cassette 800 which incorporates a separate digital memory device to store voice messages, marks, etc. Modified cassette 800 includes a digital storage means 894, such
30 as a solid state memory, for storing vocal messages, marks made by the user, and optionally recording a code identifying the audio segment being played, while a user records a message. A controller 892 receives a user

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record commands 876 and enables amplifier 878 to amplify
the users voice or marks which is then converted to
digital data using a CODEC 896, such as 3054 of National
Semiconductors. The digital data is then compressed by
5 controller 892 and stored on solid state memory 894, such
as FLASH memory of Intel Corporation. In the
alternative, an MD system can include Solid state memory
for recording short audio segments, such as voice notes.

10 The present invention having thus been described
with particular reference to the preferred forms thereof,
it will be obvious that various changes and modifications
may be made therein without departing from the spirit and
scope of the invention as defined in the appended claims.

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CLAIMS

1. A computerized audio system for converting text to audio segments on a portable storage means, said computerized system comprising:

means for accessing digital data representative of said text;

means for storing said audio segments on said portable storage means; and

processing means coupled to said accessing means for retrieving from said means portions of said digital data, said processing means further including means for converting said portions of said digital data to a signal form that is recordable as audio and causing said means for storing to store said signal form on said portable storage means as audio segments.

2. The system as recited in claim 1, wherein said processing means selectively retrieves said portions of said digital data based on user entered criteria.

3. The system as recited in claim 1, wherein said processing means converts said portions of said digital data to an analog signal for storage on said portable storage means as said audio segments.

4. The system as recited in claim 1, wherein said processing means converts said portions of said digital data to a digital format for storage on said portable storage means as said audio segments.

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5. The system as recited in claim 1, wherein said text is one of the group consisting of electronic mail, textual documents and html page data.
6. The system as recited in claim 1, wherein said means for storing stores said audio segments on said portable storage means at a faster rate than a playing rate.
7. The system as recited in claim 1, wherein said means for storing is a magnetic tape recorder.
8. The system as recited in claim 1, wherein said processing means stores audio segments on said portable storage means in a manner to respond to a search function of a portable storage means player.
9. The system as recited in claim 1, wherein said processing means produces silence segments on said portable storage means between each of said audio segments.
10. The system as recited in claim 1, wherein said means for storing is a voice activated audio tape recorder so as to enable an automatic storage operation of said signal form on said portable storage means without user intervention.
11. The system as recited in claim 10, wherein said voice activated audio tape recorder includes a magnetic head, said processing means generating a signal that is detectable by said voice activated audio tape recorder to enable said storing operation to continue even though any

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signal recording during transmission of said signal will be considered as a silence segment by a tape player.

12. The system as recited in claim 11, wherein said processing means selectively generates said signal to produce said silence segment on said portable storage means between each of said audio segments.

13. The system as recited in claim 1, wherein said means for storing is detachably connected to said processing means.

14. The system as recited in claim 1, wherein said portable storage means includes:

first memory means for storing said audio segments;

input means for receiving user responses to said audio segments;

second memory means, connected to said input means, for storing said user responses; and

second processing means for storing said user responses from said input means on said second memory means.

15. The system as recited in claim 14, wherein said first memory means is at least a magnetic tape.

16. The system as recited in claim 14, wherein said second memory means is connectable to said processing means to download said user responses from said second memory means to said processing means.

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17. The system as recited in claim 1, wherein said portable storage means includes a first recording section and a second recording section, said means for storing said audio segments on said first recording section and user responses to said audio segments on said second recording section.

18. The system as recited in claim 1, wherein said processing means stores a code segment on said portable storage means.

19. The system as recited in claim 18, wherein said code segment is an identification code to identify each of said audio segments.

20. The system as recited in claim 18, wherein said code segment is a security code that is written on said portable storage means that at least identifies at least one authorized receiver.

21. The system as recited in claim 1, further comprising speaker means, said processing means having means for muting said speaker means during storage of said audio segments on said portable storage means.

22. The system as recited in claim 1, wherein said processing means further includes means for storing a number of times each of said audio segments has been recorded.

23. The system as recited in claim 22, further comprising means for generating a signal and means for

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transmitting said signal if said number of times of one of said audio segments exceeds a predetermined number.

24. The system as recited in claim 22, wherein said processing means disables further duplication of one of said audio segments if said number of times of one of said audio segments exceeds a predetermined number.

25. The system as recited in claim 1, wherein said processing means includes means for determining whether said portable storage means has reached full capacity.

26. The system as recited in claim 25, wherein said processing means causes remaining audio segments unable to be stored on said portable storage means to be stored onto an alternate portable storage means.

27. The system as recited in claim 25, wherein said portable storage means has a first side and a second side, said processing means causes remaining audio segments unable to be stored on said first side to be stored on said second side.

28. The system as recited in claim 1, wherein said portable storage means is a recordable mini disk.

29. The system as recited in claim 1, wherein said portable storage means is an audio cassette tape.

30. The system as recited in claim 1, wherein said portable storage means is a recordable compact disc.

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31. A computerized audio system for downloading data as audio segments to a portable storage means, said computerized system comprising:

communication means for receiving data, across a network;

means for storing said audio segments on said portable storage means; and

processing means coupled to said communication means for selectively retrieving data across said network, said processing means further including means for converting said selected data to analog signals and causing said means for storing to store said analog signals on said portable storage means as audio segments.

32. The system as recited in claim 31, wherein said processing means stores audio segments on said portable storage means in a manner to respond to a search function of a portable storage means player

33. The system as recited in claim 31, wherein said processing means produces silence segments on said portable storage means between each of said audio segments.

34. The system as recited in claim 31, wherein said means for storing is a voice activated audio tape recorder so as to enable an automatic storage operation of said signal form on said portable storage means without user intervention.

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35. The system as recited in claim 34 wherein said voice activated audio tape recorder includes a magnetic head, said processing means generating a signal that is detectable by said voice activated audio tape recorder to enable said storing operation to continue even though any signal recording during transmission of said signal will be considered as a silence segment by a tape player.

36. The system as recited in claim 35, wherein said processing means selectively generates said signal to produce said silence segment on said portable storage means between each of said audio segments.

37. A method for automatically recording selected data as audio segments on a portable storage means, said method comprising the steps of:

selectively retrieving data across a network or from local storage;

converting said selected data to analog signals; and

storing said analog signals on said portable storage means as audio segments.

38. The method as recited in claim 37, wherein said step of converting further converts said selected data related to text to a signal form that is recordable as audio.

39. The method as recited in claim 37, wherein said step of storing stores audio segments on said portable storage means in a manner to respond to a search function of a portable storage means player.

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40. The method as recited in claim 37, wherein said step of storing further produces a silence segment on said portable storage means between each of said audio segments.

41. The method as recited in claim 37, wherein said analog signals is stored on said portable storage means through the use of a voice activated audio tape cassette recorder having a magnetic head, said step of storing further including the step of generating a signal that is detectable by said voice activated audio tape recorder to enable said storing operation to continue even though any signal recording during transmission of said signal will be considered as a silence segment by a tape player.

42. The system as recited in claim 41, wherein said step of storing selectively generates said signal to produce said silence segment on said portable storage means between each of said audio segments.

43. A portable special cassette playable on a cassette player comprising:

first memory means for storing audio segments that are played by said cassette player;

input means for receiving user responses to said audio segments;

second memory means, connected to said input means, for storing said user responses; and

processing means for storing said user responses from said input means on said second memory means.

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-55-

44. The cassette as recited in claim 43, wherein said first memory means is a magnetic tape.

45. The cassette as recited in claim 43, wherein said second memory means is a digital storage device.

46. The cassette as recited in claim 43, wherein said input means is connectable to a microphone.

47. The cassette as recited in claim 43, further comprising interface means for interconnecting to said second memory means to download said user responses.

48. A personal remotely controlled audio system for playing a portable storage means having stored thereon said audio segments of claim 1, said audio system comprising:

means for playing said audio segments on said portable storage means; and

means for remotely operating said means for playing to at least play said audio segments.

49. The audio system of claim 48, wherein said means for remotely operating causes said means for playing to perform a search function, including at least skipping between said audio segments.

50. The audio system as recited in claim 43, wherein said portable means is a cassette player.

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51. The audio system as recited in claim 48, wherein said portable means is a Mini Disk.
52. The audio system as recited in claim 48, wherein said means for remotely operating controls wirelessly controls said means for playing
53. The system as recited in claim 28, wherein said portable storage means stores user comments along with an identifier to associate said user comments to an audio segment of said audio segments being played prior to recording said user comments.
54. The system as recited in claim 53, wherein said stored user responses and each said identifier can be uploaded to said processing means.

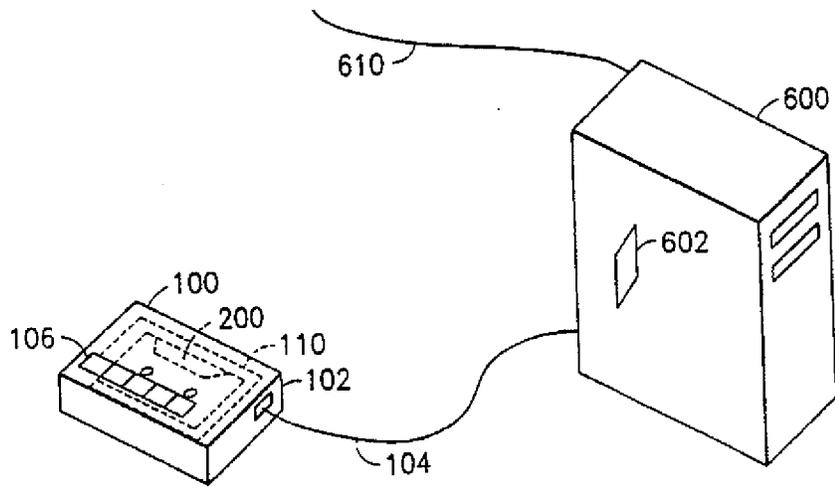


FIG. 1A

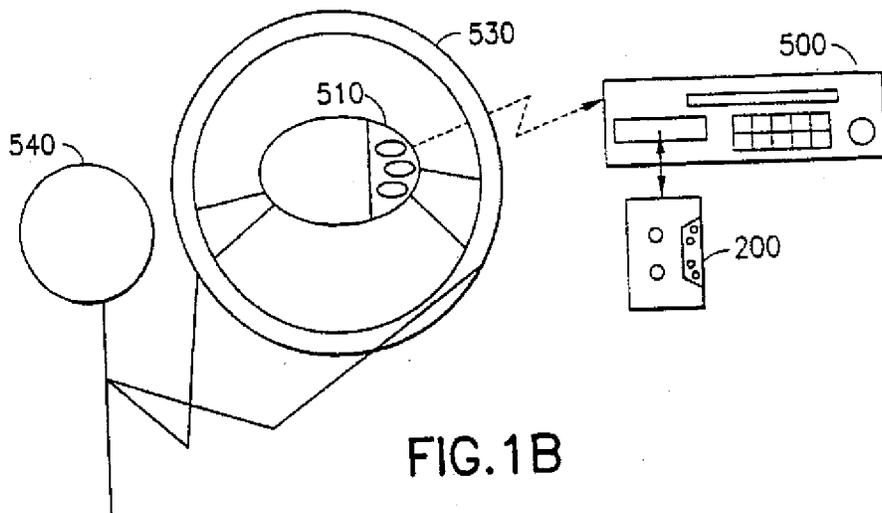


FIG. 1B

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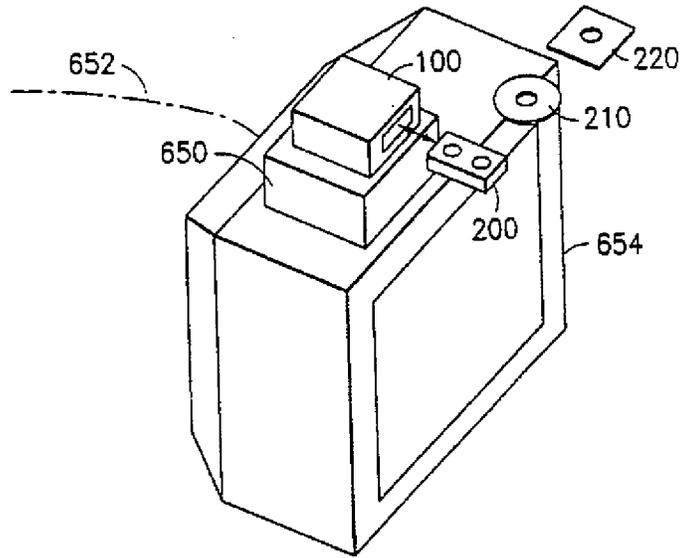


FIG. 1C

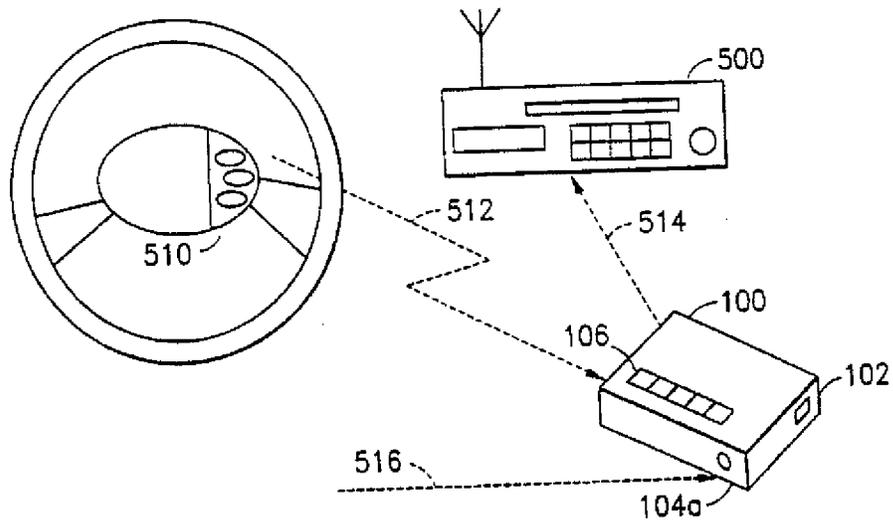


FIG. 1D

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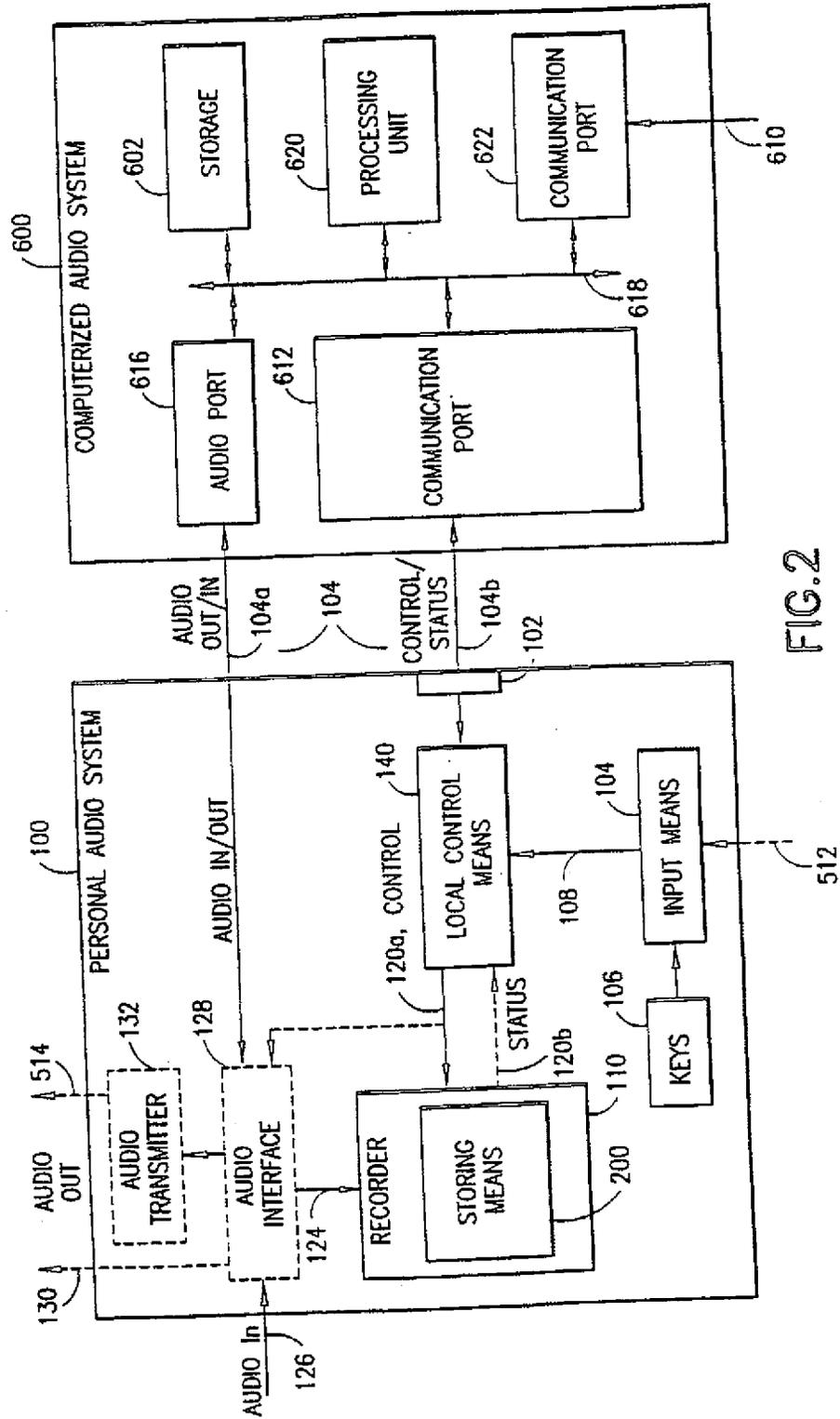


FIG.2

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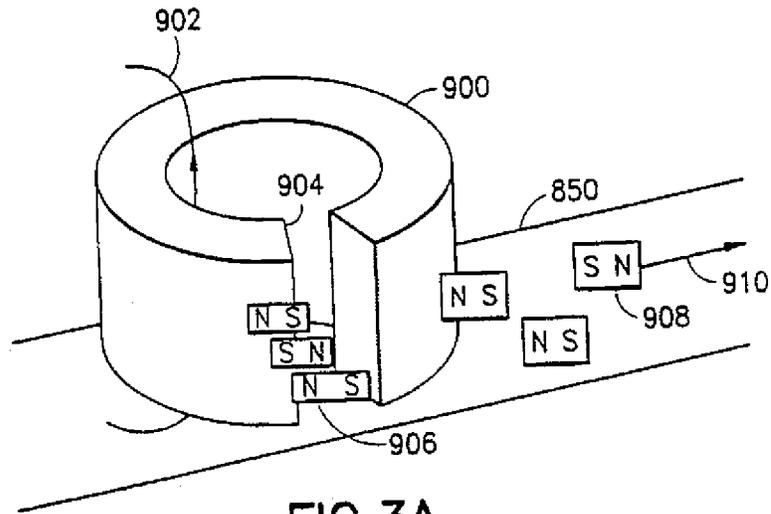


FIG. 3A

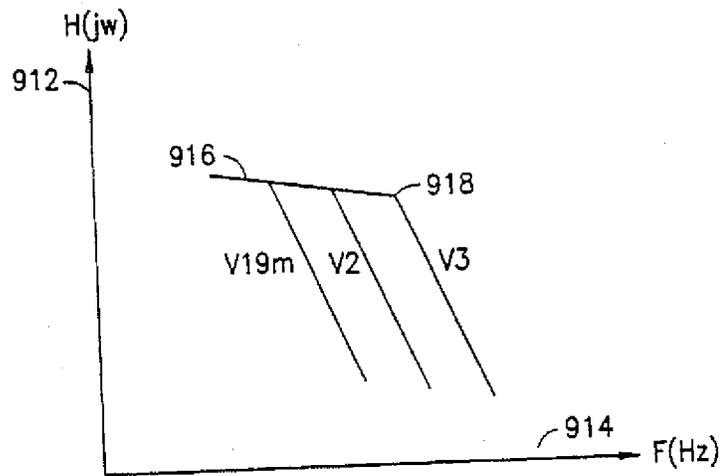


FIG. 3B

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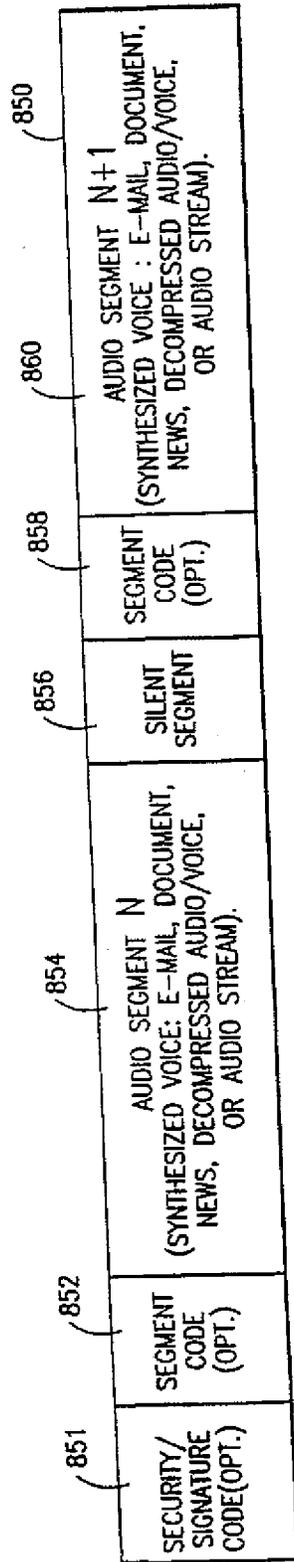


FIG. 4A

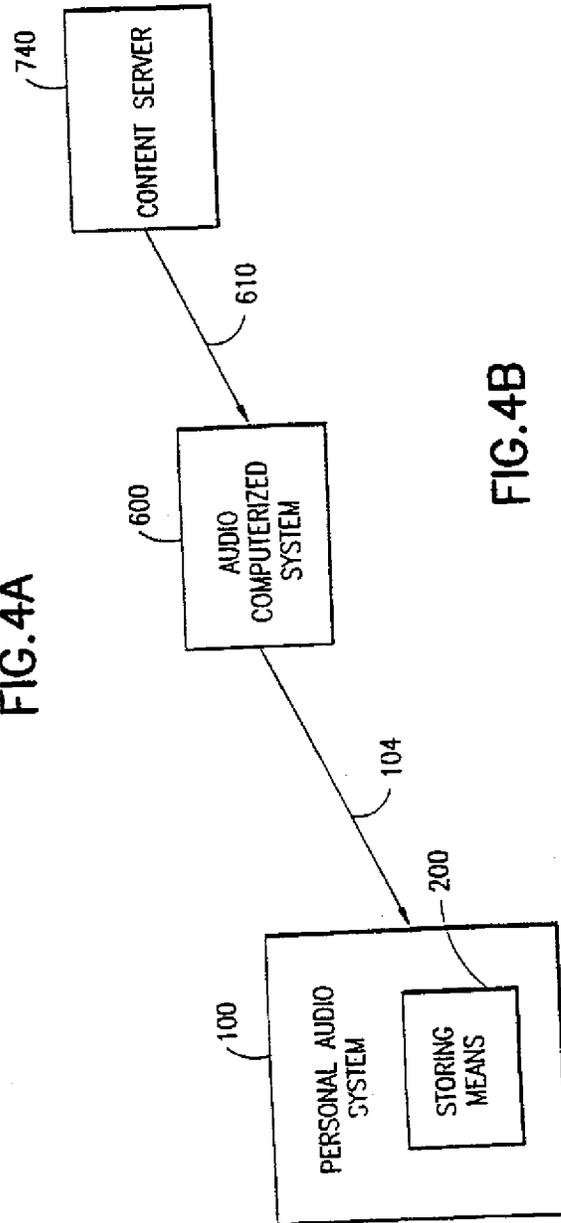


FIG. 4B

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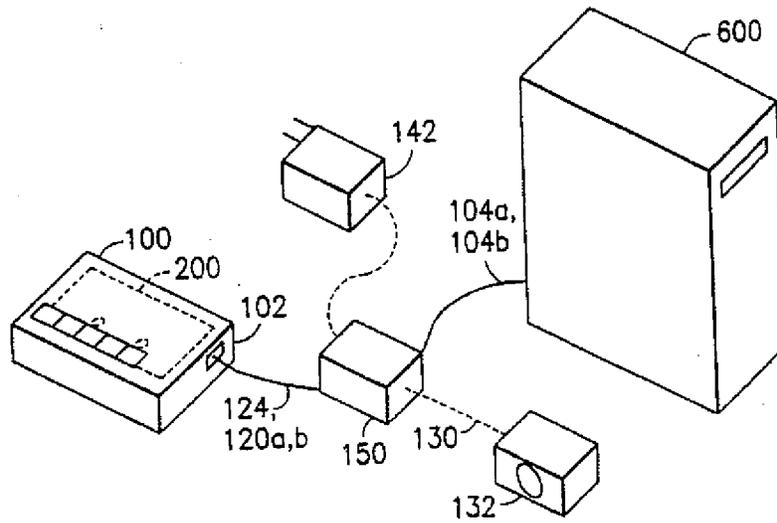


FIG. 5A

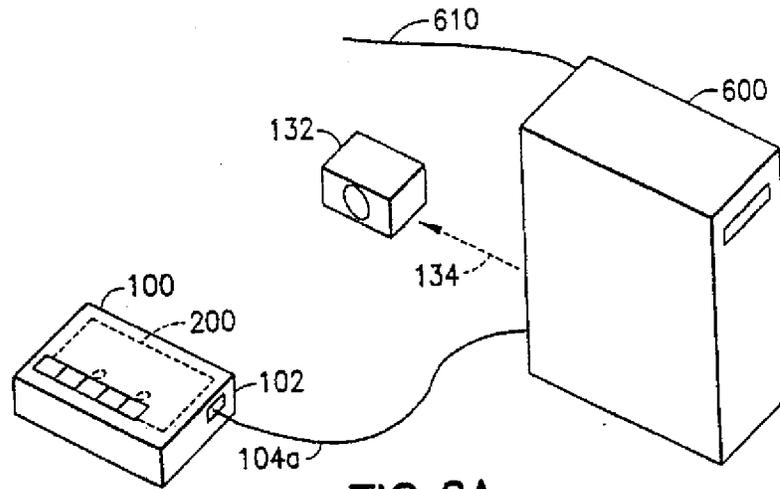


FIG. 6A

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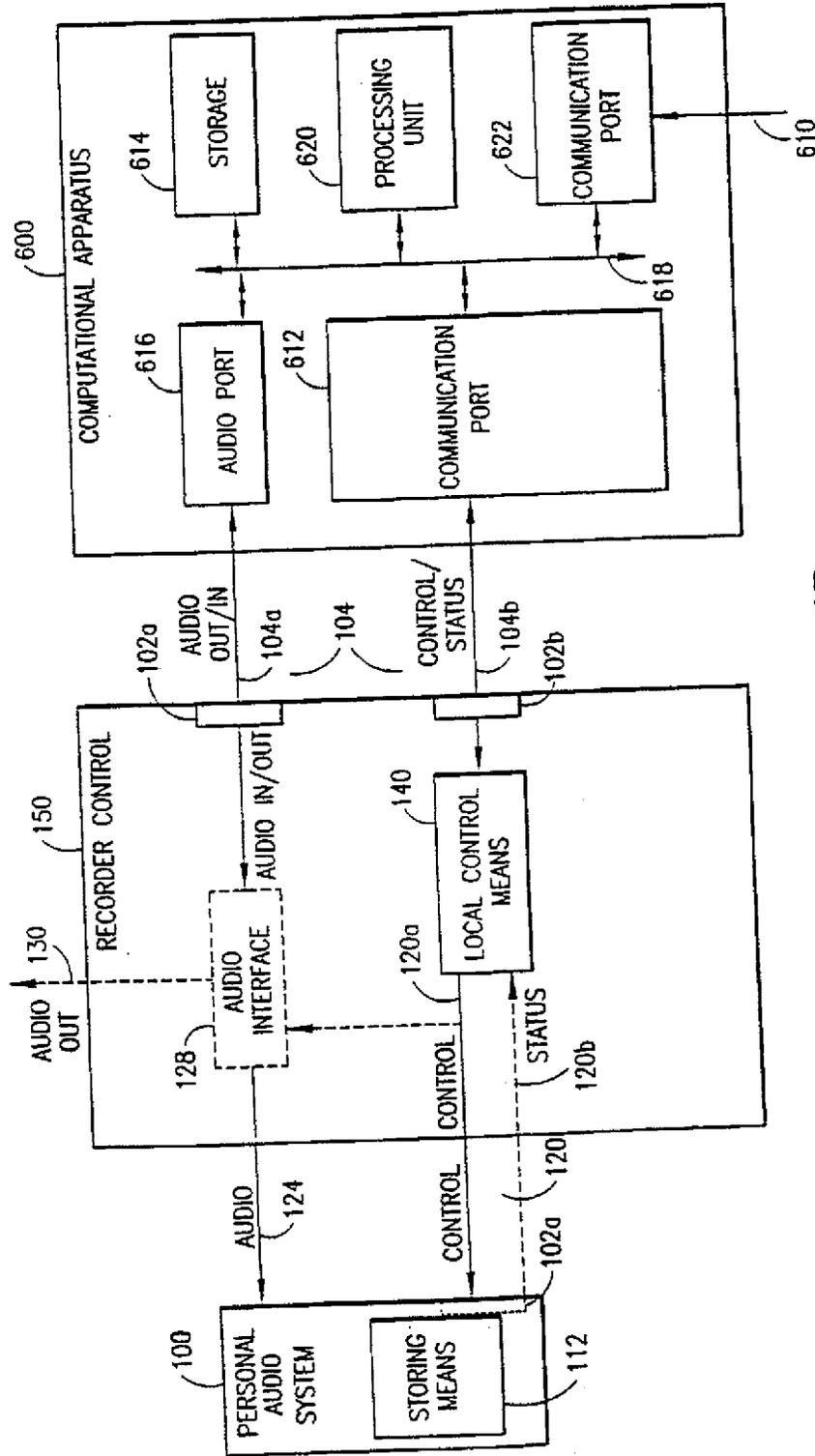


FIG.5B

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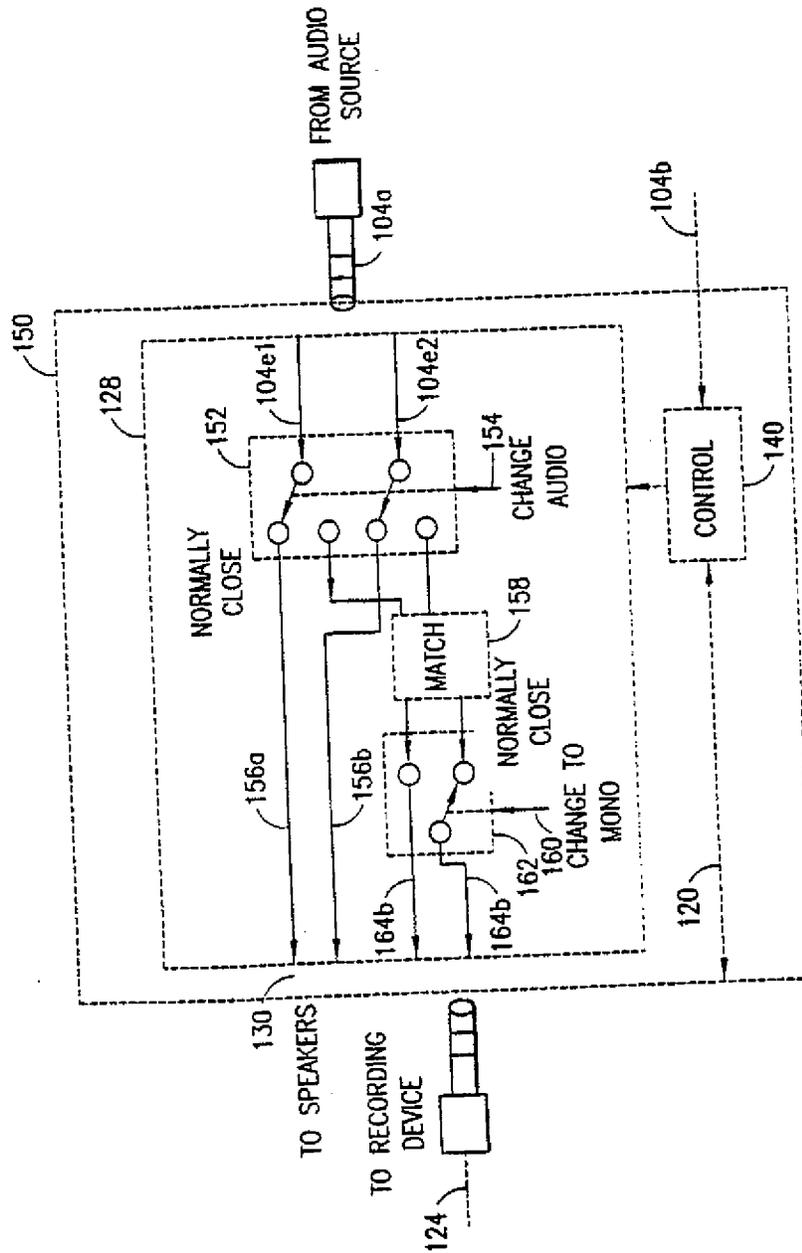


FIG. 5C

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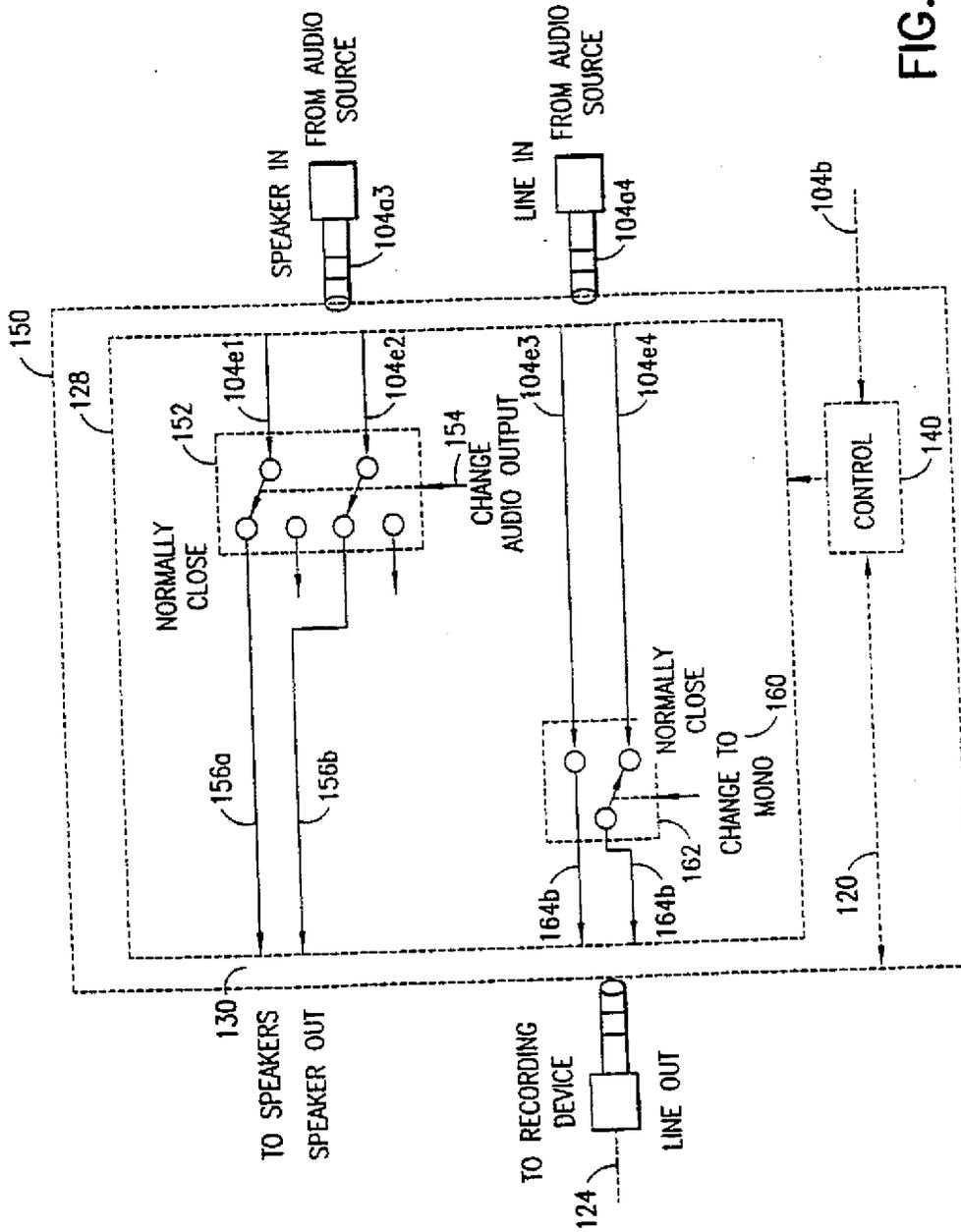


FIG.5D

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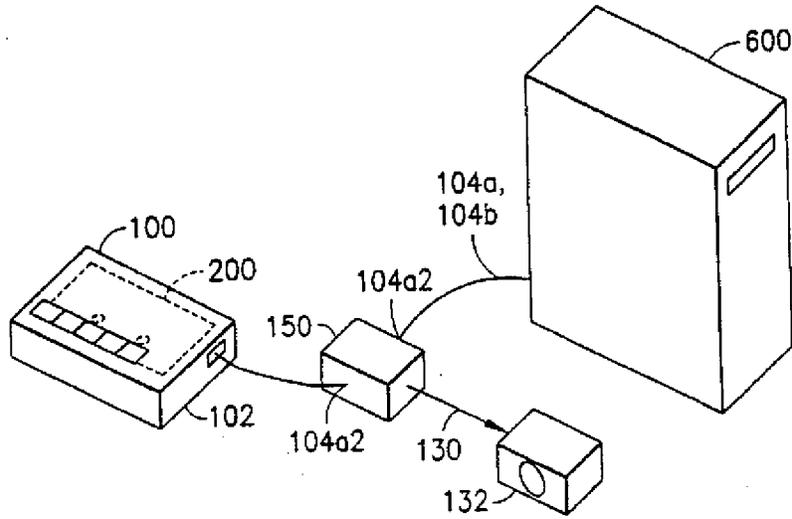


FIG. 6B

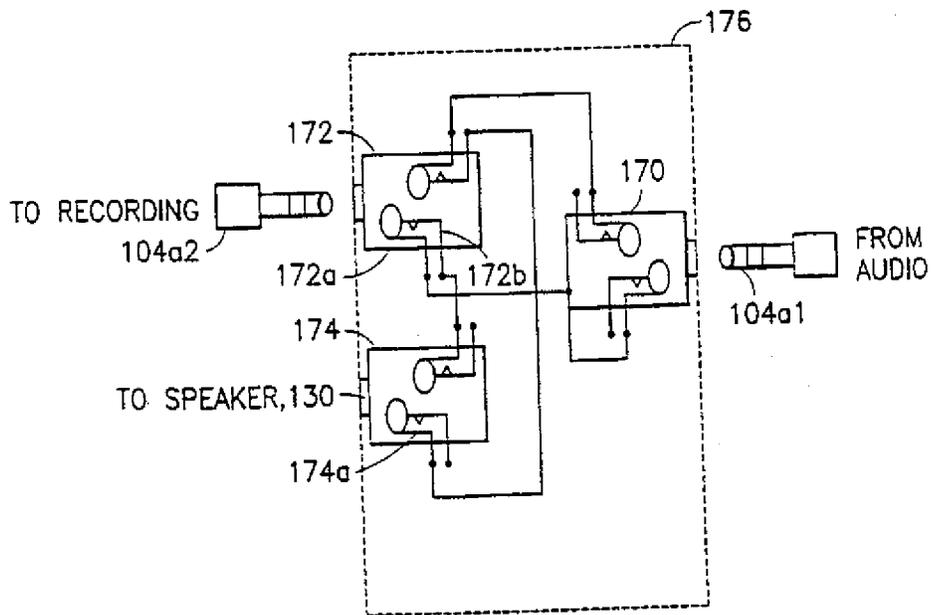


FIG. 6C

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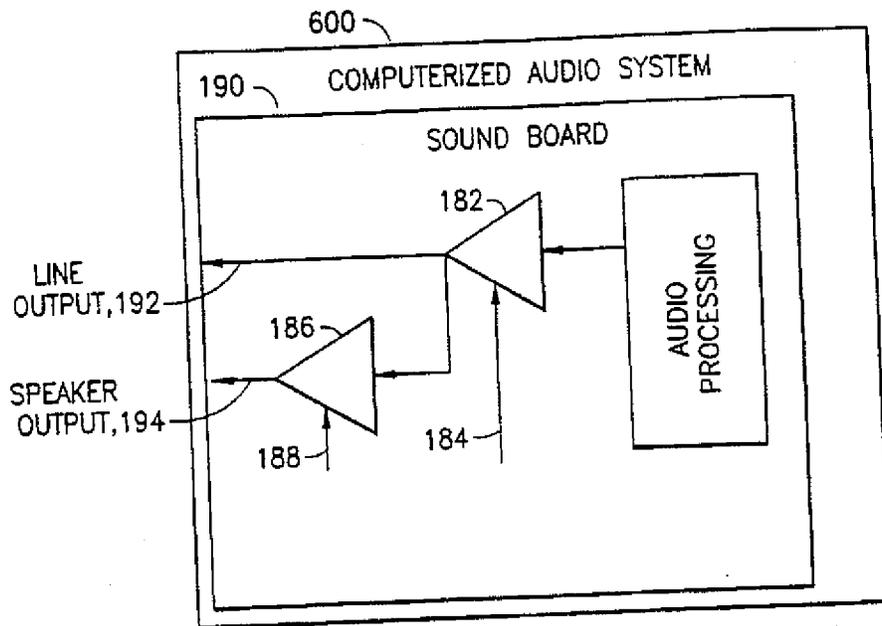
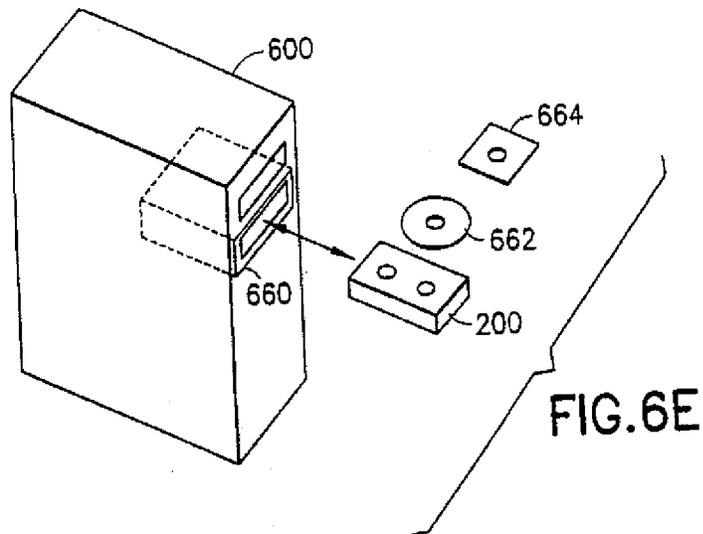


FIG.6D



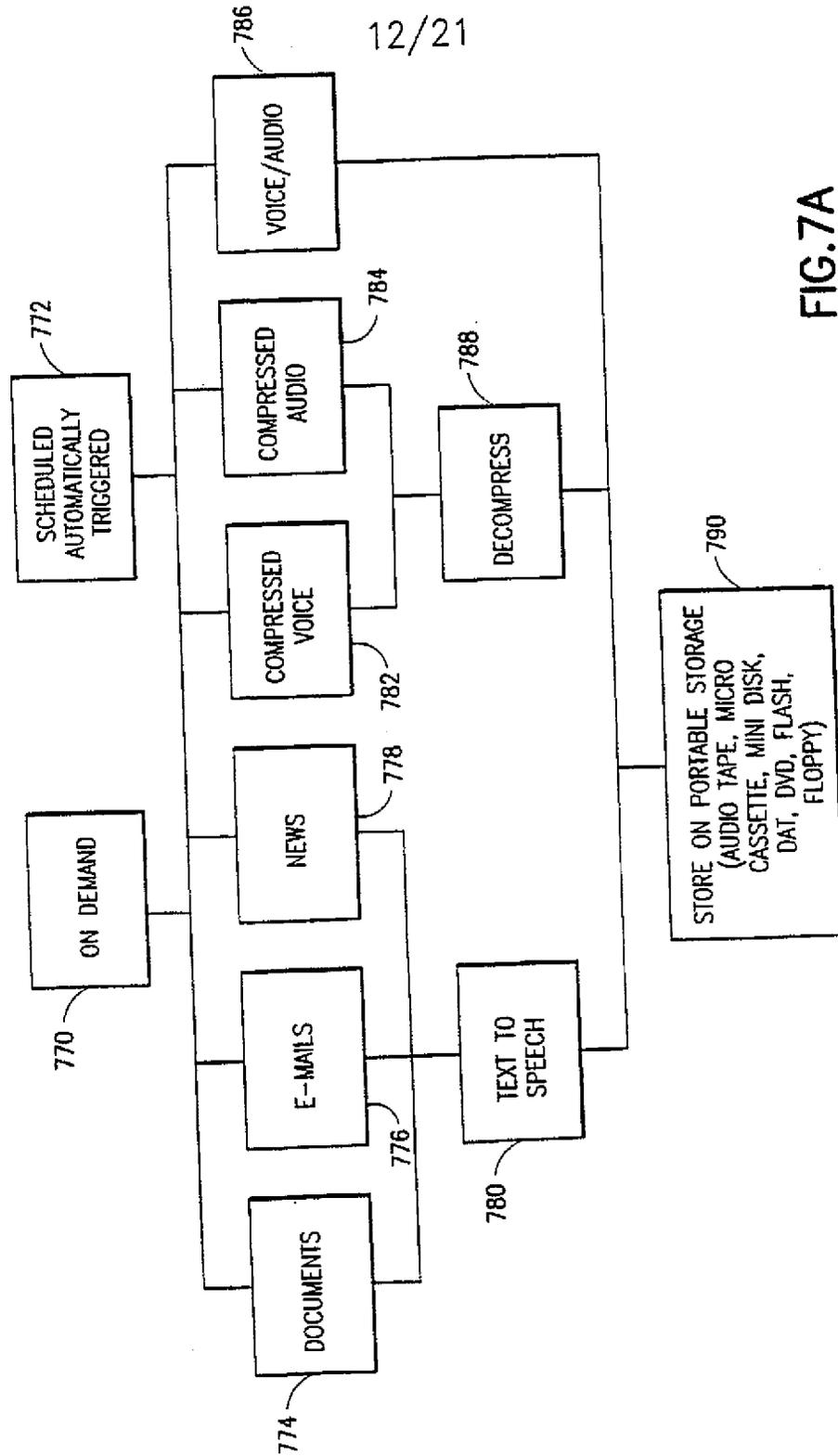


FIG.7A

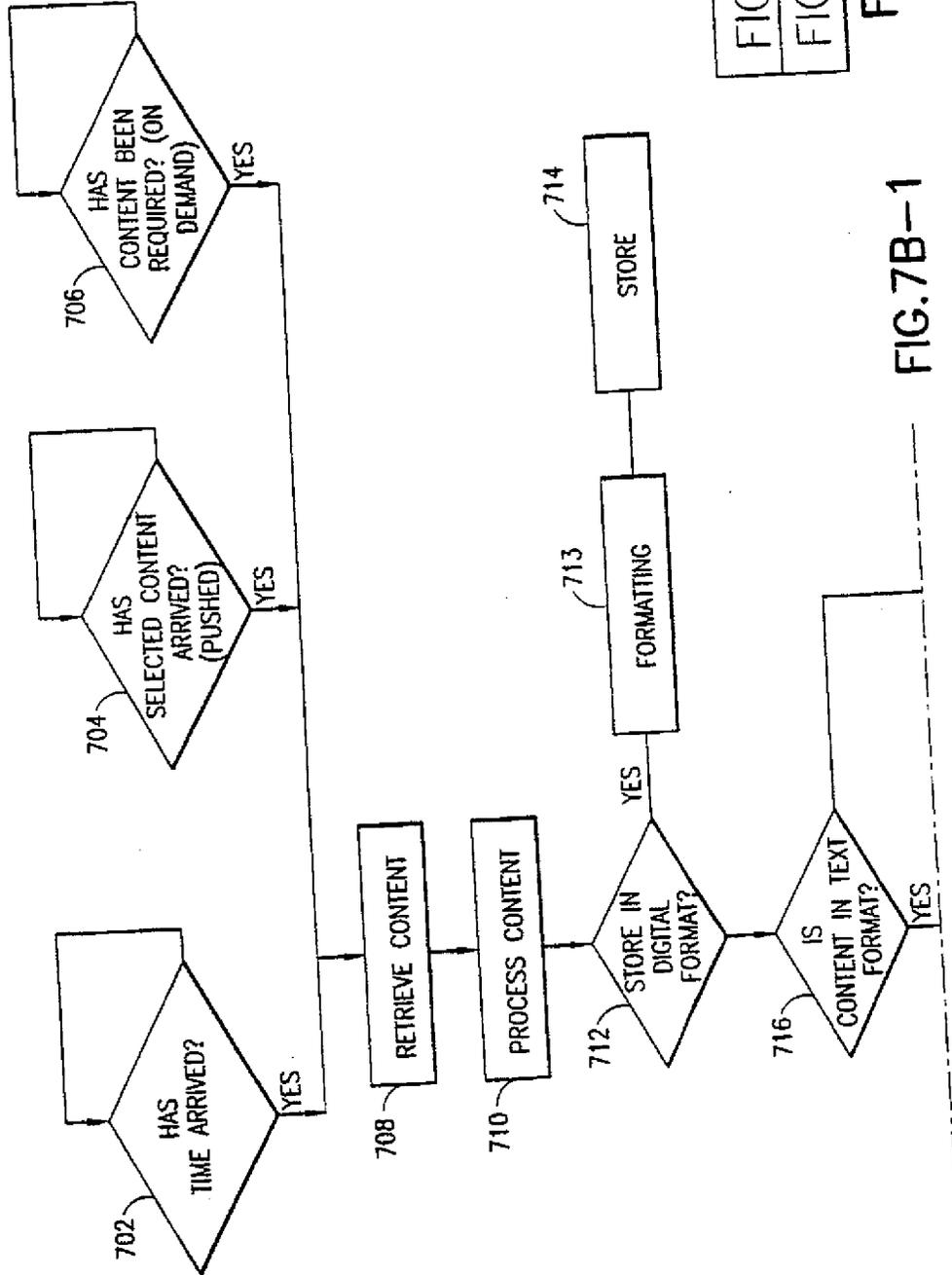


FIG. 7B-1
FIG. 7B-2

FIG. 7B

FIG. 7B-1

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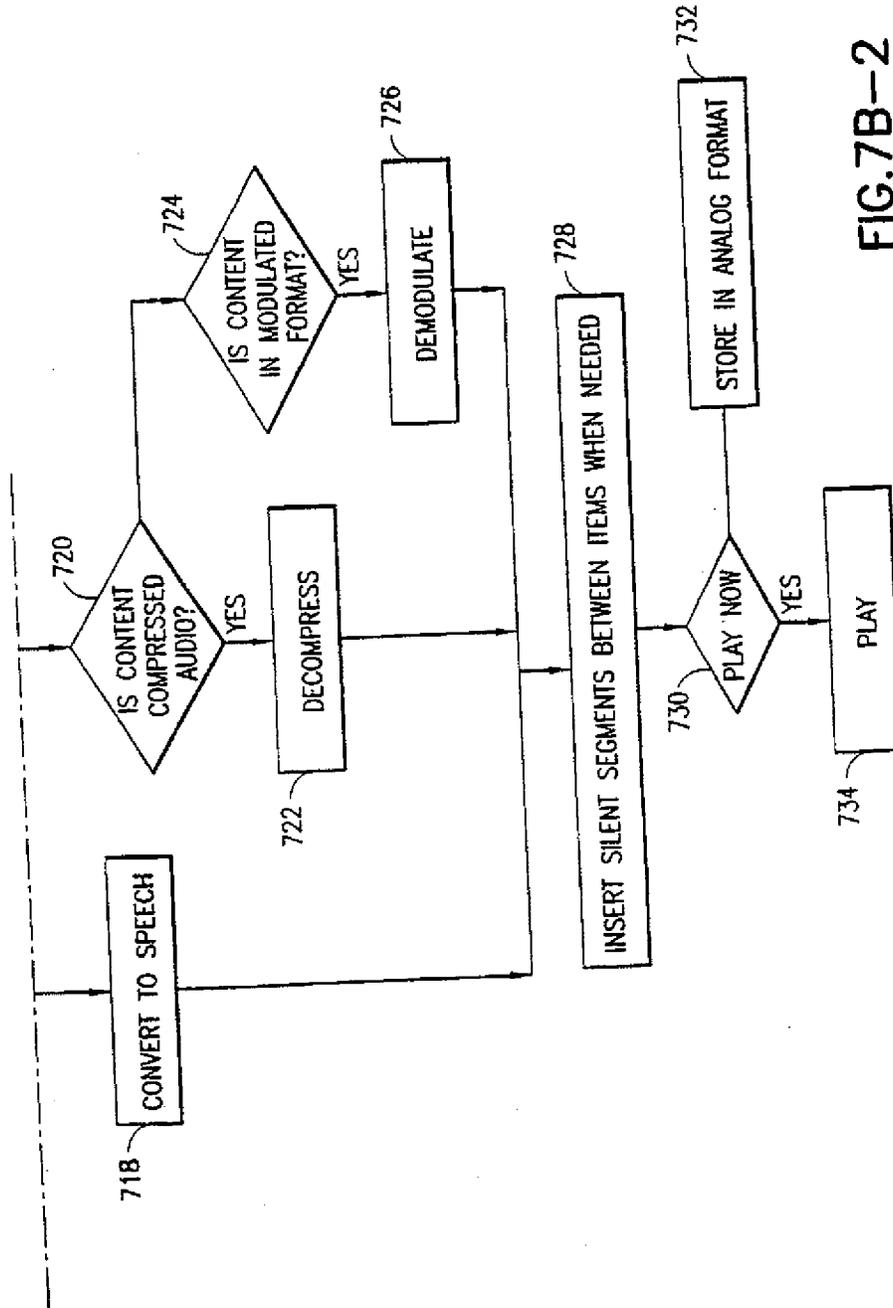


FIG.7B--2

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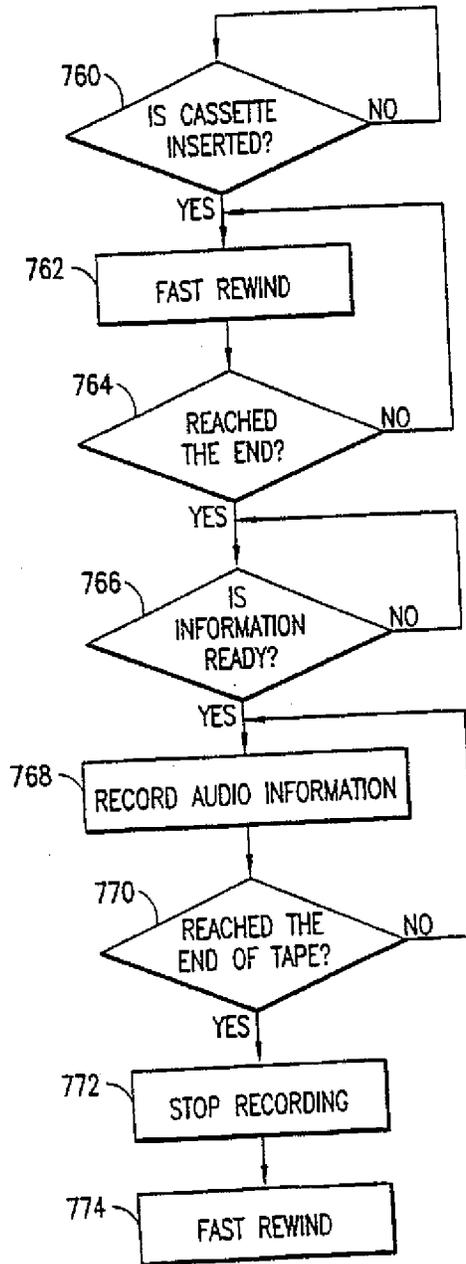


FIG.7C

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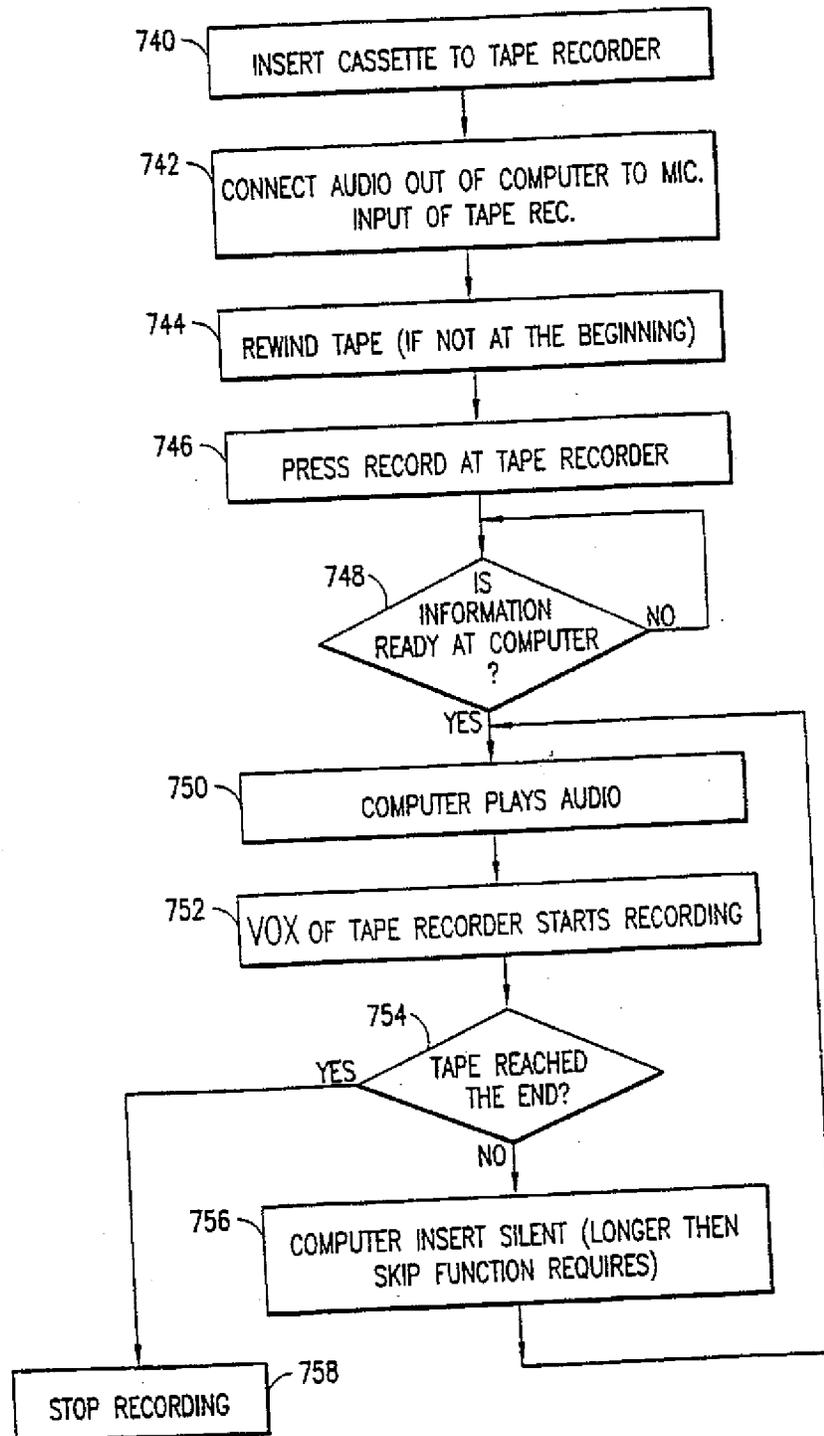


FIG. 7D

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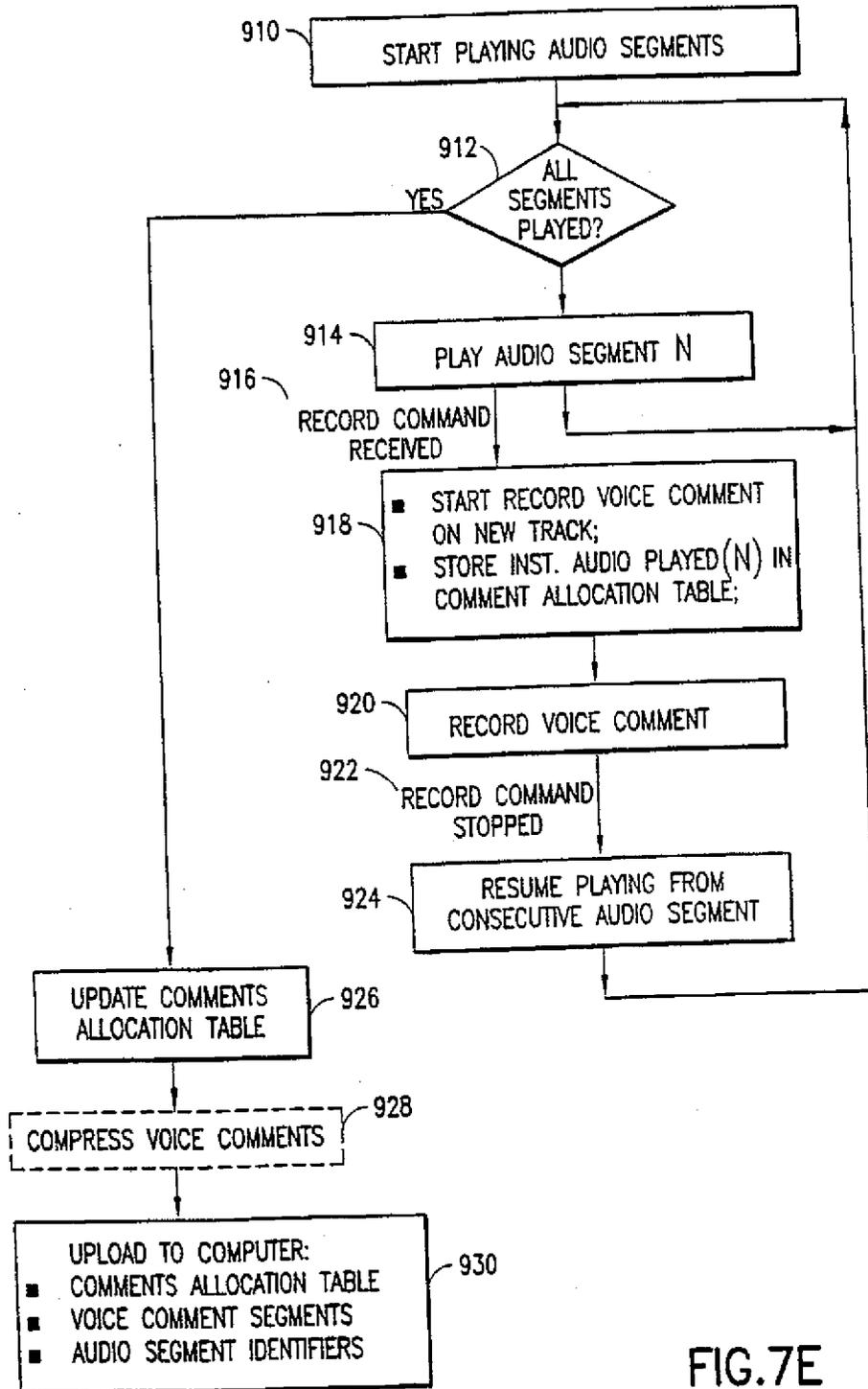


FIG.7E

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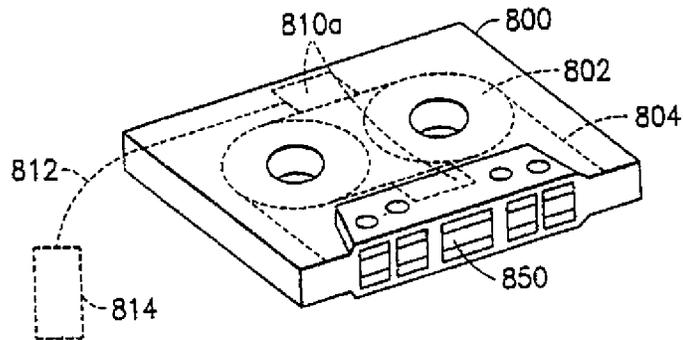


FIG. 8A

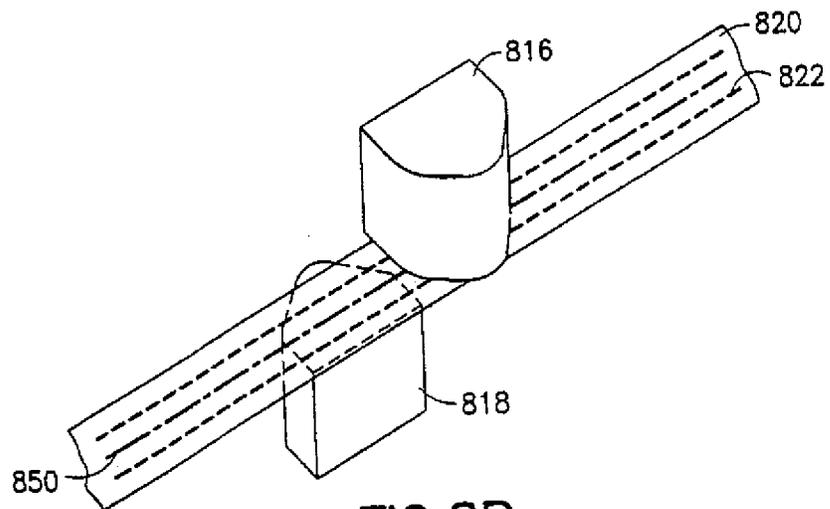


FIG. 8B

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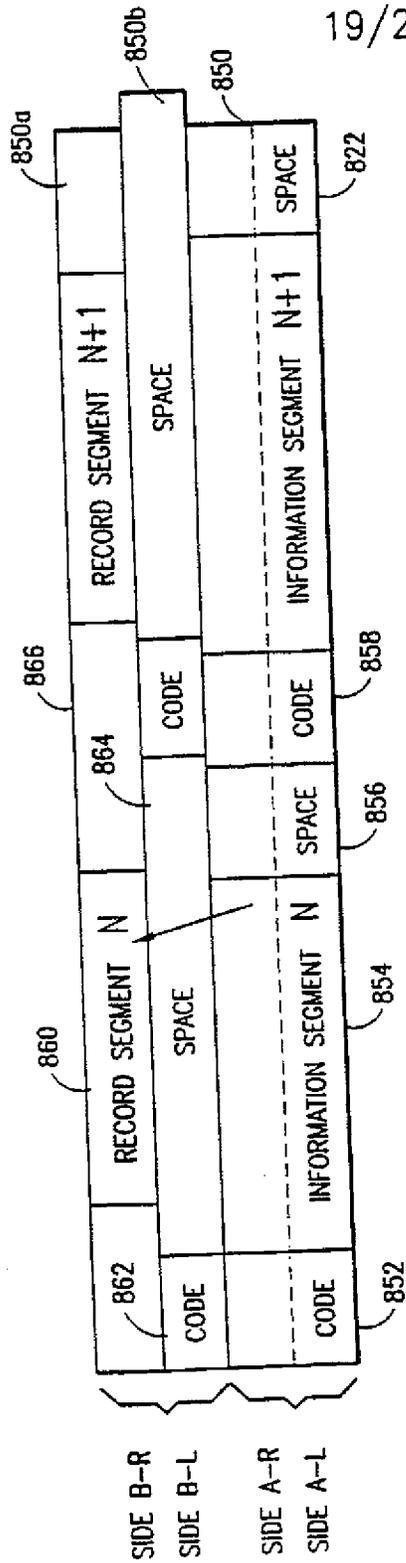


FIG.8C

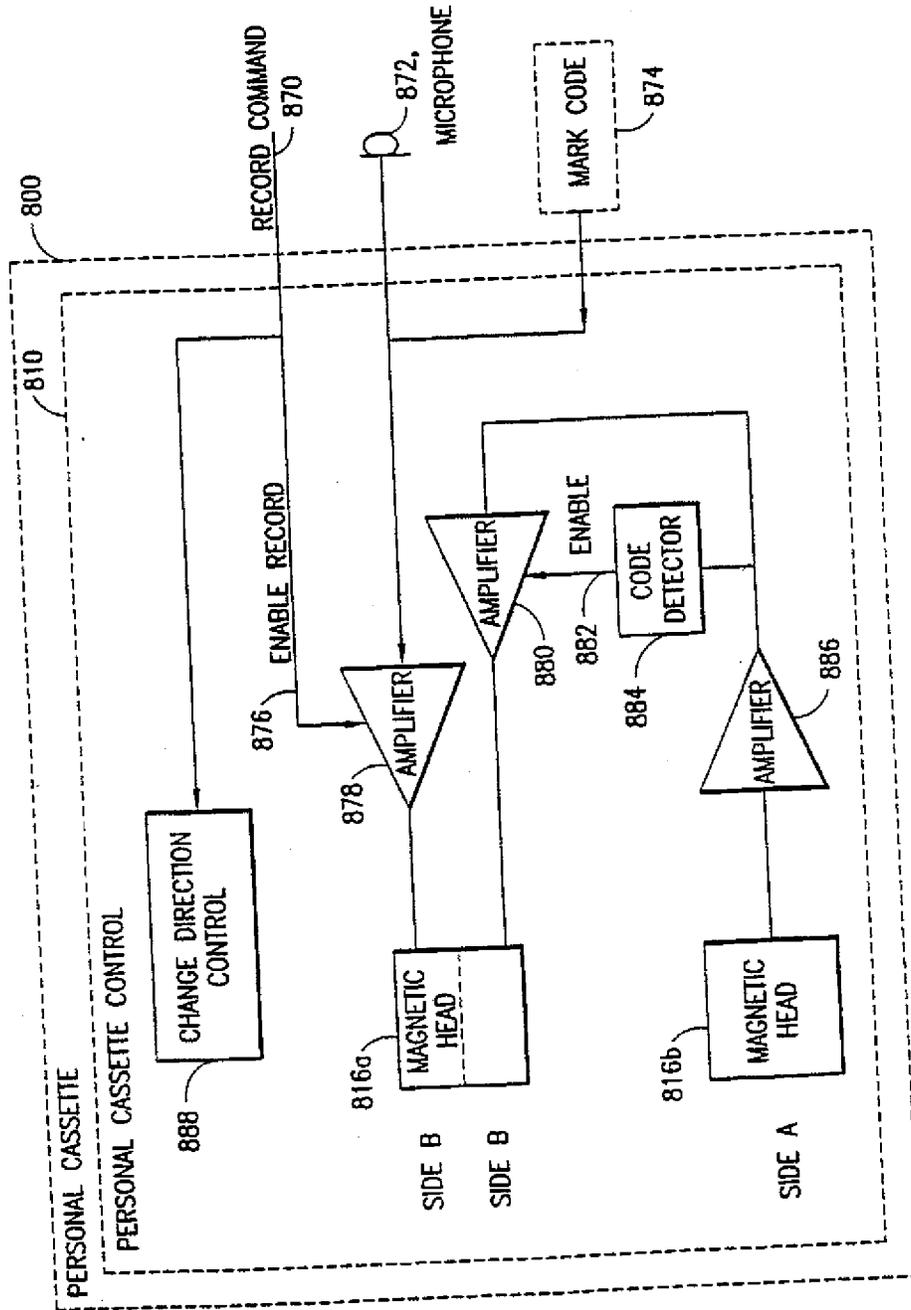


FIG. 8D

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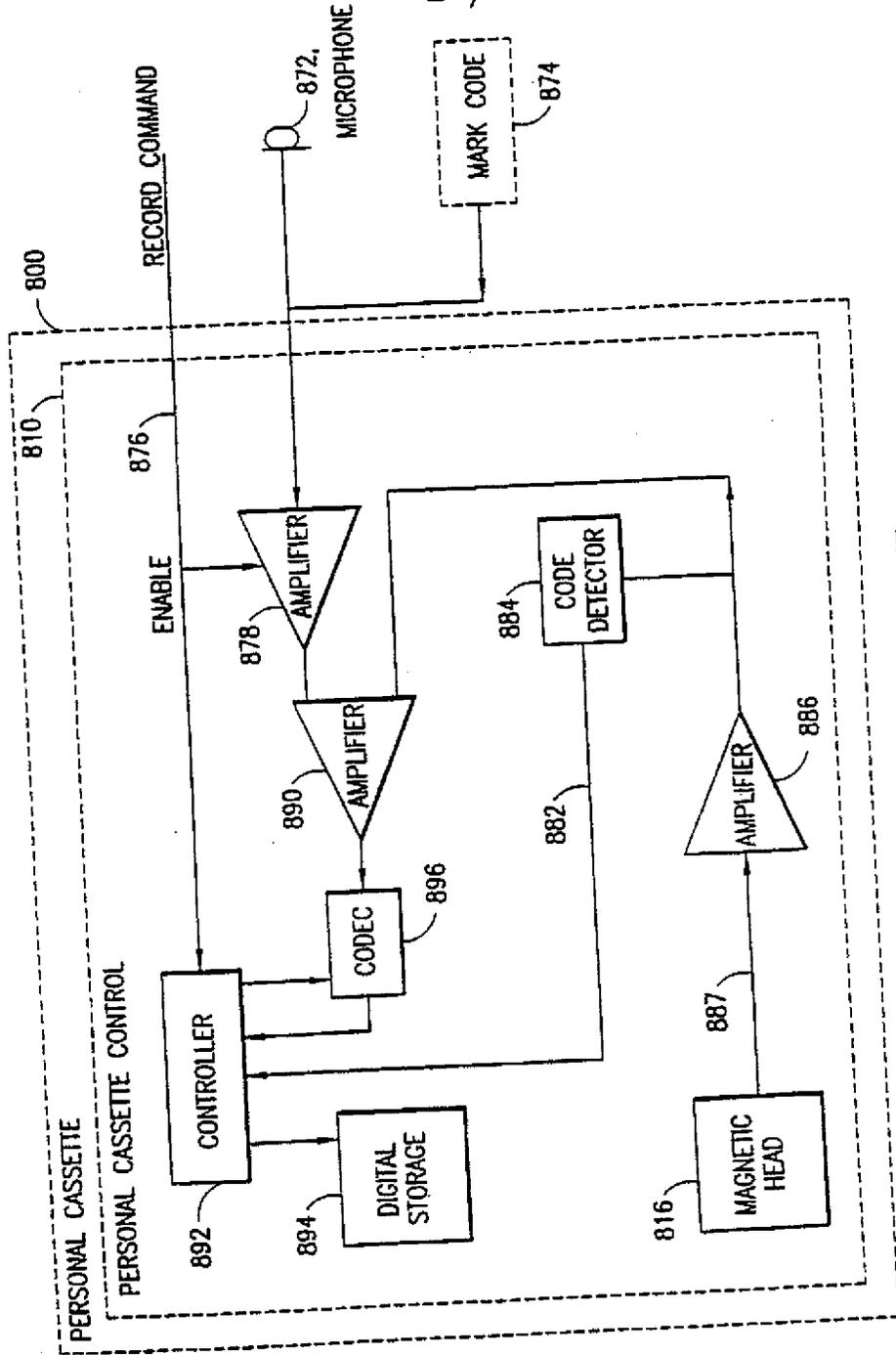


FIG.8E

INTERNATIONAL SEARCH REPORT

Intern: Application No
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A. CLASSIFICATION OF SUBJECT MATTER IPC 6 G10L3/00				
According to International Patent Classification (IPC) or to both national classification and IPC				
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 5 444 768 A (LEMAIRE CHARLES A ET AL) 22 August 1995 see abstract	1, 3-5, 7, 29, 31, 37, 38		
Y	--- US 5 619 384 A (LEONHARDT MICHAEL L ET AL) 8 April 1997 see abstract	9-12, 18-20, 33-36, 40-42, 48		
Y	--- US 5 619 384 A (LEONHARDT MICHAEL L ET AL) 8 April 1997 see abstract	9-12, 18-20, 33-36, 40-42		
Y	--- WO 95 06309 A (VOICE POWERED TECHNOLOGY INTER) 2 March 1995 see abstract	10, 34, 48		
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 4 315 323 A (BRONISZ LARRY F ET AL) 9 February 1982 see abstract	1,7,10, 13,15, 29,34, 35,48,50
A	EP 0 776 097 A (WIRELESS LINKS INTERNATIONAL L) 28 May 1997 see abstract; claim 1	1-3,31, 38

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. Application No
PCT/GB 98/03626

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
US 5444768	A	22-08-1995	NONE	
US 5619384	A	08-04-1997	US 5570242 A US 5719717 A	29-10-1996 17-02-1998
WO 9506309	A	02-03-1995	AU 7637194 A	21-03-1995
US 4315323	A	09-02-1982	NONE	
EP 0776097	A	28-05-1997	NONE	



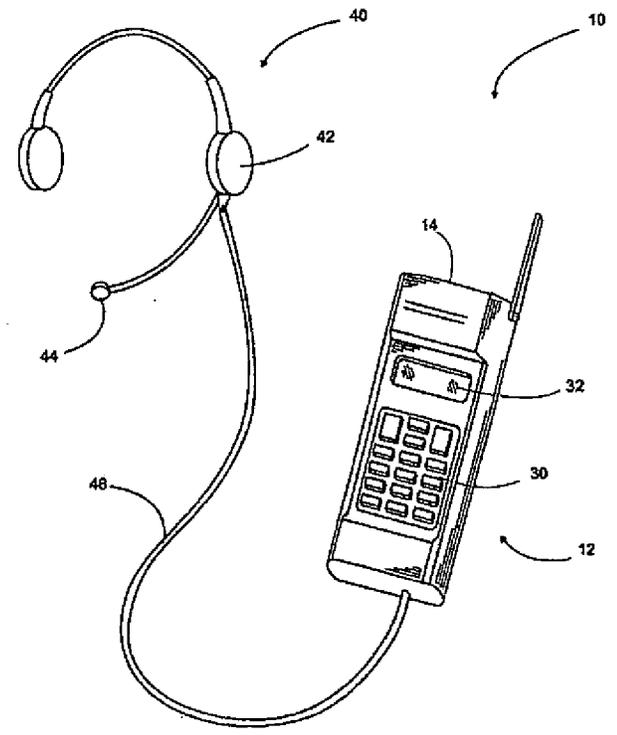
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : H04M 1/72, 1/60</p>	<p>A1</p>	<p>(11) International Publication Number: WO 99/43136 (43) International Publication Date: 26 August 1999 (26.08.99)</p>
<p>(21) International Application Number: PCT/US99/00570 (22) International Filing Date: 11 January 1999 (11.01.99) (30) Priority Data: 09/025,395 18 February 1998 (18.02.98) US (71) Applicant: ERICSSON, INC. [US/US]; P.O. Box 13969, Research Triangle Park, NC 27709-3969 (US). (72) Inventors: RYDBECK, Nils, R., C.; 202 Rutherglen, Cary, NC 27511 (US). FUSSELL, John, P.; 2844 Mattlyn Court, Raleigh, NC 27613 (US). (74) Agents: BENNETT, David, E. et al.; Rhodes, Coats & Bennett, LLP, P.O. Box 5, Raleigh, NC 27602 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>	

(54) Title: CELLULAR PHONE WITH EXPANSION MEMORY FOR AUDIO AND VIDEO STORAGE

(57) Abstract

A cellular telephone includes an internally integrated digital entertainment module. The telephone includes a transceiver unit and a headset which is connected to the transceiver unit by wired or wireless link. The entertainment module includes an interchangeable ROM and/or expansion RAM for storing music or other audio signals for playback through the telephone's headset. Music or other audio signals in digitized form is stored in the interchangeable ROM or is loaded into the expansion RAM from a CD player, computer, or other source of digitized audio signals. Under control of the cellular telephone's microprocessor, the digitally stored audio signal is played back through the telephone's headset. The entertainment module may be located in the transceiver unit, a removable battery pack, or in a separate adapter.



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**CELLULAR PHONE WITH EXPANSION MEMORY
FOR AUDIO AND VIDEO STORAGE**

FIELD OF THE INVENTION

The present invention relates generally to mobile communication devices, and more particularly to portable radio communication devices having an integral entertainment module including RAM or ROM for storing audio, video and/or still images.

BACKGROUND OF THE INVENTION

In the past two decades, advances in digital electronic technology have led to a rapid growth in the area of entertainment oriented consumer electronic devices. In particular, portable electronic devices such as audio CD players, FM/AM radio receivers, and even television or video tape/disc players have become increasingly popular among consumers as they have become small, lightweight, and easy for an individual to carry.

While quite popular with consumers, the mass storage type devices (audio CD, video tape/disc) typically suffer from motion induced distortion otherwise known as bouncing or skipping. These problems arise, in part, as a result of the required motion of the mass storage medium during normal operation. That is, in the case of an audio CD or a video disc, the disc which comprises the storage medium is typically spun or rotated at a relatively high speed while the information stored on the disc is read by an associated read head. Proper and precise alignment of the read head with respect to the spinning storage medium must be maintained at all times in order to insure error free reading of the stored data. Such precise alignment is often difficult to maintain when the audio or video player is being used in manner which is conducive to extreme vibration or mechanical shock. In practice, mechanically harsh

activities such as jogging or running are common among users of portable electronics, particularly with regard to the use of portable audio CD players. In such cases, skipping or bouncing artifacts induced in the CD player can seriously impair the overall performance of the player.

With further regard to the recreational athletic activities of portable electronics consumers, it is often the case such consumers will carry not only an audio CD player for entertainment purposes, but also a cellular telephone for safety and security. Although such equipment provides the desired entertainment/security services to the athletically active consumer, the need to carry multiple pieces of equipment is generally viewed as inhibiting or impairing to their athletic endeavors.

Therefore, there is and continues to be a need for a practical and efficient technique for incorporating the functionality of audio and/or video playing devices within wireless communications devices such as cellular telephones.

SUMMARY OF THE INVENTION

The present invention is a cellular telephone particularly adapted for leisure activities. The cellular telephone of the present invention includes a portable transceiver unit and a headset which can be worn by the user during leisure activities such as jogging, biking, gardening, etc. The transceiver unit includes a fully functional transceiver capable of sending and receiving voice and data signals via an RF carrier. The transceiver unit has an integral digital entertainment module including a memory for storing music or other audio signals for playback through the headset. For purposes of this application, memory means all forms of computer memory but does not include disk storage, tape storage or other memory requiring electromechanical read systems. The memory may be in the form of a removable ROM cartridge and/or an expansion RAM. In those embodiments having an

expansion RAM, an input port is provided for loading music or other audio signals into the expansion RAM from a CD player, computer, or other source of digitized audio.

Under the control of the transceiver unit's microprocessor, the digitally stored audio signal is played out through the telephone's headset, which in the preferred embodiment comprises stereo headphones. The headset may be connected to the phone by a wired or wireless link. Because of its integration into the cellular phone, the digital entertainment module can share components already present in the cellular phone. Such savings would not be available if a CD player were simply aggregated with the phone. Further, the use of solid state RAM or ROM, as opposed to disc storage, eliminates the need for bounce control circuitry. This enables the disclosed invention to provide cellular communications and entertainment during leisure activities.

In another aspect of the present invention, the digital entertainment module could be located in a removable battery pack which attaches to the transceiver unit, or in a separate adapter which plugs into the transceiver unit. Locating the digital entertainment module in either a battery pack or separate adapter allows the manufacturer to offer the digital entertainment module as an optional accessory which does not need to be purchased at the same time the cellular phone is purchased. This allows consumers who purchase a phone without the digital entertainment module to later purchase the battery pack or adapter as an upgrade to the existing phone.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the portable communication device of the present invention.

Figure 2 is a block diagram of the portable communication device.

Figure 3 is a block diagram of the entertainment module contained in the portable communication device.

Figure 4 is a perspective view of a second embodiment of the portable communication device in which the digital entertainment module is located in a removable battery pack.

Figure 5 is a block diagram showing the second embodiment of the portable communication device in which the entertainment module is located in a removable battery pack.

Figure 6 is a perspective view of a third embodiment of the portable communication device in which the digital entertainment module is located in a separate adapter with attaches to the transceiver unit.

Figure 7 is a block diagram showing the third embodiment of the portable communication device in which the entertainment module is located in a separate adapter.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, and particularly to Figures 1 through 3, the cellular phone of the present invention is shown therein and indicated generally by the numeral 10. The cellular phone 10 of the present invention is particularly adapted for use during leisure activities such as jogging, hiking, gardening, etc.

The cellular phone 10 includes a transceiver unit 12 and a headset 40 which can be worn on the head by the user. The transceiver unit 12 includes a main

housing 14 and a removable battery pack 16 containing a rechargeable battery 28. Housing 14 of the transceiver unit 12 contains an RF transceiver 18, control logic 20, program memory 22, and audio processing unit 24 which are operatively connected by a system bus 26. The RF transceiver 18 may be, for example, a class 1 mobile phone transceiver capable of transmitting and receiving radio signals containing voice and/or data. Audio processing unit 24 processes voice and data signals that are transmitted and received by the transceiver 18. Audio processing unit 24 may include voice recognition circuitry to enable activation and use of the phone 10 by voice commands for truly hands-free operation. The control logic 20 controls the operation of the transceiver 18 according to instructions stored in program memory 22. A keypad 30 and display 32 provide a user interface. Keypad 30 enables the user to enter dialing instructions and commands to initiate a call, and to select options. The display 32 displays the number dialed and call status information to the user. Display 32 may also display instructions or options to the user. Unlike a conventional cellular phone, the transceiver unit 12 of the present invention does not include an internal microphone and speaker, though such is within the scope of the contemplated invention.

The headset 40 includes stereo speakers 42 and microphone 44 that are connected to the transceiver unit 12 by a cable 46. Cable 46 may include a plug (not shown) which removably mates with a corresponding jack on the transceiver unit 12. The cable 46 connects to the system bus 26 which routes audio signals from the audio processing unit 24 to and from the headset 40 under the control of the microprocessor 20. The jack could also connect directly to audio processing circuit 24. Alternatively, the headset 40 could communicate wirelessly with the transceiver

unit 12, for example, by means of an infrared carrier, low power RF carrier or magnetic link.

The portable telephone 10 of the present invention includes a built-in digital entertainment module 50 (DEM) which allows music or other audio signals to be "played-back through the cellular telephone's headset 40. The entertainment module 50 includes extended RAM and/or removable memory cartridges for storing music or other audio signals which can be played back through the headset 40 of the phone 10.

Referring now to Figure 3, a schematic diagram of the digital entertainment module 50 is shown. The digital entertainment module 50 includes a secondary bus 52, extended random access memory (RAM) 54, removable ROM 56, and an input 58. The extended RAM 54 may, for example, be a flash EPROM chip capable of storing digitized audio. Digitized audio is loaded into the flash EPROM via input 58. The input 58 may be a serial port, parallel port, infra-red data port, modem, or any other type of input device capable of interfacing with a source of digitized audio, such as a CD player, or computer. It is also contemplated that audio may be obtained from the transceiver unit 12 in an "internet-enabled" phone 10. The removable ROM 56 is preferably in the form of a cartridge which fits into a slot in the transceiver unit 12. The ROM cartridge 54 would contain pre-recorded music which could be purchased by the user. In the preferred embodiment, the data format of both the extended RAM 54 and removable ROM 56 would be organized according to CD-ROM standards, which is 14 bits per sample and 44.1 k samples per second.

In operation, the user would insert a removable ROM cartridge 56 into the transceiver unit 12 or load audio into the extended RAM 54 from a CD player, computer, or other source of digitized audio. The transceiver unit 12 is attached the

belt or other article of clothing worn by the user. The headset 40 is placed on the user's head and connected to the transceiver unit 12. Playback of audio in the extended RAM 54 or removable ROM 56 could be activated via the keypad 30, or alternately, by voice command. The audio would be played back through the headset 40 under control of the microprocessor 20 while the user engages in leisure activities. When an incoming call is received, the microprocessor 20 automatically mutes or stops the playback of audio from the digital entertainment module 50 until the call is terminated. Preferably, the transceiver unit 12 includes a preferred caller list stored in a screening memory which may be part of program memory 22 or separate therefrom but in communication with the control logic 20. This preferred caller list is used to screen incoming calls such that only calls from callers on the preferred caller list cause the playback of audio from the digital entertainment module 50 to be muted or stopped; calls from callers not on the preferred caller list preferably do not cause such response. Upon termination of the call, the microprocessor 20 would unmute or restart the playback of audio from the digital entertainment module 50.

A significant advantage of the present invention is that audio is played back from solid state RAM or ROM memory thus eliminating the need for bounce control circuitry which is commonly used in portable CD players. Further, because of its integration into the cellular phone 10, there is no need for the user to carry both a portable audio player and a cellular phone. Moreover, integration of the entertainment module 50 into the cellular phone 10 allows the entertainment module 10 to share components with the cellular phone 10 to take advantage of the phone's communication capability to load the RAM 54. Thus, the present invention could

replace both a conventional cellular phone and portable audio player at lower cost than a conventional walk-man and telephone.

Referring now to Figures 4 and 5, a second embodiment of the present invention is shown. The second embodiment is similar to the first embodiment and, therefore, the same reference numerals will be used to identify similar components. As shown in Figures 4 and 5, the second embodiment of the phone 10 includes a transceiver unit 12 with a removable battery pack 14, and a headset 40 connected to the transceiver unit 12. The transceiver unit 12 includes a transceiver 18, microprocessor 20, program memory 22, audio processing circuits 24, keypad 30 and display 32 as previously described. Similarly, the headset 40 includes stereo speakers 42 and microphone 44. The second embodiment differs from the first in that the digital entertainment module 50 is contained within the removable battery pack 14. The entertainment module 50 connects to a secondary bus in the battery pack 14. When the battery pack 14 is attached to the transceiver unit 12, a connection is made between the secondary bus in the battery pack 14 and the main bus 26 of the transceiver unit 12. The main bus 26 and secondary bus enable the routing of audio signals between the entertainment module 50 and audio processing circuits 24 under the control of the microprocessor 20.

Figures 6 and 7 show a third embodiment of the present invention. The third embodiment is similar to the first and second embodiments and therefore the same reference numbers will be used to identify similar components. As shown in Figures 6 and 7, the third embodiment includes a transceiver unit 12, headset 40, and adapter 70. The transceiver unit 12 includes a transceiver 18, microprocessor 20, program memory 22, audio processing circuits 24, keypad 30, and display 32. In addition, the transceiver unit 12 in the third embodiment includes an internal

microphone and speaker 34 and 36 respectively. Thus, the transceiver unit 12 can be used without the headset 40.

The headset 40 includes a pair of stereo speakers 42 and microphone 44. The headset 40 is connected by a cable 46 to the adapter 70. The entertainment module 50 is contained in the adapter 70. The adapter 70 includes a secondary bus 72 which connects to the main bus 26 on the transceiver unit when the adapter 70 is plugged into the transceiver unit 12. An input/output circuit 74 routes audio signals to and from the headset 40.

When the transceiver unit 12 is used without the adapter 70, audio signals are routed under the control of the microprocessor from the audio processing circuits 24 to the internal microphone and speaker 34 and 36. When the adapter 70 is plugged into the transceiver unit 12, the audio signals are routed to the microphone 44 and speakers 42 on the headset 40.

The configuration of the phone 10 shown in Figures 6 and 7 is advantageous in that it allows the transceiver unit 12 to be sold without the digital entertainment module 50 and later upgraded by the consumer. The adapter 70 and headset 40 could be sold separately as an accessory or at a later time as an upgrade. Thus, a single phone could be manufactured for use both with and without the digital entertainment module 50.

It will be apparent to those skilled in the art that the digital entertainment module 50 could also be used to store video or still images which could be output to the display 32 of the transceiver unit 12. Any sound accompanying the video would be played back through the headset 40 or internal speaker. It should also be apparent that the digital entertainment module 50 could include a broadcast receiver

for receiving conventional radio and TV broadcasts in addition to its entertainment memory.

The present invention may, of course, be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

CLAIMS

What is claimed is:

1. A mobile radio communication device comprising:
 - a. a transceiver unit for transmitting and receiving audio signals;
 - b. a speaker operatively connected to said transceiver unit for converting audio signals received by said transceiver unit into audible signals which can be heard by a user;
 - c. a microphone operatively connected to said transceiver unit for converting the user's voice into audio signals for transmission by said transceiver;
 - d. memory operatively connected to said transceiver unit for storing pre-recorded audio for subsequent playback through said speaker.

2. The mobile radio communication device according to claim 1 wherein said memory is an erasable memory.

3. The mobile radio communication device according to claim 1 wherein said memory is an unerasable memory.

4. The mobile radio communication device according to claim 1 wherein said memory is contained in said transceiver unit.

5. The mobile radio communication device according to claim 1 further including a removable cartridge insertable into said transceiver unit, wherein said memory is contained in said removable cartridge.

6. The mobile radio communication device according to claim 1 further including a removable battery pack attachable to said transceiver unit, said memory being located in said battery pack.

7. The mobile communication device according to claim 1 further including a detachable adapter for attaching to said transceiver unit, said memory being located in said adapter.

8. The mobile radio communication device according to claim 1 further including a headset, wherein said speaker and microphone are mounted to said headset.

9. The mobile radio communication device according to claim 1 further including a input port operatively connected to said memory for loading audio into said memory.

10. The mobile radio communication device of claim 1 further including a screening memory in communication with said transceiver for storing a list of preferred callers and wherein when an incoming call is received during playback of said pre-recorded audio, playback continues unless said incoming call is from a caller on said list of preferred callers.

11. A cellular telephone having an entertainment module for playing pre-recorded audio and video signals comprising:

- a. a transceiver for transmitting and receiving audio and data signals;

- b. a microprocessor for controlling the operation of said transceiver;
- c. a signal processing circuit operatively connected to the transceiver and microprocessor for processing signals transmitted and received by the transceiver; and
- d. an entertainment module with a memory operatively connected to the microprocessor and signal processing circuits for storing audio and video signals for subsequent playback under the control of said microprocessor.

12. The cellular telephone of claim 11 wherein said memory comprises an erasable and programmable memory for storing and playing audio and video signals.

13. The cellular telephone of claim 12 including an input coupled to the erasable and programmable memory for downloading and storing audio and video signals into said erasable and programmable memory.

14. The cellular telephone of claim 11 wherein said memory comprises a permanent memory which is removable from said cellular telephone for storing and playing audio and video signals.

15. The cellular telephone of claim 11 wherein the entertainment module includes a first memory which is programmable and erasable, an input coupled to said first memory for downloading and storing audio and video signals into said first memory, and a second permanent memory having pre-recorded audio and video signals stored therein.

16. The cellular telephone according to claim 15 wherein said second memory is a removable and interchangeable memory cartridge.

17. The cellular telephone of claim 11 wherein the first and second memories are coupled to a headset port in the cellular telephone, thereby permitting audio signals to be directed from the memories to a headset coupled to the cellular telephone via the headset port.

18. The cellular telephone of claim 11 wherein the microprocessor is pre-programmed to preempt output from said first and second memories in response to an incoming call or the initiation of an outgoing call.

19. The cellular telephone of claim 11 further including a screening memory in communication with said microprocessor for storing a list of preferred callers and wherein said output from said first and second memories is not preempted in response to an incoming call unless said incoming call is from a caller on said list of preferred callers.

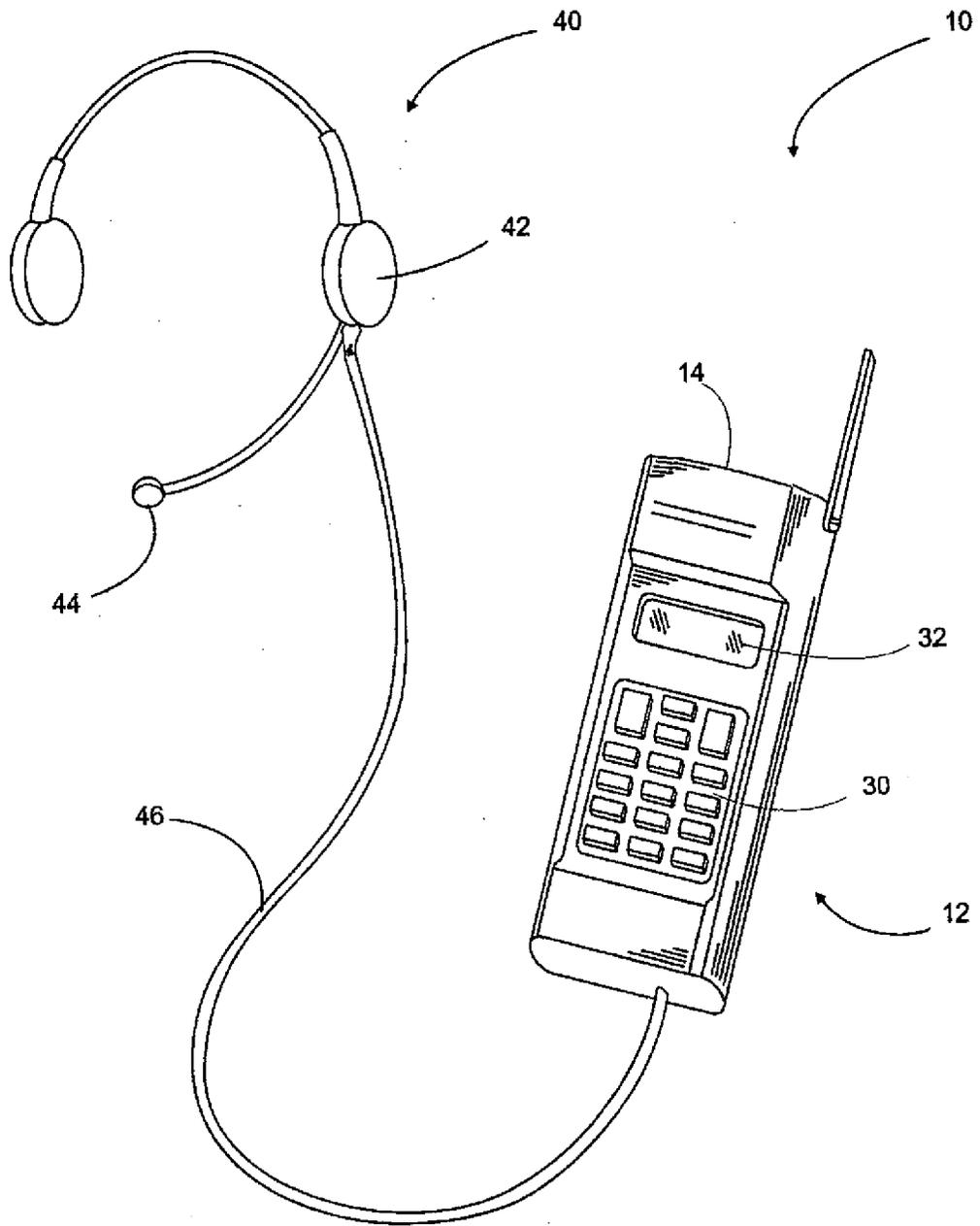


FIG. 1

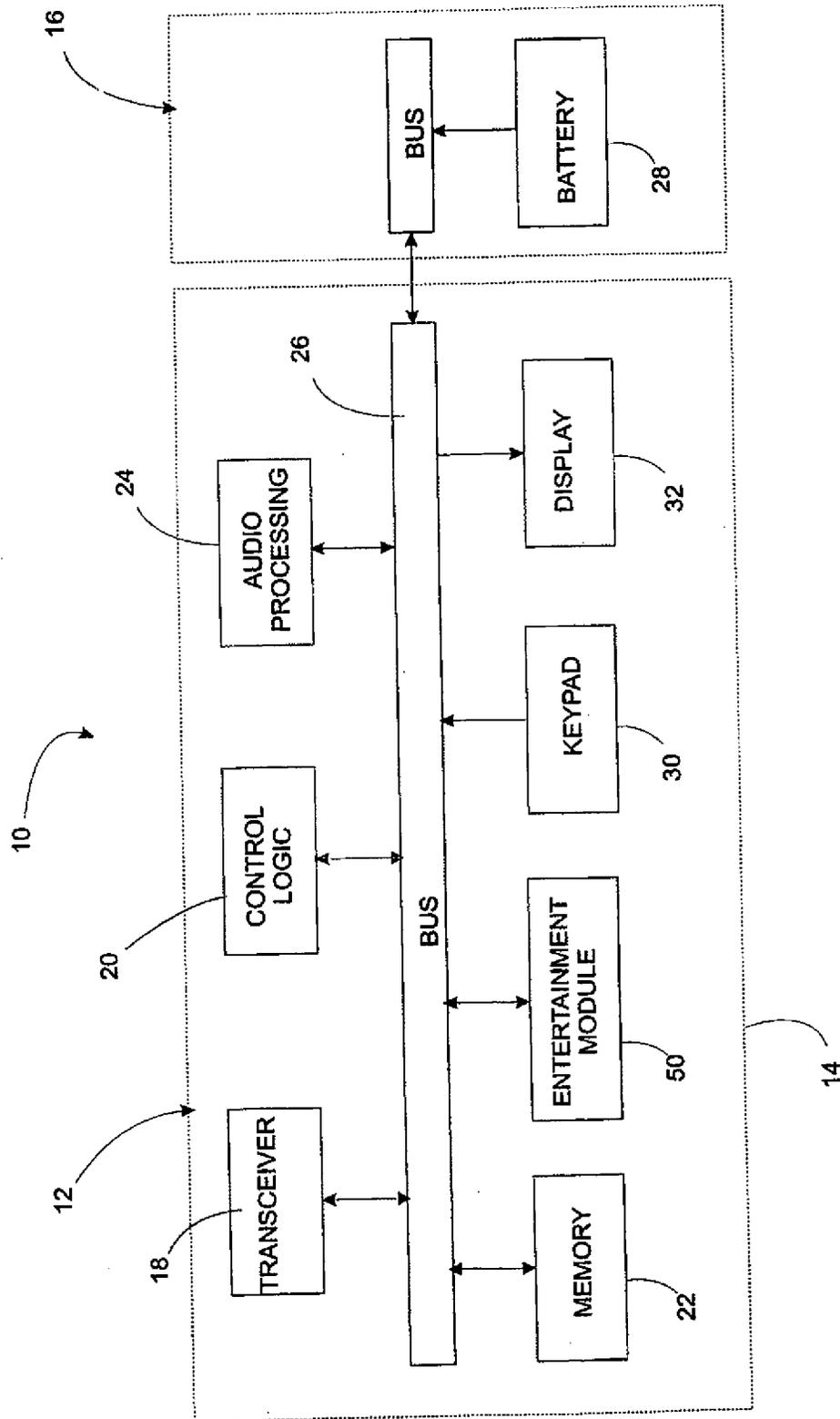


FIG. 2

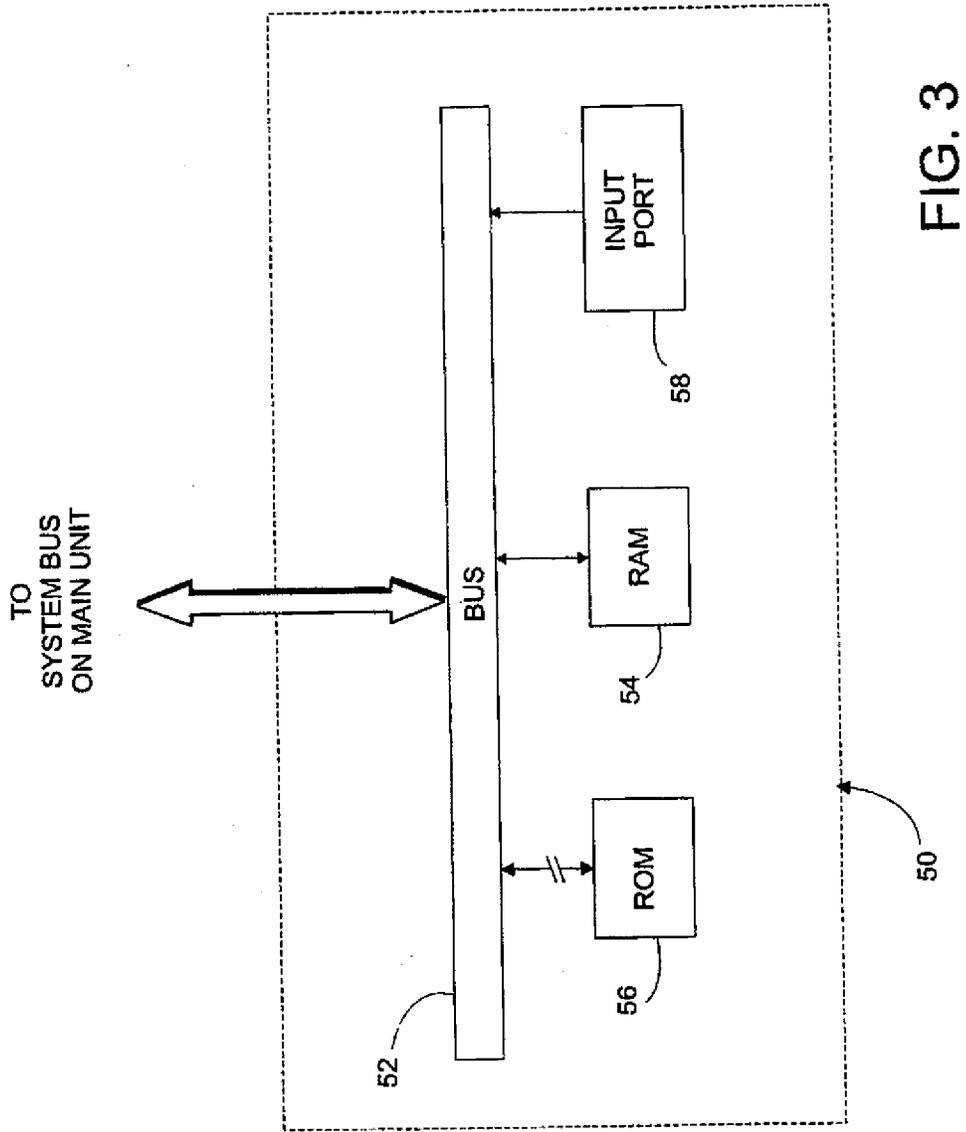


FIG. 3

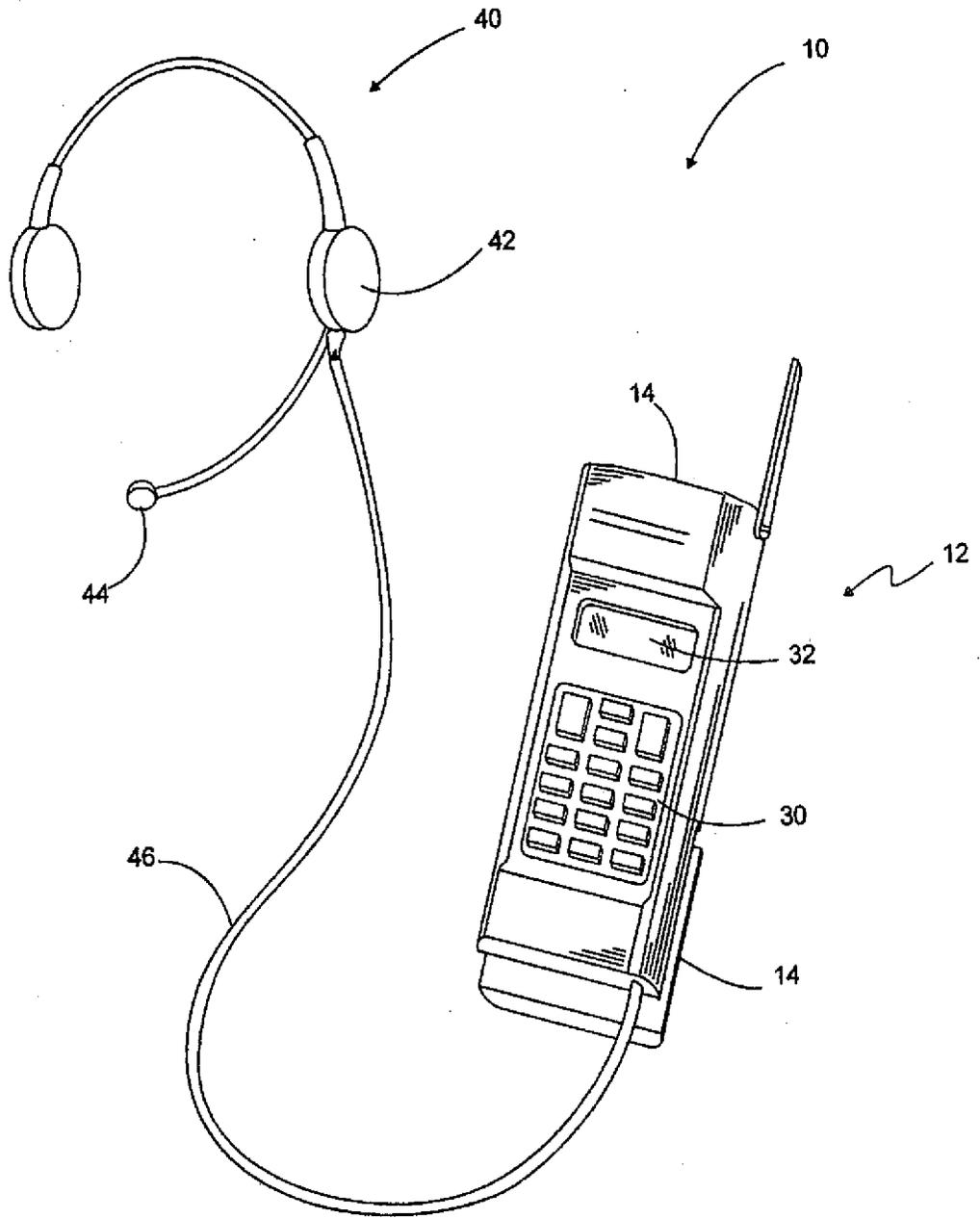


FIG. 4

4/7

4/12

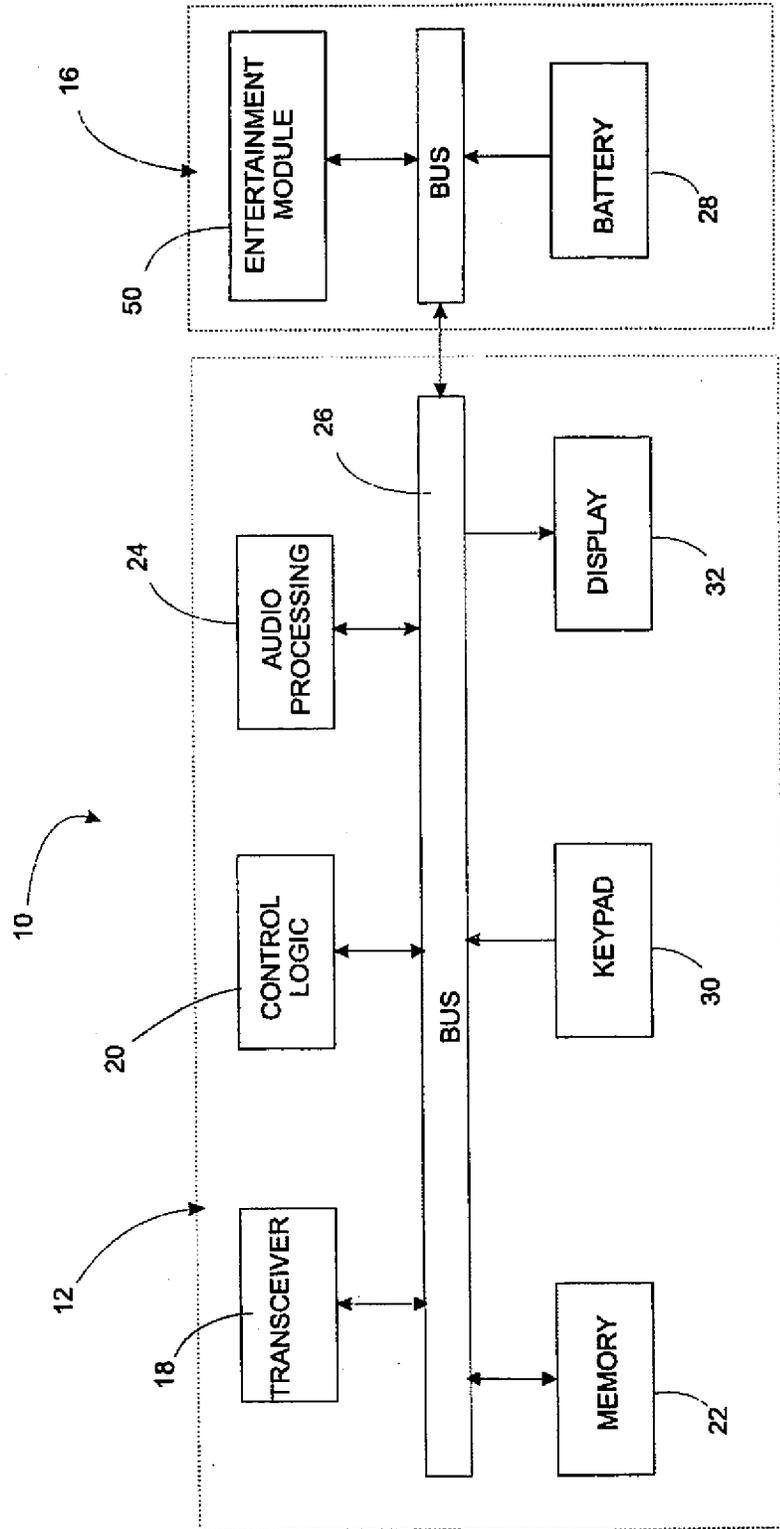


FIG. 5

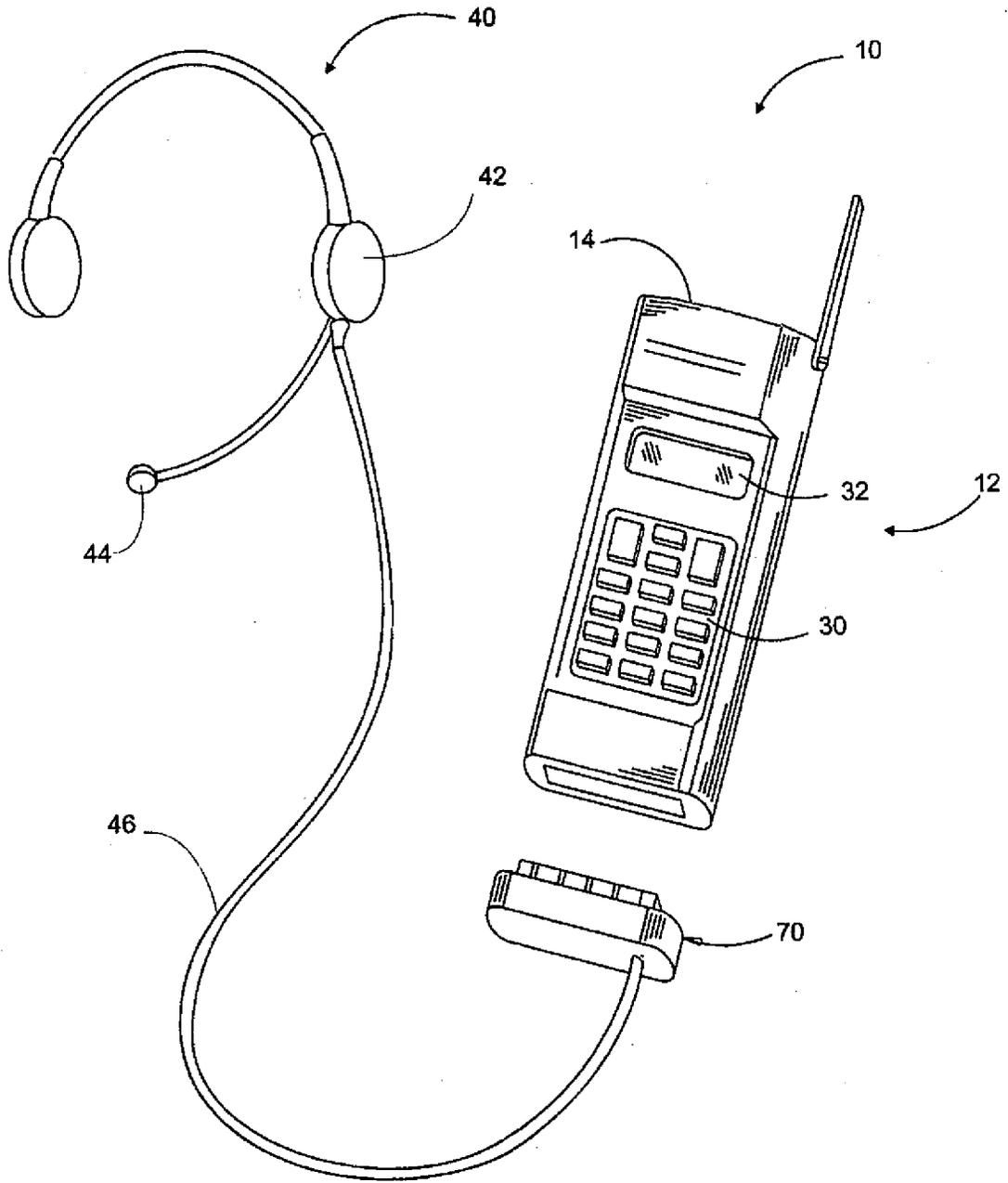


FIG. 6

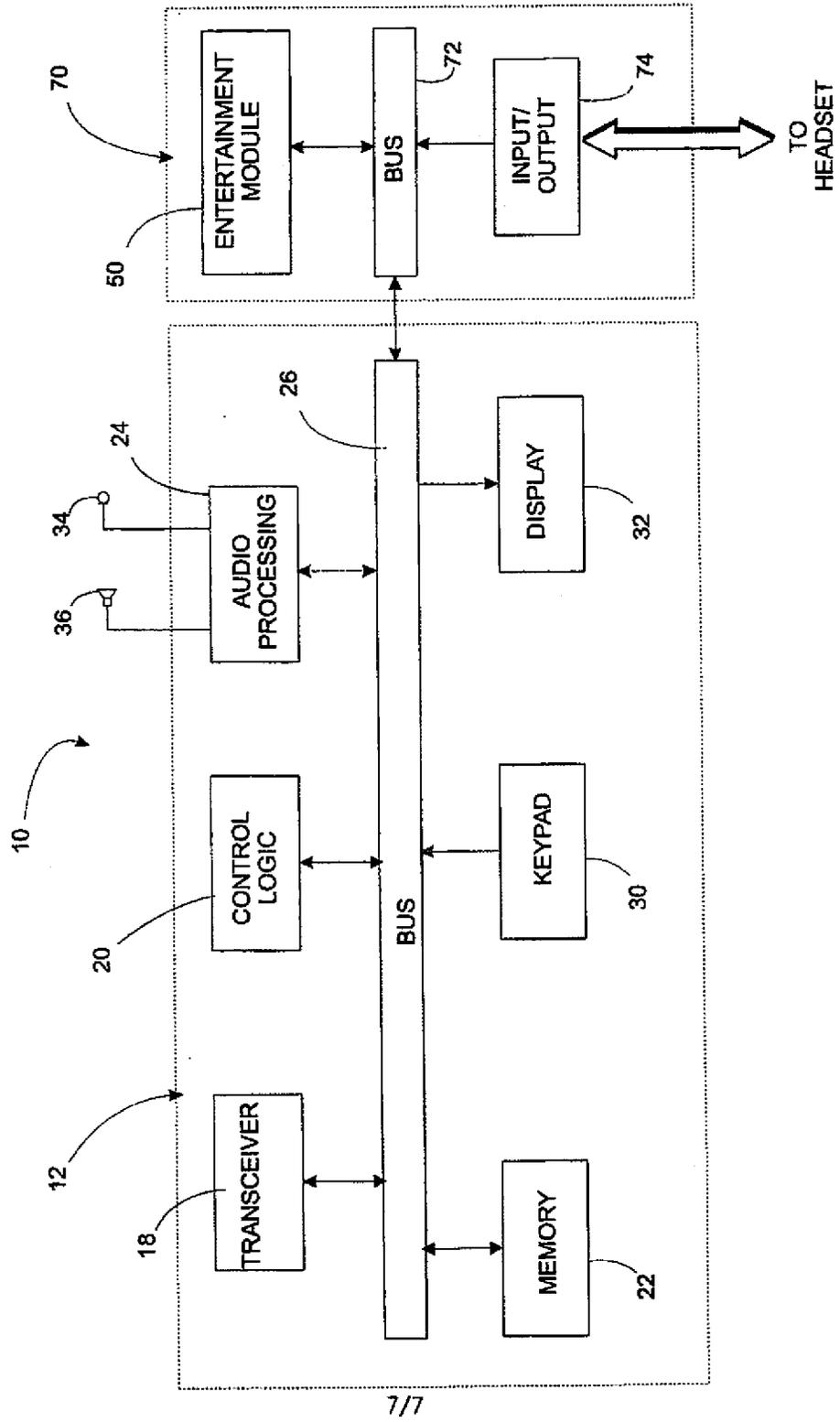


FIG. 7

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/00570

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 H04M1/72 H04M1/60		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 6 H04M H04B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	see page 6, line 1 - line 26 see page 8, line 9 - page 11, line 17 see page 14, line 6 - line 11 see figures 1,2	10,11,18
X	US 4 481 382 A (VILLA-REAL) 6 November 1984	1,2,4,5
A	see column 2, line 29 - line 34 see column 12, line 39 - line 56 see column 13, line 34 - line 50 see figures 6-8	11
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents :		
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed		*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *a* document member of the same patent family
Date of the actual completion of the international search 21 April 1999		Date of mailing of the international search report 29/04/1999
Name and mailing address of the ISA European Patent Office, P.B. 5318 Patentlaan 2 NL - 2290 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Fragua, M

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/00570

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	<p>WO 97 26744 A (ROBB) 24 July 1997 see abstract see page 1, line 8 - page 2, line 6 see page 3, line 5 - page 4, line 4 see page 9, line 18 - page 10, line 17 see page 12, line 12 - line 22 see page 15, line 4 - line 16 see page 16, line 20 - line 25 see page 17, line 10 - page 18, line 6 see page 21, line 13 - page 22, line 26 see page 24, line 1 - line 12 see page 25, line 10 - line 22 see page 26, line 1 - page 27, line 5 see figures 3,9</p>	1-5, 11-16
A	<p>GB 2 289 555 A (NOKIA MOBILE PHONES LTD) 22 November 1995 see page 1, line 1 - line 6 see page 4, line 18 - line 23 see page 5, line 20 - page 6, line 2 see page 7, line 1 - page 8, line 9 see page 10, line 5 - line 7 see page 14, line 1 - line 16 see figures 1-3</p>	1,2,4,7, 11-13
A	<p>DE 195 28 424 A (SIEMENS AG) 21 November 1996 see column 1, line 29 - line 34 see column 4, line 68 - column 5, line 64 see column 7, line 36 - line 60 see column 8, line 43 - line 53 see figures 1,2,6</p>	1,2,4, 11,12
A	<p>US 5 550 754 A (WILLIAMS ET AL) 27 August 1996 see abstract see column 7, line 24 - column 8, line 9 see column 11, line 1 - line 34 see column 12, line 24 - column 13, line 27 see column 20, line 54 - column 22, line 4 see figures 8,16,30,31</p>	1,7-9, 11,17
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/00570

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5 661 788 A (CHIN) 26 August 1997 see abstract see column 2, line 47 - column 3, line 3 see column 3, line 38 - column 4, line 3 see column 4, line 59 - line 67 see figure 1 -----	1,4,10, 11,18,19

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 99/00570

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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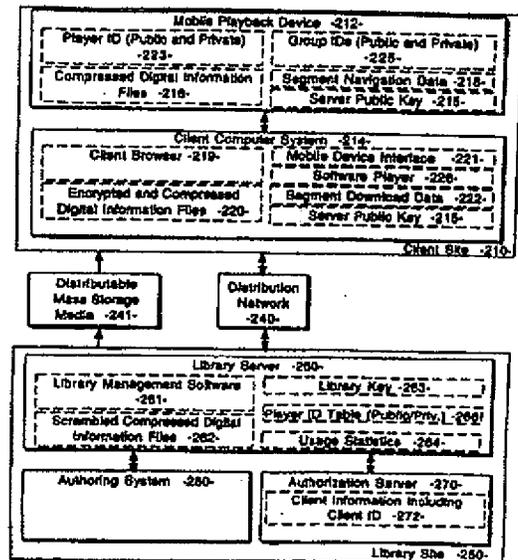
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : G06F 13/00, H04M 11/00</p>	<p>A1</p>	<p>(11) International Publication Number: WO 98/11487 (43) International Publication Date: 19 March 1998 (19.03.98)</p>
<p>(21) International Application Number: PCT/US97/16184 (22) International Filing Date: 12 September 1997 (12.09.97) (30) Priority Data: 08/710,114 12 September 1996 (12.09.96) US (71) Applicant: AUDIBLE, INC. [US/US]; 65 Willowbrook Boulevard, Wayne, NJ 07470 (US). (72) Inventors: KATZ, Donald, R.; 4 Russell Terrace, Montclair, NJ 07042 (US). LAU, Edwin, J.; 1266 Shasta Avenue, San Jose, CA 95126 (US). MOTT, Timothy; 110 Old Mill Road, P.O. Box 6289, Ketchum, ID 83340 (US). BRENNEMAN, Scott, A.; 299 Waverly Street, Menlo Park, CA 94025 (US). CHE-MING JUN, Benjamin; 1081-B Tanland Drive, Palo Alto, CA 94303 (US). HONG-YEN PAI, Samuel; 340 Marmona Drive, Menlo Park, CA 94025 (US). (74) Agents: SALTER, James, H. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).</p>	<p>(81) Designated States: AL, AM, AT, AT (Utility model), AU (Petty patent), AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	

(54) Title: A DIGITAL INFORMATION LIBRARY AND DELIVERY SYSTEM

(57) Abstract

A computer network based digital information library system employing authentication and encryption protocols for the secure transfer of digital information library programs to a client computer system (214) and a mobile digital information playback device (212) removably connectable to the client computer system. The present invention is a computer network based library and information delivery system for accessing and obtaining selected digital information files. The library and information delivery system comprises: 1) a library server (260) having a plurality of digital information files; 2) a client computer system (214) coupled to the library server (260) over a network (240); and 3) a mobile device (212) removably connectable to the client computer system (214), the client computer system (214) including logic for requesting a download of a selected one or more of the digital information files from the library server (260), the client computer system (214) further including logic for downloading the selected one or more of the digital information files to the mobile device (212).



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**A DIGITAL INFORMATION LIBRARY
AND DELIVERY SYSTEM**

FIELD OF THE INVENTION

The present invention relates generally to a digital information transmission, receiving, and playback system. Specifically, the present invention pertains to a computer network based digital information library providing interactive client computer access.

DESCRIPTION OF RELATED ART

Recent technological advances in the compression of digital data and the expansion of storage capacities of computer systems together with the increased bandwidth of computer network infrastructures have created new possibilities for personalized access to and usage of large amounts of digital information. One form of this type of digital information is audio information delivered across a computer network as digitized information.

In the field of interactive digital information transmission, receiving, and playback systems, several patents are known to the present applicants. U.S. Patent No. 5,132,992, issued July 21, 1992 to Yurt et al. (Yurt), describes a system of distributing video and/or audio information employing digital signal processing to achieve high rates of data compression. The Yurt patent describes a transmission system including a conversion means for placing the items from a source material library into a predetermined format as formatted data. Audio data is compressed by an audio compressor by application of an adaptive differential pulse code modulation (ADPCM) process to the audio data. Stored items are accessed in the compressed data library through the use of a unique address code assigned to each item during storage encoding. The unique address code is used for requesting and accessing information and items throughout the Yurt transmission and receiving process. The Yurt transmission system includes means by which a user enters a customer identifier (ID) code by which the system accesses the users account, and indicates to the system that the user is a subscriber of the system. If a subscriber is in good standing, the Yurt system delivers selected titles using the described techniques.

One significant problem with the audio transmission and receiving system described in Yurt is the lack of an effective means for ensuring the security of the digital information library and of the items downloaded to a user from the digital information library. Although Yurt describes the use of a unique identification code assigned to items in the library and a customer ID code assigned to particular users, no authentication protocols or encryption techniques are described to prevent the unauthorized creation of clone libraries or the unauthorized download or copying of library items. Secondly, Yurt and related prior art does not describe an authentication or encryption means providing secure transactions between a server based digital information

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library supporting a client computer system having an interface to a mobile playback device. Thirdly, the prior art does not describe a mechanism for selecting a digital information passage to be previewed. Prior art systems also do not describe a system whereby only part of a program gets downloaded from a client computer system to a mobile playback device depending on how much storage space is available in the mobile playback device. Prior art systems also do not describe a mechanism for specifying multiple programs to be downloaded from a digital information library into a mobile playback device. Prior art systems also do not detail the processes required in the authoring system to generate content for the digital information library. Finally, prior art systems do not describe an accounting system whereby library content providers can perform real-time queries on usage information related to the access of library items.

SUMMARY OF THE INVENTION

The preferred embodiment of the present invention is a computer network based digital information library system employing authentication, targeting, and encryption protocols for the secure transfer of digital information library programs to a client computer system and a mobile digital information playback device removably connectable to the client computer system. The present invention is a computer network based library and information delivery system for accessing and obtaining selected digital information files. The library and information delivery system comprises: 1) a library server having a plurality of digital information files; 2) a client computer system coupled to the library server over a network; and 3) a mobile device removably connectable to the client computer system, the client computer system including logic for requesting a download of a selected one or more of the digital information files from the library server, the client computer system further including logic for downloading the selected one or more of the digital information files to the mobile device.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are included as part of the present specification, illustrate the presently preferred embodiment of the present invention and together with the general description given above and the detailed description of the preferred embodiment given below serve to explain and teach the principles of the present invention.

Figure 1 illustrates a typical computer platform on which the present invention may be implemented.

Figure 2 illustrates a high level block diagram of the computer network based digital information library system of the present invention.

Figure 3 illustrates a high level block diagram of the authoring system of the present invention.

Figure 4 illustrates an alternative embodiment having a plurality of library servers.

Figure 5 illustrates an alternative embodiment having a plurality of library server processes.

Figure 6 illustrates an alternative embodiment having a single authoring/authorization server.

Figure 7 illustrates an alternative embodiment wherein client computer systems have a local library.

Figure 8 illustrates an alternative embodiment wherein mobile playback devices have a direct network interface in lieu of a client computer system.

Figure 9 illustrates an alternative embodiment wherein a kiosk is used to retain and distribute selected programming.

Figure 10 illustrates an alternative embodiment wherein all system components are connected through a common network.

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**DETAILED DESCRIPTION OF
THE PREFERRED EMBODIMENT**

The preferred embodiment of the present invention is a computer network based digital information library system employing authentication, targeting, and encryption protocols for the secure transfer of digital information library programs to a client computer system and a mobile digital information playback device removably connectable to the client computer system. In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be apparent to one of ordinary skill in the art that these specific details need not be used to practice the present invention. In other instances, well known structures, interfaces, and processes have not been shown in detail in order not to unnecessarily obscure the present invention.

Figure 1 illustrates a typical data processing system upon which one embodiment of the present invention is implemented. It will be apparent to those of ordinary skill in the art, however that other alternative systems of various system architectures may also be used. The data processing system illustrated in Figure 1 includes a bus or other internal communication means 101 for communicating information, and a processor 102 coupled to the bus 101 for processing information. The system further comprises a random access memory (RAM) or other volatile storage device 104 (referred to as main memory), coupled to bus 101 for storing information and instructions to be executed by processor 102. Main memory 104 also may be used for storing temporary variables or other intermediate information during execution of instructions by processor 102. The system also comprises a read only memory (ROM) and/or static storage device 106 coupled to bus 101 for storing static information and instructions for processor 102, and a mass storage device 107 such as a magnetic disk drive or optical disk drive. Mass storage device 107 is coupled to bus 101 and is typically used with a computer readable mass storage medium 108, such as a magnetic or optical disk, for storage of information and instructions. The system may further be coupled to a display device 121, such as a cathode ray tube (CRT) or a liquid crystal display (LCD) coupled to bus 101 through bus 103 for displaying information to a computer user. An alphanumeric input device 122, including alphanumeric and other keys, may also be coupled to bus 101 through bus 103 for communicating information and command selections to processor 102. An additional user input device is cursor control 123, such as a mouse, a trackball, stylus, or cursor direction keys coupled to bus 101 through bus 103 for communicating direction information and command selections to processor 102, and for controlling cursor movement on display device 121. Another device which may optionally be coupled to bus 101 through bus 103 is a hard copy device 124 which may be used for printing instructions, data, or other information on a medium such as paper, film, or similar types of media. In the preferred embodiment, a communication device 125 is coupled to bus 101 through

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bus 103 for use in accessing other nodes of a network computer system or other computer peripherals. This communication device 125 may include any of a number of commercially available networking peripheral devices such as those used for coupling to an Ethernet, token ring, Internet, or wide area network. It may also include any number of commercially available peripheral devices designed to communicate with remote computer peripherals such as scanners, terminals, specialized printers, or audio input/output devices. Communication device 125 may also include an RS232 or other conventional serial port, a conventional parallel port, a small computer system interface (SCSI) port or other data communication means. Communications device 125 may use a wireless means of data transfer devices such as the infrared IRDA protocol, spread-spectrum, or wireless LAN. In addition, communication device 125 is used in the preferred embodiment to couple the mobile playback device 212 to the client computer system 214 as described in more detail below. One other device used in the preferred embodiment is sound circuitry 130 either with attached speakers or headphones 132, or with analog audio outputs suitable for input into audio reproduction equipment such as external amplifiers and speakers, cassette adapters, etc. Sound circuitry 130 is well known in the art for playing audio files. Alternatively, sound circuitry may be a radio transmitter which transmits audio data on a predefined frequency for reception and playback by a radio receiver. Other wireless methods are possible.

Note that any or all of the components of the system illustrated in Figure 1 and associated hardware may be used in various embodiments of the present invention; however, it will be appreciated by those of ordinary skill in the art that any configuration of the system may be used for various purposes according to the particular implementation. In one embodiment of the present invention, the data processing system illustrated in Figure 1 is an IBM[®] compatible personal computer (PC), an Apple Macintosh[®] personal computer, or a SUN[®] SPARC Workstation. Processor 102 may be one of the 80X86 compatible microprocessors such as the 80486 or PENTIUM[®] brand microprocessors manufactured by INTEL[®] Corporation of Santa Clara, California.

The software implementing the present invention can be stored in main memory 104, mass storage device 107, or other storage medium accessible to processor 102. It will be apparent to those of ordinary skill in the art that the methods and processes described herein can be implemented as software stored in main memory 104 or read only memory 106 and executed by processor 102. This software may also be resident on an article of manufacture comprising a computer usable mass storage medium 108 having computer readable program code embodied therein and being readable by the mass storage device 107 and for causing the processor 102 to perform digital information library transactions and protocols in accordance with the teachings herein.

Digital Information Library System

Figure 2 illustrates the computer network architecture used in the preferred embodiment of the present invention. In general, the network architecture of the present invention includes a library site 250 coupled to a client site 210 via a conventional distribution network infrastructure 240. This conventional distribution network infrastructure 240 can be implemented as a standard telephone connection provided between the library site 250 and client site 210 through an Internet provider to enable data communication on the Internet over a conventional telephone network. This use of the Internet as a distribution network is well known to those of ordinary skill in the art. In an alternative embodiment having cable modem capability, communication over a conventional cable network is possible in lieu of communication over the telephone network. The cable network is typically much faster (i.e. provides a much greater bandwidth) than the standard telephone network; however, cable modems are typically more expensive than standard POTS (plain old telephone system) modems. In another alternative embodiment having conventional Integrated Services Digital Network (ISDN) capability, the distribution network 240 is accessed using an ISDN modem. Again, the ISDN network is typically faster than the POTS network; however, access to an ISDN network is generally more expensive. Cable modems and ISDN implementations are alternative communications media to the POTS implementation.

In addition, it will be apparent to those of ordinary skill in the art that other forms of networking may equivalently be supported by the present invention. For example, a wireless transmission means such as infrared or radio links may also provide the distribution network 240 described in the present application. As an alternative to the Internet, a proprietary network/bulletin board such as AMERICA-ON-LINE (AOL), or COMPUSERVE may be used.

Each of the servers at library site 250 and the client computer system 214 at client site 210 can be implemented as a computer system such as the one described above in connection with Figure 1. It will be apparent to one of ordinary skill in the art that the library server 260, authoring system 280, and authorization server 270 can be remotely located yet networked together as a distributed system using the techniques described above. In addition, the present invention allows for multiple library servers, authoring systems and authorization servers. Conversely, the servers may be implemented as separate functions of a single machine. These alternative embodiments are illustrated in Figures 4-8 and are described in more detail below.

The mobile playback device 212 is a minimally configured, low-cost, standalone mobile unit for receiving and storing digital information files or programs as downloaded by library server 260 and client computer system 214 and for playing back the digital information files or programs for a user of the mobile playback device 212. The mobile playback device 212 is temporarily removably coupled to the client computer system 214 while the download takes place.

Once downloaded, the mobile playback device 212 may be detached from the client computer system 214 and used as a standalone digital information playback device. A co-pending U.S. Patent Application titled, "Interactive Audio Transmission, Receiving and Playback System", assigned Serial No. 08/490,537, and assigned to the Audible Words Corporation of Montclair, NJ describes the details of mobile playback device 212.

In its basic form, the preferred embodiment of the present invention is a digital information library system providing selection of digital information programming on demand over a computer network. In an alternative embodiment, the digital information programming is selected via the computer network but delivered using mass storage media 241. This alternative embodiment is described in more detail below.

The digital information library is an indexed collection of digital information programming, drawing content from digital information sources such as books, daily news and entertainment feeds, conferences and educational sources, other computer systems, the host on the World Wide Web (WWW) of the Internet, and customized audio or visual image programming. Other sources of the digital information content include, but are not limited to, conference or seminar proceedings, lecture or speech materials, language lessons, readings, comedy, customized spoken digests and related, "need-to-know" business information, computer software, local sound studio material, text to speech conversion of machine readable files, pre-recorded material from magnetic tape, CD-ROM, digital audio tape, or analog cassette tape. This digital information content is input as raw digital information content to authoring system 280 shown in Figure 2. In an alternative embodiment, a raw digital information digitizer 307 is included for receiving raw input and converting the input to a digital form which can be manipulated as a digital information file.

In an alternative embodiment, the digital information comprises digitized image or graphics data used to produce visual images on a display screen or projection screen. These images may be included in the digital information retained and maintained by the library server 260.

Authoring System

Authoring system 280 is used to edit, index, compress, scramble, segment, and catalog digital information content into digital information programs in digital information files, which are stored on mass storage media 241 or on library server 260 as scrambled and compressed digital information files 262. The digital information programs are initially categorized according to traditional criteria (e.g. genre, modern fiction, mystery, adventure, romance, non-fiction, classics, self-help, science fiction, westerns, etc.). Categories associated with specific authors or publishers are also provided. Both unabridged and abridged titles are provided. In some circumstances, it may be necessary to digitize digital information content from an undigitized form. The raw information digitizer 307 is provided for this purpose. Authoring system 280 also

partitions digital information content into segments, which can be identified, searched, and skipped over if desired. All of these functions are performed by authoring system 280.

Figure 3 illustrates the authoring system 280 of the preferred embodiment. Authoring system 280 receives digital information content from a variety of conventional sources as raw digitized data. This digital information data is fed to three components of the authoring system 280 of the preferred embodiment. The digital information compressor 314 receives the raw digital data and compresses the digitized data. There are a variety of conventional techniques in existence for compressing digital data. These techniques can be optimized depending upon the type of digital data being processed. Thus, the present invention provides several compression methods and a means for the authoring system operator 305 to select between these methods based upon the category of digital information content 310 being input to the digital information compressor 314. Alternatively, the selection of compression method may be performed automatically by interpretation of the digital information content 310 itself. A compressed digital information file is output by digital information compressor 314 to scrambler 318.

The raw digital information content 310 is also fed to template header generator 312. Each digital information file maintained by the library server 260 includes other descriptive information used to identify the file's content and to provide information used to process the digital information within the file. Each digital information file includes a template header, a descrambling map, selected preview clips, and the digital information programming itself. In the preferred embodiment, the template header comprises a number of attributes corresponding to the digital information in the file. For example, the digital information may be audio information generated from the content of a book or other published work. In this example, the audio file template header contains attributes including: 1) the title of a book, volume, or medium from which the digital information content originated, 2) the legal copyright associated with the digital information content, 3) audible title(s) of the content, 4) a table of contents of the content, and 5) playback settings for appropriately playing or rendering the digital information. The table of contents contains content navigation information including but not limited to: the number of chapters, the length of the program, and information indicative of the relevant content sections. The table of contents is generated with input from authoring system operator 305 or automatically by analysis of digital information content 310. The descrambling map 322 is used to interpret the digital information after the digital information has been scrambled by scrambler 318 as described below. The preview clips 324 comprise short pre-generated portions of digital information content used to give a consumer a sense of the content of a particular digital information file. In the preferred embodiment, these previews are generated as conventional formatted files which can be directly played by sound generation circuitry 130 or rendered by other means. A digital information file can have several preview clips associated with it. The preview clips 324 are not compressed or

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scrambled in the preferred embodiment. The template header 312 remains with the digital information file as it is transferred to the network 240 or mass storage media 241. The other descriptive information related to a digital information file is typically stored with digital information file, but is not required to be so stored.

Referring again to Figure 3, template header generator 312 generates the template header given information from a particular portion of digital information content 310. Input from Authoring System Operator 305 and Digital Information Compressor 314 may be solicited during the header generation process. The template header is provided to library server 260. Other portions of the digital information file header are provided by scrambler 318 and preview generator 323. These portions of the digital information file header are assembled into the header for a particular digital information file by library server 260. The remainder of the digital information file is filled with compressed, scrambled, and segmented digital information content.

After digital information compressor 314 has compressed the raw digital information using a selected compression method suitable for the category of digital information, the scrambler 318 scrambles the digital information. The digital information is scrambled to prevent an unauthorized consumer from using the digital information. In the preferred embodiment, scrambler 318 uses a conventional encryption method to render the data unusable. A corresponding descrambling map 322 is generated to provide a means for descrambling the scrambled digital information file. A scrambling map 316 is used by scrambler 318 to scramble the digital information file. The scrambler 318 can encrypt the entire digital information file or selected critical subsets of the digital information file. The level of scrambling can be selected depending upon the capabilities of the authoring system 280, the mobile playback device 212 and/or the anticipated software player 226 on client computer system 214. In an alternative embodiment, a proprietary digital information format is used in lieu of scrambler 318.

The scrambled digital information content is output by scrambler 318 to segmentation logic 326. Segmentation logic 326 partitions the digital information content into blocks for efficient storage in and transfer to a mobile playback device 212 or software player 226 and for efficient navigation during playback. Transport integrity data is generated and appended to the segmented digital information. In an alternate embodiment, portions of the segmentation process may take place before or after digital information compressor 314 and scrambler 318. Segmentation information may also be used in the header generation process by template header generator 312. The compressed, scrambled, and segmented digital information blocks are provided to the library server 260 by authoring system 280. Library server 260 assembles the segmented digital information blocks, the descrambling map 322, the preview clip(s) 324, and the template header 312 for a particular item of digital information content into a digital information program file or files, which are stored in a digital information program file storage area 262. Other raw digital

information content is converted into digital information files using the authoring system 280 in a similar manner.

Library Server

Referring again to Figure 2, the library server 260 is responsible for maintaining the digital information program files 262 created by the authoring system 280. In addition, the library server 260 receives requests for access to the digital information program files 262 from client computer systems 214 over network 240 and manages purchase and delivery of the selected digital information files and/or delivery of selected preview clips 324. The library server 260 includes library management software 261 for performing these library server functions and a library key 263 used for the authentication protocol described below. Library management software 261 includes processing logic for receiving and responding to client computer system 214 requests for access and/or purchase of a digital information program file 262. Upon receiving such a client request, library server 260 uses authorization server 270 to authenticate the request with client information 272 generated and maintained by library server 260 or authorization server 270. The client information 272 includes client identifiers which are used to target content for playback on individual mobile playback devices 212 or software players 226. Client information 272 may also contain client personal information, user content preferences, client billing history, player usage history, and player group lists. In an alternative embodiment, portions of client information 272 may instead be stored in server 260. Using the authorization protocol described in more detail below, the library server 260 determines if the client request can be serviced. If approved, the library server 260 accesses the digital information program file(s) or preview clip(s) requested by the client computer system 214, delivers the selected preview clip(s) or builds encrypted, targeted, and digitally signed digital information files using the authentication protocol described in more detail below, and transfers the encrypted and compressed digital information file(s) to the requesting client computer system 214 via network 240. Distributable mass storage media 241 may also be used as a delivery medium for the transfer of information to client system 214. The client computer system 214 may then independently download the selected digital information files (or a subset thereof) into the mobile playback device 212 for subsequent playback. The library server 260 also collects usage statistics on the access history of the digital information files 262 and stores this usage data into usage statistic storage area 264. The library server 260 also stores operating code segments (firmware) for the client browser 219, software player 226, and for mobile playback device 212. This operating code can be downloaded to the client computer system 214 in the same manner as digital information files are transferred. Player configuration data for playback device 212 and software player 226 is stored on the library server 260 and can be customized or updated in the same manner as digital information files and firmware are

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transferred. Configuration data includes, but is not limited to, audio prompts, user interface options, group ID information, and information playback parameters. Player configuration data is transferred to client computer system 214, software player 226, or mobile playback device 212 as required according to client information 272.

The library server 260 interfaces with a client application program or client browser 219 executing on client computer system 214. The client browser 219 is used to make requests of library server 260 for various types of service including, but not limited to, searching the digital information files 262 for a desired program, previewing a selected preview clip associated with a digital information file 262, purchasing a selected program, requesting operating code segments or player configuration data, and downloading the purchased program or other material to the requesting client computer system 214.

The library server 260 interface with the authorization server 270 and client computer system 214 uses the unique authentication protocol and encryption protocol of the preferred embodiment of the present invention. The preferred embodiment of these protocols is described in the sections below.

Client Computer System

Referring again to Figure 2, the client computer system 214 represents a consumer or end user computer system, typically a personal computer, such as the sample system illustrated in Figure 1, with which a consumer may browse, preview, select, purchase, and take delivery of digital information content from digital information library server 260 across distribution network 240. Client computer system 214 comprises client browser software 219, a mobile device interface 221, storage for encrypted and compressed digital information files 220 downloaded from the network 240, software player 226, and segment download data 222 derived from digital information files 220 for defining the storage segments in mobile playback device 212 and for assisting in the downloading of digital information files 220 from client computer system 214 to mobile playback device 212. Client computer system 214 also includes a server public key 215 used for authenticating digital information and software files received from server 260. Client browser software 219 provides the control logic with which the client or consumer accesses and purchases titles from the digital information library 262 of library server 260. Client browser software 219 also provides control logic which requests and downloads configuration information or operating code from server 260. The client browser software 219 can be configured to perform these operations without direct human intervention. The mobile device interface 221 is a software interface used to control the transfer of control information, operating code, and digital information files from client computer system 214 to mobile playback device 212. Encrypted and compressed digital information files 220 are received by client computer system 214 from library

server 260 over network 240. In an alternate embodiment, distributable mass storage media 241 is used instead of network 240 to transfer information to client computer system 214. The software player 226 is a software module used to emulate the operation of mobile playback device 212 and for playing digital information files through the sound circuitry 130 and audio output device 132 of client computer system 214. Operating code and configuration information for the software player 226 can be downloaded or updated from the server 260 in the same manner as the mobile playback device 212 can be downloaded or updated. The software player 226 functionality is the equivalent of the functionality and operation of the mobile playback device 212. Thus, the use of the term "player" throughout this document generally applies to both the mobile playback device 212 and software player 226. Software players 226 are assigned unique player IDs and can be assigned group IDs that function similarly to IDs assigned to mobile playback devices 212.

Mobile Playback Device

The mobile playback device 212 converts a digital information file into sound or displayable imagery which is played through audio output means or displayed on a display device. In the preferred embodiment, the mobile playback device 212 is a minimal capability, low-cost device primarily dedicated to playing audio files or displaying visual images or text on a display device. The mobile playback device 212 is minimally configured to retain its light-weight, low cost, and readily mobile features. The preferred embodiment does not therefore include the use of a portable personal computer or laptop computer as the mobile playback device 212; because, such general purpose computing devices typically do not meet the light-weight and low cost constraints of the preferred mobile playback device 212. Such general purpose computing devices typically have unnecessary functionality, more complicated interfaces, and may suffer cost and performance penalties in comparison to the special purpose mobile playback device 212. In the preferred embodiment, the mobile playback device 212 includes a processor, memory, and an interface to client computer system 214 over which compressed digital information files 216 are received. As described in more detail below, mobile playback device 212 also includes a player ID 223, group IDs 225, and server public key 215 used for authenticating digital information and software files received from server 260 via client computer system 214. The user controls the mobile playback device 212 using buttons and knobs provided on the device. These controls are used to navigate through digital information files 216, adjust configuration data and playback parameters, or perform other functions as directed by firmware stored in playback device 212. When coupled to the player, client computer system 214 or other electronic devices can solicit user input from these controls. In an alternative embodiment, a set of additional user controls is provided on a remote control unit that is coupled to the player via a wired or wireless connection. Digital information output may be provided via a headphone jack, on board speaker, or wireless transmitter to a

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separate wireless receiver with speakers or headphones. Audio level can be adjusted with a volume knob. A wireless transmitter may contain an adjustment knob to adjust the transmission frequency or other transmission parameters. Visual information output is provided via LCD display, LED display, or outputs to a standard visual display device. The mobile playback device 212 contains a limited quantity of non-volatile memory, RAM, and ROM. Digital information content, configuration data, and operating code are stored in the memory space of the mobile playback device 212. Configuration data includes but is not limited to: public and private IDs, content playback parameters, and user interface parameters. The use of non-volatile memory allows portions of the digital information content, configuration data, and firmware to be updated via download. Both digital information content and firmware (operating software) is stored in this memory device. Portions of the firmware and configuration information are stored permanently in a read only memory (ROM). An internal memory allocation method is used to track the content of mobile playback device 212 memory. This allocation method, in conjunction with segment navigation data 218, also provides the means for locating desired digital information, program, configuration data, or header data resident in the mobile playback device 212 memory. The mobile playback device 212 includes an interface to the client computer system 214 through which the mobile playback device 212 receives compressed digital information files 216, software updates, and configuration changes from client computer system 214.

Downloading Digital Information Content, Software Updates, or Configuration Information From the Library Server to the Client Computer System

The client browser software 219 of client computer system 214 operates in cooperation with library management software 261 of library server 260 and the firmware resident on the mobile playback device 212 to provide a means by which a consumer may browse, preview, select, purchase, and take delivery of selected digital information content from digital information library server 260 across distribution network 240. The digital information content is typically downloaded to the client computer system 214 at the time of purchase, but it is possible to download digital information content either, 1) sometime after the purchase, or 2) multiple times after an initial purchase. The client browser 219 can be configured to download content to client computer system 214 without user intervention. In addition, portions of the client computer system 214 software itself or mobile playback device 212 resident software/firmware may be downloaded or updated from library server 260. The mobile playback device 212 resident software/firmware is downloaded through client computer system 214. If library server 260 has an updated or more recent copy of client computer system 214 software or mobile playback device 212 software/firmware, the library server copy is downloaded to replace the outdated version of the corresponding client computer system 214 software or mobile playback device software 212.

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The software is encrypted, scrambled, and digitally signed in a manner similar to the scrambling and delivery of the digital information files. Changes to the ID list, audio prompts, and other configuration data for playback device 212 can be downloaded in a manner similar to the downloading of software updates from library server 260.

The preferred embodiment utilizes three authentication processes to protect the transfer of information from server 260 to client system 214 and playback device 212. First, a point-to-point authentication protocol is performed whereby the library server 260 must verify that the requesting client computer system 214 is an authorized client and the client computer system 214 must verify that the library server 260 is an authorized provider. Secondly, a targeting protocol is performed whereby the library server 260 utilizes a set of identifiers (i.e. player IDs) for mobile playback devices 212 authorized to receive the selected download data from library server 260. The mobile playback device identifiers are provided by client computer system 214 or are referenced from user profiles stored on library server 260. In the targeting process, library server 260 formats and downloads data that can only be read by mobile devices 212 with these identifiers. Thirdly, a library server digital signature is appended to the downloaded data for use by the mobile playback device 212 to verify that the downloaded data was originated by an authorized library server. These three authentication processes of the present invention are described in detail in the following sections.

Point-to-Point Authentication Protocol

The library server 260, client computer system 214, and mobile playback devices 212 each have a unique verification sequence which is used to verify the authenticity of another system. In communications between library server 260 and client system 214, both systems alternately act to (1) request verification of the other system and (2) provide an authenticating response to a verification request. Communication between mobile devices 212 and client computer system 214 use a similar authentication protocol, as well as real-time communication between mobile devices 212 and library server 260 via client system 214. This verification sequence comprises a pre-defined set of bit streams or data structures which are sent by the requesting system (i.e. the system requesting verification) to the receiving system being authenticated (i.e. the respondent) in a point-to-point transmission. The receiving system must respond to the verification sequence in a pre-defined manner by sending particular response bit streams or data structures to the requesting system. If the appropriate response data from the respondent is received by the requesting system, the system being verified is considered an authorized system. Conversely, the system being verified is considered unauthorized if the appropriate response data is not received by the requesting system prior to a pre-defined time-out period. Both systems begin communication by acting as requesters and respondents in separate verification cycles. Upon completion of these

point-to-point authentication cycles, further client/server processing only continues if both systems deem each other to be authorized systems.

In an alternate embodiment, point-to-point authentication is used in a subset of the communications among library server 260, client computer system 214, and mobile playback devices 212. In another embodiment, point-to-point authentication is not used and system security rests on the use of targeting and/or digital signature authentication.

Targeting Protocol

The targeting protocol of the present invention is a means and method for limiting the playback of digital information content, the adjustment of player configuration data, and the download of player operating code to a specified player 212/226 or a specified set of mobile playback devices 212. Each player 212/226 contains a unique player ID 223. The player ID 223 comprises a public player ID and a private player ID. The public player ID is a unique identifier and serves as a serial number for player identification. The private player ID is used to target data for individual mobile playback devices 212. Private player IDs are never sent through any communications link or network path, except during installation. In the preferred embodiment, private player IDs should be sufficiently diverse, but need not be unique.

Mobile playback devices 212 may be logically grouped together using a Group ID. Digital information content, software, or configuration data changes may be targeted to a group of mobile playback devices 212 defined by a group ID. Each player 212/226 includes memory space for storage of one or more group IDs 225 of which the particular player 212/226 is a member. Each group ID includes a public portion and a private portion, each of which is equivalent to the public and private player IDs, respectively. Each group is identified by a uniquely valued public ID that is not shared with other player or group IDs. Digital information content, software, or configuration data can be targeted to a particular group ID in the same way as it would be targeted for a specific player ID. Mobile playback devices 212 in the same group share the same Group ID. A particular Group ID is pre-defined as the global group to which all mobile playback devices 212 are a member. Mobile playback devices 212 may be members of more than one group. A particular player 212/226 is added to a new group by appending the new group ID to the set of group IDs 225 maintained in the particular player 212/226. The new group ID is appended after the server 260 provides a public group ID and a group key to the player 212/226 via client computer system 214. The player 212/226 generates a private group ID from the combination of the group key and the mobile playback device's 212 private player ID. As with the private player ID, the private group ID is never sent through any communications link or network path, except during installation. In an alternative embodiment, players receive the group private ID directly or by combining the group key with the players public ID or other known numeric value. In another

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alternative embodiment, the private group ID is not used in the targeting process and is not transferred to the player. The group assignment process may be restricted to using real-time communications between server 260 and the player via client system 214, or it may take place sometime after group assignments have been downloaded to client system 214. Having described the player IDs and group IDs defined in the present invention, the use of these IDs in the targeting protocol is described next.

Library server 260 includes a player ID table 266 as shown in Figure 2. Player ID table 266 includes a storage area for private IDs and public IDs. The private IDs are pre-loaded into player table 266 when a new mobile playback device is installed into the system or when a new group is established. In another embodiment, ID table 266 is a mathematical function which converts group or player public IDs. Public player and group IDs are sent by a client computer system 214 to the server 260 when the client computer system 214 desires to target a particular player 212/226 or set of mobile playback devices 212 to a particular specified digital information, software content, or configuration data selection. Digital information selection is made from the files 262 stored on library server 260. Software or configuration data selection is made from files stored on server 260 or from data generated upon request by server 260. Software content and configuration data is prepared and scrambled in a manner similar to the authoring process for digital information content. Once an association is made by client computer system 214 between a set of targeted public IDs and the associated data to be transferred from server 260, library server 260 creates a targeted header for the selected files. The library management software 261 consults the public ID to private ID table 266 to locate the corresponding targeted private ID(s). The targeted header comprises a combination of the descrambling map 322 from the selected files with the private player IDs corresponding to the targeted mobile playback devices 212. The descrambling map 322 is thereby encrypted using the secret IDs of the targeted mobile playback device(s) 212. This targeted header is linked with the corresponding digital information or software content of the selected file in a network transport ready data block. A digital signature is applied to the data block as described below in connection with the data signature protocol. Transport integrity data (such as the use of checksums or cyclic redundancy check) is applied to the data block and the data block is sent to the client computer system 214 via network 240. Because the data block can only be unscrambled using the corresponding descrambling block 322 in its header and because the descrambling block 322 was combined (i.e. encrypted) with a private ID known only by the targeted mobile playback device(s) 212, only the targeted mobile playback device(s) 212 will be able to unscramble and read the data block. The selected digital information, software content, and configuration data is thereby targeted to a particular set of mobile playback devices 212.

For small groups of mobile playback devices 212, each targeted header of a digital

information file may contain a plurality of descrambling maps, each associated with a different player 212/226. In this manner, multiple mobile playback devices 212 can read a single file 220 stored on the client computer system 214.

A person of ordinary skill in the art will note that alternative methods of targeting exist. In an alternative embodiment, library server 260 uses the targeted recipient's private player 212/226 identifier or the targeted group's private group identifier to generate scrambling map 316. Descrambling map 322 is not stored with the file as it is already known by the recipient player or group. This method targets content to a single player 212/226 or group and achieves the identical result of preventing unauthorized playback of content.

In another alternative embodiment, library server 260 does not scramble the digital information content or uses a known key to scramble the digital information content. In this embodiment, descrambling map 322 is unnecessary and is not stored with the file. Either the public or private player 212/226 identifier can be stored in the header for targeting identification purposes. Upon receipt of data from library server 260, the player 212/226 checks if its player 212/226 identifier or group identifier is included in the header. This method assumes unmodified mobile playback devices 212 and achieves the identical result of preventing unauthorized playback of content.

In another alternative embodiment, the player IDs for the targeted mobile playback devices 212 are sent to the library server 260 by the client computer system 214 when the user registers with the library server 260 to obtain the user's client ID. In this alternative embodiment, these player IDs are stored on the library server 260 in a user profile. In this embodiment, the library server 260 manages the player IDs for the targeted mobile playback devices 212.

Digital Signature Protocol

The third authentication protocol used in the present invention is the digital signature protocol. For selected data blocks generated by library server 260 and downloaded to a client computer system 214, library server 260 uses its private library key 263 to apply a digital signature to the data block. The digital signature comprises a known bit string or data pattern which is combined with the data in data blocks that are downloaded from library server 260 to client computer system 214. The library server 260 may perform this operation on all the data blocks or a selected subset of the data blocks. After a data block is downloaded to a player 212/226 through a client computer system 214, the player 212/226 can retrieve the digital signature applied by the library server 260 using a public server key known to the player 212/226. The player 212/226 can thereby verify that the data block originated with an authorized library server 260. The public server key is also known to client computer system 214, which can perform the identical operation to verify that the data block originated with an authorized library

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server 260. In this embodiment, library server 260 performs signatures on the content. A person of ordinary skill in the art would realize that the signatures may also be performed on the digital information by authoring system 280. The signatures may also be performed in a multiple step process shared by authoring system 280 and library server 260.

In an alternate embodiment, digital signatures are applied to downloaded material by a trusted client computer system 214. In another alternate embodiment, digital signatures are not applied to downloaded material and system security rests on the use of targeting and/or point-to-point authentication.

Downloading Digital Information Content, Software Updates, or Configuration Information From the Client Computer System to the Mobile Playback Device

In a first step, the client computer system 214 and the mobile device use the point-to-point authentication protocol described above to verify that an authorized mobile playback device 212 is communicating with an authorized client computer system 214. If this is the case, the mobile playback device 212 transmits its memory map to the client computer system 214 via the mobile device interface 221. A table of contents defining the available digital information files 220 and player configuration profiles resident in client computer system 214 is displayed along with the mobile playback device 212 memory map for a user of client computer system 214. The user selects which files 220 of client computer system 214 should replace portions or segments of specified mobile playback device 212 memory as defined by the mobile playback device 212 memory map. Alternately, client browser 219 can be configured to automatically perform this selection process. In either case, the user is prevented from selecting digital information content larger than the available memory of playback device 212. In addition, control software and/or configuration data for playback device 212 may be automatically updated by client computer 214. The specified digital information files 220, associated headers, operating code, or configuration data are thereafter downloaded into mobile playback device 212 memory. The mobile playback device 212 uses checksums to verify the integrity of the download. The mobile playback device 212 uses the server public key 215, the header, and the digital signature to authenticate the download as described above. The header descrambling map is used by targeted mobile playback devices 212 to unscramble the downloaded data. In other embodiments, mobile playback device 212 may unscramble the downloaded data and/or decompress the downloaded data before authenticating the signature. Each segment of the digital information content may be independently authenticated and validated using any of the techniques described above. Digital information prompts on the mobile playback device 212 guide the user to the desired portion of the

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downloaded digital information content as specified by the table of contents residing in the header of the downloaded data. The user may preview selected portions of the digital information content by selecting a preview option. The preview option plays a predetermined portion of a selected digital information program. Upon selection of a particular digital information program, the selected digital information program is played for the user after the mobile playback device 212 converts the digital information content into sound or displayable imagery which is played through an audio output means or displayed on a display device.

The software player 226 of client computer system 214 may also receive digital information content in approximately the same form as the digital information content downloaded to the mobile playback device 212; however, the digital information content for the software player 226 does not need to be downloaded to the software player 226. The software player 226 has direct access to the digital information content; because, it shares memory and/or disk storage space with the client computer system 214. Therefore, there are no downloading or memory map concerns. In the same manner as the mobile playback device 212, the software player 226 performs digital signature verification, verification of checksums, and receiving targeted information. In an alternative embodiment, software player 226 may use a communication protocol similar to that of mobile playback device 212 when receiving digital information content, configuration information, and dynamically downloaded software.

Figure 4 illustrates an alternative embodiment of the present invention. As shown in Figure 4, authoring system 280 can support a plurality of library servers 260. Each library server can be configured to support a specific type of digital information content. In the same manner described above, the client computer systems 214 access network 240 and obtain digital information content from any of the library servers 260 after performing the authentication process described above. Authorization server 270 is provided for this purpose. The configuration illustrated in Figure 4 provides a more distributed architecture thereby dispersing the load across several server platforms. A site with many client computer systems 214 may have its own library server 260 to reduce demand on network 240. This architecture scales well as the number of client computer systems 214 grows and the content provided by the library server 260 grows.

Figure 5 illustrates another embodiment of the present invention except the library server 461 has been implemented as a plurality of separate processes or tasks 460 running concurrently on a single library server platform 461. Each library server process 460 services requests for access to its corresponding portion of the digital information content. This content is created using authoring system 280 in the manner described above. The authorization server 270 is used to validate the links between the client computer systems 214 and the library server processes 460. The configuration illustrated in Figure 5 is advantageous in that the convenience of a single server is maintained while the scalability of multiple libraries is also supported.

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This concept can also be used for the authoring and authorization servers 280 and 270, respectively. As shown in Figure 6, the authoring system 280 and the authorization server 270 is implemented on a single platform 685 as authoring process 680 and authorization process 670. These processes perform the same functions as described above, except the implementation provides the convenience of a single server and the scalability of multiple processes for the authoring and authorization tasks.

Figure 7 illustrates yet another alternative embodiment wherein the client computer systems 214 include a local library 710. The local library 710 provides a local storage area and library access control functionality which provides access to a subset of the archived digital information from library server 260. In the manner described above, the user of a client computer system 214 identifies the titles or items of digital information in library server 260 that the user wishes to access. In the preferred embodiment, these content selections are transferred to a client storage area 220 (as shown in Figure 2) for subsequent downloading to mobile playback device 212. The embodiment shown in Figure 7 expands upon the client storage area 220 and creates a local library 710. The local library 710 is used for storage of selected content; but also for searching, sorting, categorizing, and abstracting the locally stored content. The local library 710 allows a client computer system 214 to maintain a small subset of the full library which may be used to create custom collections of content in a variety of user selected configurations. Client systems 214 may be permitted to access the contents of local libraries 710 on other client systems 214. In a related alternate embodiment, library server processes 460 may also reside on selected client systems 214. This embodiment allows client systems 214 to browse and purchase content that is scrambled, targeted, and delivered from library server process 460 executing on a locally positioned client system 214. By maintaining the library locally, a portion of the network access and transfer overhead is eliminated.

Figure 8 illustrates another alternative embodiment of the present invention wherein the client computer system 214 is eliminated and the mobile playback device 212 is connected directly to the network 240 through network interface 810. In the preferred embodiment, the mobile playback device 212 is a **minimal capability device primarily dedicated to playing audio files or displaying visual images or text on a display device**. The mobile playback device 212 is minimally configured to retain its **light-weight, low cost, and readily mobile features**. The preferred embodiment does not therefore include the use of a portable personal computer or laptop computer; because, such devices typically do not meet the light-weight and low cost constraints of the preferred mobile playback device 212. However, the minimal mobile playback device 212 may be augmented to add network interface 810 which comprises a conventional hardware connector, hardware buffers and controllers, and firmware support for a particular conventional network protocol. For example, the mobile playback device 212 may be augmented with an **integrated**

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modem that includes a telephone jack with which the playback device may be connected to a telephone network. It will be apparent to those of ordinary skill in the art that network interface 810 may be implemented in a low cost and light-weight device such as mobile playback device 212. Because the client system browser 219 would not be available in the alternative embodiment shown in Figure 8, a simplified user interface may be provided in firmware or other non-volatile memory of mobile playback device 212 with which the user may select items of digital information for download and playback from library server 260. As described above, the authentication process to validate the link between the mobile playback device 212 and the library server 260 must also be performed prior to user access to the library server 260 content. Alternatively, a client system 814 coupled to network 240 may be provided to support client browser 219 and thereby enable selection of items of digital information for download and playback from library server 260 directly to any of the mobile playback devices 212. Client systems 814 may support local storage of digital information, software, and configuration data in a form similar to storage space 220 or local library 710. In addition, a more simplified implementation of network interface 810 may be designed to communicate via network 240 to client system 814 instead of library server 260.

In another alternative embodiment of the present invention, digital information programming selections are made using the client computer system 214 and library server 260 as described above; however, the selections are delivered on mass storage medium 241. Mass storage medium 241 represents any of a variety of conventional mass storage technologies including CD-ROM, PCMCIA cards, DVDs, floppy disks, removable hard drives, digital magnetic tape, optical cards, flash memory or other optical, magnetic, electronic, or semiconductor memory devices. Upon selection by a user of a client computer system 214, selected programming is targeted and scrambled as described above and transferred to a selected mass storage medium 241 and mailed, hand-delivered, or held for pickup by the user. Once the user takes physical possession of the selected mass storage media 241, the selected programming may be read from the mass storage medium 241 by the client browser 219 and thereafter transferred to the mobile playback device 212 as described above. Figure 9 illustrates another embodiment of the system that does not include the use of client computer 214 to transfer data to mobile playback device 212. Kiosk 910 consists of a computer system such as the one described above in Figure 1. Kiosk 910 is a publicly accessible unit that can perform browse, content purchase, and download functions in a manner equivalent to a client computer system 214. The kiosk 910 is special because it contains its own library server for fast local access and download of content. Kiosk 910 contains a mobile device interface 221, a special version of client browser 219, and local library server process 460. Kiosk library server process 460 has local storage of scrambled and compressed digital information files 262. These compressed information files 262 originate from remote authoring system 280 and may be delivered via physical transport of mass

storage media 241 or via distribution network 240. A customer operates client browser 219 to browse, select, and purchase digital information files that are delivered to the customer's mobile playback device 212. Authentication, targeting, and download processes are performed within the kiosk by library server process 460 that is connected to remote authorization server 270 over network 240. In a related embodiment, figure 7 shows a client system 214 with local library 710 that can be converted into a kiosk with functionality similar to kiosk 910. In this system, a special version of client browser 219 provides the same user functionality as the previous kiosk embodiment.

An alternate embodiment of the system uses a common communication network to connect all system components. In Figure 10, network 240 is directly coupled to client system 214 and 814, network interface(s) 810, library server(s) 260, authorization server 270, and authoring system(s) 280. One of ordinary skill in the art will realize that network 240 can also be segmented into a number of independent networks or communication links without changing the functionality of the system.

Thus, a method and apparatus for implementing a computer network based digital information library system employing authentication and encryption protocols for the secure transfer of digital information library programs, software, and configuration data to a client computer system and a mobile digital information playback device removably connectable to the client computer system is disclosed. Although the present invention has been described with respect to specific examples and subsystems, it will be apparent to those of ordinary skill in the art that the invention is not limited to these specific examples or subsystems but extends to other embodiments as well. The present invention includes all of these other embodiments as specified in the claims that follow.

CLAIMS

We claim:

1. A computer based library and information delivery system for accessing and obtaining selected digital information files, said library and information delivery system comprising:
 - a library server having a plurality of digital information files;
 - a client computer system coupled to said library server over a network; and
 - a mobile device removably connectable to said client computer system, said client computer system including logic for requesting a download of a selected one or more of said digital information files from said library server, said client computer system further including logic for downloading said selected one or more of said digital information files to said mobile device.

2. The library and information delivery system as claimed in Claim 1 further including an authoring system coupled to said library server for generating or modifying said plurality of digital information files.

3. The library and information delivery system as claimed in Claim 1 wherein said plurality of digital information files includes audio files, spoken audio files, visual image files, text files, video files, multimedia files, operating code files, or configuration information files.

4. The library and information delivery system as claimed in Claim 1 wherein said library server further includes library management software for interfacing with said client computer system and said plurality of digital information files.

5. The library and information delivery system as claimed in Claim 1 wherein said client computer system further includes a client browser for interfacing with said library server and for making selections of one or more of said digital information files from said library server.

6. The library and information delivery system as claimed in Claim 1 wherein said client computer system further includes a player for tangibly playing said selected one or more of said digital information files on said client computer system.

7. The library and information delivery system as claimed in Claim 1 wherein said mobile device further includes a means for tangibly playing said selected one or more of said digital information files downloaded from said client computer system.

8. The library and information delivery system as claimed in Claim 1 further including an authorization server coupled to said library server for authorizing access to said plurality of digital information files by said client computer system.

9. The library and information delivery system as claimed in Claim 1 wherein said library server is a software process running on several computer systems.

10. The library and information delivery system as claimed in Claim 2 wherein said library server and said authoring system run on different computer systems.

11. The library and information delivery system as claimed in Claim 8 wherein said library server and said authorization server run on different computer systems.

12. The library and information delivery system as claimed in Claim 1 further including an authoring system coupled to said library server for generating or modifying said plurality of digital information files, said library and information delivery system further including an authorization server coupled to said library server for authorizing access to said plurality of digital information files by said client computer system, said library and information delivery system running on a single computer system.

13. The library and information delivery system as claimed in Claim 1 further including an authoring system coupled to said library server for generating or modifying said plurality of digital information files, said library and information delivery system further including an authorization server coupled to said library server for authorizing access to said plurality of digital information files by said client computer system, said authoring system and said authorization server running on a different computer system than said library server.

14. The library and information delivery system as claimed in Claim 1 wherein said client computer system further includes a local library for local storage of a selected portion of said plurality of digital information files.

15. The library and information delivery system as claimed in Claim 1 wherein said mobile device further includes a network interface for direct communication with a network without the aid of a client computer system.

16. The library and information delivery system as claimed in Claim 1 wherein said logic for downloading further includes logic for limiting said download based on available memory of said mobile device.

17. The library and information delivery system as claimed in Claim 1 wherein said logic for downloading further includes logic for performing authentication on each segment of said digital information files downloaded to said mobile device.

18. The library and information delivery system as claimed in Claim 1 wherein said client computer system further includes logic for previewing said digital information files prior to being downloaded to said mobile device.

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19. The library and information delivery system as claimed in Claim 1 further including authentication logic for authenticating access to said library, said authentication logic including a means for performing a point-to-point authentication protocol.

20. The library and information delivery system as claimed in Claim 1 further including authentication logic for authenticating access to said library, said authentication logic including a means for performing a targeting authentication protocol.

21. The library and information delivery system as claimed in Claim 1 further including authentication logic for authenticating access to said library, said authentication logic including a means for performing a digital signature authentication protocol.

22. In a computer based library and information delivery system, said library and information delivery system including a library server having a plurality of digital information files, a client computer system coupled to said library server over a network, and a mobile device removably connectable to said client computer system, a method for accessing and obtaining selected digital information files comprising the steps of:

requesting a download of a selected one or more of said digital information files from said library server; and

downloading said selected one or more of said digital information files to said mobile device.

23. The method as claimed in Claim 22 further including a step of generating or modifying said plurality of digital information files.

24. The method as claimed in Claim 22 wherein said plurality of digital information files includes audio files, spoken audio files, visual image files, text files, video files, multimedia files, operating code files, or configuration information files.

25. The method as claimed in Claim 22 further including a step of activating library management software for interfacing with said client computer system and said plurality of digital information files.

26. The method as claimed in Claim 22 further including a step of interfacing with said library server and for making selections of one or more of said digital information files from said library server.

27. The method as claimed in Claim 22 further including a step of tangibly playing said selected one or more of said digital information files on said client computer system.

28. The method as claimed in Claim 22 further including a step of tangibly playing said selected one or more of said digital information files downloaded from said client computer system.

29. The method as claimed in Claim 22 further including a step of authorizing access to said plurality of digital information files by said client computer system.

30. The method as claimed in Claim 22 further including the steps of generating or modifying said plurality of digital information files, and authorizing access to said plurality of digital information files by said client computer system, said library and information delivery system running on a single computer system.

31. The method as claimed in Claim 22 further including a step of locally storing a selected portion of said plurality of digital information files.

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32. The method as claimed in Claim 22 further including a step of directly communicating with a network without the aid of a client computer system.

33. The method as claimed in Claim 22 further including a step of limiting said download based on available memory of said mobile device.

34. The method as claimed in Claim 22 further including a step of performing authentication on each segment of said digital information files downloaded to said mobile device.

35. The method as claimed in Claim 22 further including a step of previewing said digital information files prior to being downloaded to said mobile device.

36. The method as claimed in Claim 22 further including a step of performing a point-to-point authentication protocol.

37. The method as claimed in Claim 22 further including a step of performing a targeting authentication protocol.

38. The method as claimed in Claim 22 further including a step of performing a digital signature authentication protocol.

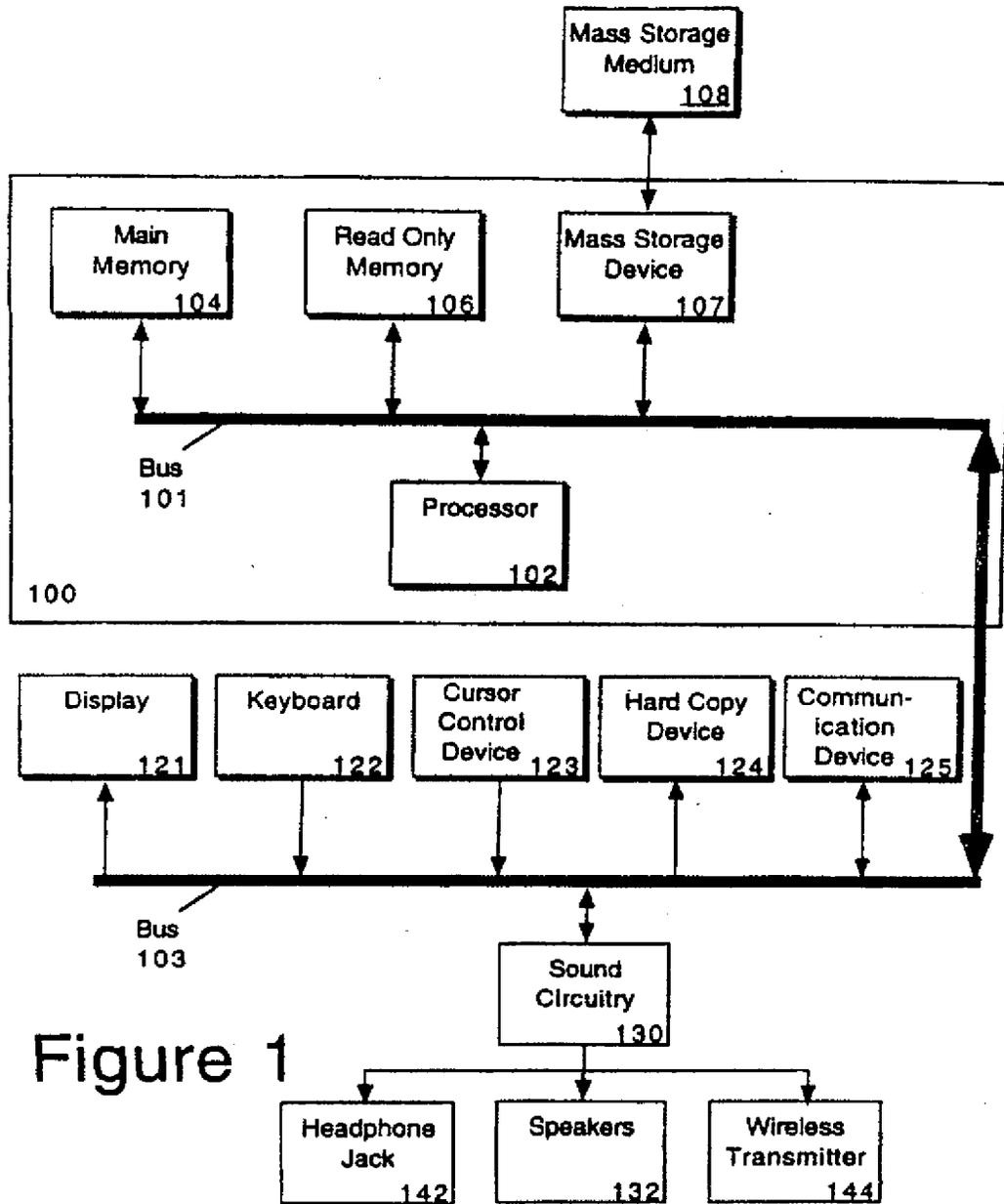


Figure 1

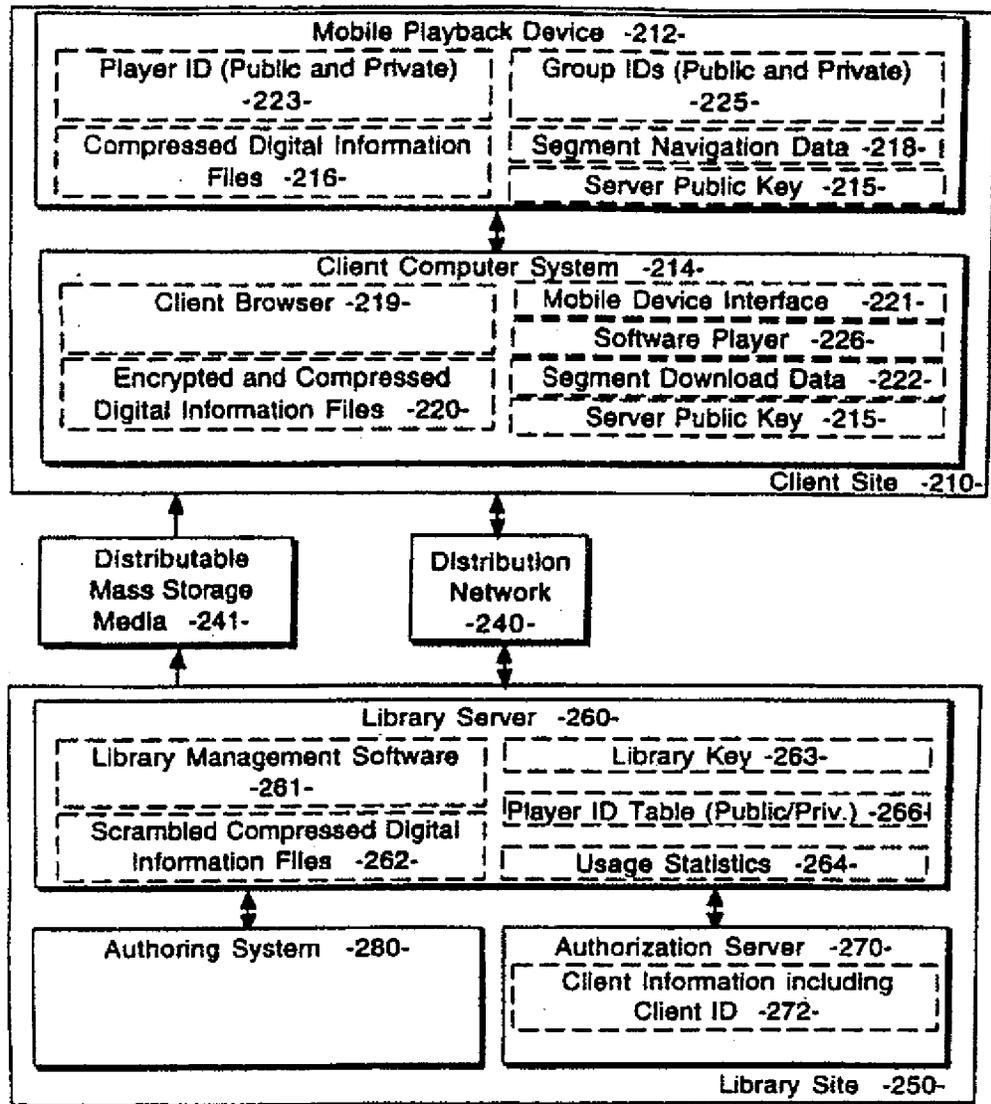


Figure 2

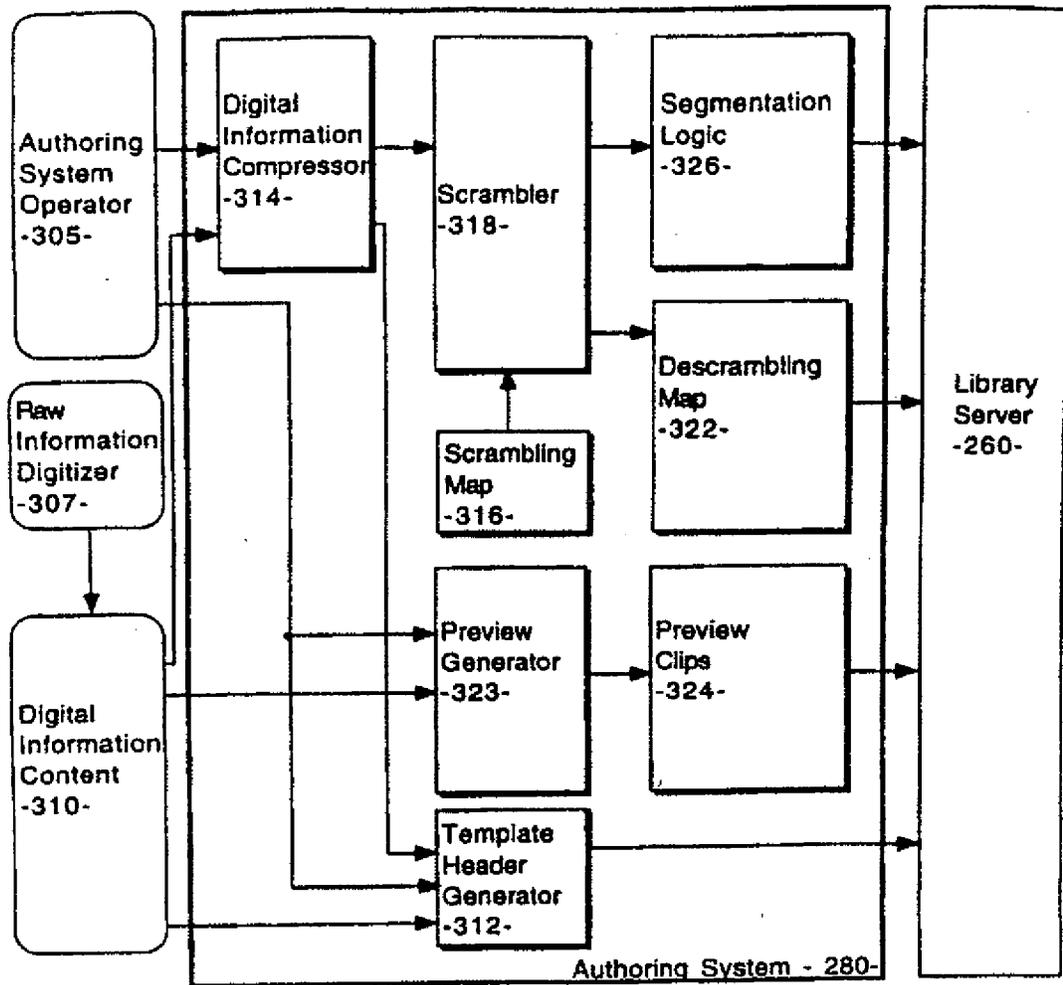


Figure 3

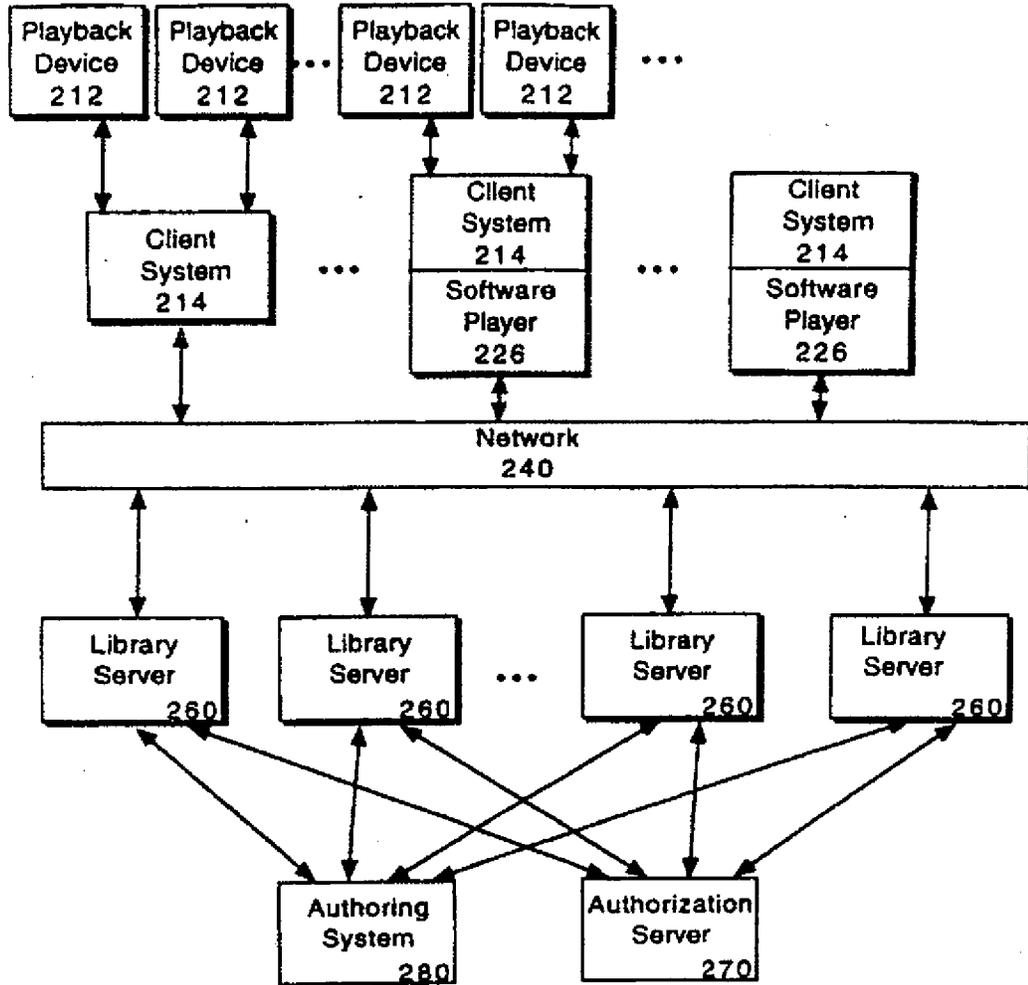


Figure 4

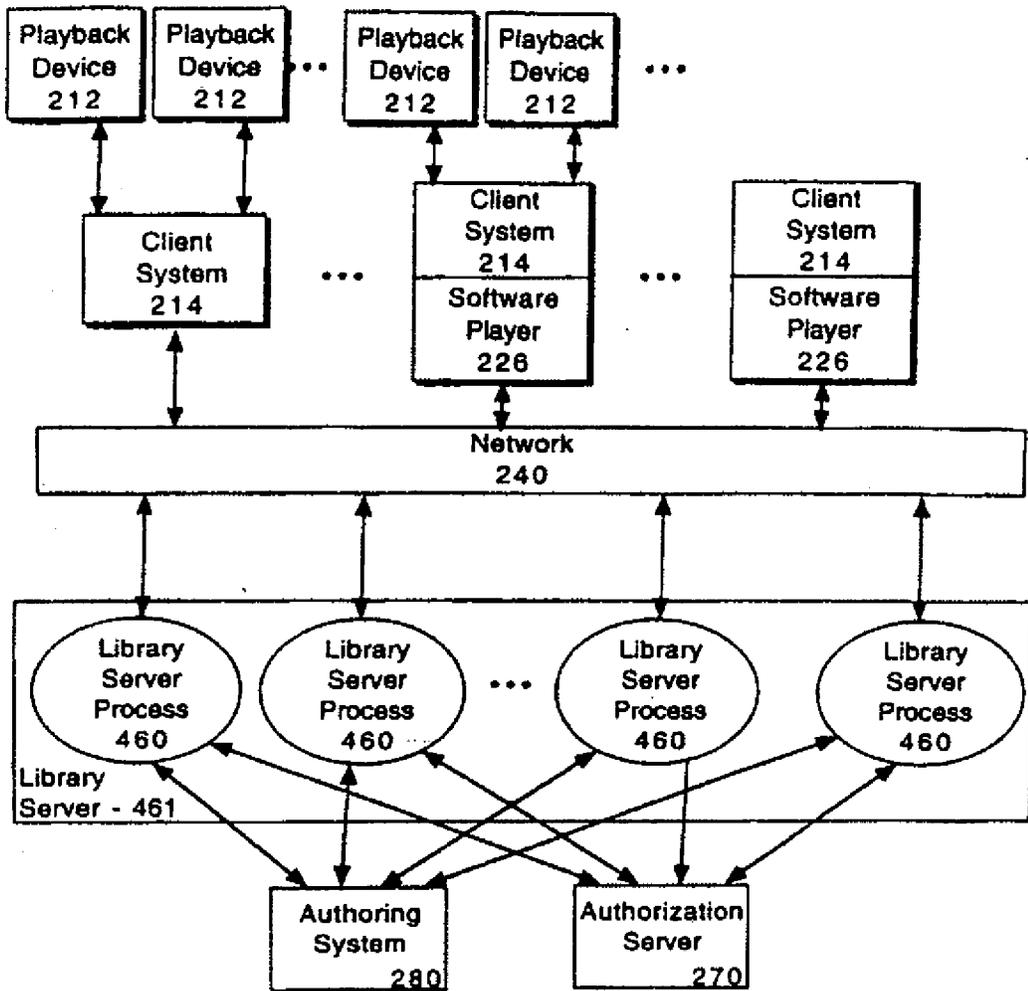


Figure 5

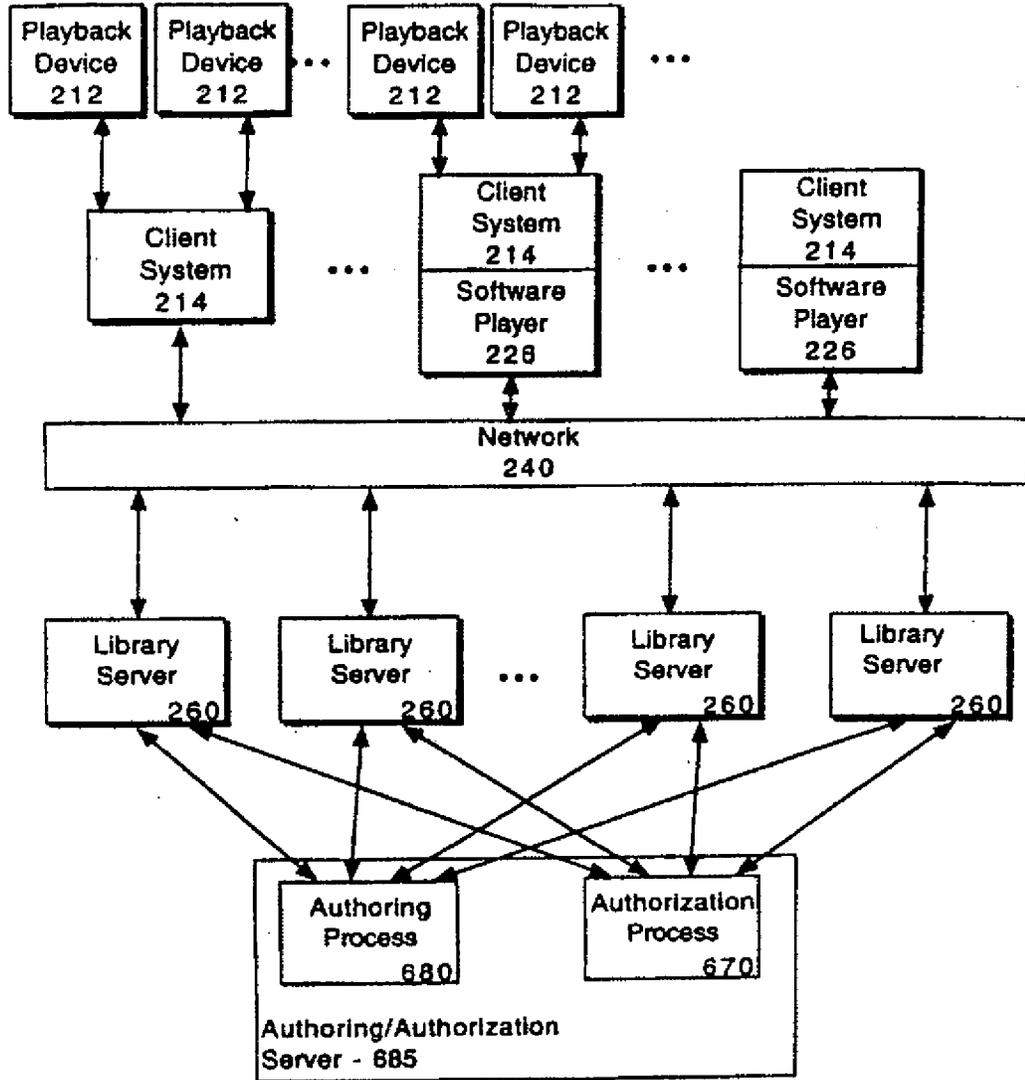


Figure 6

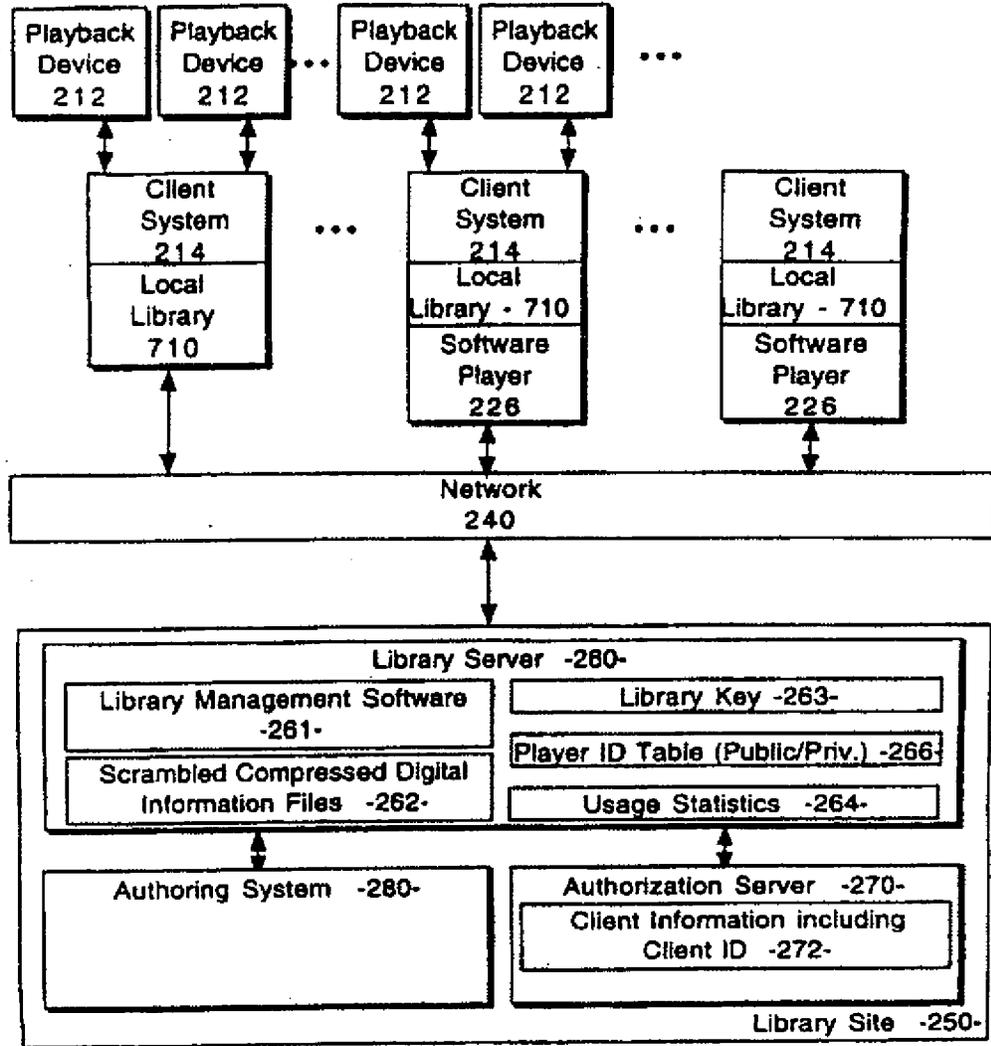


Figure 7

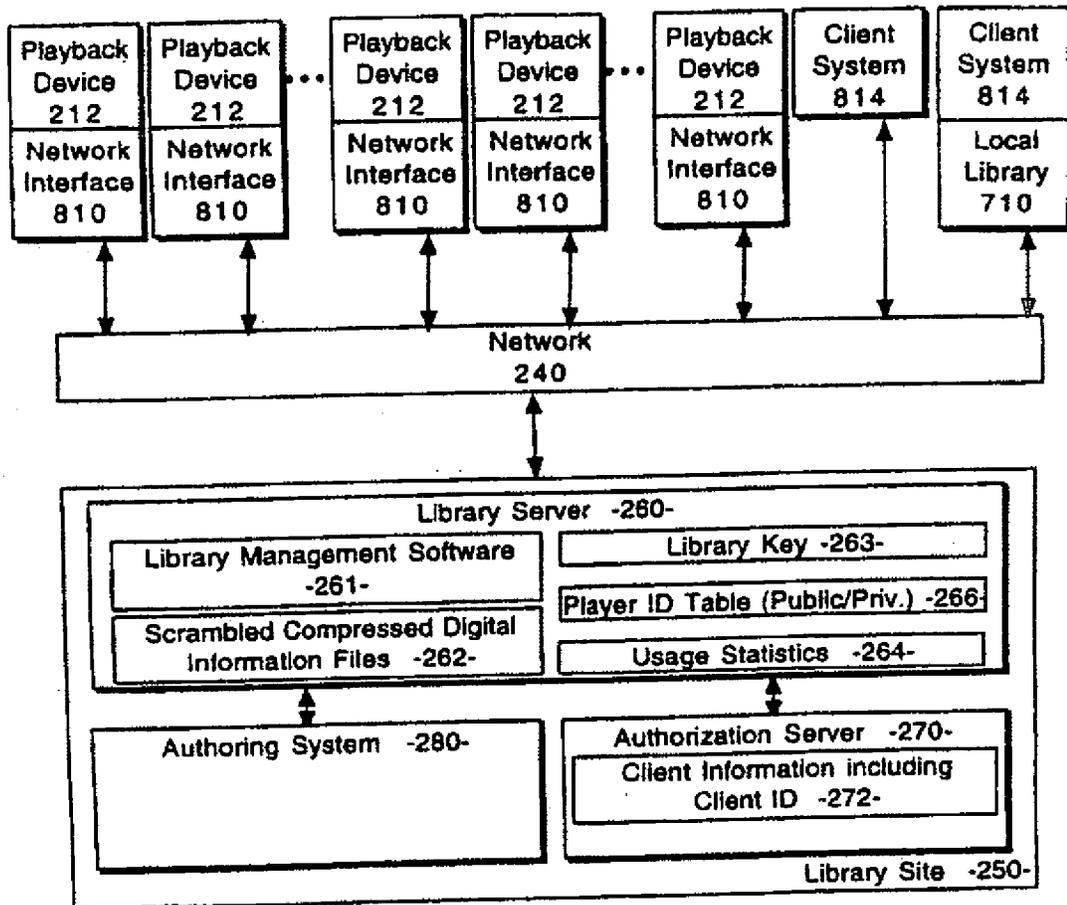


Figure 8

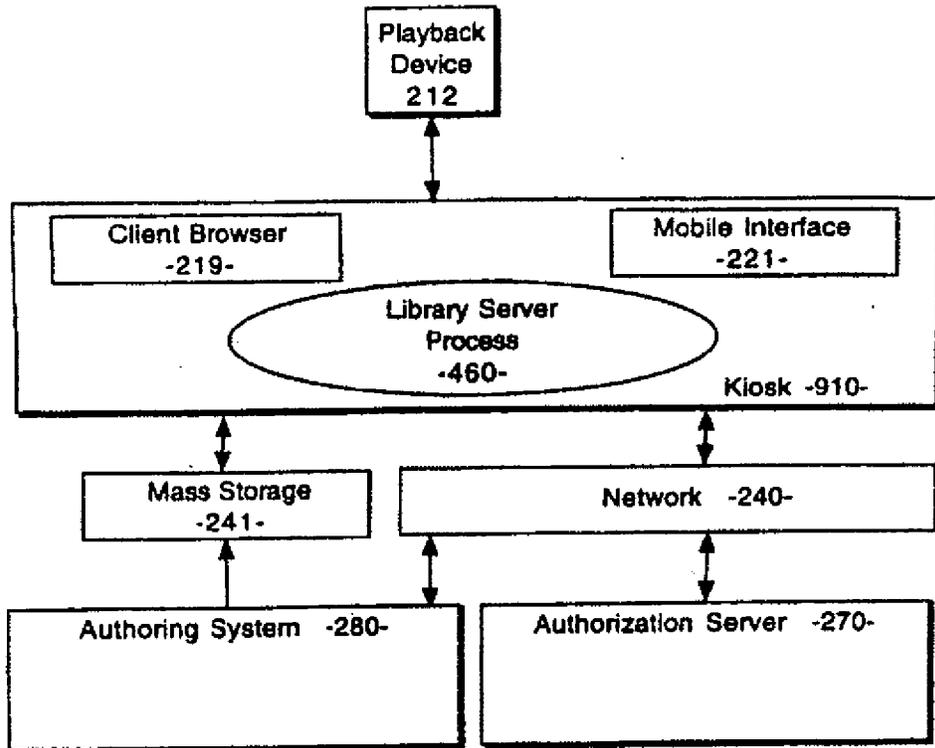


Figure 9

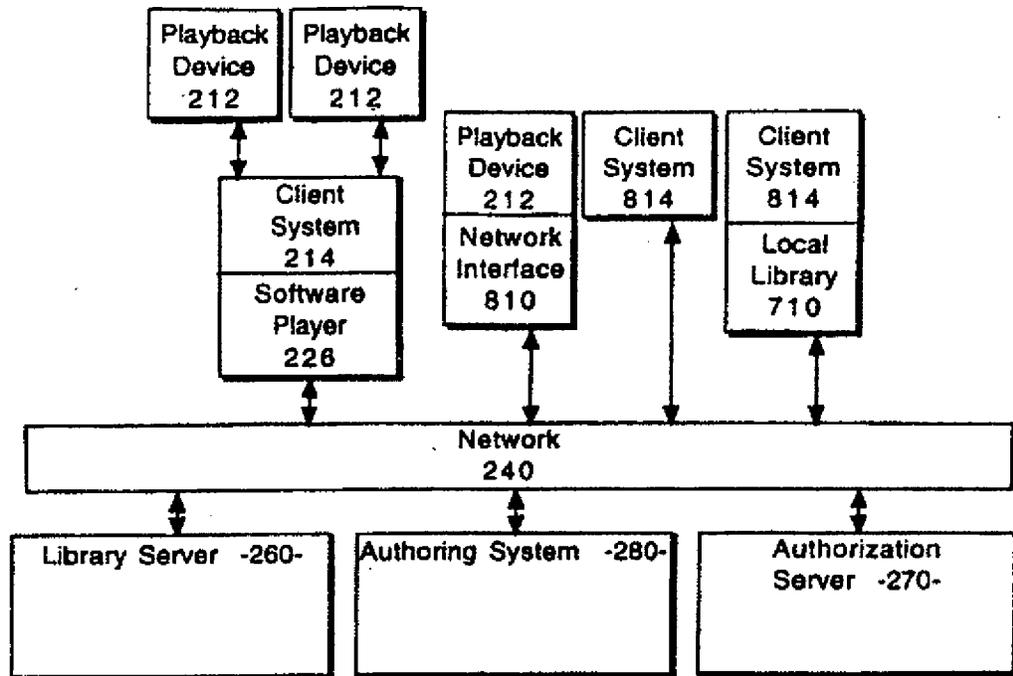


Figure 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/16184

A. CLASSIFICATION OF SUBJECT MATTER IPC(6) : G06F 13/00; H04M 11/00 US CL : 395/200.47, 200.49; 705/26 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 395/200.31, 200.32, 200.47, 200.48, 200.49; 345/327, 156, 169; 705/26, 27 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Extra Sheet.		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,440,336 A (BUHRO et al.) 08 August 1995, col.4 lines 49-60.	1-38
Y,P	US 5,634,080 A (KIKINIS et al.) 27 May 1997, fig.47, 48	1, 22
Y,P	US 5,579,471 A (BARBER et al) 26 November 1996. col.3 lines 39-68.	5-9 18, 25-28
A	RAMANATHAN ET AL. "Architectures for personalized multimedia", IEEE Multimedia, 1994, all	1-38
Y	DESMEDT ET AL. "Multi-receiver / Multi-sender network security", INFOCOM '92, p.2045-2054	19-21, 35-38
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search 25 NOVEMBER 1997		Date of mailing of the international search report 30 JAN 1998
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/16184

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS

(online or library or demand) and (mobile or portable) and server and client and authoriz?

Proquest IEEE Publications OnDisc

authentication

digital signature



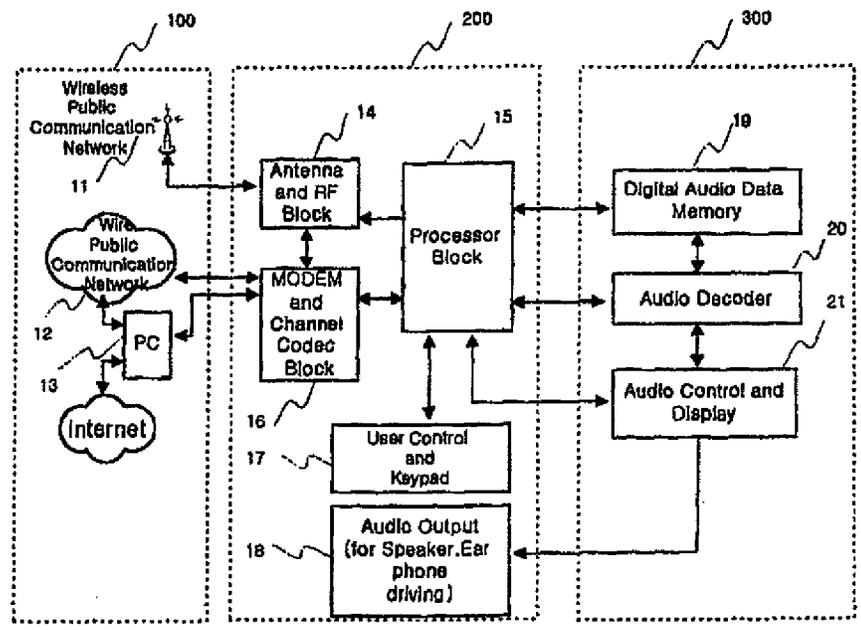
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/KR99/00800 (22) International Filing Date: 22 December 1999 (22.12.99) (30) Priority Data: 1998/56960 22 December 1998 (22.12.98) KR (71)(72) Applicant and Inventor: KIM, Jaehan [KR/KR]; Kwangju Dong-gu, Sansudong 568-1, Duam-Town, Apt.107-1106, 501-090 (KR).</p>	<p>(81) Designated States: CN, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Korean).</i></p>	

(54) Title: APPARATUS AND METHOD FOR STORING AND PLAYING BACK OF DIGITAL AUDIO DATA ON WIRELESS MOBILE TERMINAL

(57) Abstract

This invention presents the combining idea of the wireless mobile terminal and the digital audio data player. This invention will reduce user's inconveniency with possessing above two products. In this invention, the function of storing digital audio data encoded by MP3 or AAC into the memory and the function of decoding the data to decoded original audio signal are added to a wireless mobile terminal. And using various methods that first method is PC interfacing method to connect with Internet, second method is requesting method of the digital audio data encoded by MP3 or AAC via the public communication network or data network that is wire or wireless channel, third method is passive receiving method of the digital audio data transmitted from station, it is stored the digital audio data encoded by MP3 or AAC into the memory, decoded the digital audio data stored in the memory to decoded original audio signal. As result, using this invented apparatus, it will be implemented convenient mobile services of telephone and audio on demand (AOD) or music on demand (MOD). The main function of the invented apparatus is wireless mobile terminal, additional function is storing and playback of the digital audio data encoded by MP3 or AAC.



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Apparatus and method for storing and playing back of Digital audio data on wireless mobile terminal

Technical Field

This invention relates to combining technology of wireless mobile terminal and digital audio data player.

Background Art

We want to communicate with others using wireless mobile terminal or listen to music using digital audio data player, must take two products inconveniently.

The present wireless mobile terminal for communication is consists of data transceiving function block, audio signal processing function block and control function block by keypad. And present portable digital audio data player is consists of playback module as basic function, data storage module and recording module. But there are no products providing two functions as single assembly.

Above mentioned the wireless mobile terminal includes cellular phone, PCS phone, IMT-2000 terminal, GSM terminal, wireless portable handset, hand phone and mobile phone for wireless communication of audio or data.

Disclosure of Invention

Since it is added the function of storing and playing back of the digital audio data to the wireless mobile terminal by this invention, selectable usage of the digital audio player or the wireless mobile terminal is available in this invented apparatus.

In this invention, the wireless mobile terminal comprises memory for storing digital audio data, audio decoder, audio control and display module, audio signal output module. The memory for storing of the digital audio data is fixed or replaceable.

There are two method for storing of the digital audio data, first method is PC interfacing method to connect with Internet, second method is requesting and receiving method of the digital audio data via public communication network or data network that is wire or wireless channel, or passive receiving method of the digital audio data transmitted from station.

The digital audio data that are received and stored into the memory, will be decoded and played back to the decoded original audio signal using keypad operation by user's necessity.

In accordance with an embodiment of the present invention, the receiving and storing method of the digital audio data is as follows;

first, this invented apparatus is connected with public communication network via wire(12), the digital audio data are inputted to the modem block(16) by user's keypad operation(17), stored into the memory(19) by the processing of the processor block(15).

second, operation of the PC(13) connected with public communication network

via wire or Internet, provides the modem's block(16) with the digital audio data, this data will be stored into memory(19) by control of the processor block(15),

third, by the user's keypad(17), requesting and receiving of the digital audio data via the public wireless communication network, or passive receiving of the digital audio data transmitted from the audio providing station is performed, and then the digital audio data are stored into the memory(19),

fourth, the replaceable memory storing digital audio data is inserted and connected with the data interfacing connector.

The stored digital audio data by above methods will be decoded by decoder(20) and generated a audio signal to audio output(18) in accordance with the audio circuit control by the operation of keypad(17).

As result, using this invented apparatus, the mobile services of audio on demand(AOD) or music on demand(MOD) will be implemented.

Brief Description Of Drawing

FIG. 1 is a block diagram showing the functional configuration of storing and playing back of Digital audio data on wireless mobile terminal.

Modes for Carrying out the Invention

The storing and playing back part(300) of the digital audio data is consists of the digital audio data storage memory(19), audio Decoder(20), selecting control of

transceiving that wireless telephone function has priority over audio player in the case of detecting call signal, audio control and display(21). The processor block(15), user's controller, key pad(17) and audio output module(18) are common to be used in the function of wireless mobile terminal and audio player.

In accordance with an embodiment of the present invention, the fresh memory may be used for storing memory(19) of digital audio data. The memory types adequate for this embodiment are fixed memory, replaceable or combinational memory(19) for storing digital audio data. The MP3(MPEG-1 Layer 3) decoder, AAC(MPEG-2 Advanced Audio Coding) decoder, or MP3 and AAC decoder(20) are used for decoding of the digital audio data. The LCD display at present or LCD displaying selection menu of digital audio data is used as a display module(21). And the selected digital audio data is decoded and the audio signal is outputted to the audio output device(18) such as speaker or earphone.

The digital audio data comprises music, audio program for language education, narration and so forth that are coded by the MP3 or AAA coding algorithm.

Industrial Applicability

Using this invention, it will be implemented convenient mobile services of telephone and audio on demand(AOD) by single apparatus.

CLAIMS

1. A wireless mobile terminal including:

fixed or replaceable memory(19) for storing digital audio data, encoded by MP3(MPEG-1 Layer 3) audio encoder or AAC(MPEG-2 Advanced Audio Coding) encoder; and

MP3 or AAC Decoder(20) for reading digital audio data stored in the memory and decoding the digital audio data to the decoded original audio signal.
2. The apparatus of claim 1 including:

interfacing means with PC for storing the digital audio data from Internet into the memory(19) mentioned in claim 1; and

interfacing means with public communication network (or data network) via wire or wireless channel for storing the digital audio data from Internet into the memory(19) mentioned in claim 1.
3. A Method for playing back to the original audio signal ; comprising the steps of:

interfacing with PC to connect with Internet as mentioned in claim 2;

receiving the digital audio data encoded by MP3 or AAC from Internet;

storing the digital audio data into the memory(19) mentioned in claim 1; and

decoding the digital audio data to the decoded original audio signal using the

decoder(20) mentioned in claim 1.

4. A Method for playing back to the original audio signal ; comprising the steps of:

requesting and receiving the digital audio data encoded by MP3 or AAC via public communication network (or data network) that is wire or wireless channel; or receiving the digital audio data encoded by MP3 or AAC that is transmitted from station; and

storing the digital audio data into the memory(19) mentioned in claim 1; or decoding the digital audio data stored in the memory to the decoded original audio signal using the decoder(20) mentioned in claim 1.

5. The apparatus of claim 1 comprising;

Antenna and RF Block(14) for communication function of wireless mobile telephone;

Modem and Channel codec Block(16);

Processor Block(15) for Signal Processing and Control function;

Fixed or replaceable memory(19) for storing digital audio data;

Decoder(20) for reading digital audio data stored in the memory and decoding the data to the decoded original audio signal;

Interfacing means with PC for receiving the digital audio data from Internet and storing the digital audio data into the memory;

Interfacing means with public communication network for receiving of the digital audio data via wire or wireless public telephone network (or data network) and storing of the digital audio data into the memory;

User control means and keypad(17) for the call operation of wireless mobile terminal, the data storing operation, and the playback operation of the digital audio data;

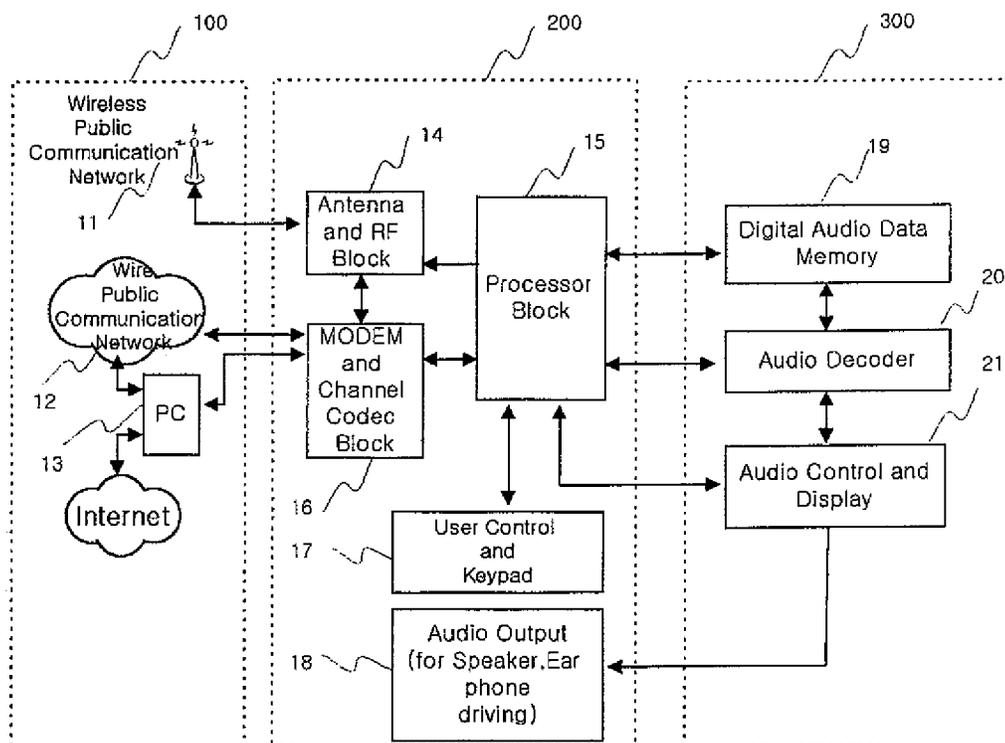
Audio control and display means(21) for control and display of wireless mobile terminal's call operation status and audio operation control status by keypad; and

Audio signal output means(18) for speaker or earphone to listen mobile terminal's voice and playback audio.

DRAWING

1 / 1

Figure 1



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR99/00800

A. CLASSIFICATION OF SUBJECT MATTER				
IPC7 H04B 1/40				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) IPC7 H04B 1/40. H04M 1/21				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X,P	KR 99-33726 A (JOON-SUNG, KIM) 15 MAY 1999, page 3 lines 11 - lines 48	1-5		
X,P	KR 99-79660 A (DANAL CORP.) 5 NOVEMBER 1999, page 3 lines 10 - lines 39	1-5		
A	US 5,577,190 A (AVID TECH. INC.) 19 NOVEMBER 1996, abstract	1		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none; vertical-align: top;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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Date of the actual completion of the international search 09 MAY 2000 (09.05.2000)		Date of mailing of the international search report 10 MAY 2000 (10.05.2000)		
Name and mailing address of the ISA/KR Korean Industrial Property Office Government Complex-Taejon, Dunsan-dong, So-ku, Taejon Metropolitan City 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer KIM, Choon Seok Telephone No. 82-42-481-5947		





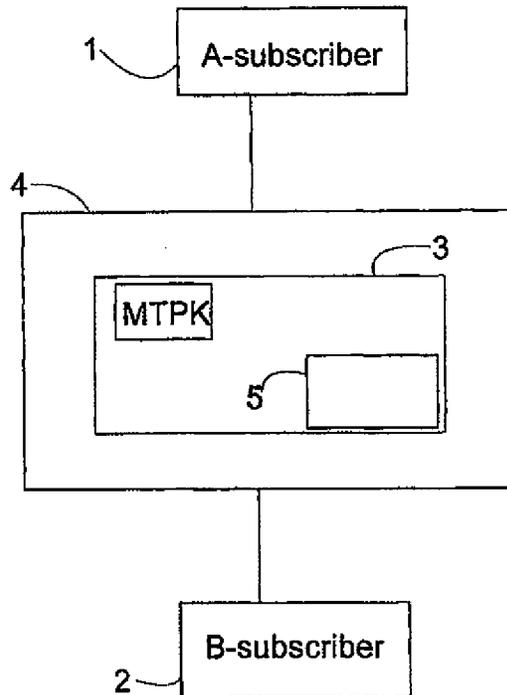
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/FI99/01042 (22) International Filing Date: 15 December 1999 (15.12.99) (30) Priority Data: 982714 15 December 1998 (15.12.98) FI (71) Applicant: OY RADIOLINJA AB [FI/FI]; P.O. Box 500, FIN-00181 Helsinki (FI). (72) Inventor: VAZVAN, Behruz; Viulutie 7 B 25, FIN-00420 Helsinki (FI). (74) Agent: SEPPO LAINE OY; Itämerenkatu 3 B, FIN-00180 Helsinki (FI).</p>		<p>(81) Designated States: EE, LT, LV, NO, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>In English translation (filed in Finnish). Without international search report and to be republished upon receipt of that report.</i></p>

(54) Title: METHOD FOR IMPLEMENTING A SOUND MESSAGE SEND/RECEIVE SERVICE IN A TELECOMMUNICATION NETWORK

(57) Abstract

The present invention concerns a method for sending a sound or musical tune message from a service user terminal device (1) or, alternatively, on the service user's request, to the terminal device (2) of another subscriber in short-message format. The method is adapted implementable by means of a mobile phone and/or a PC connected to a telecom network (3). According to the invention, the subscriber wishing to send a musical tune message selects the desired musical tune from the information displayed on his terminal device (1) and then selects the directory number or connection code of the recipient, whereupon said message is sent to the recipient's terminal device (2). In conjunction with the receipt of said musical tune message at the recipient(s) terminal (2), the sender's name and/or directory number, together with a possible text message, are displayed to the recipient. Hereupon, the recipient may activate said musical tune message and hear it and, if so desired, store the same in his terminal device (2) or, optionally, send the same to the terminal device of a third party.



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Method for implementing a sound message send/receive service in a telecommunication network

The invention relates to a method according to the preamble of claim 1.

5

The invention also relates to a mobile phone, a service center and a terminal device suitable for implementing the method according to the invention.

It is an object of the invention to provide a method for sending a sound message (a
10 tune) from a subscriber terminal device 1 or, alternatively, on a request sent therefrom, in a short-message format to a terminal device 2 owned by another subscriber. It is a further object of the invention to provide a technique for storing said sound message in a subscriber terminal device as the alarm signal of the terminal device's alarm clock.

15

In the art are known a method and system in which the connection data associated with a service provider or a service, such as the name, connection code, etc., are selected and activated in the subscriber's terminal device and, subsequently, are sent to the system switching center or to the recipient's terminal device or account. Also a
20 method and system are known featuring the possibility of delivering messages comprised of successive tones or a text (such as short messages) to a subscriber terminal device or, vice versa, from the terminal device. Such embodiments are described, e.g., in FI patent applications no. FI 945,075, FI 962,553 and FI 962,961. On the basis of cited method, also systems have been developed in which the system
25 switching center (server) has ring tones (e.g., popular music samples) stored therein so that a mobile phone subscriber can retrieve said ring tones into his mobile phone through the steps of reading a code (e.g., BVAZSAEP), e.g., from the service provider's www pages, by entering the code into his own terminal device and then sending said code as a short message to the short-message server/center, where the
30 subscriber is identified and, based on said code, the ring tone ordered by the subscriber is sent to his mobile telephone. Next, the subscriber can play the delivered

ring tone and store it in his mobile phone's selection of ring tones, whereupon it can be used only as a ring tone. The implementation of this embodiment is possible in, e.g., mobile phone types Nokia 6110, 6150, 8810, 8110i and 9000i, however, without the possibility of retransmitting the received ring tone to another subscriber or using
5 the same as the alarm signal of the mobile phone's alarm clock. Such a service provider can be found by contacting, e.g., Radiolinja's Jukebox service at <http://jukehoksi.radiolinja.fi> or Sonera's Doris service at <http://www.sonera.fi/nmt-gsm/doris/aanivalitsin.html>.

10 The basic concept of these ring tone services is that a subscriber can order a desired ring tone from a service provider, whereby the ring tone data is sent only to his personal mobile phone, wherein it can be used as a ring tone for incoming calls.

For some time, the service centers of telecom operators have also offered voice mail
15 systems in which a subscriber can leave a voice message to the voice mail center, whereupon the destination party known as B-subscriber has been provided with the possibility of hearing said message by calling the voice mail center. Systems based on this concept operate so that, after receiving a voice mail message, the voice mail center sends the destination subscriber a message informing that one voice mail
20 message has been received at the voice mail center. Then, the destination subscriber calls the voice mail center, receives instructions and enters his password, whereupon he is authorized to listen to the voice-mail messages addressed to him.

A shortcoming of this arrangement is that no musical tune messages or melodic ring
25 tones can be transmitted to another subscriber from the ordering pages of the service provider's www site or from the subscriber's personal terminal device. A further shortcoming is that the sending subscriber cannot *a priori* know whether the other subscriber has a terminal device suitable for receiving a melodic voice mail message.

30 It is an object of the invention to provide a feature service allowing a subscriber to send by means of his terminal device a musical tune message (MT) to another

subscriber's terminal, by means of which device the musical tune message can be listened to, stored and/or retransmitted to the terminal device of a third party.

5 A further shortcoming of conventional techniques is that the alarm clock signal of a terminal device has been controllable only by the owner of the terminal device, whereby alarm signal information defined by others than the terminal device owner has been impossible to emit via the alarm clock device or in the same fashion as by an alarm clock.

10 The goal of the invention is achieved by providing a telecom network with a facility to deliver ring tones and the like particularly as a musical tune message to the terminal device of another subscriber. The invention is particularly characterized in that the sending party (e.g., the A-subscriber) is offered the possibility of sending a musical tune message (MT) to the terminal device of the another party later called
15 the B-subscriber. A preferred embodiment of the invention is also characterized in that the message received by a subscriber terminal device may also be used as the alarm signal of the terminal device's alarm clock.

20 Particularly advantageously, the musical tune message is played to the subscriber either from the alarm signal device at the loudness of the terminal device's alarm clock or from the earphone of a hands-free set at a sound pressure above the normal setting.

25 More specifically, the method according to the invention is characterized by the specifications disclosed in the characterizing part of claim 1.

The mobile phone according to the invention is characterized by what is stated in the characterizing part of claim 15.

30 The service center according to the invention is characterized by what is stated in the characterizing part of claim 16.

The terminal device according to the invention is characterized by what is stated in the characterizing part of claim 17.

5 The invention has significant benefits. Instead of a mere voice mail message or text message, the user of the invention can send another subscriber of a short-message service a musical tune message (MT), whereby an unexpected type of novel feature service is offered to mobile phone users and service providers.

10 In the following, the invention is described in more detail with reference to appended drawings in which

Fig. 1 is a block diagram illustrating the equipment and system associated with the service; and

15

Figs. 2A and 2B show a flow diagram illustrating the send/receive arrangements of a musical tune message in two alternative embodiments.

Referring to the block diagram of Fig. 1, the invention described herein relates to a
20 method for sending a voice mail message or musical tune message (MT) with the help of a subscriber terminal device 1 to the terminal device 2 of another subscriber. The method is applicable in a telecom network 4, part of which is formed by a musical tune message center 3, wherefrom the user by means of his terminal device can select a desired musical piece 5, then submit the directory number of the recipient's
25 terminal device 2 and thus send the musical piece to the recipient's terminal device 2, whose display subsequently indicates the greetings or other message received from the sender. Next, the recipient can after storage and/or activation of the received musical or voice-mail message listen to the same, store the same in his terminal device 2 and use the same as a ring tone, the alarm signal of the alarm clock of the
30 terminal device or retransmit the same to a third party.

As shown in Fig. 1 and Fig. 2A, the process according to the invention begins from block 10, followed by block 11 in which the A-subscriber opens with the help of his terminal device 1 the www page of a musical tune message center MTPK 3 maintained by a service provider such as a telecom operator, where the stored musical pieces are selectable by certain codes/names and are so arranged that the A-sub-
5 subscriber 1 can enter in a certain field the mobile phone directory number (e.g., 050-5066728) of the recipient's (B-subscriber) terminal device 2. After the A-subscriber has entered the directory number of the B-subscriber 2 and selected his favourite musical piece, he can give the "send" command (by a certain keystroke or icon, etc.)
10 that in block 12 sends the musical tune message to the B-subscriber's mobile phone 2 over the telecom network 4. The B-subscriber's terminal device 2 indicates the greeting/message associated with the musical tune message as a short message (e.g., as text "*With love from me*") on the display of the terminal device 2. The B-subscriber can store and/or activate the musical tune message, as well as listen to or
15 store the same in his terminal device as is known from the listening and storing technique of ring tones. Before the desired musical tune message (MT) is sent to the B-subscriber's terminal device 2, MTPK 3 checks in block 13 the compatibility of B-subscriber's terminal device 2. If the check result is "YES", MTPK 3 sends in block 15 the musical tune message (MT) to the B-subscriber's terminal device 2. If
20 the result is "NO", MTPK 3 reports in block 14 the situation to the A-subscriber via his terminal device 1. Next, the B-subscriber's terminal device in block 16 indicates the message transmitted along with the received MT. At his will, the B-subscriber can activate the MT in block 17 and hear it.

25 Fig. 2B illustrates an alternative process in which the A-subscriber enters, after the start block 18, into his own mobile phone 1 the code of the desired musical piece stored in the musical tune message service center 3 and/or the name thereof (e.g., "BVAZSAEP" and/or "Holy night") and in block 19 the mobile phone directory number of the B-subscriber, and sends the information as a short message to the
30 service provider's service center 3, where the message is checked in block 20 and, when necessary, checks in block 21 whether the B-subscriber has a compatible

terminal device and, subsequently, the ordered musical tune message is sent in block 23 to the B-subscriber's terminal device 2. If MTPK cannot retrieve sufficient data on the type of the B-subscriber's terminal device (e.g., because the B-subscriber may be a client of another network and therefore data on his terminal device is not available in the network, or some other reason prevents access to the needed data), MTPK sends a report on such a shortcoming to the A-subscriber and gives in block 22 the A-subscriber a choice whether or not to send the ordered musical tune message MT to the B-subscriber. Then, A-subscriber can decide whether to send the ordered MT to the B-subscriber although no firm information has been obtained on the existence of a compatible terminal device on the B-subscriber side. This choice can save the A-subscriber from unnecessary costs. Nevertheless, the A-subscriber can order the musical tune message MT to be sent to his own mobile phone 1 and then retransmit the message to the B-subscriber's terminal device 2 by dialing the B-subscriber's directory number. The user's terminal device (1, 2) contains all the necessary means for retransmitting the musical tune message to another subscriber or for storing the musical tune message into the alarm signal selection of the alarm clock of his terminal device.

MTPK may include a short-message center, an intelligent network or a portion of these facilities or, alternatively, comprise a www server or the like equipment.

Instead of a musical tune message, also a synthesized sound message may be used as the ordered message. Hence, the scope and spirit of the invention also covers synthesized sound sequences that cannot be categorized as music or speech in a strict sense.

A sound message is typically played from the alarm signal device of the terminal at a sound pressure approximately equal to that of the alarm signal proper.

Accordingly, at least the following alternatives are possible according to the invention:

The telecom network is equipped to give a subscriber the possibility of sending a code and/or name defining the desired musical tune or sound message, together with the B-subscriber directory number, to a musical tune message service center 3, wherein the B-subscriber data and ownership of a compatible terminal device is
5 verified if necessary, after which the musical tune message ordered by the first subscriber is sent to the B-subscriber 2, the B-subscriber's terminal device 2 indicates the receipt of the musical tune message by displaying a text telling that said musical tune message has been received and, if so arranged, displays the sending party's text message (e.g., "With love"), and finally the B-subscriber can listen to said musical
10 tune message by activating/storing the same and, when so desired, retransmit the same to the terminal device of a third mobile phone user.

Furthermore, the system can be configured so that sending said musical tune message (MT) may be allowed from both the service user's terminal device (1) as well as
15 from said service center (3) to the terminal device (2) of the B-subscriber in a short-message format.

According to the invention, the mobile phone (1 or 2) used in the method may be allowed to receive, store, play and retransmit a musical tune message sent thereto.
20

Alternatively, the service center and/or the data base 3 thereof can be arranged to send to and indicate on the subscriber terminal device 1 the names and codes of available musical tune messages and provide thereon a recipient data entry field by means of which the service user can submit the recipient's directory number and then
25 select a desired musical tune message, whereby it is sent directly from the service center to the B-subscriber's terminal 2.

Moreover, the A subscriber allowed to submit the required data through sending the code and/or name of the musical tune message, together with the mobile phone
30 directory number of the B-subscriber, to the service center 3, where the necessary functions are carried out to send the musical tune message to the B-subscriber.

The B-subscriber may be provided with a facility allowing the musical tune message, which is sent by the A-subscriber or, respectively, ordered by the A-subscriber to be sent, to be stored in his terminal device 2 or the smart card thereof (such as the SIM card) and use the content of the message as the ring tone of his terminal device 2, alarm signal of his terminal device alarm clock or retransmit the message to a third party.

Service billing can be arranged according to the invention so that the A-subscriber is billed by the service center 3 or a billing facility (such as a billing center) operating therewith for a musical tune message sent to the B-subscriber or, alternatively, a sufficient payment (e-cash) must be sent from the A-subscriber's terminal device in conjunction with the sending of the musical tune message to the account of the service center and/or the due party to receive the payment such as the service provider.

It is also possible to complement the billing of the musical tune message service by allowing the service center 3 or the billing center operating therewith to cater to the artists' royalty payments so that the latter will be paid in conjunction with the musical tune message transmission or thereafter to the artists' royalty payment account.

The invention also concerns a mobile phone 1, 2 to be used in conjunction with the use of the method according to the invention, said mobile phone including means for reception, storage and playing as well as retransmission of said sound message to the terminal device of a third party.

Furthermore, the invention concerns a service center comprising means for storage, reception and sending of musical tune messages, as well as means for receiving and/or storing the (B-subscriber) directory number of the recipient of the musical tune message, whereby said service center 3 also includes means for receiving the code/name of the musical tune message and the destination B-subscriber directory number submitted from the A-subscriber's terminal device 1 so that said service

center is capable of sending the musical tune message selected by the A-subscriber 1 to the terminal device 2 of the B-subscriber.

5 While the invention has been described above by making reference to one of its preferred embodiment, those skilled in the art will find a plurality of modifications possible within the inventive spirit and scope of the appended claims.

What is claimed is:

1. Method for sending a message to the terminal device (2) of a mobile phone subscriber in a telecom network (4), said network incorporating a service center (3) wherein the subscriber identity is verified if necessary, characterized in that the sending party (e.g., the A-subscriber) is provided with a facility to send another terminal device (2) (e.g., the B-subscriber) a sound message (such as a musical tune message, MT) that can be listened to at least essentially at the same loudness as the normal alarm signal emitted by said terminal device (2).
5
2. Method according to claim 1, characterized in that the message to be sent comprises a preselectable musical piece.
10
3. Method according to claim 1, characterized in that the message to be sent comprises a preselectable sampled or synthesized sound message.
15
4. Method according to any of claims 1-3, characterized in that the identity of the client (1) ordering the service and/or the recipient of the message or his terminal device (2) is verified if necessary from a service code and/or directory number and/or name/code.
20
5. Method according to claim 1, characterized in that the sending client is provided with a facility to select a desired sound message and enter the directory number of the B-subscriber on a www service page furnished by said service center (3) so that said www service page is displayed on the sending client's terminal device (1).
25
6. Method according to claim 1, characterized in that the client (1) is provided with a facility to send the code and/or name of said desired musical tune message, together with the B-subscriber directory number, to said musical tune message service center (3), wherein the data of the B-subscriber and the compatibili-
30

- ty of the B-subscriber's terminal device are verified if necessary, after which the musical tune message ordered by said client is sent to the B-subscriber (2), the B-subscriber's terminal device (2) indicates the receipt of the musical tune message by displaying a text telling that said musical tune message has been received and, if so arranged, displays the sending party's text message (e.g., "With love"), and finally the B-subscriber can hear said musical tune message by activating/storing the same and, when so desired, retransmit the same to the terminal device of a third mobile phone user.
- 5
- 10 7. Method according to claim 1, characterized in that sending said musical tune message (MT) may be allowed from both the service client's terminal device (1) as well as from said service center (3) to the terminal device (2) of the B-subscriber in a short-message format.
- 15 8. Method according to any of foregoing claims, characterized in that the mobile phone (1 or 2) used in the method is allowed to receive, store, play and retransmit a musical tune message sent thereto.
- 20 9. Method according to any of foregoing claims, characterized in that the recipient's terminal (2) is allowed to receive and play the musical tune message sent thereto immediately after the receipt thereof without any action from the user's side.
- 25 10. Method according to any of foregoing claims for sending and/or receiving musical tune messages via such a telecom network that incorporates a service center (3) or a data base (5) associated therewith, said data base containing therein in a stored format a plurality of music or sound messages or musical tune samples, together with their codes, names and the like data, characterized in that said service center and/or said data base (3) is arranged so that the names and codes of the musical tune messages are sent to the service user's terminal device (1) and are displayed thereon, together with a field serving for the entry of the recipient's directory number therein, whereby the service user can submit the recipient's directory number in the field and
- 30

select the desired musical tune message and send the same directly from the service center to the B-subscriber's terminal device (2).

5 11. Method according to any of foregoing claims, characterized in that the A-subscriber is provided with a facility of entering the code and/or name of a musical tune message, together with the B-subscriber's mobile phone directory number, to send said data to said service center (3), wherein the necessary operations are carried out to send said desired musical tune message to said B-subscriber.

10 12. Method according to any of foregoing claims, characterized in that the B-subscriber is provided with a facility allowing the musical tune message, which is sent by the A-subscriber (1) or, respectively, ordered by the A-subscriber to be sent, to be stored in his terminal device (2) or the smart card thereof (such the SIM card) and, subsequently, use the content of the message as the ring tone of his terminal
15 device (2).

13. Method according to any of foregoing claims, characterized in that the A-subscriber is billed by the service center (3) or a billing facility (such as a billing center) operating therewith for a music sample message or a musical tune message
20 sent to the B-subscriber or, alternatively, a sufficient payment (e-cash) is required to be sent from the A-subscriber's terminal device in conjunction with the sending of said music sample message or said musical tune message to the account of the service center (3) and/or the due party to receive the payment such as the service
25 provider.

14. Method according to any of foregoing claims, characterized in that the billing of the musical tune message service performed in conjunction with the sending of said message at said service center (3) or said billing center operating therewith takes into account the artists' royalty payments so that the latter will be
30 paid in conjunction with the musical tune message transmission or thereafter to the artists' royalty payment account.

15. Mobile phone (1, 2) suitable for use in the method according to any of foregoing claims, characterized in that said mobile phone (1, 2) includes means for reception, storage and playing as well as retransmission of said sound message to the terminal device (2) of another subscriber.

16. Service center (3) suitable for use in the method according to any of foregoing claims, characterized in that said service center comprises means for storage, reception and sending of musical tune messages, as well as means for receiving and/or storing the (B-subscriber) directory number of the recipient of the musical tune message, whereby said service center (3) also includes means for receiving the code/name of the musical tune message and the destination B-subscriber directory number submitted from the A-subscriber's terminal device (1) so that said service center is capable of sending the musical tune message selected by the A-subscriber (1) to the terminal device (2) of the B-subscriber.

17. Terminal device suitable for use in the method according to any of foregoing claims, characterized in that said terminal device (1 or 2) includes means facilitating the service user to store the received musical tune message into a format serving as the alarm signal of terminal device's alarm clock and to select and/or change said tune to serve as the alarm signal of the alarm clock.

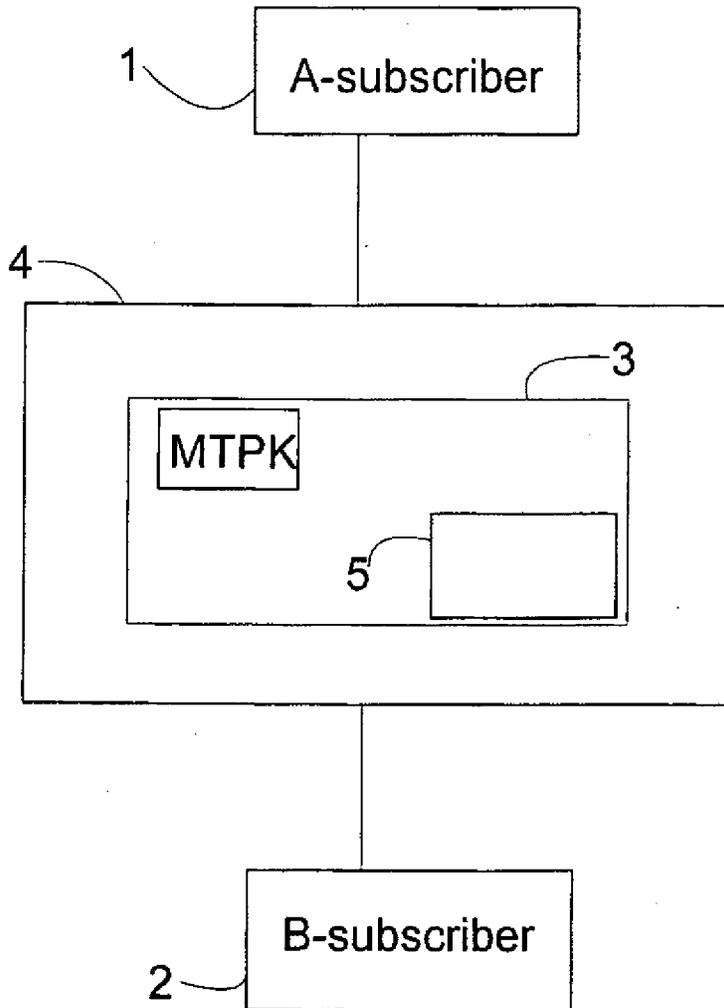


Fig. 1

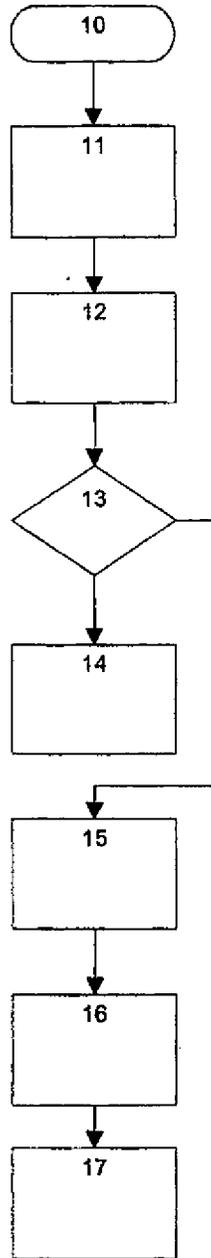


Fig. 2A

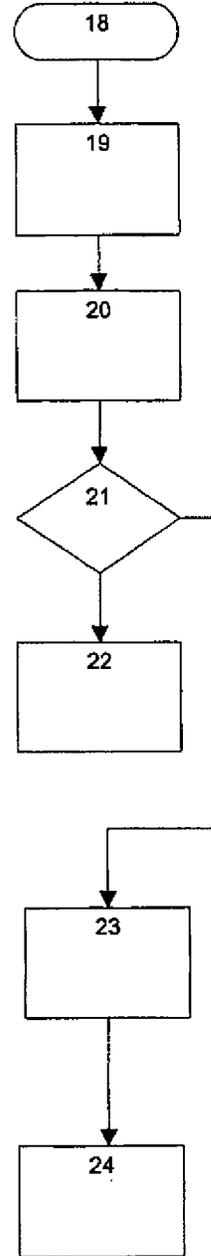


Fig. 2B

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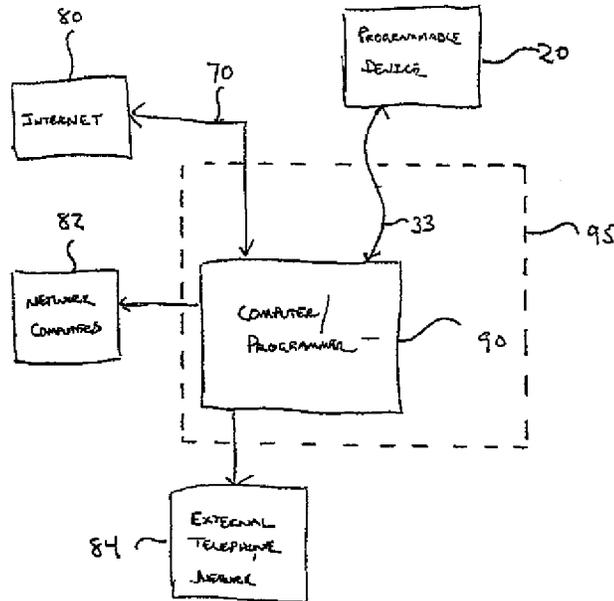
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(57) Abstract: A device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as user-selected audio, video, or Internet access information into his or her programmable device. Such electronic devices include wireless telephones, pagers, and personal digital assistants. The programmer allows a user to, among other things, customize the device to suit his or her particular taste.

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5 METHODS AND APPARATUSES FOR PROGRAMMING
 USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

 This application claims priority from
United States provisional application 60/169,158 filed
December 6, 1999.

10 Background of the Invention

 This application relates to electronic devices,
and more particularly to a programming apparatus that
allows users to program user-defined information into
their electronic device.

15 There are many types of electronic devices
available to consumers today that have the ability to
produce both audio sounds and video displays. Many of
these devices provide users with the ability to select
and play a particular piece of audio or video. A
20 television viewer, for example, may tune to a TV channel
and watch a particular program, or connect a VCR or DVD
player to the television in order to view a specific
program not currently being broadcast. Similarly, an
audio system user may tune a receiver to a particular

radio station to hear a certain genre of music, or connect a CD or tape player to the system in order to hear specific pieces of music. In both cases, the audio and video is user-selectable.

5 Currently, however, there are many electronic products that offer an audio/video playing capability that are not fully user-programmable. Users of such devices (e.g., wireless or cordless telephones, pagers, personal digital assistants (PDAs), hand-held computers
10 and the like) have to choose from a limited selection of pre-programmed information (e.g., audio clips, video clips or frames, etc.) placed there by the manufacturer. This severely limits the user's ability to customize the device to suit his or her particular taste. Furthermore,
15 most pre-programmed audio tends to be rather generic and can be confusing when a device of a nearby user generates a sound similar to or the same as that of another user's device. Although a programmable memory within many such electronic devices could support user-defined audio,
20 currently, no system exists for programming such information into an electronic device.

 The same is true for user-defined video. For example, certain types of user-defined video information, such as video clips, frames, and other digital or analog
25 images could be programmed into an electronic device (e.g., PDA, wireless phone, or any portable display device) and displayed at a time of the user choosing. Although a programmable memory within such a device could support user-defined video, currently, no system exists
30 for programming such information into the device.

Summary Of The Invention

It is therefore an object of the present invention to provide an apparatus that allows a user to

program user-defined audio information into a programmable electronic device.

It is a further object of the present invention to provide an apparatus that allows a user to program user-defined video information into a programmable electronic device.

These and other objects of the present invention are accomplished by providing methods apparatuses that allow a user to program user-defined information into his or her electronic device. In one embodiment of the present invention, the programming apparatus includes processing circuitry and first and second communications links. In operation, a user selects a piece of information from a source such as a computer disk drive, the Internet, or a remote database using the first communications link. The programming apparatus may download this information and compare its format with that required by the programmable device to determine format compatibility. If the two formats are compatible, the programming apparatus may download the selected information into the programmable device. If the formats are not compatible, the programming apparatus may convert the downloaded file to a format compatible with that required by the programmable electronic device. The programming apparatus may also provide the user with an opportunity to edit the converted file. Once editing is complete, the resulting file may then be programmed into the programmable device for subsequent use.

In another aspect of the invention, a user may send customized information such as an audio or video file called a "signature" when placing a telephone call. This feature allows a user to select and send a signature file to the person receiving the telephone call such that the person receiving the call is alerted by that file.

Brief Description Of The Drawings

The above and other objects and advantages of the present invention will be apparent upon consideration of the following detailed description, taken in
5 conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1 is a generalized block diagram of a system for programming user-defined information into an
10 electronic device in accordance with one embodiment of the present invention.

FIG. 2 is a schematic diagram of a programmer constructed in accordance with one possible embodiment of the present invention.

15 FIG. 3 shows a computer based implementation of a programmer constructed in accordance with one embodiment of the present invention.

FIG. 4a shows an alternate embodiment of a computer based implementation of a programmer constructed
20 in accordance with the principles of the present invention.

FIG. 4b shows an alternate network embodiment of the computer based implementation in shown in FIG. 4a.

25 FIG. 5 illustrates an imbedded implementation of the programmer shown in FIG. 2.

FIG. 6 shows yet another embodiment of a computer based implementation the programmer in shown in FIG. 4b.

30 FIG. 7 is a schematic diagram of one possible embodiment of a wireless telephone that can receive and play user-defined audio in accordance with one aspect of the present invention.

FIGS. 8-9 show a flow chart illustrating some of the steps involved in programming user-defined

information into an electronic device in accordance with one embodiment of the present invention.

FIGS. 10-12 show a flow chart illustrating some of the steps involved in sending and receiving signature information in accordance with one embodiment of the present invention.

Detailed Description of the Invention

FIG. 1 shows a block diagram of a system 10 for programming user-defined information (e.g., audio, video, or Internet access information, etc.) into an electronic device in accordance with one embodiment of the present invention. As shown in FIG. 1, system 10 generally includes a programmable electronic device 20, a device programmer 30, and a source 50. Programmer 30 is connected to source 50 via link 31, and to device 20 via link 32.

Programmable device 20 may be any portable electronic device (e.g., a wireless telephone, a pager, a handheld computer, personal digital assistant (PDA), etc.). Device 20 may also be any device which integrates some or all of the functions of such devices into one device. For example, device 20 may be a PDA capable of making wireless telephone calls, a PDA with paging functions, a wireless telephone with some PDA or paging functions, a handheld or notebook computer with some or all of the functions of a PDA, a pager, and a telephone, etc.

In FIG. 1, links 31 and 32 may be, for example, communications links (e.g., serial ports, parallel ports, universal serial buses (USB), RS232, GPIB, etc.), modems (e.g., any suitable analog or digital modems, cellular modems, or cable modems), a network interface link (e.g., Ethernet links, token ring links, etc.), wireless communications links (e.g., cellular telephone links,

wireless Internet links, infrared links, etc.), or any other suitable hard-wired or wireless Internet or communications links.

5 Source 50 may be any device or combination of devices suitable for providing user-defined information to programmer 30 (e.g., the Internet, an optical disc player (CD, DVD), a cassette player, a VCR, a digital camera, or any suitable storage device containing computer programs or files, etc.).

10 In operation, a user may choose certain information, such as Internet configuration information, an audio sample of a popular song, a video clip or frame, etc., that is available from source 50 and transfer it to programmer 30. Programmer 30 may then process this
15 information into a suitable format (or may simply route the information if no format conversion is required), and program it into a programmable memory within device 20 (not shown). Device 20 may then retrieve this information when a certain event occurs (e.g., when
20 receiving an incoming telephone call, browsing the Internet, or when programmed to do so by a user, etc.).

Programmer 30 may also coordinate or perform certain functions related to the routing and storing of information within device 20. For example, programmer 30
25 may communicate with (or simply search) device 20 to find available memory locations in which to store the user-defined information. Programmer 30 may also communicate with device 20 to determine which format the incoming information should be converted to so that the
30 information is compatible with the downloading requirements of device 20. For audio files, this may include, but is not limited to, converting to or from any of the following format types: analog; MIDI; MPEG; PCM; Windows Media Audio Code (WMA); WAV; or Adaptive
35 Transform Acoustic Coding (ATRAC), or to or from any

other suitable audio format, etc. For video files, this may include, but is not limited to, converting to or from any of the following format types: analog; JPEG; MPEG; GIF; AVI, or to or from any other suitable video format, etc. Text files may include, for example, HTML files, 5 Wireless Markup Language (WML) files, WordPerfect™ files, Microsoft Office™ files, or any other suitable text files.

If multiple blocks of information are being 10 programmed into device 20, programmer 30 may "tag" the different blocks so that device 20 and/or a user may distinguish among the different blocks stored therein. After the information has been provided, programmer 30 may communicate with device 20 to confirm that the 15 information has been correctly received.

A more detailed diagram of one possible embodiment of programmer 30 is illustrated in FIG. 2. As 20 illustrated, programmer 30 may include a transducer 25, a processor 34, a programmable memory 36, an analog-to-digital (A/D) converter 38, signal processing circuitry (SPC) 40, an output buffer 42, and an input buffer 44. Generally speaking, processor 40 controls the operation of programmer 30. Programmer 30 may be configured to receive and process both analog and digital signals. It 25 may also acquire acoustic signals via transducer 25 (if installed).

In operation, programmer 30 may download certain user-selected information from source 50 via link 31. This information, such as audio or video files, in the 30 form of electronic signals, may be received from link 31 and directed to input buffer 44. As mentioned above, these signals may need to be processed in order to be compatible with the format required by programmable device 20. For example, if analog input signals are 35 received at input buffer 44 and device 20 requires a

digital format, the analog signals may be routed to A/D converter 38 for conversion into a suitable digital form (e.g., into PCM, PAM, etc.). Further processing into another digital format (e.g., MP3, ATRAC, WMA, etc.) may
5 be accomplished by routing the converted signals to SPC 40 or processor 34 (discussed in more detail below). On the other hand, if digital input signals are received at input buffer 44 and device 20 requires analog signals, the digital signals may be routed to SPC 40 or to a
10 dedicated digital-to-analog (D/A) converter (not shown) for conversion to the analog domain.

Processor 34 may route incoming signals from source 50 to memory 36, SPC 40, or directly to output buffer 42 depending on the circumstances. For example,
15 some or all of the input signals received from source 50 may require further processing to meet the downloading specifications of device 20. In this case, the incoming signals that require processing may be routed to SPC 40 for such processing. For example, incoming MP3 or WMA
20 signals may be routed to SPC 40 and converted to ATRAC format (or vice-versa). Once this conversion is complete, the resulting information may be stored in memory 36, or routed to output buffer 42 for programming in device 20. Input signals that do not require a format
25 change may be routed directly from input buffer 44 to memory 36, or output buffer 42. Although not shown in FIG. 2, programmer 30 preferably has a display screen and a data input device, such as a keyboard associated with it so that a user may, among other things, browse and
30 select files, monitor file transfers, and ensure that device 20 has properly received the selected files.

In one embodiment of the present invention, SPC 40 may be programmable so that the conversion and processing protocols contained therein may be periodically updated.

Furthermore, in some embodiments, processor 34 may be programmed via software routines in programmable memory 36 to perform some or all of the functions of SPC 40. In this case, an SPC of reduced processing capacity may be used or SPC 40 may be removed altogether from programmer 30.

Audio signals may also be acquired and processed by programmer 30. Transducer 25 may acquire an acoustic signal from a stereo or other audio source and convert it to an electrical signal. This electrical signal may then be processed in a way similar to the way the above-described analog signal was processed. That is, the electrical signal may be routed to A/D converter 38 and/or SPC 40 and then stored in memory 36 or output buffer 42, for example.

It will be understood that the generalized system shown in FIG. 1 may be implemented in many ways. For example, as shown in FIG. 3, system 100 may be implemented using a computer-based architecture. In this case, some or all of programmer 30 may be installed in or connected to a computer, such as a personal computer. For example, in FIG. 3, programmer 30 may be installed in an expansion slot and connected to an interface bus such as an ISA or PCI bus (not shown) in computer 60. In this configuration, programmer 30 may receive user-defined information via the interface bus in computer 60 and operate as described above with the interface bus acting as part of link 31. Some or all of programmer 30 may also be external to computer 60 and connected to it via a link similar to link 31 (not shown). Furthermore, in certain embodiments, some of the functions of programmer 30 may be distributed between computer 60 and programmer 30. For example, programmer 30 may be constructed such that it partially or fully relies on the processing capability of computer 60. In this type of

embodiment, programmer 30 may be constructed without processor 34 or with a processor of reduced capacity. Programmer 30 may also be constructed such that it partially or fully relies on the memory capacity of computer 60. Moreover, signal processing functions such as those performed by SPC 40 could also be fully or partially carried out by circuitry or software resident within computer 60.

As shown in FIG. 3, computer 60 may be connected to Internet 80 through link 70. Link 70 may be, for example, a modem (e.g., any suitable analog or digital modem, cellular modem, or cable modem), a network interface link (e.g., an Ethernet link, token ring link, etc.), a wireless communications link (e.g., a wireless telephone link, a wireless Internet link, an infrared link, etc.), or any other suitable hard-wired or wireless communications link. With this configuration, a user may download information from Internet 80 (e.g., using electronic distribution (ED) services) and/or from a disc drive or other devices (not shown) connected to computer 60 and program that information into device 20 (via programmer 30 and link 32).

It will be understood, of course, that computer 60, with a suitable communications link, such as link 32, may be programmed with software to function as programmer 30. In this way, a user may take advantage of the fact that many of the components of programmer 30 are resident within computer 60. For example, computer 60 may contain a processor, such as processor 34 and programmable memory circuitry such as memory 36. Computer 60 may also include signal processing circuitry such as SPC 40, or software that instructs processor 34 to perform the necessary format conversions. Computer 60 may include circuitry similar to input buffer 44 and output buffer 42. Such circuitry may include random

access memory (RAM) or cache memory in computer 60. Computer 60 also may include internal or external A/D conversion circuitry, such as A/D converter 38, and an internal or external transducer 25.

5 As shown in FIG. 4a, computer 60, programmed to function as programmer 30, may be connected to Internet 80 through link 70 and to device 20 through link 32. This arrangement allows a user to select information from Internet 80 or from a storage device
10 connected to computer 30 (not shown) for programming into device 20.

 Using the generalized system shown in FIG. 4a, user-defined information may be programmed into device 20 in many ways. For example, computer 60 may be part of a
15 communications network 95, such as a telephone network, that provides Internet and/or telephone access to programmable device 20 (shown in FIG 4b). Communications network 95 may be provide hard-wired or wireless telephone or Internet access (or combination of the two).
20 This arrangement is generally illustrated in FIG. 4b as architecture 200, in which computer 90, for the sake of clarity, represents computer 60, configured at least in part, to function as programmer 30.

 With this configuration, a user of device 20 may
25 access Internet 80 and select information for downloading into device 20. It will be understood, however, that in this implementation, at least a portion of computer 90 is configured to function as programmer 30, and that computer 90 may continue to perform other functions such
30 as communicating with network computers 82, communicating with Internet 80, interfacing with external telephone network 84, and coordinating wireless Internet and telephone access etc., in addition to performing some or all of the above-described programming functions.

In operation, computer 90 may communicate with device 20 to determine its format requirements and perform any conversions necessary to make user-selected information compatible with those requirements. This
5 allows a user to select information, such as audio and/or video, that is available on the Internet or on a remote network computer, and program that information into device 20. This may be accomplished via communications link 33 (which may be any type of link previously
10 described as suitable for link 32). For example, a user may wish to download video images from an Internet site to a hand-held computer, such as a PDA, or to a wireless telephone. The user may communicate with computer 90 via a wireless link 33 and select information from
15 Internet 80 using an Internet browser installed in device 20. Such a browser may be a Wireless Application Protocol (WAP) compliant browser for supporting wireless Internet services. Computer 90 ensures format compatibility of the information, transmits the
20 information to device 20, and may communicate with device 20 to confirm that the selected information has been properly received. Device 20 may provide a visual, audio, or tactile output to indicate the requested information has been successfully received.

25 Computer 90 may also coordinate information downloading with respect to the memory capacity of device 20. For example, if the user-selected information exceeds the available memory of device 20, computer 90 may inform the user, via link 33, that the selected
30 information is larger than the available memory. In such an event, the user may be prompted to cancel or modify the information request. In certain instances, however, the user may instruct computer 90 to provide the information in a "scrolling" fashion (i.e., provide it in
35 portions) so that all the requested information may be

reviewed, albeit in sections. This may be particularly desirable in instances where large files, such as video files, are requested.

In some embodiments of the present invention,
5 computer 90 may simply contact a remote computer or Internet site to fulfill requests for audio or video information in a particular format. Such web sites or remote computers may act as virtual "jukeboxes" of video and audio information, containing extensive lists of such
10 information in a variety of formats available for downloading. Using this approach, a user may select a particular piece of information in a certain format from a list displayed on a screen of programmable device 20. Computer 90 may receive this as a request via link 33 and
15 handle the information transfer to device 20. In some embodiments, format selection may be transparent to the user. That is, the user may simply request a piece of information and computer 90 may determine and then request information in a format appropriate for the
20 requesting device.

In another embodiment, a remote computer or Internet site may perform a format conversion of information requested by computer 90 or device 20. For example, a user may access an Internet site or remote
25 computer using communications network 95 and enter a title or description of the desired audio or video information along with format requirements. The remote computer or Internet site may then search the Internet or other databases to find a file that matches the user's
30 description. Once this file is found, the Internet site or remote computer may convert that file to the requested format, (using a system similar to the described above) and provide it to device 20 via computer 90 and/or link 33. It will be understood, of course, that

embodiments such as these are within the scope of the present invention.

If desired, a user may also employ the systems shown in FIGS. 4a and 4b to download remotely stored
5 information such as Internet access information to device 20. For example, a user may have customized bookmarks or web page addresses stored in a remote personal computer or on Internet 80. The user may employ wireless link 32 or 33 to contact that remote computer or
10 Internet site and then download the Internet access information for use in device 20. This feature is desirable because it relieves the user of the burden of having to type in complicated Internet access information from the small keyboard of a wireless telephone or hand-
15 held computer. It also spares the user from having to re-enter customized Internet information that is already present in another location, into their electronic device. Moreover, such a feature is convenient when a user wishes to access information on a remote computer
20 that is not currently available in device 20. For example, a user may wish to view spreadsheet information stored on a remote computer with device 20. Rather than having to download this information from a hard-wired access point, a user may simply employ wireless link 33
25 (e.g., a wireless modem or Internet connection) to access that remote computer or Internet site and download that information to device 20.

Another feature which may be implemented using the embodiments shown in FIGS. 4a and 4b is a "signature"
30 feature. This allows device 20 to send user-defined information, which may be indicative of the user's personal taste or identity, along with other information when performing certain functions. For example, if a user is placing a wireless telephone call or paging
35 someone with device 20, he or she may select the

signature feature in order to send user-defined audio or video along with, or prior to, that call. A user may accomplish this by browsing through a menu on device 20 that displays available signature options, and by

5 choosing a particular file (not shown). If the user chooses an audio file, for example, device 20 may send that selected audio file when a call or page is placed (or a period of time before the call or page is placed). This audio file may temporarily replace the "ring

10 sequence" of the device receiving the incoming call so that the person receiving the incoming call will be alerted by hearing the audio file sent by the caller. The person receiving the call may be able to discern the identity of the caller or other information from the

15 audio file. After the call is complete, the ring sequence of the receiving device may be returned to its former configuration (either by computer 60 or by the receiving device).

In another embodiment, a user may program certain

20 audio or video files into device 20 that are activated when a certain person calls. For example, a user may program device 20 so that certain signature files are played in response to receiving a characteristic

25 indicative of the caller, such as the caller's telephone number. In this way, a user will be able to identify the caller by the sound and/or display generated by device 20. Users may also program signatures in device 20 to be played at predetermined times. For

30 example, a user (or caller) may program "Happy Birthday" or "Jingle Bells" into device 20 to play on a certain day, or may program device 20 to play a certain signature file at specified time (e.g., as an alarm).

In yet another embodiment, a user, when placing a call, may invoke a menu on device 20, which displays a

35 list of signature files available for the person being

called. This list may be defined by the person receiving the call. For example, the person receiving the call may create a signature file list by selecting certain audio and/or video files and placing them in a database of a remote computer such as computer 90 by using, for example, a personal computer connected to the Internet. In some embodiments, signature files may also be stored in a device 20 of the person receiving the call. In this implementation, a list of signature file names may be stored in computer 90 so that a caller may browse the names of signature files stored in the device of the person receiving the call. Signature files may also be stored in a combination of both computer 90 and device 20.

In some embodiments, the signature information may not necessarily be user-defined. For example, a list of pre-selected signature files may be stored on computer 90 or a remote computer from which a user of device 20 may choose. Such a list may be created by a wireless service provider, an Internet provider, an Internet site, or a manufacturer of the wireless telephone.

With these implementations, the caller may simply select a signature file from the displayed list. The selected file is then sent along with the call by computer 90 (if the selected signature file is stored in computer 90) or associated with the incoming call at device 20 (if the selected signature file is stored in device 20). In some embodiments, the caller may be able to preview signatures before sending them. For example, computer 90 may send the selected signature file to the caller for his or her review.

In systems that have a video capability, a video file containing a video clip or frame may be sent instead of or in addition to the audio sample. This may be accomplished by selecting a video option from a signature

menu and choosing a video file. In this case, the person receiving the call is alerted by seeing or hearing the video clip and/or associated audio. It will be appreciated that a video clip may have its own audio portion associated with it so that the video clip (or frame) by itself would be sufficient to alert the person receiving the incoming call.

The above-described signature feature may be implemented in many ways. In some embodiments, for example, the audio or video signatures may be stored in (the caller's) device 20 and sent along with the outgoing call or page via link 33 and computer 90. In other embodiments, however, the signature information may be stored in computer 90 and associated with the outgoing call when it is processed by computer 90. This type of embodiment may be implemented when it is desired to conserve memory space within device 20. In still other embodiments, signature information may be stored in both device 20 and computer 90. In any case, computer 90 may determine the format requirements of the device receiving the incoming call or page and convert the accompanying signature information into a suitable format.

Another implementation of a system in accordance with this invention may use an architecture 300, which is shown in FIG. 5. Using this arrangement, programmer 30 (or similar circuitry) may be embedded within programmable device 20. User-defined information may be provided to device 20 from source 50 via link 32. Such information may be routed to programmer 30, which may perform some or all of the above-described functions.

If source 50 is an acoustic source, however, link 32 may not be needed. For example, if a user desires to program an acoustic sound into device 20, the user may place a transducer 25, (e.g., a speaker/microphone existing within or external to device 20) near

the acoustic signal source, place device 20 into an "acquisition mode," and record an audio sample. In this case, transducer 25 converts the acoustic signal into an electrical signal, which is provided to programmer 30 for processing and possibly storage within device 20. A visual, audio, or tactile output may be provided by device 20 to indicate a sample has been successfully loaded. A user may employ transducer 25 to acquire and record, for example, a verbal message or sound effect (e.g., laughter, crying, sneezing, etc.) for use as a signature file.

Other embodiments of the present invention may use the embedded architecture of system 400 as shown in FIG. 6. Using this arrangement, user-defined information may be requested by device 20 via link 32 and computer 60. With this approach, a user may select information from Internet 80 or a remote computer and perform any necessary format conversion within device 20.

In addition to selecting user-defined information with programmer 30, a user may customize that information by performing various editing procedures. For example, a user may find an audio track or video clip that suits his or her taste. It may be desired, however, to utilize only a portion of that track or clip. In this case, a user may edit or "sample" a portion of the information to obtain the desired segment. For example, a user may wish to sample a few bars of a popular song and send it along as signature information when making a wireless telephone call. Such editing may be accomplished, for example, by using an application program with programmer 30 or by using known software with computer 60. Furthermore, once the user has edited a particular piece of information, he or she may be given the option to review the piece to ensure it is acceptable. When a user is satisfied with an edited segment, he or she may save it and be given an

opportunity to "name" that segment, so that it may be readily identified later by a user of device 20.

It will be appreciated that various other types of editing procedures are also possible. For example, a user may combine and/or further edit the content of segments of information. This may be accomplished using "cut and paste" routines in an application program. Other types of revisions may include modifying the color or content of a portion of video clip or frame, as well as editing the audio track that accompanies a video clip or frame. It may also include revising or combining audio segments or creating customized audio segments to accompany video clips or frames.

In some instances, a user may wish to download large portions of copyrighted audio or video. To prevent improper usage of such material, programmer 30 may include copyright protection software such as software that conforms with the Secure Digital Music Initiative (SDMI). Generally speaking, this may allow an owner of such material to "check out" a finite number of copies so that unauthorized distribution is prevented.

A schematic diagram of a portion of a wireless telephone 500 that can receive and play user-defined audio and/or video is shown in FIG. 7. As illustrated in FIG. 7, telephone 500 may include antenna 510, receiver/transmitter (R/T) circuit 520, processor 530, communications interface 532, speaker/transducer 540, alerting circuit 550, and optionally, programmer 30 (or similar circuitry).

A user may program information into telephone 500 in several ways. For example, a user may connect telephone 500 to an external programmer 30 (not shown in FIG. 7) via link 32 to program user-defined audio or video in telephone 500 as described above. Processor 530 may route this information to alerting circuit 550 for

storage and subsequent use. Afterwards, the user may configure telephone 500 to play a certain user-defined audio file stored in alerting circuit 550 when receiving an incoming call. Thus, when a call is received, processor 530 may instruct alerting circuit 550 to play the selected file through speaker 540. If a video file is chosen, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display screen on the telephone (not shown). Alerting circuit 550 may include programmable memory circuitry for storing user-defined information and driver circuitry (not shown) for driving speaker 540 and/or a display screen on telephone 500.

Telephone 500 may also receive user-defined information from communications network 95 via link 33 and antenna 510. With this implementation, user defined information, such as a signature file, may be received by antenna 510 and demodulated with R/T circuit 520. Processor 530 may then route the demodulated signals to an appropriate location. In the case of a signature file, for example, processor 530 may check the format of the incoming file to ensure it is compatible with the format required by alerting circuit 550. If the format is compatible, the incoming file may be routed to alerting 550 for storage and subsequent use or to speaker 540 for immediate playing. If the format is not compatible, the incoming file may be routed to programmer 30 for conversion. After conversion is complete, processor 530 may instruct programmer 30 to route the converted file to speaker 540 or alerting circuit 550. If a video file was sent as a signature file, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display in telephone 500 (not shown). In some embodiments,

speaker 540 may be an enhanced performance speaker (as compared to those currently installed in telephones) with a capacity for generating a full range of audio sounds. Moreover, it will be understood that circuitry similar to that shown in FIG. 7 may be installed for use in other communication devices such as PDA's, pagers, notebook computers, etc.

Some of the steps involved in programming user-defined information into programmable device 20 as described herein are illustrated in the flow chart of FIGS. 8-9. It will be understood that although programmer 30 is used in the following description, computer/programmer 90 may also perform some or all of these (or similar) steps.

At step 100 in FIG. 8, programmer 30 allows the user to browse information for potential programming into device 20. As mentioned above, this may include browsing audio/video information on the Internet, or on a hard, floppy, or optical disc drive of a computer. At step 102, the user may choose certain files for programming into device 20. Next, at step 104, programmer 30 may determine the format requirements of device 20 and compare the format of the selected files to that specified by device 20. This may be accomplished, for example, by electronically polling device 20. At step 105, if the formats are compatible, programmer 30 may go directly to step 108. If the formats are not compatible, at step 106, programmer 30 may convert the selected files to a format compatible with device 20. In some embodiments, the user may be prompted to confirm that the conversion should be performed. In addition, programmer 30 may also prompt the user to supply a name for the converted file. Moreover, if the selected file cannot be converted, programmer 30 may so inform the user.

Next, programmer 30 provides the user with an option of editing the contents of the resulting files at step 108. If desired, the user may first review the converted file to determine if editing is warranted. At
5 step 109, if the user chooses not to edit the file, programmer 30 may go directly to step 112 (shown in FIG. 9). If the user decides to edit the file, he or she may do so at step 110. When finished editing, the user may be given the option of reviewing the file at
10 step 111 by returning to step 108 to determine whether the file is acceptable or requires further revision. Programmer 30 may alternate between steps 108-110 until the user is satisfied with the resulting file. When editing is complete, programmer 30 provides the user with
15 the option of programming the file into device 20 at step 112. At this point, (step 113) the user may exit the program at step 114 or return to step 100 to browse more information.

It will be understood that these steps are merely
20 illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, it may be desired to edit a file already stored in device 20. In this case, a user may bypass steps 100-106 and go directly to step 108. In some embodiments,
25 selected files may be revised before converting them to format compatible with device 20. This may be desirable when the file's original format facilitates the editing process. In addition, programmer 30 may determine the format requirements of device 20 at any time before the
30 conversion occurs. A user may also name or revise the name of a selected file at any time.

Some of the steps involved in sending signature files to programmable device 20 as described herein are illustrated in the flow chart of FIGS. 10-12.

At step 150 in FIG. 10, device 20 allows the user to browse signature files for potential transmission to device 20 of the person receiving the call (hereinafter the "receiver"). At step 150, the user may be provided with option of creating a new signature file if a suitable signature file not found on the list. At step 154 the user may select a signature file. Once a signature file is selected, computer 90, at step 156, may determine the location of the selected signature file. Such locations may include, but are not limited to, the caller's device 20, the receiver's device 20, or computer 90.

If computer 90 determines that the signature file is located in the user's device 20 (i.e., the caller's device 20) computer 90 may retrieve that file from the user's device 20 at step 158. Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to determine if they are compatible at step 160. If the formats are compatible, computer 90 may go directly to step 164. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 162. At step 164, the signature file may be sent along with, or somewhat before, the outgoing call. At step 166, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 167, the receiver's ring sequence may be returned to its original setting and the program may exit.

If, however, the signature file is located in computer 90 (step 156), computer 90 may retrieve that file at step 168 (FIG. 11). Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to determine if they are compatible at step 170. If the

formats are compatible, computer 90 may go directly to step 174. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 172. At step 174, the signature file may be sent
5 along with, or somewhat before, the outgoing call. At step 176, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 177 the receiver's ring sequence may return to its original setting and the program may exit.

10 On the other hand, if computer 90 determines at step 156 that the signature file is located in the receiver's device 20, computer 90 may transmit an indicia indicative of the selected file to the receiver's device 20 along with the outgoing call at step 178
15 (FIG. 12). Next, the receiver's device 20 may associate a signature file that corresponds to the indicia, replace its ring sequence with that signature file, and play that signature file at step 180. At step 182, the receiver's ring sequence may be returned to its original setting and
20 the program may exit. It is assumed for the purposes of this illustration that signatures files stored in the receiver's device 20 are already in a suitable format. However, if this is not the case, a conversion step may be added between step 178 and step 180 (not shown).

25 It will be understood that these steps are merely illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, computer 90 may determine the format requirements of device 20 at any time before the conversion occurs.

30 Thus, it is seen that a device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as audio, video, or Internet access information into his or programmable device. This
35 allows a user to, among other things, customize his or

her device to suit the user's particular taste. It will be understood that the foregoing is only illustrative of the principles of the invention, and that various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention. For example, it is not necessary that programmable memory within device be a fixed programmable memory. That is, a removable memory module may be programmed externally from a given programmable device and subsequently installed in that device. Furthermore, the many aspects of the invention are suitable for use with hard-wired, cordless, or wireless communications devices. For example, user-defined audio and video and signature files may be used with hard-wired or cordless telephone systems. Accordingly, such embodiments will be recognized as within the scope of the present invention.

Persons skilled in the art will appreciate that the present invention can be practiced by other than the described embodiments, which are presented for purposes of illustration rather than of limitation, and the present invention is limited only by the claims which follow.

I Claim:

1. A method for programming a user-defined audio file into a telephone comprising:
providing the user-defined audio file; and
enabling a user of the telephone to program at least a portion of the audio file into the telephone.

2. The method of claim 1 wherein the providing further comprises providing the audio file from the Internet.

3. The method of claim 1 wherein the providing further comprises providing a plurality of audio files and wherein the method further comprises allowing the user of the telephone to select at least one of the audio files.

4. The method of claim 1 wherein the providing further comprises providing the audio file from a disc drive of a computer.

5. The method of claim 1 further comprising editing the audio file.

6. The method of claim 1 wherein the programming further comprises:
determining a format of the audio file;
determining an audio file format required by the telephone; and
comparing the format of the audio file with the audio file format required by the telephone.

7. The method of claim 6 further comprising converting the audio file to the file format required by the telephone.

8. The method of claim 7 wherein the enabling further comprises retrieving the audio file from the Internet.

9. The method of claim 7 wherein the enabling further comprises transmitting the audio file across a wireless network.

10. The method of claim 1 wherein the telephone includes a programmable memory that is a removable programmable memory, the method characterized by programming the audio file into the removable memory.

11. A method for playing a user-defined audio file in a telephone comprising:
programming a user-defined audio file into a programmable memory in the telephone; and
playing the user-defined audio file when receiving an incoming telephone call.

12. The method of claim 11 wherein the playing further comprises reading the audio file from the programmable memory.

13. An apparatus for programming a user-defined audio file into a telephone having a telephone memory comprising:
a data input device that allows the user to select the audio file; and
a programmer circuit that programs the audio file into the telephone memory.

14. The apparatus of claim 13 wherein the programmer circuit is installed in a computer.

15. The apparatus of claim 13 wherein the programmer circuit is a personal computer configured to perform the programming.

16. The apparatus of claim 13 further comprising a first communications link between the telephone and the programming circuit.

17. The apparatus of claim 16 wherein the first communications link is a wireless communications link.

18. The apparatus of claim 13 further comprising a second communications link between a source of audio files and the programming circuit.

19. The apparatus of claim 18 wherein the source of audio files is the Internet.

20. The apparatus of claim 18 wherein the source of audio files is a computer disc drive.

21. The apparatus of claim 18 wherein the programmer circuit further comprises a processor that converts the audio file to a format compatible with the telephone.

22. The apparatus of claim 21 wherein the programmer circuit further comprises memory that includes software for instructing the processor to perform the audio file format conversion.

23. The method of claim 21 wherein the processing circuitry is in a networked computer that provides wireless Internet access.

24. The method of claim 21 wherein the processor is in a networked computer that provides wireless telephone access.

25. The apparatus of claim 21 wherein the programmer circuit comprises memory that contains software for instructing the processor to perform editing procedures on the audio file, the software communicating with a display screen so that a user can review the audio file via a user interface.

26. The apparatus of claim 13 wherein the programmer circuit is embedded within the telephone, a display screen is provided on the telephone, and the data input device is a keypad associated with the telephone.

27. The apparatus of claim 26 further comprising a communications link between a source of audio files and the programming circuit.

28. The apparatus of claim 27 wherein the source of audio files is the Internet.

29. The apparatus of claim 27 wherein the source of audio files is a computer disc drive.

30. The apparatus of claim 13 wherein the telephone memory is removable from the telephone.

31. The apparatus of claim 30 wherein the telephone memory is capable of being programmed with the audio file when separate from the telephone.

32. The apparatus of claim 31 wherein the telephone is a wireless telephone.

10

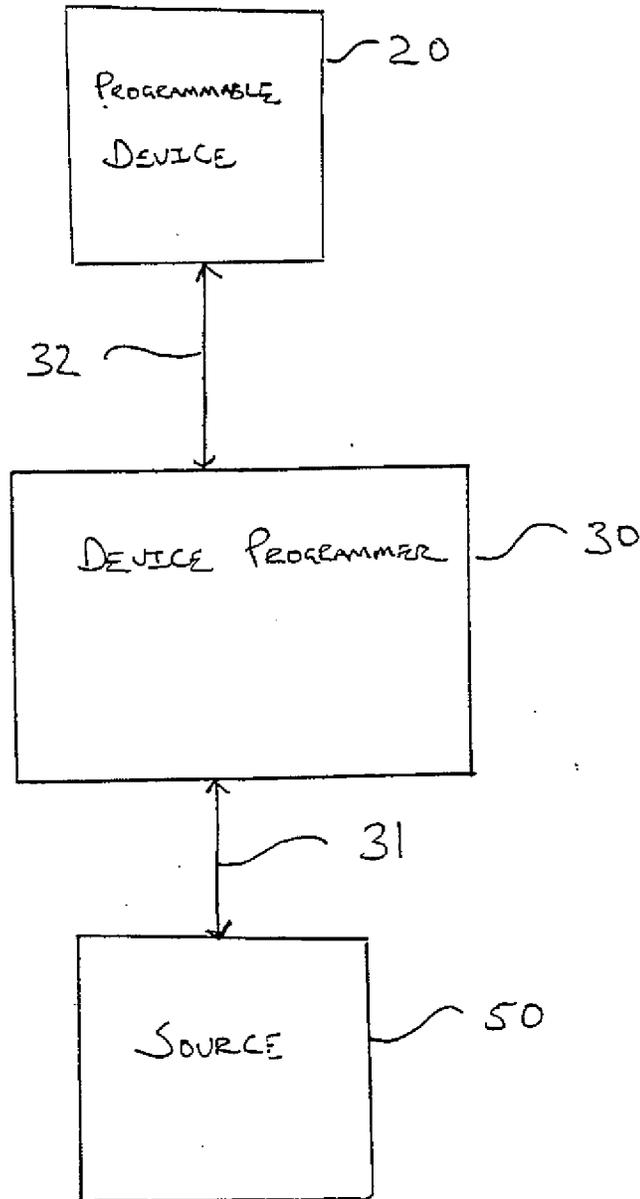


FIG. 1

30

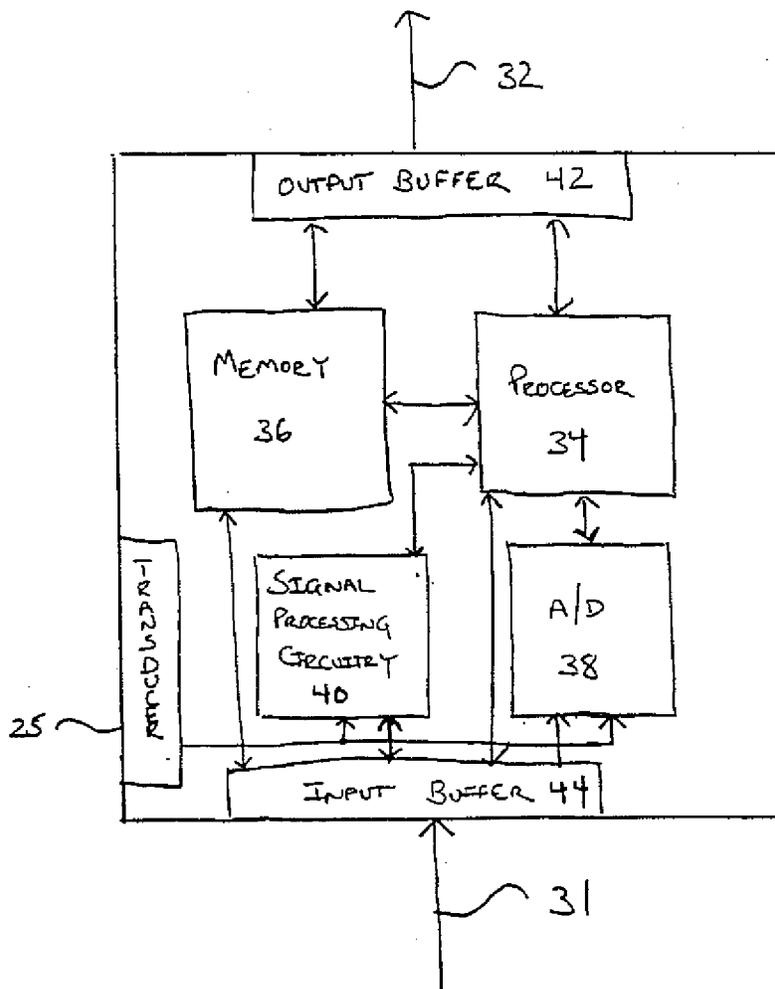


FIG. 2

100

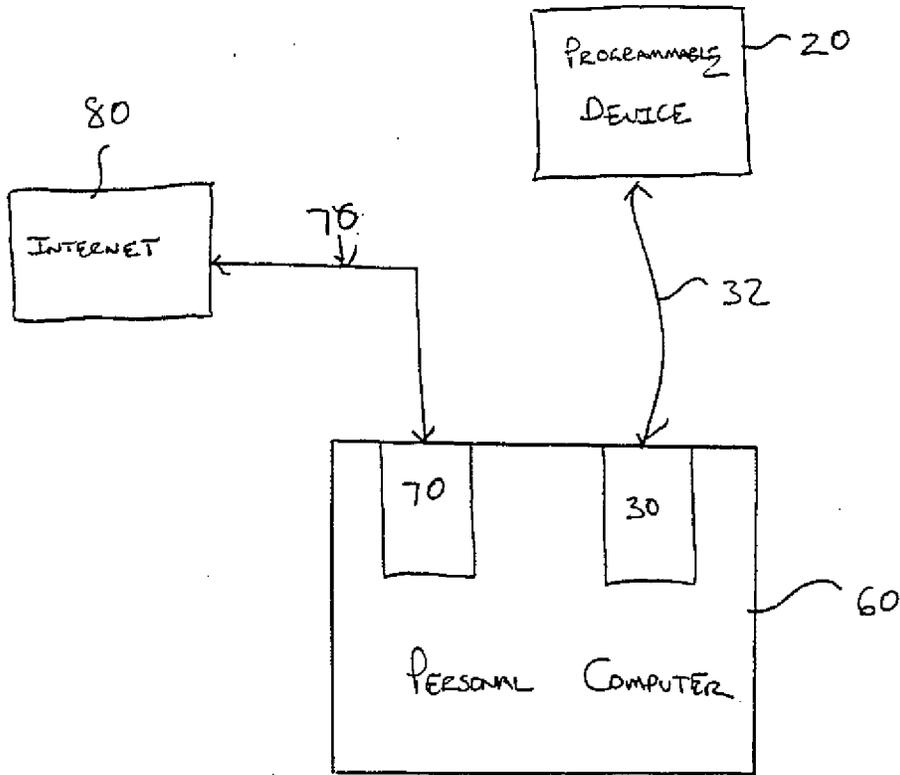


FIG. 3

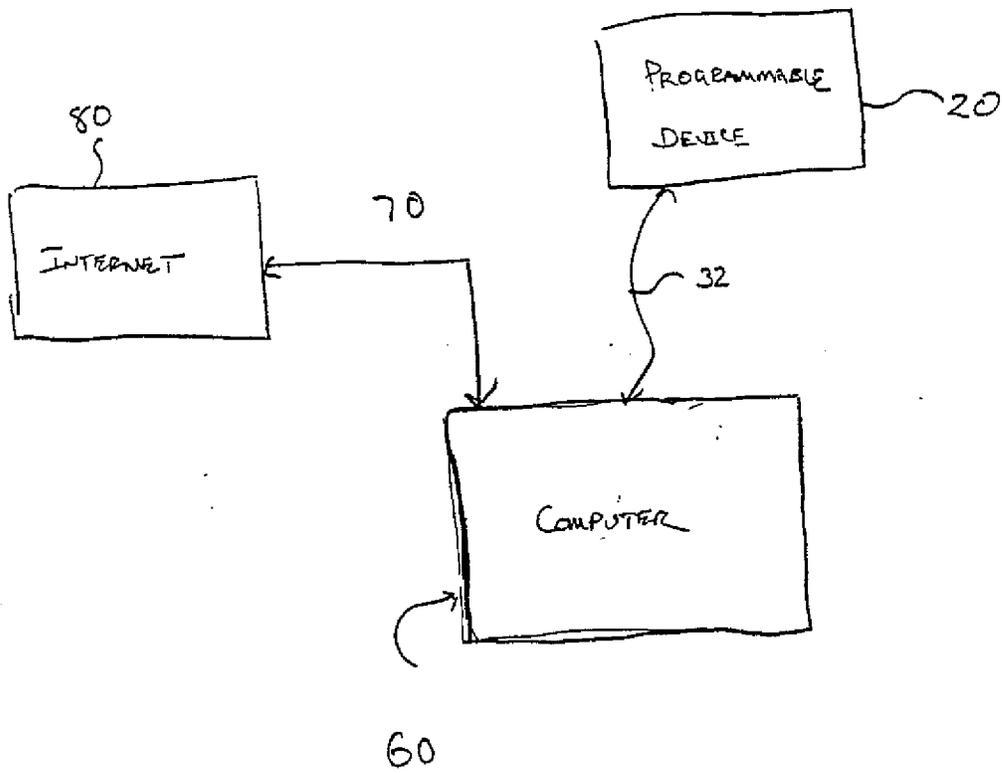


FIG. 4a

200

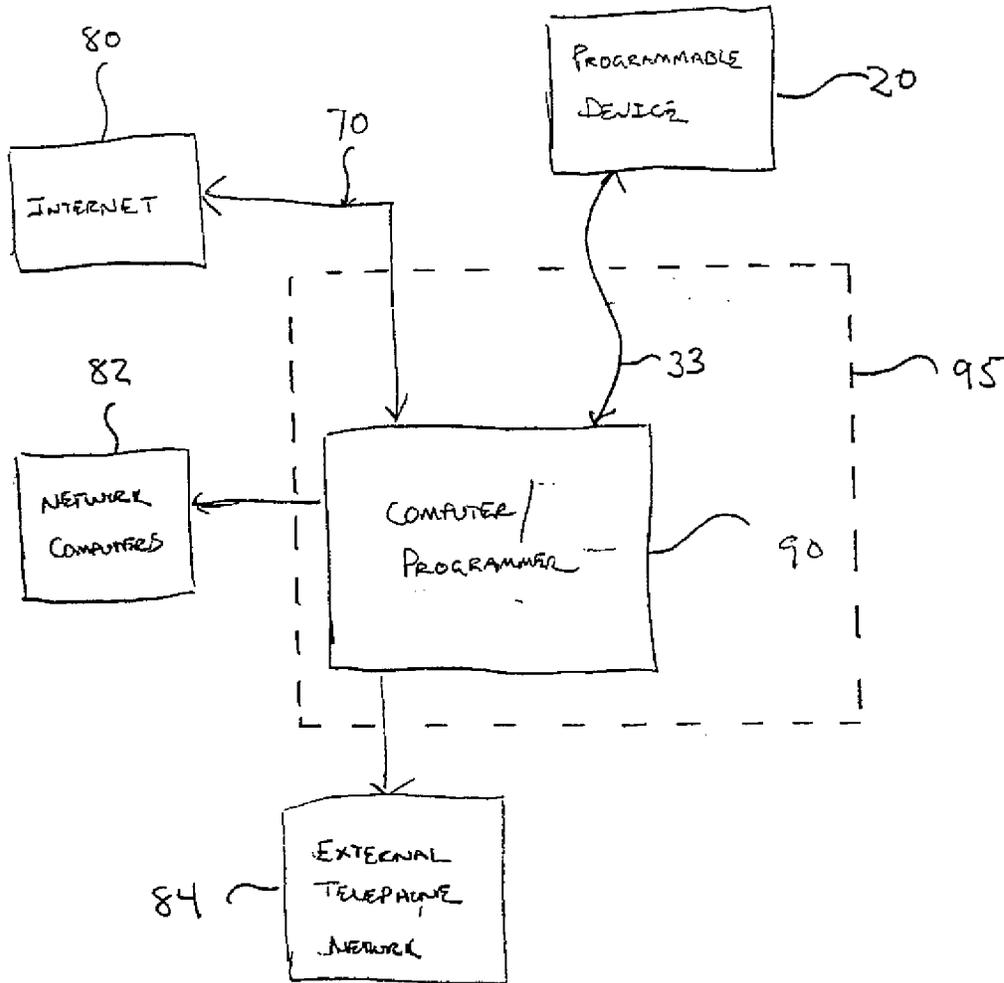


FIG. 4b

300

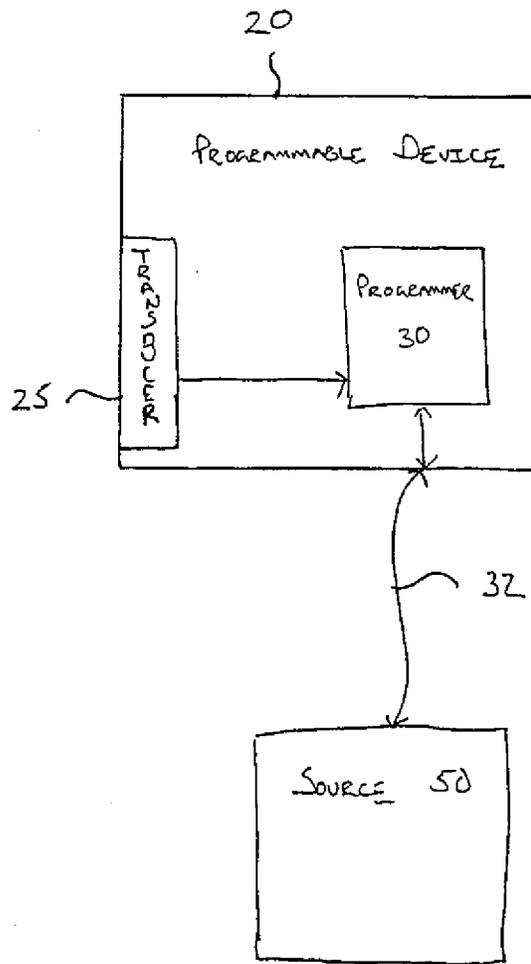


FIG. 5

400

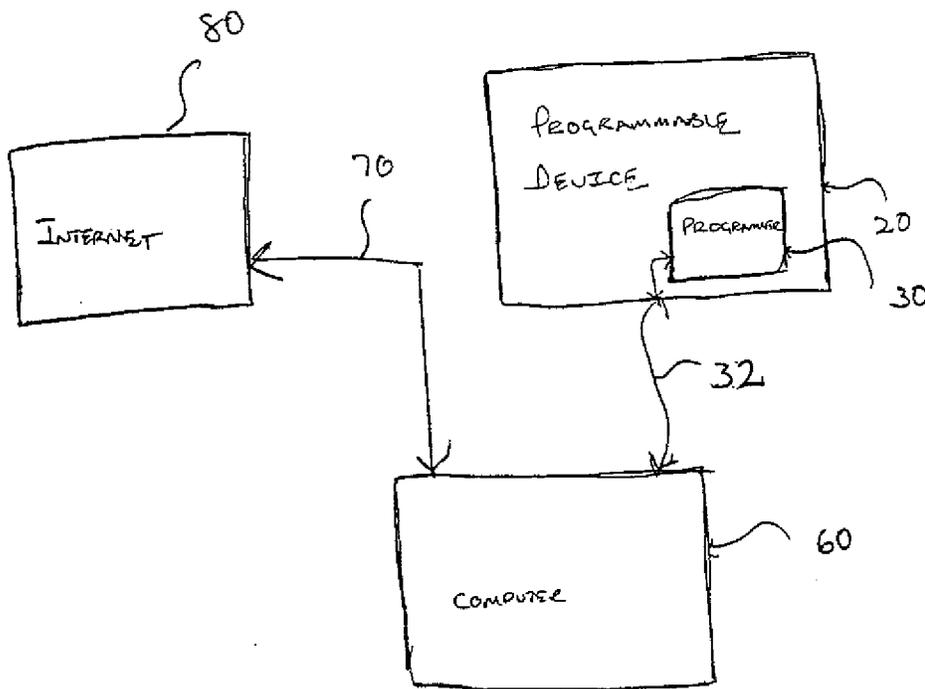


FIG. 6

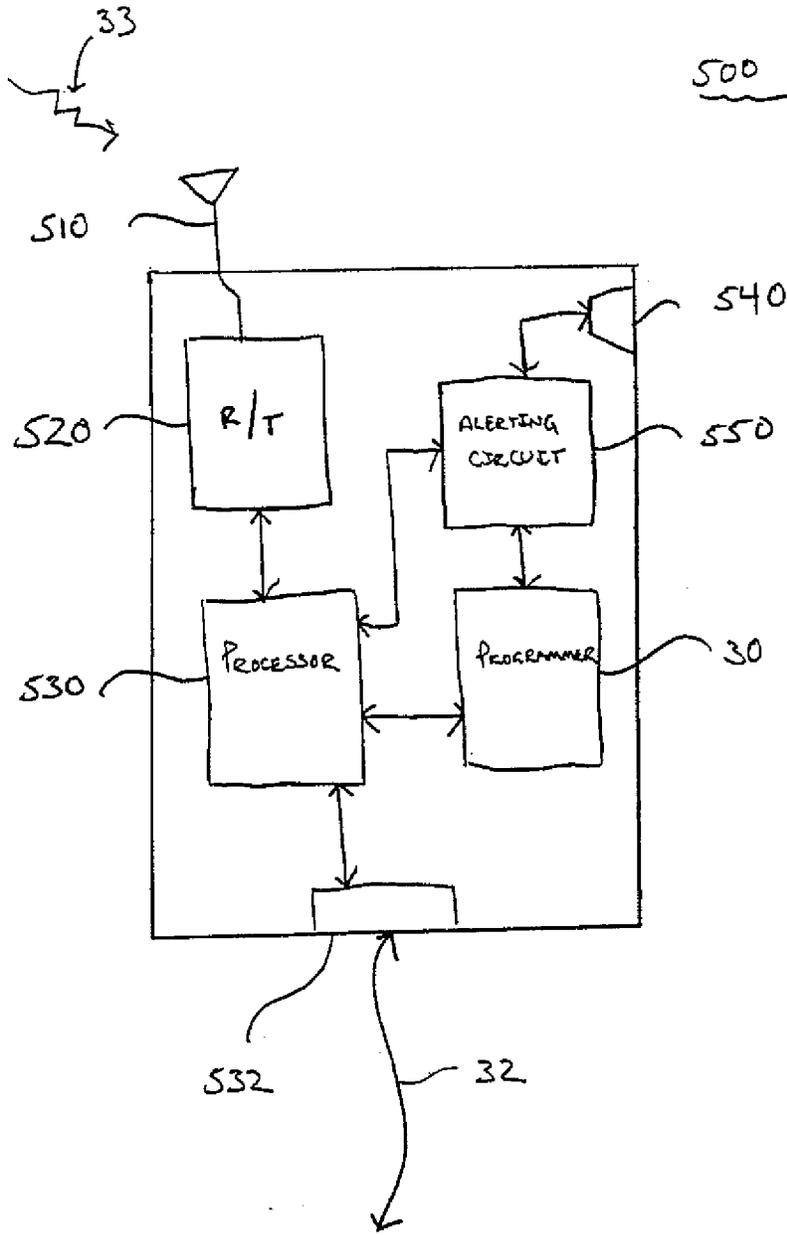


FIG. 7

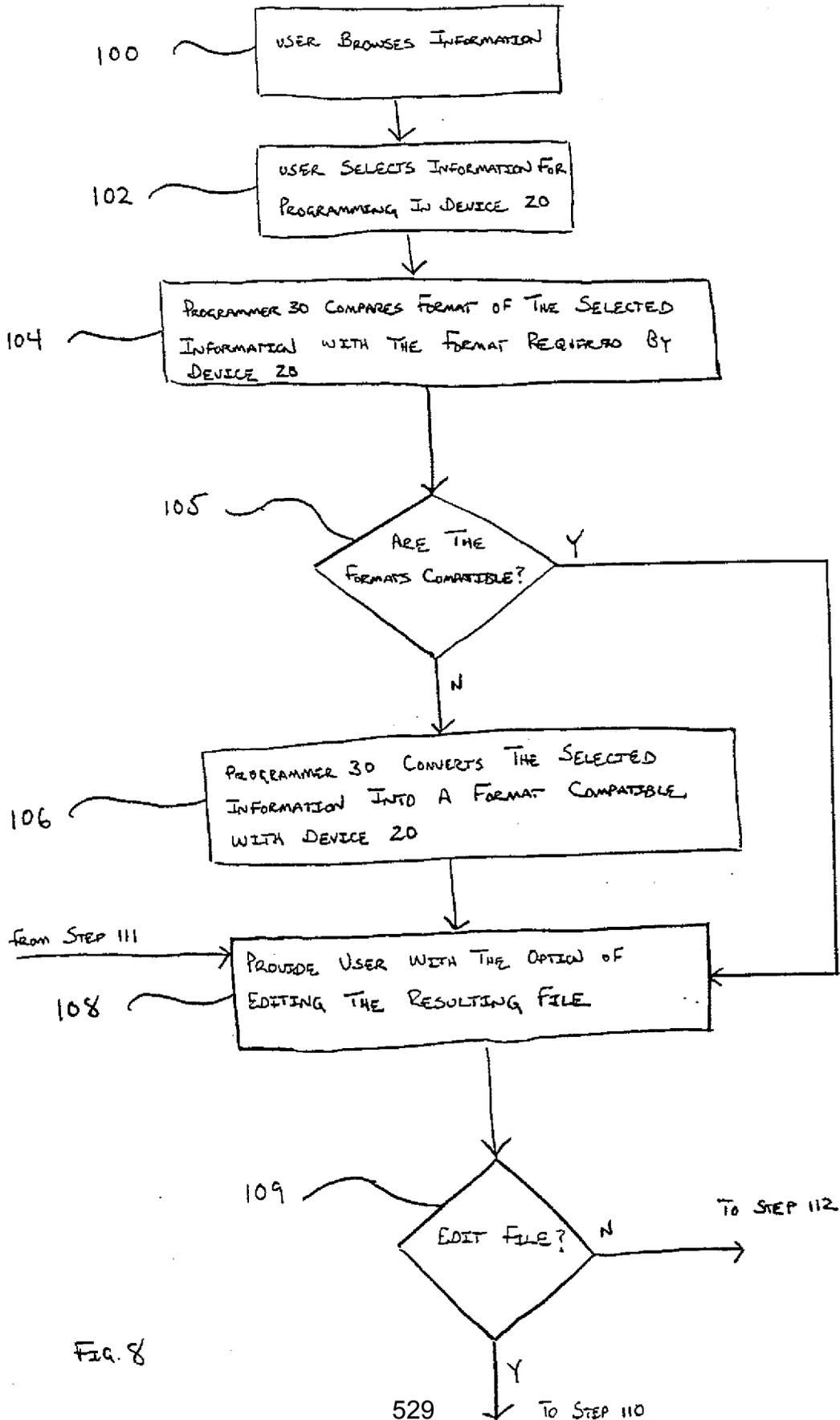


FIG. 8

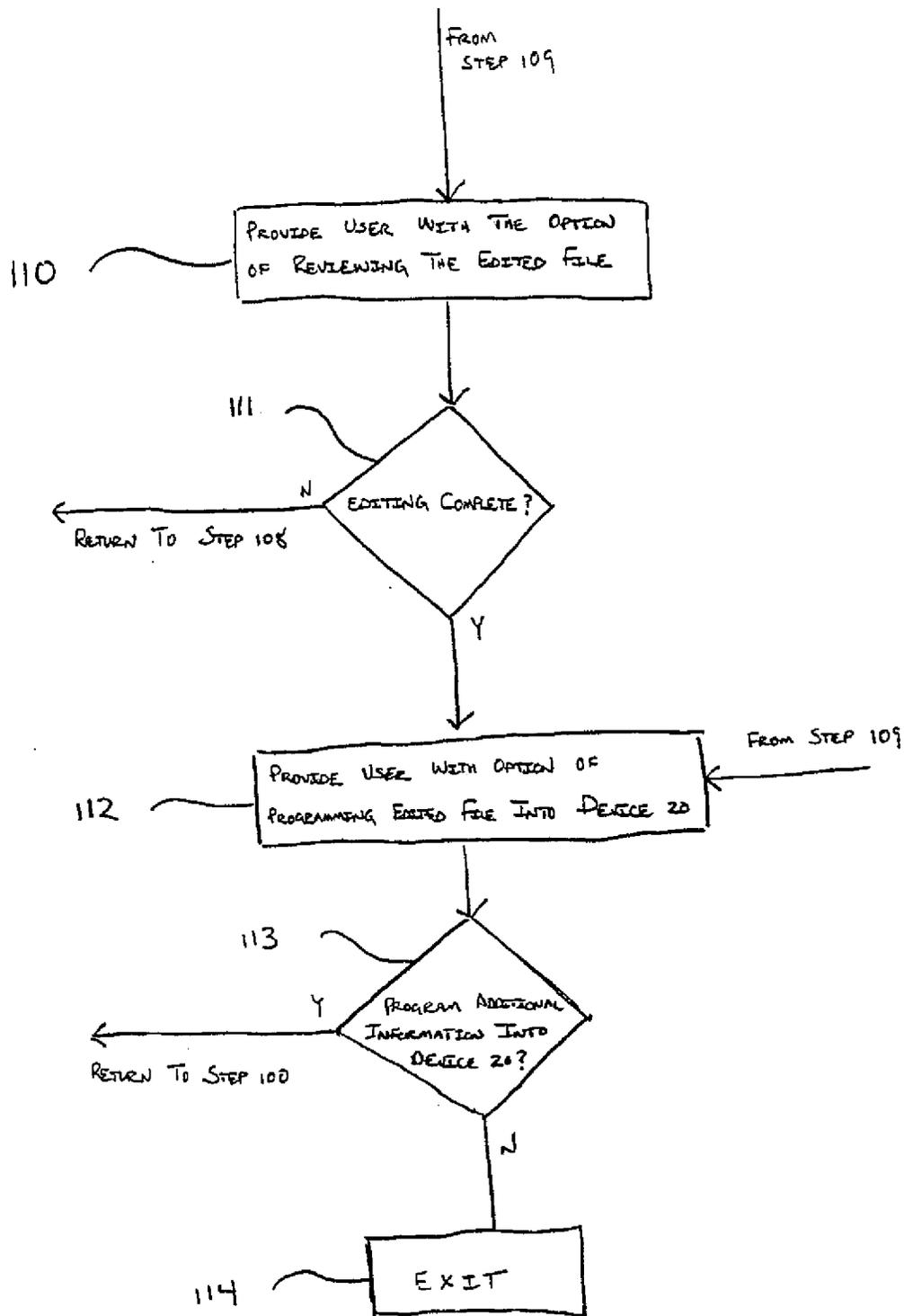


FIG. 9

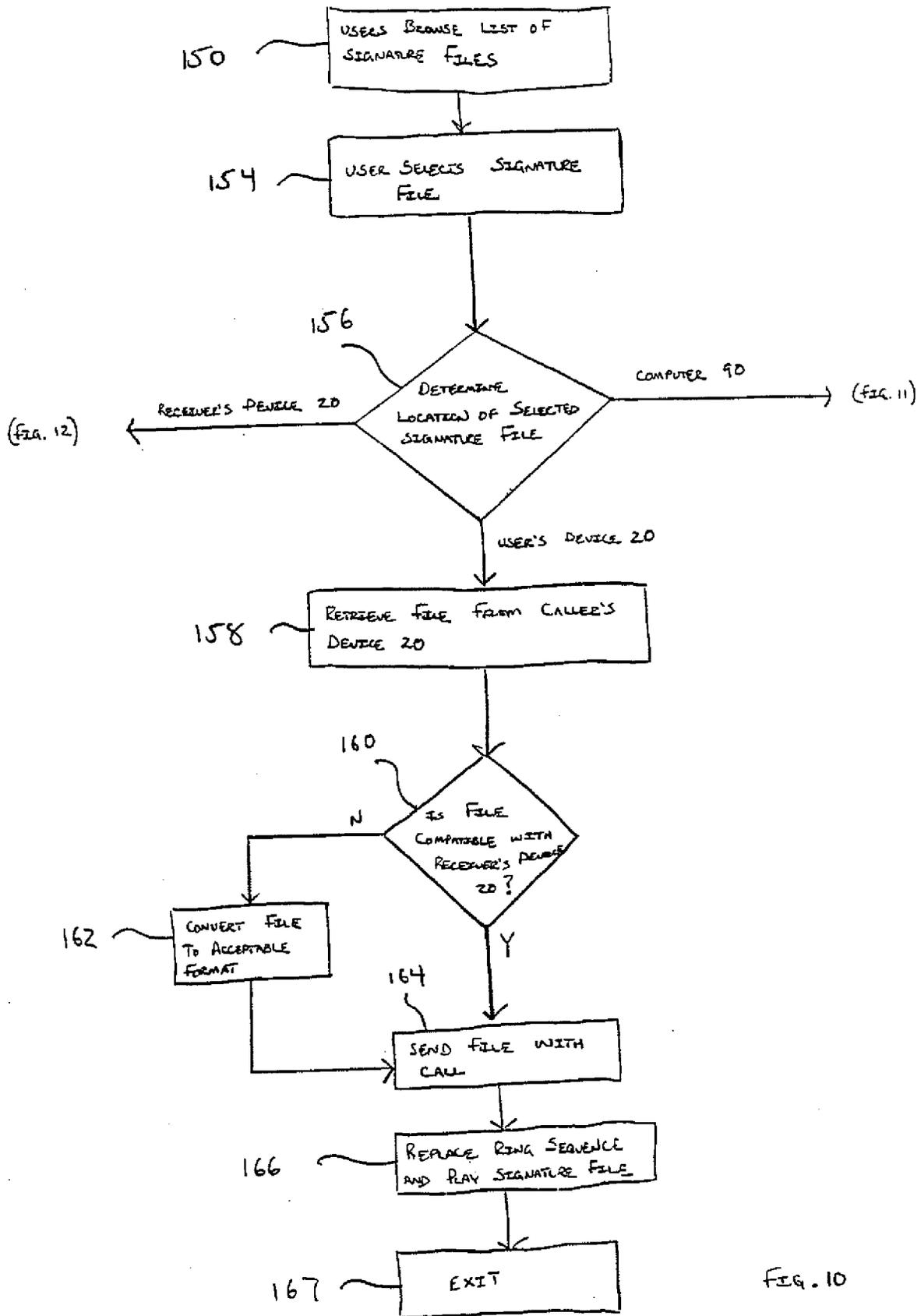


FIG. 10

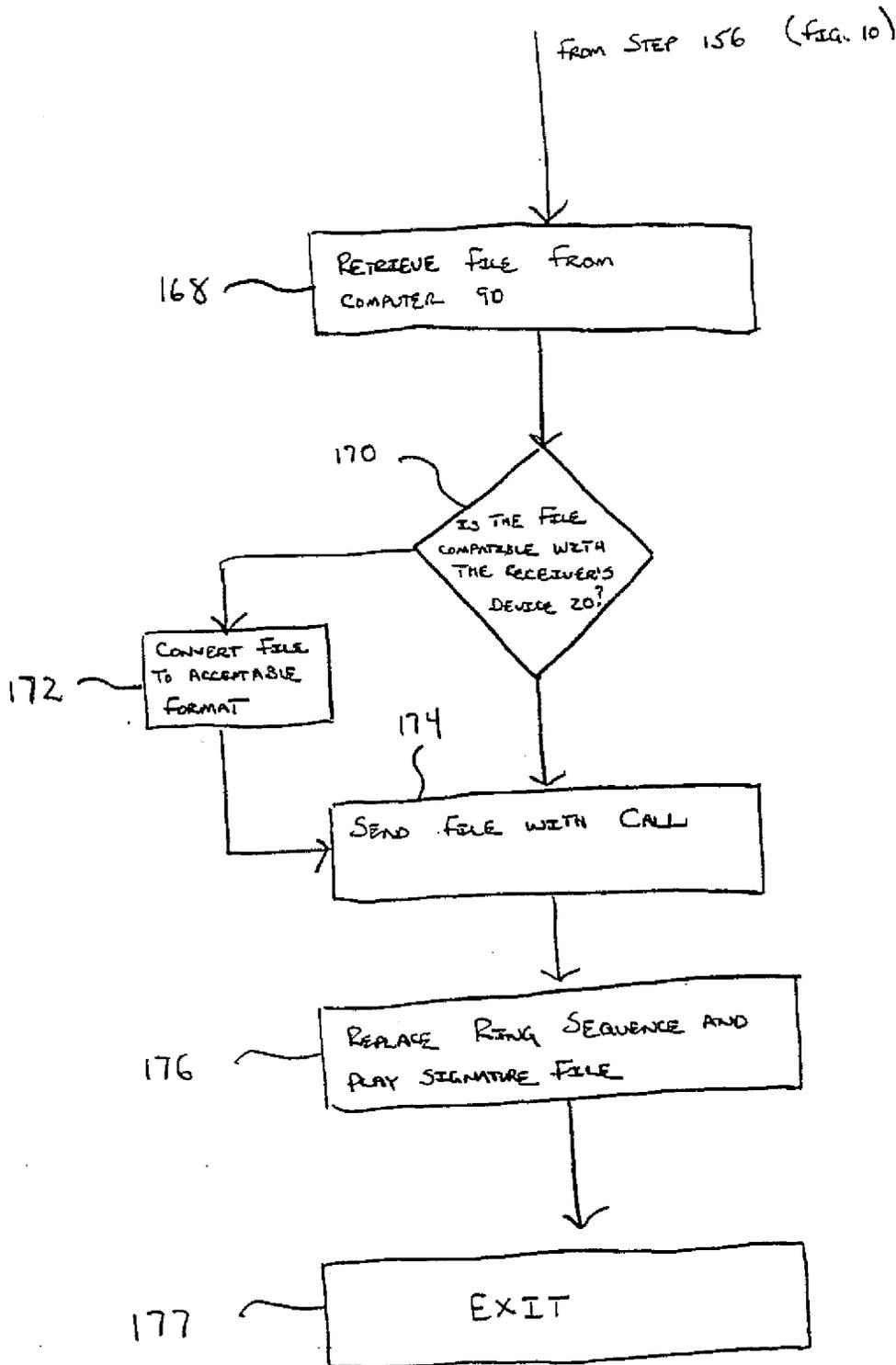


FIG. 11

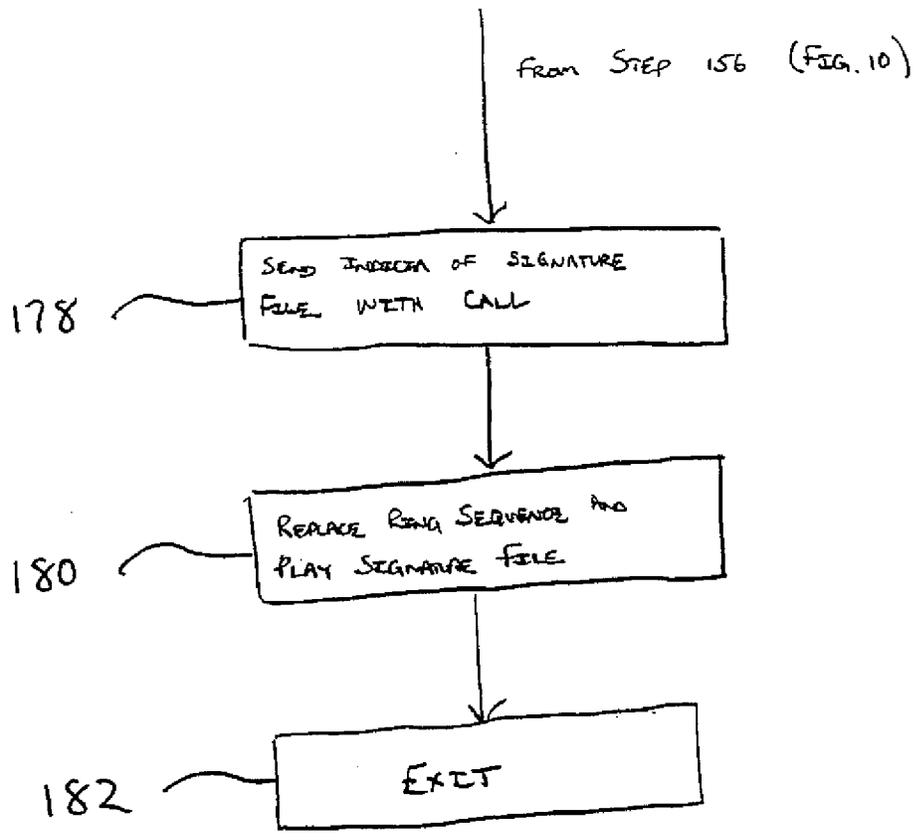


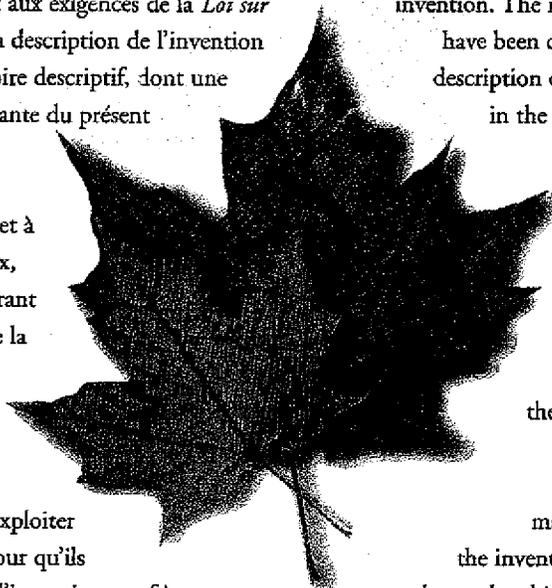
FIG. 12



Brevet canadien / Canadian Patent

* Le commissaire aux brevets a reçu une demande de délivrance de brevet visant une invention. Ladite requête satisfait aux exigences de la *Loi sur les brevets*. Le titre et la description de l'invention figurent dans le mémoire descriptif, dont une copie fait partie intégrante du présent document.

Le présent brevet confère à son titulaire et à ses représentants légaux, pour une période expirant vingt ans à compter de la date du dépôt de la demande au Canada, le droit, la faculté et le privilège exclusif de fabriquer, construire, exploiter et vendre à d'autres, pour qu'ils l'exploitent, l'objet de l'invention, sauf jugement en l'espèce rendu par un tribunal compétent, et sous réserve du paiement des taxes périodiques.



* The Commissioner of Patents has received a petition for the grant of a patent for an invention. The requirements of the *Patent Act* have been complied with. The title and a description of the invention are contained in the specification, a copy of which forms an integral part of this document.

The present patent grants to its owner and to the legal representatives of its owner, for a term which expires twenty years from the filing date of the application in Canada, the exclusive right, privilege and liberty of making, constructing and using the invention and selling it to others to be used, subject to adjudication before any court of competent jurisdiction, and subject to the payment of maintenance fees.

B R E V E T C A N A D I E N

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C A N A D I A N P A T E N T

Date à laquelle le brevet a été
accordé et délivré

2007/10/09

Date on which the patent
was granted and issued

Date du dépôt de la demande

2000/12/05

Filing date of the application

Date à laquelle la demande est
devenue accessible au public
pour consultation

2001/06/07

Date on which the application
was made available for
public inspection

Commissaire aux brevets / Commissioner of Patents

Canada

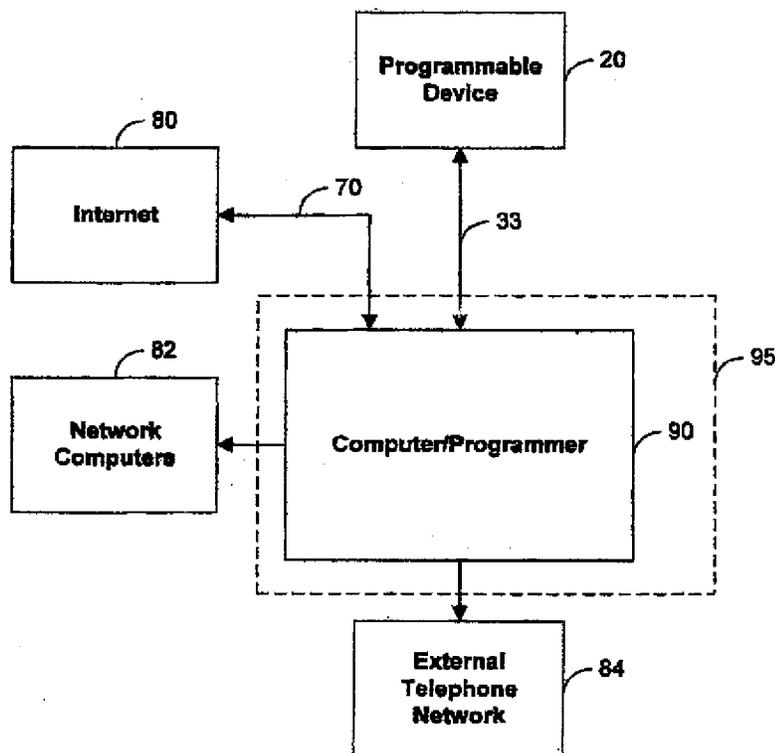




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(54) Titre : PROCÉDES ET APPAREILS DE PROGRAMMATION D'INFORMATIONS DÉFINIES PAR LES
 UTILISATEURS DANS DES DISPOSITIFS ÉLECTRONIQUES
 (54) Title: METHODS AND APPARATUS FOR PROGRAMMING USER-DEFINED INFORMATION INTO
 ELECTRONIC DEVICES



(57) **Abrégé/Abstract:**

A device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as user-selected audio, video, or Internet access information into his or her programmable device. Such electronic devices include wireless telephones, pagers, and personal digital assistants. The programmer allows a user to, among other things, customize the device to suit his or her particular taste.



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METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED
INFORMATION INTO ELECTRONIC DEVICES

Background of the Invention

This application relates to electronic devices,
5 and more particularly to a programming apparatus that
allows users to program user-defined information into their
electronic device.

There are many types of electronic devices
available to consumers today that have the ability to
10 produce both audio sounds and video displays. Many of
these devices provide users with the ability to select and
play a particular piece of audio or video. A television
viewer, for example, may tune to a TV channel and watch a
particular program, or connect a VCR or DVD player to the
15 television in order to view a specific program not
currently being broadcast. Similarly, an audio system user
may tune a receiver to a particular

radio station to hear a certain genre of music, or connect a CD or tape player to the system in order to hear specific pieces of music. In both cases, the audio and video is user-selectable.

5 Currently, however, there are many electronic products that offer an audio/video playing capability that are not fully user-programmable. Users of such devices (e.g., wireless or cordless telephones, pagers, personal digital assistants (PDAs), hand-held computers
10 and the like) have to choose from a limited selection of pre-programmed information (e.g., audio clips, video clips or frames, etc.) placed there by the manufacturer. This severely limits the user's ability to customize the device to suit his or her particular taste. Furthermore,
15 most pre-programmed audio tends to be rather generic and can be confusing when a device of a nearby user generates a sound similar to or the same as that of another user's device. Although a programmable memory within many such electronic devices could support user-defined audio,
20 currently, no system exists for programming such information into an electronic device.

 The same is true for user-defined video. For example, certain types of user-defined video information, such as video clips, frames, and other digital or analog
25 images could be programmed into an electronic device (e.g., PDA, wireless phone, or any portable display device) and displayed at a time of the user choosing. Although a programmable memory within such a device could support user-defined video, currently, no system exists
30 for programming such information into the device.

Summary Of The Invention

It is therefore an object of the present invention to provide an apparatus that allows a user to

program user-defined audio information into a programmable electronic device.

It is a further object of the present invention to provide an apparatus that allows a user to program user-defined video information into a programmable electronic device.

These and other objects of the present invention are accomplished by providing methods apparatuses that allow a user to program user-defined information into his or her electronic device. In one embodiment of the present invention, the programming apparatus includes processing circuitry and first and second communications links. In operation, a user selects a piece of information from a source such as a computer disk drive, the Internet, or a remote database using the first communications link. The programming apparatus may download this information and compare its format with that required by the programmable device to determine format compatibility. If the two formats are compatible, the programming apparatus may download the selected information into the programmable device. If the formats are not compatible, the programming apparatus may convert the downloaded file to a format compatible with that required by the programmable electronic device. The programming apparatus may also provide the user with an opportunity to edit the converted file. Once editing is complete, the resulting file may then be programmed into the programmable device for subsequent use.

In another aspect of the invention, a user may send customized information such as an audio or video file called a "signature" when placing a telephone call. This feature allows a user to select and send a signature file to the person receiving the telephone call such that the person receiving the call is alerted by that file.

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According to another aspect of the invention, there is provided a method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method comprising: connecting to a remote database that includes a plurality of lists of audio files; allowing a user of the wireless telephone to browse at least one of the lists of audio files; allowing the user of the wireless telephone to select at least one of the audio files from the browsed list; optionally reviewing the selected audio file before downloading the selected audio into the wireless telephone; and allowing the user to optionally download the selected audio file for use as an indicia of an incoming communication.

The invention provides, in a further aspect, a method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method comprising: allowing the user to electronically or acoustically couple the wireless telephone to an external audio source; allowing the use of the wireless telephone to select and record an audio sample from the external source; optionally converting the audio sample to a format suitable for use in the wireless telephone; and allowing the user to optionally store the recorded audio sample into a programmable memory for use as an indicia of an incoming communication.

The invention also provides a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a remote database that includes a plurality of lists of audio files; a display screen that allows a user of the wireless telephone to

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browse at least one of the lists of audio files and view selectable audio files present in the browsed list; a speaker and processing circuitry configured to allow the user to optionally review a selected audio file before
5 downloading the selected audio file into the wireless telephone; and a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

In accordance with a still further aspect of the
10 invention, there is provided a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a remote database that
15 includes a plurality of lists of audio files; a display screen that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list; processing circuitry configured to receive a selected audio
20 file from the communications link; and a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

According to another aspect of the invention,
25 there is provided a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: means for connecting to a remote database that includes a plurality of
30 lists of audio files; means for browsing at least one of the lists of audio files; means for selecting at least one of the audio files from the browsed list; means for optionally reviewing the selected audio file before downloading the

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selected audio file into the wireless telephone; and means for downloading the selected audio file for use as an indicia of an incoming communication.

The invention provides, in a further aspect, a
5 wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:
means for connecting to a remote database that includes a plurality of audio files; means for selecting at least one
10 of the audio files from the database; means for downloading and storing the selected audio file for use as an indicia of an incoming communication; and means for preventing the unauthorized distribution of a selected audio file stored in the wireless telephone.

15 The invention also provides a wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone
20 comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of lists of audio files in Motion Pictures Expert Group (MPEG), Waveform audio file (WAV), or MPEG 2 layer 3 (MP3) format; a display screen and a mobile Internet browser that
25 allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list; processing circuitry configured to receive a selected one of the audio files from the communications link; a programmable
30 memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from

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MPEG, WAV, or MP3 files when one of the stored audio files is played as an indicia of an incoming communication.

In accordance with a still further aspect of the invention, there is provided a wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the polyphonic audio files and select at least one polyphonic audio file therefrom; processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link; a programmable memory circuit for allowing the user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected polyphonic audio file is played as an indicia of an incoming communication.

According to another aspect of the invention, there is provided a wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use at a time specified by the user, the telephone comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the

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polyphonic audio files and select at least one polyphonic audio file therefrom; processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link; a programmable memory circuit for
5 allowing the user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected
10 polyphonic audio file is played.

The invention provides, in a further aspect, a wireless telephone that may be customized by programming an audio file into the wireless telephone for use at a time specified by a user of the wireless telephone, the telephone
15 comprising: means for connecting to a remote database that includes a plurality of lists of polyphonic audio files; means for browsing at least one of the lists of polyphonic audio files; means for selecting at least one of the polyphonic audio files from the browsed list; means for
20 optionally reviewing the selected polyphonic audio file before downloading the selected polyphonic audio into a memory circuit in the wireless telephone; and means for downloading the selected polyphonic audio file for use at the time specified by the user of the wireless telephone.

25 The invention also provides a method for programming a video file into a wireless telephone, the method comprising: connecting to a remote database that includes a plurality of lists of video files; allowing a user of the wireless telephone to browse at least one of the
30 lists of video files; allowing the user of the wireless telephone to select at least one of the video files from the browsed list; optionally reviewing the selected video file before downloading the selected video into the wireless

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telephone; and allowing the user to optionally download the selected video file for present or subsequent use.

In accordance with a still further aspect of the invention, there is provided a method of programming a video file into the wireless telephone, the method comprising:
5 connecting to a remote database that includes a plurality of video files; allowing the user of the wireless telephone to browse and select at least one of the video files; allowing the user to optionally download the selected video file into
10 a programmable memory for present or subsequent use.

According to another aspect of the invention, there is provided a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: a
15 communications link capable of connecting to a remote database that includes a plurality of lists of video files; a display screen that allows a user of the wireless telephone to browse at least one of the lists of video files and view selectable video files present in the browsed list;
20 a speaker, display screen, and processing circuitry configured to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone; and a programmable memory circuit for allowing the user to optionally store the selected video
25 file for present or subsequent use.

The invention provides, in a further aspect, a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: a communications link capable of
30 connecting to a remote database that includes a plurality of lists of video files; a display screen that allows a user of the wireless telephone to browse at least one of the

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plurality of lists of video files and view selectable video files present in the browsed list; processing circuitry configured to receive a selected video file from the communications link; and a programmable memory circuit for
5 allowing the user to optionally store the selected video file for present or subsequent use.

The invention also provides a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone
10 comprising: means for connecting to a remote database that includes a plurality of lists of video files; means for browsing at least one of the lists of video files; means for selecting at least one of the video files from the browsed list; means for optionally reviewing the selected video file
15 before downloading the selected video into the wireless telephone; and means for downloading the selected video file for present or subsequent use.

The invention also provides a wireless telephone capable of downloading a video file into the wireless
20 telephone for present or subsequent use, the telephone comprising: means for connecting to a remote database that includes a plurality of video files; means for browsing and selecting at least one of the video files; means for optionally downloading the selected video file into a
25 programmable memory for present or subsequent use.

In accordance with a still further aspect of the invention, there is provided a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: means
30 for connecting to a remote database that includes a plurality of video files; means for selecting at least one of the video files from the database; means for downloading

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and storing the selected video file for present or subsequent use; and means for preventing the unauthorized distribution of a selected video file stored in the wireless telephone.

5 According to another aspect of the invention, there is provided a wireless telephone capable of searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone
10 comprising: a communications link capable of connecting to a database in the remote computer that comprises a plurality of lists of video files in Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic
15 Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) format; a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of video files and view selectable video files present in the browsed list; processing circuitry configured
20 to receive a selected one of the video files from the communications link; a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use; and an enhanced performance speaker capable of providing a substantially
25 full range of audio sounds from an audio portion of the JPEG, MPEG, GIF, AVI, or DVD files when one of the stored video files is played.

The invention provides, in a further aspect, a wireless telephone capable of searching for and selecting a
30 video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone comprising: a communications link capable of connecting to a database in

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the remote computer that includes a plurality of video files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom; 5 processing circuitry configured to supervise receipt of a selected video file from the communications link; a programmable memory circuit for allowing the user to optionally store the selected video file for use; and an enhanced performance speaker capable of providing a 10 substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

The invention also provides a wireless telephone that may be customized by searching for and selecting a 15 video file from a remote computer and programming the selected video file into the wireless telephone for use at a time specified by a user, of the telephone, comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of video 20 files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom; processing circuitry configured to supervise receipt of a selected video file from the communications link; a 25 programmable memory circuit for allowing the user to optionally store the selected video file for use at a time specified by the user; and an enhanced performance speaker capable of providing a substantially full range of audio sounds that may be associated with the selected video file 30 when the selected video file is played.

Brief Description Of The Drawings

The above and other objects and advantages of the present invention will be apparent upon consideration of the following detailed description, taken in
5 conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1 is a generalized block diagram of a system for programming user-defined information into an
10 electronic device in accordance with one embodiment of the present invention.

FIG. 2 is a schematic diagram of a programmer constructed in accordance with one possible embodiment of the present invention.

15 FIG. 3 shows a computer based implementation of a programmer constructed in accordance with one embodiment of the present invention.

FIG. 4a shows an alternate embodiment of a computer based implementation of a programmer constructed
20 in accordance with the principles of the present invention.

FIG. 4b shows an alternate network embodiment of the computer based implementation in shown in FIG. 4a.

25 FIG. 5 illustrates an imbedded implementation of the programmer shown in FIG. 2.

FIG. 6 shows yet another embodiment of a computer based implementation the programmer in shown in FIG. 4b.

30 FIG. 7 is a schematic diagram of one possible embodiment of a wireless telephone that can receive and play user-defined audio in accordance with one aspect of the present invention.

FIGS. 8-9 show a flow chart illustrating some of the steps involved in programming user-defined

information into an electronic device in accordance with one embodiment of the present invention.

FIGS. 10-12 show a flow chart illustrating some of the steps involved in sending and receiving signature
5 information in accordance with one embodiment of the present invention.

Detailed Description of the Invention

FIG. 1 shows a block diagram of a system 10 for programming user-defined information (e.g., audio, video,
10 or Internet access information, etc.) into an electronic device in accordance with one embodiment of the present invention. As shown in FIG. 1, system 10 generally includes a programmable electronic device 20, a device programmer 30, and a source 50. Programmer 30 is
15 connected to source 50 via link 31, and to device 20 via link 32.

Programmable device 20 may be any portable electronic device (e.g., a wireless telephone, a pager, a handheld computer, personal digital assistant (PDA),
20 etc.). Device 20 may also be any device which integrates some or all of the functions of such devices into one device. For example, device 20 may be a PDA capable of making wireless telephone calls, a PDA with paging
25 functions, a wireless telephone with some PDA or paging functions, a handheld or notebook computer with some or all of the functions of a PDA, a pager, and a telephone, etc.

In FIG. 1, links 31 and 32 may be, for example, communications links (e.g., serial ports, parallel ports,
30 universal serial buses (USB), RS232, GPIB, etc.), modems (e.g., any suitable analog or digital modems, cellular modems, or cable modems), a network interface link (e.g., Ethernet links, token ring links, etc.), wireless
communications links (e.g., cellular telephone links,

wireless Internet links, infrared links, etc.), or any other suitable hard-wired or wireless Internet or communications links.

5 Source 50 may be any device or combination of devices suitable for providing user-defined information to programmer 30 (e.g., the Internet, an optical disc player (CD, DVD), a cassette player, a VCR, a digital camera, or any suitable storage device containing computer programs or files, etc.).

10 In operation, a user may choose certain information, such as Internet configuration information, an audio sample of a popular song, a video clip or frame, etc., that is available from source 50 and transfer it to programmer 30. Programmer 30 may then process this
15 information into a suitable format (or may simply route the information if no format conversion is required), and program it into a programmable memory within device 20 (not shown). Device 20 may then retrieve this information when a certain event occurs (e.g., when
20 receiving an incoming telephone call, browsing the Internet, or when programmed to do so by a user, etc.).

Programmer 30 may also coordinate or perform certain functions related to the routing and storing of information within device 20. For example, programmer 30
25 may communicate with (or simply search) device 20 to find available memory locations in which to store the user-defined information. Programmer 30 may also communicate with device 20 to determine which format the incoming information should be converted to so that the
30 information is compatible with the downloading requirements of device 20. For audio files, this may include, but is not limited to, converting to or from any of the following format types: analog; MIDI; MPEG; PCM; Windows Media Audio Code (WMA); WAV; or Adaptive
35 Transform Acoustic Coding (ATRAC), or to or from any

other suitable audio format, etc. For video files, this may include, but is not limited to, converting to or from any of the following format types: analog; JPEG; MPEG; GIF; AVI, or to or from any other suitable video format, etc. Text files may include, for example, HTML files, Wireless Markup Language (WML) files, WordPerfect™ files, Microsoft Office™ files, or any other suitable text files.

If multiple blocks of information are being programmed into device 20, programmer 30 may "tag" the different blocks so that device 20 and/or a user may distinguish among the different blocks stored therein. After the information has been provided, programmer 30 may communicate with device 20 to confirm that the information has been correctly received.

A more detailed diagram of one possible embodiment of programmer 30 is illustrated in FIG. 2. As illustrated, programmer 30 may include a transducer 25, a processor 34, a programmable memory 36, an analog-to-digital (A/D) converter 38, signal processing circuitry (SPC) 40, an output buffer 42, and an input buffer 44. Generally speaking, processor 40 controls the operation of programmer 30. Programmer 30 may be configured to receive and process both analog and digital signals. It may also acquire acoustic signals via transducer 25 (if installed).

In operation, programmer 30 may download certain user-selected information from source 50 via link 31. This information, such as audio or video files, in the form of electronic signals, may be received from link 31 and directed to input buffer 44. As mentioned above, these signals may need to be processed in order to be compatible with the format required by programmable device 20. For example, if analog input signals are received at input buffer 44 and device 20 requires a

digital format, the analog signals may be routed to A/D converter 38 for conversion into a suitable digital form (e.g., into PCM, PAM, etc.). Further processing into another digital format (e.g., MP3, ATRAC, WMA, etc.) may be accomplished by routing the converted signals to SPC 40 or processor 34 (discussed in more detail below). On the other hand, if digital input signals are received at input buffer 44 and device 20 requires analog signals, the digital signals may be routed to SPC 40 or to a dedicated digital-to-analog (D/A) converter (not shown) for conversion to the analog domain.

Processor 34 may route incoming signals from source 50 to memory 36, SPC 40, or directly to output buffer 42 depending on the circumstances. For example, some or all of the input signals received from source 50 may require further processing to meet the downloading specifications of device 20. In this case, the incoming signals that require processing may be routed to SPC 40 for such processing. For example, incoming MP3 or WMA signals may be routed to SPC 40 and converted to ATRAC format (or vice-versa). Once this conversion is complete, the resulting information may be stored in memory 36, or routed to output buffer 42 for programming in device 20. Input signals that do not require a format change may be routed directly from input buffer 44 to memory 36, or output buffer 42. Although not shown in FIG. 2, programmer 30 preferably has a display screen and a data input device, such as a keyboard associated with it so that a user may, among other things, browse and select files, monitor file transfers, and ensure that device 20 has properly received the selected files.

In one embodiment of the present invention, SPC 40 may be programmable so that the conversion and processing protocols contained therein may be periodically updated.

Furthermore, in some embodiments, processor 34 may be programmed via software routines in programmable memory 36 to perform some or all of the functions of SPC 40. In this case, an SPC of reduced processing capacity may be used or SPC 40 may be removed altogether from programmer 30.

Audio signals may also be acquired and processed by programmer 30. Transducer 25 may acquire an acoustic signal from a stereo or other audio source and convert it to an electrical signal. This electrical signal may then be processed in a way similar to the way the above-described analog signal was processed. That is, the electrical signal may be routed to A/D converter 38 and/or SPC 40 and then stored in memory 36 or output buffer 42, for example.

It will be understood that the generalized system shown in FIG. 1 may be implemented in many ways. For example, as shown in FIG. 3, system 100 may be implemented using a computer-based architecture. In this case, some or all of programmer 30 may be installed in or connected to a computer, such as a personal computer. For example, in FIG. 3, programmer 30 may be installed in an expansion slot and connected to an interface bus such as an ISA or PCI bus (not shown) in computer 60. In this configuration, programmer 30 may receive user-defined information via the interface bus in computer 60 and operate as described above with the interface bus acting as part of link 31. Some or all of programmer 30 may also be external to computer 60 and connected to it via a link similar to link 31 (not shown). Furthermore, in certain embodiments, some of the functions of programmer 30 may be distributed between computer 60 and programmer 30. For example, programmer 30 may be constructed such that it partially or fully relies on the processing capability of computer 60. In this type of

embodiment, programmer 30 may be constructed without processor 34 or with a processor of reduced capacity. Programmer 30 may also be constructed such that it partially or fully relies on the memory capacity of computer 60. Moreover, signal processing functions such as those performed by SPC 40 could also be fully or partially carried out by circuitry or software resident within computer 60.

As shown in FIG. 3, computer 60 may be connected to Internet 80 through link 70. Link 70 may be, for example, a modem (e.g., any suitable analog or digital modem, cellular modem, or cable modem), a network interface link (e.g., an Ethernet link, token ring link, etc.), a wireless communications link (e.g., a wireless telephone link, a wireless Internet link, an infrared link, etc.), or any other suitable hard-wired or wireless communications link. With this configuration, a user may download information from Internet 80 (e.g., using electronic distribution (ED) services) and/or from a disc drive or other devices (not shown) connected to computer 60 and program that information into device 20 (via programmer 30 and link 32).

It will be understood, of course, that computer 60, with a suitable communications link, such as link 32, may be programmed with software to function as programmer 30. In this way, a user may take advantage of the fact that many of the components of programmer 30 are resident within computer 60. For example, computer 60 may contain a processor, such as processor 34 and programmable memory circuitry such as memory 36. Computer 60 may also include signal processing circuitry such as SPC 40, or software that instructs processor 34 to perform the necessary format conversions. Computer 60 may include circuitry similar to input buffer 44 and output buffer 42. Such circuitry may include random

access memory (RAM) or cache memory in computer 60. Computer 60 also may include internal or external A/D conversion circuitry, such as A/D converter 38, and an internal or external transducer 25.

5 As shown in FIG. 4a, computer 60, programmed to function as programmer 30, may be connected to Internet 80 through link 70 and to device 20 through link 32. This arrangement allows a user to select information from Internet 80 or from a storage device
10 connected to computer 30 (not shown) for programming into device 20.

 Using the generalized system shown in FIG. 4a, user-defined information may be programmed into device 20 in many ways. For example, computer 60 may be part of a
15 communications network 95, such as a telephone network, that provides Internet and/or telephone access to programmable device 20 (shown in FIG 4b). Communications network 95 may be provide hard-wired or wireless telephone or Internet access (or combination of the two).
20 This arrangement is generally illustrated in FIG. 4b as architecture 200, in which computer 90, for the sake of clarity, represents computer 60, configured at least in part, to function as programmer 30.

 With this configuration, a user of device 20 may
25 access Internet 80 and select information for downloading into device 20. It will be understood, however, that in this implementation, at least a portion of computer 90 is configured to function as programmer 30, and that computer 90 may continue to perform other functions such
30 as communicating with network computers 82, communicating with Internet 80, interfacing with external telephone network 84, and coordinating wireless Internet and telephone access etc., in addition to performing some or all of the above-described programming functions.

In operation, computer 90 may communicate with device 20 to determine its format requirements and perform any conversions necessary to make user-selected information compatible with those requirements. This
5 allows a user to select information, such as audio and/or video, that is available on the Internet or on a remote network computer, and program that information into device 20. This may be accomplished via communications link 33 (which may be any type of link previously
10 described as suitable for link 32). For example, a user may wish to download video images from an Internet site to a hand-held computer, such as a PDA, or to a wireless telephone. The user may communicate with computer 90 via a wireless link 33 and select information from
15 Internet 80 using an Internet browser installed in device 20. Such a browser may be a Wireless Application Protocol (WAP) compliant browser for supporting wireless Internet services. Computer 90 ensures format compatibility of the information, transmits the
20 information to device 20, and may communicate with device 20 to confirm that the selected information has been properly received. Device 20 may provide a visual, audio, or tactile output to indicate the requested information has been successfully received.

25 Computer 90 may also coordinate information downloading with respect to the memory capacity of device 20. For example, if the user-selected information exceeds the available memory of device 20, computer 90 may inform the user, via link 33, that the selected
30 information is larger than the available memory. In such an event, the user may be prompted to cancel or modify the information request. In certain instances, however, the user may instruct computer 90 to provide the information in a "scrolling" fashion (i.e., provide it in
35 portions) so that all the requested information may be

reviewed, albeit in sections. This may be particularly desirable in instances where large files, such as video files, are requested.

In some embodiments of the present invention,
5 computer 90 may simply contact a remote computer or
Internet site to fulfill requests for audio or video
information in a particular format. Such web sites or
remote computers may act as virtual "jukeboxes" of video
and audio information, containing extensive lists of such
10 information in a variety of formats available for
downloading. Using this approach, a user may select a
particular piece of information in a certain format from
a list displayed on a screen of programmable device 20.
Computer 90 may receive this as a request via link 33 and
15 handle the information transfer to device 20. In some
embodiments, format selection may be transparent to the
user. That is, the user may simply request a piece of
information and computer 90 may determine and then
request information in a format appropriate for the
20 requesting device.

In another embodiment, a remote computer or
Internet site may perform a format conversion of
information requested by computer 90 or device 20. For
example, a user may access an Internet site or remote
25 computer using communications network 95 and enter a
title or description of the desired audio or video
information along with format requirements. The remote
computer or Internet site may then search the Internet or
other databases to find a file that matches the user's
30 description. Once this file is found, the Internet site
or remote computer may convert that file to the requested
format, (using a system similar to the described above)
and provide it to device 20 via computer 90 and/or
link 33. It will be understood, of course, that

embodiments such as these are within the scope of the present invention.

If desired, a user may also employ the systems shown in FIGS. 4a and 4b to download remotely stored
5 information such as Internet access information to device 20. For example, a user may have customized bookmarks or web page addresses stored in a remote personal computer or on Internet 80. The user may employ wireless link 32 or 33 to contact that remote computer or
10 Internet site and then download the Internet access information for use in device 20. This feature is desirable because it relieves the user of the burden of having to type in complicated Internet access information from the small keyboard of a wireless telephone or hand-
15 held computer. It also spares the user from having to re-enter customized Internet information that is already present in another location, into their electronic device. Moreover, such a feature is convenient when a user wishes to access information on a remote computer
20 that is not currently available in device 20. For example, a user may wish to view spreadsheet information stored on a remote computer with device 20. Rather than having to download this information from a hard-wired access point, a user may simply employ wireless link 33
25 (e.g., a wireless modem or Internet connection) to access that remote computer or Internet site and download that information to device 20.

Another feature which may be implemented using the embodiments shown in FIGS. 4a and 4b is a "signature"
30 feature. This allows device 20 to send user-defined information, which may be indicative of the user's personal taste or identity, along with other information when performing certain functions. For example, if a user is placing a wireless telephone call or paging
35 someone with device 20, he or she may select the

signature feature in order to send user-defined audio or video along with, or prior to, that call. A user may accomplish this by browsing through a menu on device 20 that displays available signature options, and by
5 choosing a particular file (not shown). If the user chooses an audio file, for example, device 20 may send that selected audio file when a call or page is placed (or a period of time before the call or page is placed). This audio file may temporarily replace the "ring
10 sequence" of the device receiving the incoming call so that the person receiving the incoming call will be alerted by hearing the audio file sent by the caller. The person receiving the call may be able to discern the identity of the caller or other information from the
15 audio file. After the call is complete, the ring sequence of the receiving device may be returned to its former configuration (either by computer 60 or by the receiving device).

In another embodiment, a user may program certain
20 audio or video files into device 20 that are activated when a certain person calls. For example, a user may program device 20 so that certain signature files are played in response to receiving a characteristic
indicative of the caller, such as the caller's telephone
25 number. In this way, a user will be able to identify the caller by the sound and/or display generated by device 20. Users may also program signatures in device 20 to be played at predetermined times. For
example, a user (or caller) may program "Happy Birthday"
30 or "Jingle Bells" into device 20 to play on a certain day, or may program device 20 to play a certain signature file at specified time (e.g., as an alarm).

In yet another embodiment, a user, when placing a call, may invoke a menu on device 20, which displays a
35 list of signature files available for the person being

called. This list may be defined by the person receiving the call. For example, the person receiving the call may create a signature file list by selecting certain audio and/or video files and placing them in a database of a remote computer such as computer 90 by using, for example, a personal computer connected to the Internet. In some embodiments, signature files may also be stored in a device 20 of the person receiving the call. In this implementation, a list of signature file names may be stored in computer 90 so that a caller may browse the names of signature files stored in the device of the person receiving the call. Signature files may also be stored in a combination of both computer 90 and device 20.

In some embodiments, the signature information may not necessarily be user-defined. For example, a list of pre-selected signature files may be stored on computer 90 or a remote computer from which a user of device 20 may choose. Such a list may be created by a wireless service provider, an Internet provider, an Internet site, or a manufacturer of the wireless telephone.

With these implementations, the caller may simply select a signature file from the displayed list. The selected file is then sent along with the call by computer 90 (if the selected signature file is stored in computer 90) or associated with the incoming call at device 20 (if the selected signature file is stored in device 20). In some embodiments, the caller may be able to preview signatures before sending them. For example, computer 90 may send the selected signature file to the caller for his or her review.

In systems that have a video capability, a video file containing a video clip or frame may be sent instead of or in addition to the audio sample. This may be accomplished by selecting a video option from a signature

menu and choosing a video file. In this case, the person receiving the call is alerted by seeing or hearing the video clip and/or associated audio. It will be appreciated that a video clip may have its own audio
5 portion associated with it so that the video clip (or frame) by itself would be sufficient to alert the person receiving the incoming call.

The above-described signature feature may be implemented in many ways. In some embodiments, for
10 example, the audio or video signatures may be stored in (the caller's) device 20 and sent along with the outgoing call or page via link 33 and computer 90. In other embodiments, however, the signature information may be stored in computer 90 and associated with the outgoing
15 call when it is processed by computer 90. This type of embodiment may be implemented when it is desired to conserve memory space within device 20. In still other embodiments, signature information may be stored in both device 20 and computer 90. In any case, computer 90 may
20 determine the format requirements of the device receiving the incoming call or page and convert the accompanying signature information into a suitable format.

Another implementation of a system in accordance with this invention may use an architecture 300, which is
25 shown in FIG. 5. Using this arrangement, programmer 30 (or similar circuitry) may be embedded within programmable device 20. User-defined information may be provided to device 20 from source 50 via link 32. Such information may be routed to programmer 30, which may
30 perform some or all of the above-described functions.

If source 50 is an acoustic source, however, link 32 may not be needed. For example, if a user desires to program an acoustic sound into device 20, the user may place a transducer 25, (e.g., a speaker/
35 microphone existing within or external to device 20) near

the acoustic signal source, place device 20 into an "acquisition mode," and record an audio sample. In this case, transducer 25 converts the acoustic signal into an electrical signal, which is provided to programmer 30 for processing and possibly storage within device 20. A visual, audio, or tactile output may be provided by device 20 to indicate a sample has been successfully loaded. A user may employ transducer 25 to acquire and record, for example, a verbal message or sound effect (e.g., laughter, crying, sneezing, etc.) for use as a signature file.

Other embodiments of the present invention may use the embedded architecture of system 400 as shown in FIG. 6. Using this arrangement, user-defined information may be requested by device 20 via link 32 and computer 60. With this approach, a user may select information from Internet 80 or a remote computer and perform any necessary format conversion within device 20.

In addition to selecting user-defined information with programmer 30, a user may customize that information by performing various editing procedures. For example, a user may find an audio track or video clip that suits his or her taste. It may be desired, however, to utilize only a portion of that track or clip. In this case, a user may edit or "sample" a portion of the information to obtain the desired segment. For example, a user may wish to sample a few bars of a popular song and send it along as signature information when making a wireless telephone call. Such editing may be accomplished, for example, by using an application program with programmer 30 or by using known software with computer 60. Furthermore, once the user has edited a particular piece of information, he or she may be given the option to review the piece to ensure it is acceptable. When a user is satisfied with an edited segment, he or she may save it and be given an

opportunity to "name" that segment, so that it may be readily identified later by a user of device 20.

It will be appreciated that various other types of editing procedures are also possible. For example, a user may combine and/or further edit the content of segments of information. This may be accomplished using "cut and paste" routines in an application program. Other types of revisions may include modifying the color or content of a portion of video clip or frame, as well as editing the audio track that accompanies a video clip or frame. It may also include revising or combining audio segments or creating customized audio segments to accompany video clips or frames.

In some instances, a user may wish to download large portions of copyrighted audio or video. To prevent improper usage of such material, programmer 30 may include copyright protection software such as software that conforms with the Secure Digital Music Initiative (SDMI). Generally speaking, this may allow an owner of such material to "check out" a finite number of copies so that unauthorized distribution is prevented.

A schematic diagram of a portion of a wireless telephone 500 that can receive and play user-defined audio and/or video is shown in FIG. 7. As illustrated in FIG. 7, telephone 500 may include antenna 510, receiver/transmitter (R/T) circuit 520, processor 530, communications interface 532, speaker/transducer 540, alerting circuit 550, and optionally, programmer 30 (or similar circuitry).

A user may program information into telephone 500 in several ways. For example, a user may connect telephone 500 to an external programmer 30 (not shown in FIG. 7) via link 32 to program user-defined audio or video in telephone 500 as described above. Processor 530 may route this information to alerting circuit 550 for

storage and subsequent use. Afterwards, the user may configure telephone 500 to play a certain user-defined audio file stored in alerting circuit 550 when receiving an incoming call. Thus, when a call is received,
5 processor 530 may instruct alerting circuit 550 to play the selected file through speaker 540. If a video file is chosen, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display screen on the telephone (not shown). Alerting
10 circuit 550 may include programmable memory circuitry for storing user-defined information and driver circuitry (not shown) for driving speaker 540 and/or a display screen on telephone 500.

Telephone 500 may also receive user-defined
15 information from communications network 95 via link 33 and antenna 510. With this implementation, user defined information, such as a signature file, may be received by antenna 510 and demodulated with R/T circuit 520. Processor 530 may then route the demodulated signals to
20 an appropriate location. In the case of a signature file, for example, processor 530 may check the format of the incoming file to ensure it is compatible with the format required by alerting circuit 550. If the format is compatible, the incoming file may be routed to
25 alerting 550 for storage and subsequent use or to speaker 540 for immediate playing. If the format is not compatible, the incoming file may be routed to programmer 30 for conversion. After conversion is complete, processor 530 may instruct programmer 30 to
30 route the converted file to speaker 540 or alerting circuit 550. If a video file was sent as a signature file, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display in telephone 500 (not shown). In some embodiments,

speaker 540 may be an enhanced performance speaker (as compared to those currently installed in telephones) with a capacity for generating a full range of audio sounds. Moreover, it will be understood that circuitry similar to that shown in FIG. 7 may be installed for use in other communication devices such as PDA's, pagers, notebook computers, etc.

Some of the steps involved in programming user-defined information into programmable device 20 as described herein are illustrated in the flow chart of FIGS. 8-9. It will be understood that although programmer 30 is used in the following description, computer/programmer 90 may also perform some or all of these (or similar) steps.

At step 100 in FIG. 8, programmer 30 allows the user to browse information for potential programming into device 20. As mentioned above, this may include browsing audio/video information on the Internet, or on a hard, floppy, or optical disc drive of a computer. At step 102, the user may choose certain files for programming into device 20. Next, at step 104, programmer 30 may determine the format requirements of device 20 and compare the format of the selected files to that specified by device 20. This may be accomplished, for example, by electronically polling device 20. At step 105, if the formats are compatible, programmer 30 may go directly to step 108. If the formats are not compatible, at step 106, programmer 30 may convert the selected files to a format compatible with device 20. In some embodiments, the user may be prompted to confirm that the conversion should be performed. In addition, programmer 30 may also prompt the user to supply a name for the converted file. Moreover, if the selected file cannot be converted, programmer 30 may so inform the user.

Next, programmer 30 provides the user with an option of editing the contents of the resulting files at step 108. If desired, the user may first review the converted file to determine if editing is warranted. At
5 step 109, if the user chooses not to edit the file, programmer 30 may go directly to step 112 (shown in FIG. 9). If the user decides to edit the file, he or she may do so at step 110. When finished editing, the user may be given the option of reviewing the file at
10 step 111 by returning to step 108 to determine whether the file is acceptable or requires further revision. Programmer 30 may alternate between steps 108-110 until the user is satisfied with the resulting file. When editing is complete, programmer 30 provides the user with
15 the option of programming the file into device 20 at step 112. At this point, (step 113) the user may exit the program at step 114 or return to step 100 to browse more information.

It will be understood that these steps are merely
20 illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, it may be desired to edit a file already stored in device 20. In this case, a user may bypass steps 100-106 and go directly to step 108. In some embodiments,
25 selected files may be revised before converting them to format compatible with device 20. This may be desirable when the file's original format facilitates the editing process. In addition, programmer 30 may determine the format requirements of device 20 at any time before the
30 conversion occurs. A user may also name or revise the name of a selected file at any time.

Some of the steps involved in sending signature files to programmable device 20 as described herein are illustrated in the flow chart of FIGS. 10-12.

At step 150 in FIG. 10, device 20 allows the user to browse signature files for potential transmission to device 20 of the person receiving the call (hereinafter the "receiver"). At step 150, the user may be provided
5 with option of creating a new signature file if a suitable signature file not found on the list. At step 154 the user may select a signature file. Once a signature file is selected, computer 90, at step 156, may determine the location of the selected signature file.
10 Such locations may include, but are not limited to, the caller's device 20, the receiver's device 20, or computer 90.

If computer 90 determines that the signature file is located in the user's device 20 (i.e., the caller's
15 device 20) computer 90 may retrieve that file from the user's device 20 at step 158. Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to determine if they are compatible at step 160. If the
20 formats are compatible, computer 90 may go directly to step 164. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 162. At step 164, the signature file may be sent along with, or somewhat
25 before, the outgoing call. At step 166, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 167, the receiver's ring sequence may be returned to its original setting and the program may exit.

30 If, however, the signature file is located in computer 90 (step 156), computer 90 may retrieve that file at step 168 (FIG. 11). Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to
35 determine if they are compatible at step 170. If the

formats are compatible, computer 90 may go directly to step 174. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 172. At step 174, the signature file may be sent
5 along with, or somewhat before, the outgoing call. At step 176, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 177 the receiver's ring sequence may return to its original setting and the program may exit.

10 On the other hand, if computer 90 determines at step 156 that the signature file is located in the receiver's device 20, computer 90 may transmit an indicia indicative of the selected file to the receiver's device 20 along with the outgoing call at step 178
15 (FIG. 12). Next, the receiver's device 20 may associate a signature file that corresponds to the indicia, replace its ring sequence with that signature file, and play that signature file at step 180. At step 182, the receiver's ring sequence may be returned to its original setting and
20 the program may exit. It is assumed for the purposes of this illustration that signatures files stored in the receiver's device 20 are already in a suitable format. However, if this is not the case, a conversion step may be added between step 178 and step 180 (not shown).

25 It will be understood that these steps are merely illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, computer 90 may determine the format requirements of device 20 at any time before the conversion occurs.

30 Thus, it is seen that a device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as audio, video, or Internet access information into his or programmable device. This
35 allows a user to, among other things, customize his or

her device to suit the user's particular taste. It will
be understood that the foregoing is only illustrative of
the principles of the invention, and that various
modifications can be made by those skilled in the art
5 without departing from the scope and spirit of the
invention. For example, it is not necessary that
programmable memory within device be a fixed programmable
memory. That is, a removable memory module may be
programmed externally from a given programmable device
10 and subsequently installed in that device. Furthermore,
the many aspects of the invention are suitable for use
with hard-wired, cordless, or wireless communications
devices. For example, user-defined audio and video and
signature files may be used with hard-wired or cordless
15 telephone systems. Accordingly, such embodiments will be
recognized as within the scope of the present invention.

Persons skilled in the art will appreciate that
the present invention can be practiced by other than the
described embodiments, which are presented for purposes
20 of illustration rather than of limitation, and the
present invention is limited only by the claims which
follow.

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CLAIMS:

1. A method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method
5 comprising:

connecting to a remote database that includes a plurality of lists of audio files;

allowing a user of the wireless telephone to browse at least one of the lists of audio files;

10 allowing the user of the wireless telephone to select at least one of the audio files from the browsed list;

optionally reviewing the selected audio file before downloading the selected audio into the wireless
15 telephone; and

allowing the user to optionally download the selected audio file for use as an indicia of an incoming communication.

2. The method of claim 1 wherein the format of the
20 selected audio file is from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

25 3. The method of claim 1 further comprising allowing the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

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4. The method of claim 3 wherein the searching further comprises searching the Internet or other remote databases for the desired audio file.

5 5. The method of claim 1 wherein the browsing of audio files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

6. The method of claim 1 further comprising providing a visual indication to confirm the selected audio file has been successfully downloaded.

10 7. The method of claim 1 further comprising providing an audio indication to confirm the selected audio file has been successfully downloaded.

8. The method of claim 1 further comprising:
downloading a selected audio file into the
15 wireless telephone; and

associating the downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.

20 9. The method of claim 1 wherein the characteristic indicative of the caller is the caller's telephone number.

10. A method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method
25 comprising:

allowing the user to electronically or acoustically couple the wireless telephone to an external audio source;

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allowing the user of the wireless telephone to select and record an audio sample from the external source;

optionally converting the audio sample to a format suitable for use in the wireless telephone; and

5 allowing the user to optionally store the recorded audio sample into a programmable memory for use as an indicia of an incoming communication.

11. The method of claim 10 further comprising allowing the user to optionally review the recorded audio sample
10 before storing the selected audio sample into the wireless telephone.

12. The method of claim 10 wherein the format of the recorded audio sample is from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert
15 Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

13. The method of claim 10 further comprising providing a visual indication to confirm the recorded audio
20 sample has been successfully stored.

14. The method of claim 10 further comprising providing an audio indication to confirm the recorded audio sample has been successfully stored.

15. The method of claim 10 further comprising:
25 allowing the user to associate the recorded audio sample with a characteristic indicative of a caller such that the associated audio sample plays when the indicative characteristic is received by the wireless telephone.

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16. The method of claim 15 wherein the characteristic indicative of the caller is the caller's telephone number.

17. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the
5 telephone comprising:

a communications link capable of connecting to a remote database that includes a plurality of lists of audio files;

10 a display screen that allows a user of the wireless telephone to browse at least one of the lists of audio files and view selectable audio files present in the browsed list;

15 a speaker and processing circuitry configured to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone; and

20 a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

18. The wireless telephone of claim 17 wherein the programmable memory circuit is configured to store audio files in a format selected from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert
25 Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

19. The wireless telephone of claim 17 wherein the speaker and processing circuitry is configured to play audio
30 files in a format selected from the group comprising: Music

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Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

- 5 20. The wireless telephone of claim 17 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.
- 10 21. The wireless telephone of claim 17 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired audio file.
22. The wireless telephone of claim 17 wherein the wireless telephone includes a Wireless Application Protocol
15 (WAP) compliant Internet browser.
23. The wireless telephone of claim 17 configured to provide a visual indication on the display screen of the wireless to confirm the selected audio file has been successfully downloaded.
- 20 24. The wireless telephone of claim 17 configured to allow the user to associate a downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.
- 25 25. The method of claim 17 wherein the characteristic indicative of the caller is the caller's telephone number.
26. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the
30 telephone comprising:

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a communications link capable of connecting to a remote database that includes a plurality of lists of audio files;

5 a display screen that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list;

processing circuitry configured to receive a selected audio file from the communications link; and

10 a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

27. The wireless telephone of claim 26 further comprising a speaker that operates in conjunction with the
15 processing circuitry to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone.

28. The wireless telephone of claim 26 wherein the programmable memory circuit is configured to store audio
20 files in a format selected from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

25 29. The wireless telephone of claim 26 wherein the speaker and processing circuitry is configured to play audio files in a format selected from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file

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(WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

30. The wireless telephone of claim 26 wherein the wireless telephone is configured to allow the user to search
5 the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

31. The wireless telephone of claim 29 wherein the wireless telephone is configured to search the Internet or
10 other remote databases for the desired audio file.

32. The wireless telephone of claim 26 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

33. The wireless telephone of claim 26 configured to
15 provide a visual indication on the display screen to confirm the selected audio file has been successfully downloaded.

34. The wireless telephone of claim 26 configured to allow the user to associate a downloaded audio file with a characteristic indicative of a caller such that the
20 associated audio file plays when the indicative characteristic is received by the wireless telephone.

35. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the
25 telephone comprising:

means for connecting to a remote database that includes a plurality of lists of audio files;

means for browsing at least one of the lists of audio files;

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means for selecting at least one of the audio files from the browsed list;

means for optionally reviewing the selected audio file before downloading the selected audio file into the
5 wireless telephone; and

means for downloading the selected audio file for use as an indicia of an incoming communication.

36. The wireless telephone of claim 35 further comprising means for searching the remote database for a
10 certain desired audio file using title or description information to aid in locating the desired audio file.

37. The wireless telephone of claim 36 wherein the searching further comprises means for searching the Internet or other remote databases for the desired audio file.

15 38. The wireless telephone of claim 35 further comprising means for providing a visual indication to confirm the selected audio file has been successfully downloaded.

39. The wireless telephone of claim 35 further
20 comprising means for providing an audio indication to confirm the selected audio file has been successfully downloaded.

40. The wireless telephone of claim 35 further
25 comprising means for associating a downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.

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41. The method of claim 1 further comprising preventing the unauthorized distribution of an audio file downloaded into the wireless telephone.

42. The method of claim 1 further comprising playing
5 the selected audio file through an enhanced performance speaker capable of providing a substantially full range of audio sounds from Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3),
Waveform audio file (WAV), Pulse Code Modulated (PCM),
10 Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

43. The method of claim 1 characterized by the use of a personal computer to perform the browsing step.

44. The method of claim 1 further comprising providing
15 the user with an opportunity to edit the selected audio file.

45. The method of claim 1 further comprising providing an indication that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to
20 be downloaded is larger than available memory space in the wireless telephone.

46. The method of claim 45 further comprising providing the user of the wireless telephone with the opportunity to cancel or modify a download request
25 associated with an audio file download operation if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

47. The wireless telephone of claim 26 wherein the wireless telephone is configured to prevent the unauthorized

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distribution of an audio file stored in the programmable memory circuit.

48. The wireless telephone of claim 27 wherein the speaker is an enhanced performance speaker capable of providing a substantially full range of audio sounds from Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio Code (WMA), or Adaptive Transform Acoustic Coding (ATRAC) files.

49. The wireless telephone of claim 26 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

50. The wireless telephone of claim 49 configured to provide the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an audio file download operation if the size of the audio file to be downloaded is larger than the available memory space in the wireless telephone.

51. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

means for connecting to a remote database that includes a plurality of audio files;

means for selecting at least one of the audio files from the database;

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means for downloading and storing the selected audio file for use as an indicia of an incoming communication; and

5 means for preventing the unauthorized distribution of a selected audio file stored in the wireless telephone.

52. The wireless telephone of claim 51 further comprising means for indicating that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory
10 space in the wireless telephone.

53. A wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming
15 communication, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of lists of audio files in Motion Pictures Expert Group (MPEG), Waveform audio file (WAV), or MPEG 2 layer 3 (MP3) format;

20 a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list;

25 processing circuitry configured to receive a selected one of the audio files from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication; and

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an enhanced performance speaker capable of providing a substantially full range of audio sounds from MPEG, WAV, or MP3 files when one of the stored audio files is played as an indicia of an incoming communication.

- 5 54. The wireless telephone of claim 53 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.
- 10 55. The wireless telephone of claim 53 wherein the enhanced performance speaker operates in conjunction with the processing circuitry to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone.
- 15 56. The wireless telephone of claim 53 configured to allow the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.
- 20 57. The wireless telephone of claim 53 configured to prevent the unauthorized distribution of an audio file stored in the programmable memory circuit.
- 25 58. A wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files;

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a display screen and a browsing application program that allows a user of the wireless telephone to browse the polyphonic audio files and select at least one polyphonic audio file therefrom;

5 processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected polyphonic audio file
10 for use as an indicia of an incoming communication; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected polyphonic audio file is played as an indicia of an incoming
15 communication.

59. The wireless telephone of claim 58 wherein the polyphonic audio file is selected from the group comprising Motion Pictures Expert Group (MPEG), MPEG 2 Layer 3 (MP3), or Waveform audio file (WAV) files.

20 60. The wireless telephone of claim 58 wherein the enhanced performance speaker operates in conjunction with the processing circuitry to allow the user to optionally review the selected polyphonic audio file before downloading the selected polyphonic audio file into the programmable
25 memory circuit of the wireless telephone.

61. The wireless telephone of claim 58 configured to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

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62. The wireless telephone of claim 53 wherein the communications link is capable of connecting to a database in the remote computer that includes a plurality of lists of audio files in polyphonic Music Instrument Digital Interface
5 (MIDI) format.

63. The wireless telephone of claim 55 configured to provide the user of the wireless telephone with the option of downloading the selected polyphonic audio file into a programmable memory in the wireless telephone after
10 reviewing the selected polyphonic audio file.

64. The wireless telephone of claim 63 configured to provide the user of the wireless telephone with the option of editing the selected polyphonic audio file before programming the selected polyphonic audio file into the
15 programmable memory in the wireless telephone.

65. The wireless telephone of claim 57 wherein the wireless telephone is configured to operate in conjunction with copyright protection software to prevent the unauthorized distribution of the selected polyphonic audio
20 file stored in the programmable memory circuit.

66. The wireless telephone of claim 58 wherein the group of polyphonic audio files include audio files in polyphonic Music Instrument Digital Interface (MIDI) format.

67. The wireless telephone of claim 60 configured to
25 provide the user of the wireless telephone with the option of downloading the selected polyphonic audio file into a programmable memory in the wireless telephone after reviewing the selected polyphonic audio file.

68. The wireless telephone of claim 67 configured to
30 provide the user of the wireless telephone with the option

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of editing the selected polyphonic audio file before programming the selected polyphonic audio file into the programmable memory in the wireless telephone.

69. The wireless telephone of claim 61 wherein the
5 wireless telephone is configured to operate with copyright protection software to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

70. A wireless telephone that may be customized by
10 searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use at a time specified by the user, the telephone comprising:

a communications link capable of connecting to a
15 database in the remote computer that includes a plurality of polyphonic audio files;

a display screen and a browsing application
program that allows a user of the wireless telephone to
browse the polyphonic audio files and select at least one
20 polyphonic audio file therefrom;

processing circuitry configured to supervise
receipt of a selected polyphonic audio file from the
communications link;

a programmable memory circuit for allowing the
25 user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and

an enhanced performance speaker capable of
providing a substantially full range of audio sounds from
the selected polyphonic audio file when the selected
30 polyphonic audio file is played.

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71. The wireless telephone of claim 70 wherein the polyphonic audio file is selected from the group comprising Motion Pictures Expert Group (MPEG), Waveform audio file (WAV), or MPEG 2 layer 3 (MP3) files.
- 5 72. The wireless telephone of claim 70 wherein the enhanced performance speaker operates in conjunction with the processing circuitry to allow the user to optionally review the selected polyphonic audio file before downloading the selected polyphonic audio file into the programmable
10 memory circuit of the wireless telephone.
73. The wireless telephone of claim 70 configured to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.
- 15 74. The wireless telephone of claim 71 wherein the group of polyphonic audio files includes audio files in polyphonic Music Instrument Digital Interface (MIDI) format.
75. The wireless telephone of claim 72 configured to provide the user of the wireless telephone with the option
20 of downloading the selected polyphonic audio file into a programmable memory in the wireless telephone after reviewing the selected polyphonic audio file.
76. The wireless telephone of claim 75 configured to provide the user of the wireless telephone with the option
25 of editing the selected polyphonic audio file before programming the selected polyphonic audio file into the programmable memory in the wireless telephone.
77. The wireless telephone of claim 73 wherein the wireless telephone is configured to operate in conjunction
30 with copyright protection software to prevent the

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unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

78. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use at a time specified by a user of the wireless telephone, the telephone comprising:

means for connecting to a remote database that includes a plurality of lists of polyphonic audio files;

means for browsing at least one of the lists of polyphonic audio files;

means for selecting at least one of the polyphonic audio files from the browsed list;

means for optionally reviewing the selected polyphonic audio file before downloading the selected polyphonic audio into a memory circuit in the wireless telephone; and

means for downloading the selected polyphonic audio file for use at the time specified by the user of the wireless telephone.

79. The wireless telephone of claim 78 further comprising means for searching the remote database for a certain desired polyphonic audio file using title or description information to aid in locating the desired polyphonic audio file.

80. The wireless telephone of claim 79 wherein the searching further comprises means for searching the Internet or other remote databases for the desired polyphonic audio file.

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81. The wireless telephone of claim 78 further comprising means for providing a visual indication to confirm the selected polyphonic audio file has been successfully downloaded.

5 82. The wireless telephone of claim 78 further comprising means for providing an audio indication to confirm the selected polyphonic audio file has been successfully downloaded.

83. The wireless telephone of claim 78 wherein the
10 browsing of polyphonic audio files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

84. The wireless telephone of claim 78 further comprising means for preventing unauthorized distribution of
15 the selected polyphonic audio file stored in the programmable memory circuit.

85. A method for programming a video file into a wireless telephone, the method comprising:

connecting to a remote database that includes a
20 plurality of lists of video files;

allowing a user of the wireless telephone to browse at least one of the lists of video files;

allowing the user of the wireless telephone to select at least one of the video files from the browsed
25 list;

optionally reviewing the selected video file before downloading the selected video into the wireless telephone; and

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allowing the user to optionally download the selected video file for present or subsequent use.

86. The method of claim 85 wherein the format of the selected video file is from the group comprising: Joint
5 Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

87. The method of claim 85 further comprising allowing the user to search the remote database for a certain desired
10 video file using title or description information to aid in locating the desired video file.

88. The method of claim 87 wherein the searching further comprises searching the Internet or other remote databases for the desired video file.

15 89. The method of claim 85 wherein the browsing of video files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

90. The method of claim 85 further comprising providing a visual indication to confirm the selected video
20 file has been successfully downloaded.

91. The method of claim 85 further comprising providing an audio indication to confirm the selected video file has been successfully downloaded.

92. The method of claim 85 further comprising:
25 downloading a selected video file into the wireless telephone; and

associating the downloaded video file with a characteristic indicative of a caller such that the

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associated video file plays when the indicative characteristic is received by the wireless telephone.

93. The method of claim 85 wherein the characteristic indicative of the caller is the caller's telephone number.

5 94. A method of programming a video file into the wireless telephone, the method comprising:

connecting to a remote database that includes a plurality of video files;

10 allowing the user of the wireless telephone to browse and select at least one of the video files;

allowing the user to optionally download the selected video file into a programmable memory for present or subsequent use.

15 95. The method of claim 94 further comprising allowing the user to optionally review the selected video file before downloading the selected video file into the wireless telephone.

20 96. The method of claim 94 wherein the format of the selected video file is from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

25 97. The method of claim 94 further comprising allowing the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

98. The method of claim 97 wherein the searching further comprises searching the Internet or other remote databases for the desired video file.

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99. The method of claim 94 wherein the browsing of video files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

100. The method of claim 94 further comprising
5 providing a visual indication to confirm the selected video file has been successfully downloaded.

101. The method of claim 94 further comprising providing an audio indication to confirm the selected video file has been successfully downloaded.

10 102. The method of claim 94 further comprising:

downloading a selected video file into the wireless telephone; and

15 associating the downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

103. The method of claim 94 wherein the characteristic indicative of the caller is the caller's telephone number.

104. A wireless telephone capable of downloading a
20 video file into the wireless telephone for present or subsequent use, the telephone comprising:

a communications link capable of connecting to a remote database that includes a plurality of lists of video files;

25 a display screen that allows a user of the wireless telephone to browse at least one of the lists of video files and view selectable video files present in the browsed list;

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a speaker, display screen, and processing circuitry configured to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone; and

5 a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use.

105. The wireless telephone of claim 104 wherein the programmable memory circuit is configured to store video
10 files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

106. The wireless telephone of claim 104 wherein the
15 speaker, display screen and processing circuitry is configured to play video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital
20 Versatile Disc format (DVD).

107. The wireless telephone of claim 104 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired video file using title or description information to aid in locating the
25 desired video file.

108. The wireless telephone of claim 107 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired video file.

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109. The wireless telephone of claim 104 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

110. The wireless telephone of claim 104 configured to
5 provide a visual indication to confirm the selected video file has been successfully downloaded.

111. The wireless telephone of claim 104 configured to provide an audio indication to confirm the selected video file has been successfully downloaded.

10 112. The wireless telephone of claim 104 configured to allow the user to associate a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

15 113. The wireless telephone of claim 104 wherein the characteristic indicative of the caller is the caller's telephone number.

114. A wireless telephone capable of downloading a video file into the wireless telephone for present or
20 subsequent use, the telephone comprising:

a communications link capable of connecting to a remote database that includes a plurality of lists of video files;

a display screen that allows a user of the
25 wireless telephone to browse at least one of the plurality of lists of video files and view selectable video files present in the browsed list;

processing circuitry configured to receive a selected video file from the communications link; and

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a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use.

115. The wireless telephone of claim 114 wherein the display screen operates in conjunction with the processing circuitry to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone.

116. The wireless telephone of claim 114 wherein the programmable memory circuit is configured to store video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

117. The wireless telephone of claim 114 wherein the display screen and processing circuitry is configured to play video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

118. The wireless telephone of claim 114 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

119. The wireless telephone of claim 118 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired video file.

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120. The wireless telephone of claim 114 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

121. The wireless telephone of claim 114 configured to
5 provide a visual indication to confirm the selected video file has been successfully downloaded.

122. The wireless telephone of claim 114 configured to provide an audio indication to confirm the selected video file has been successfully downloaded.

10 123. The wireless telephone of claim 114 configured to allow the user to associate a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

15 124. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

means for connecting to a remote database that includes a plurality of lists of video files;

20 means for browsing at least one of the lists of video files;

means for selecting at least one of the video files from the browsed list;

25 means for optionally reviewing the selected video file before downloading the selected video into the wireless telephone; and

means for downloading the selected video file for present or subsequent use.

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125. The wireless telephone of claim 124 further comprising means for searching the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

5 126. The wireless telephone of claim 125 wherein the searching further comprises means for searching the Internet or other remote databases for the desired video file.

127. The wireless telephone of claim 124 further comprising means for providing a visual indication to
10 confirm the selected video file has been successfully downloaded.

128. The wireless telephone of claim 124 further comprising means for providing an audio indication to confirm the selected video file has been successfully
15 downloaded.

129. The wireless telephone of claim 124 further comprising means for associating a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative
20 characteristic is received by the wireless telephone.

130. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

means for connecting to a remote database that
25 includes a plurality of video files;

means for browsing and selecting at least one of the video files;

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means for optionally downloading the selected video file into a programmable memory for present or subsequent use.

131. The wireless telephone of claim 130 further
5 comprising means for optionally reviewing the selected video file before downloading the selected video file into the wireless telephone.

132. The wireless telephone of claim 131 further
10 comprising means for searching the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

133. The wireless telephone of claim 130 wherein the searching further comprises means for searching the Internet or other remote databases for the desired video file.

15 134. The wireless telephone of claim 130 wherein the browsing of video files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

135. The wireless telephone of claim 130 further
20 comprising providing a visual indication to confirm the selected video file has been successfully downloaded.

136. The wireless telephone of claim 130 further comprising providing an audio indication to confirm the selected video file has been successfully downloaded.

25 137. The wireless telephone of claim 130 further comprising means for associating a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

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138. The method of claim 85 further comprising preventing the unauthorized distribution of a downloaded video file.

139. The method of claim 85 further comprising playing
5 an audio portion the selected video file, if any, through an enhanced performance speaker capable of providing a substantially full range of sounds from the played video file.

140. The method of claim 85 characterized by the use of
10 a personal computer to perform the browsing step.

141. The method of claim 85 further comprising providing the user with an opportunity to edit the selected video file.

142. The method of claim 85 further comprising
15 providing an indication that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

143. The method of claim 142 further comprising
20 providing the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an video file download operation if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

25 144. The wireless telephone of claim 114 wherein the wireless telephone is configured to prevent the unauthorized distribution of an video file stored in the programmable memory circuit.

145. The wireless telephone of claim 115 further
30 comprising an enhanced performance speaker capable of

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providing a substantially full range of audio sounds from an audio portion of the selected video file.

146. The wireless telephone of claim 114 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

147. The wireless telephone of claim 146 configured to provide the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an video file download operation if the size of the video file to be downloaded is larger than the available memory space in the wireless telephone.

148. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

means for connecting to a remote database that includes a plurality of video files;

means for selecting at least one of the video files from the database;

means for downloading and storing the selected video file for present or subsequent use; and

means for preventing the unauthorized distribution of a selected video file stored in the wireless telephone.

149. The wireless telephone of claim 148 further comprising means for indicating that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

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150. A wireless telephone capable of searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone
5 comprising:

a communications link capable of connecting to a database in the remote computer that comprises a plurality of lists of video files in Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic
10 Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) format;

a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of video files and view
15 selectable video files present in the browsed list;

processing circuitry configured to receive a selected one of the video files from the communications link;

a programmable memory circuit for allowing the
20 user to optionally store the selected video file for present or subsequent use; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds from an audio portion of the JPEG, MPEG, GIF, AVI, or DVD files when
25 one of the stored video files is played.

151. The wireless telephone of claim 150 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the
30 wireless telephone.

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152. The wireless telephone of claim 150 wherein the display screen operates in conjunction with the enhanced performance speaker and processing circuitry to allow the user to optionally review a selected video file before
5 downloading the selected video file into the wireless telephone.

153. The wireless telephone of claim 150 configured to allow the user to search the remote database for a certain desired video file using title or description information to
10 aid in locating the desired video file.

154. The wireless telephone of claim 150 configured to prevent the unauthorized distribution of an video file stored in the programmable memory circuit.

155. A wireless telephone capable of searching for and
15 selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone comprising:

a communications link capable of connecting to a
20 database in the remote computer that includes a plurality of video files;

a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file
25 therefrom;

processing circuitry configured to supervise receipt of a selected video file from the communications link;

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a programmable memory circuit for allowing the user to optionally store the selected video file for use; and

an enhanced performance speaker capable of
5 providing a substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

156. The wireless telephone of claim 155 wherein the video file is selected from the group comprising Joint
10 Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) files.

157. The wireless telephone of claim 155 wherein the
15 display screen operates in conjunction with the enhanced performance speaker and processing circuitry to allow the user to optionally review the selected video file before downloading the selected video file into the programmable memory circuit of the wireless telephone.

20 158. The wireless telephone of claim 155 configured to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

159. The wireless telephone of claim 152 configured to
25 provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the selected video file.

160. The wireless telephone of claim 159 configured to
30 provide the user of the wireless telephone with the option of editing the selected video file before programming the

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selected video file into the programmable memory in the wireless telephone.

161. The wireless telephone of claim 154 wherein the wireless telephone is configured to operate in conjunction
5 with copyright protection software to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

162. The wireless telephone of claim 157 configured to provide the user of the wireless telephone with the option
10 of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the selected video file.

163. The wireless telephone of claim 162 configured to provide the user of the wireless telephone with the option
15 of editing the selected video file before programming the selected video file into the programmable memory in the wireless telephone.

164. The wireless telephone of claim 158 wherein the wireless telephone is configured to operate with copyright
20 protection software to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

165. A wireless telephone that may be customized by searching for and selecting a video file from a remote
25 computer and programming the selected video file into the wireless telephone for use at a time specified by a user, of the telephone, comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of
30 video files;

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a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom;

5 processing circuitry configured to supervise receipt of a selected video file from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected video file for use at
10 a time specified by the user; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

15 166. The wireless telephone of claim 165 wherein the video file is selected from the group comprising Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD)
20 files.

167. The wireless telephone of claim 165 wherein the display screen operates in conjunction with the enhanced performance speaker and processing circuitry to allow the user to optionally review the selected polyphonic video file
25 before downloading the selected video file into the programmable memory circuit of the wireless telephone.

168. The wireless telephone of claim 165 configured to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

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169. The wireless telephone of claim 167 configured to provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the
5 selected video file.

170. The wireless telephone of claim 169 configured to provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the
10 selected video file.

171. The wireless telephone of claim 170 configured to provide the user of the wireless telephone with the option of editing the selected video file before programming the selected video file into the programmable memory in the
15 wireless telephone.

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PATENT AGENTS

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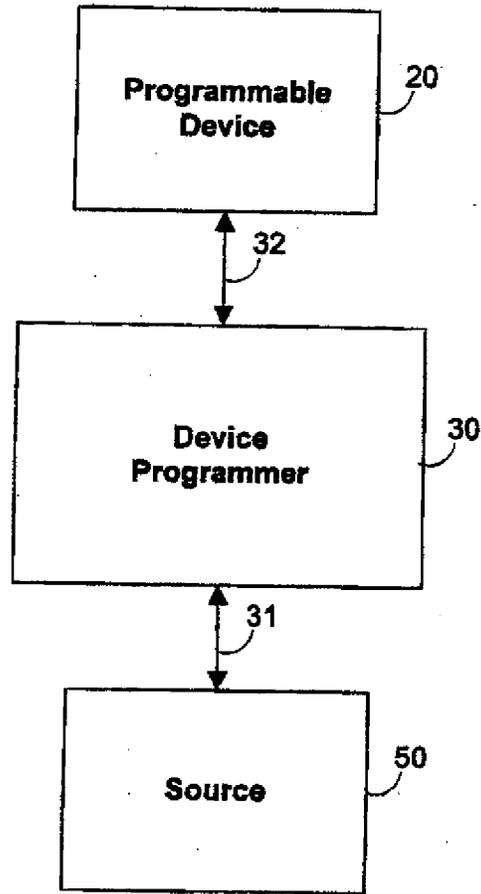


FIG. 1

30

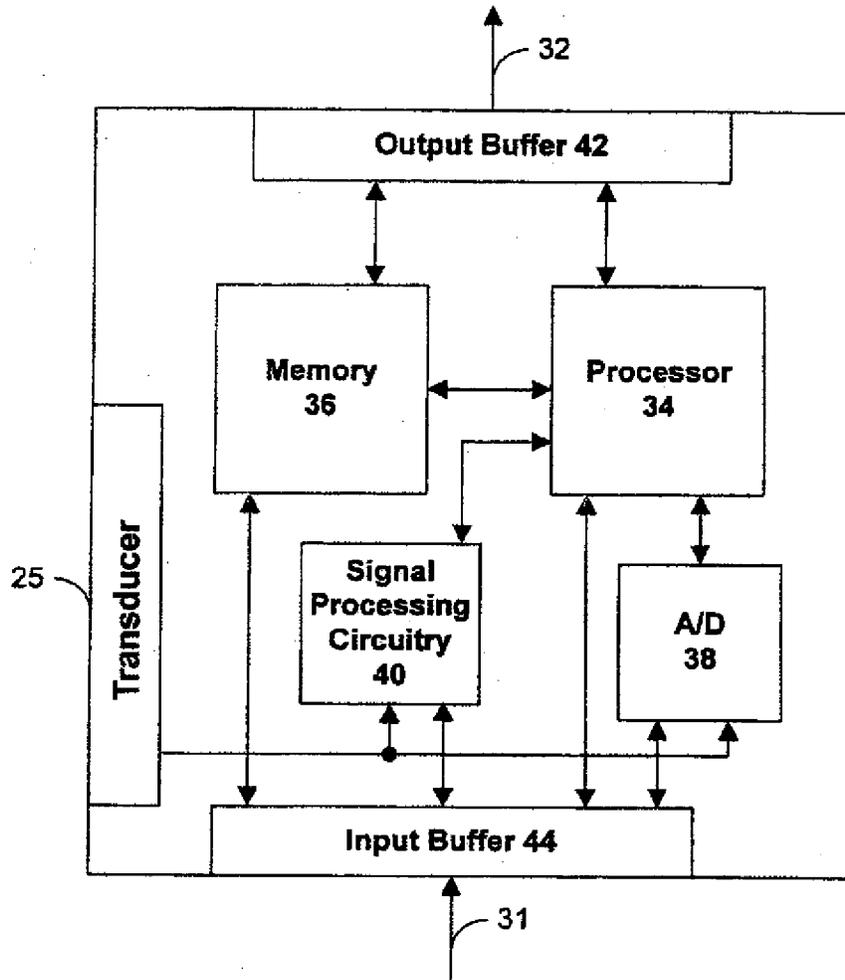


FIG. 2

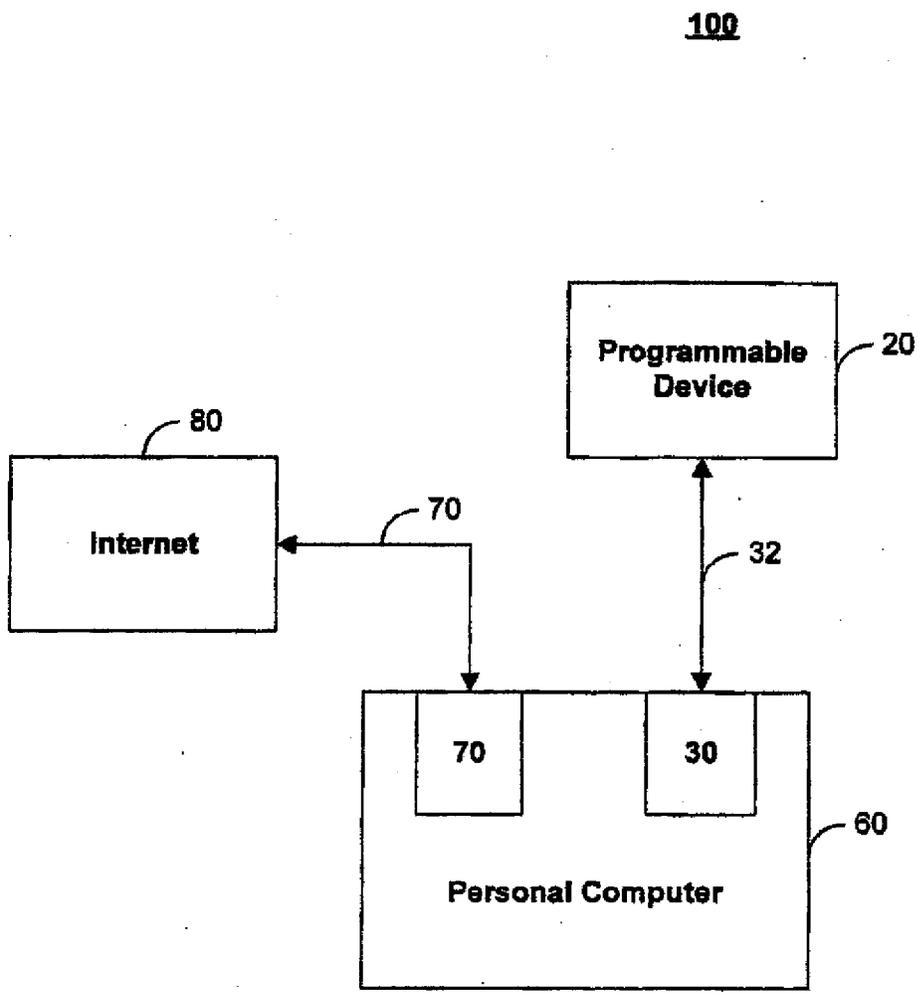


FIG. 3

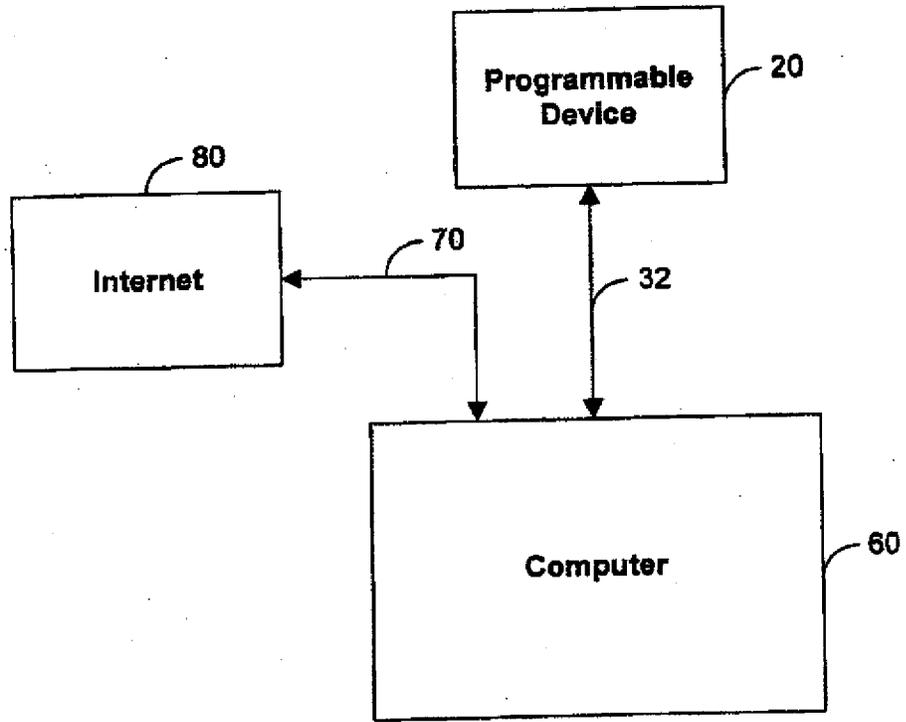


FIG. 4A

200

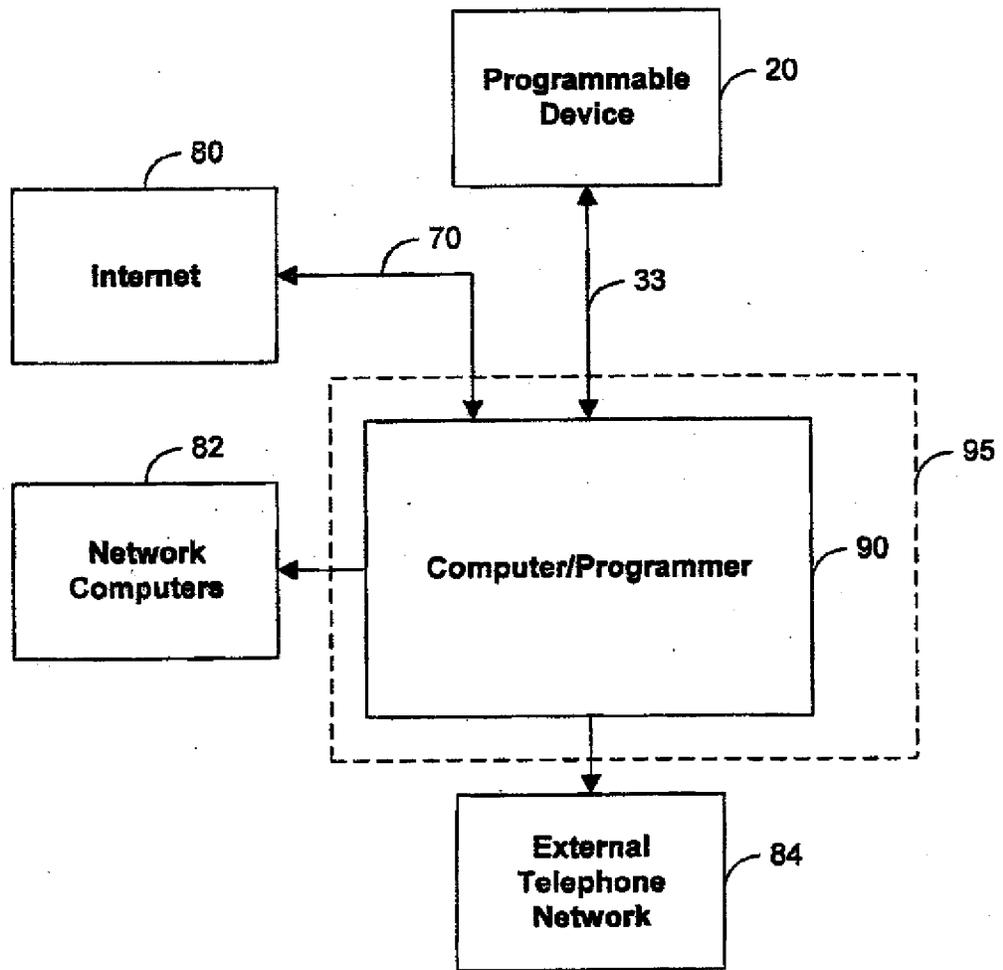


FIG. 4B

300

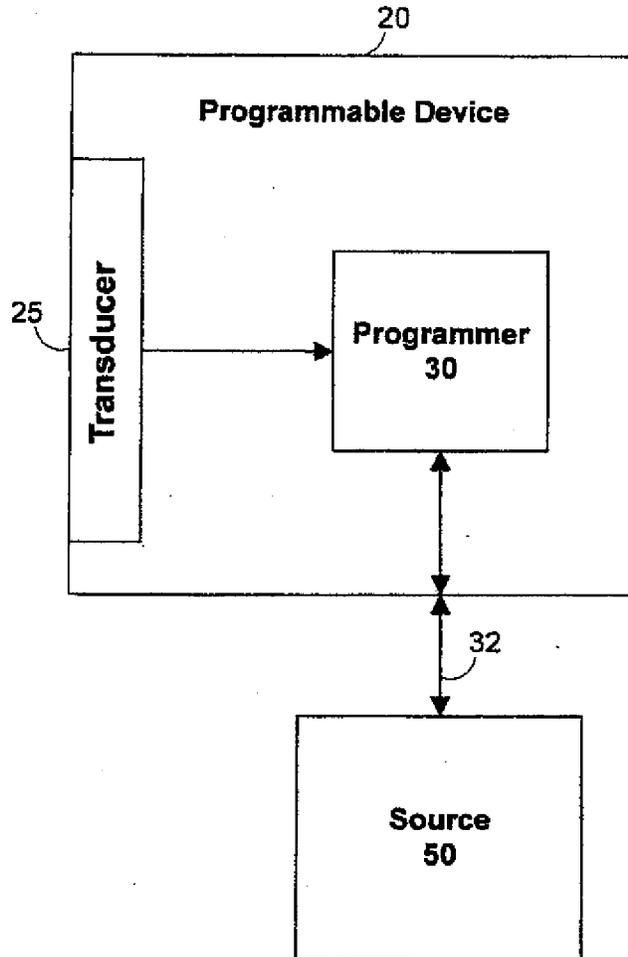


FIG. 5

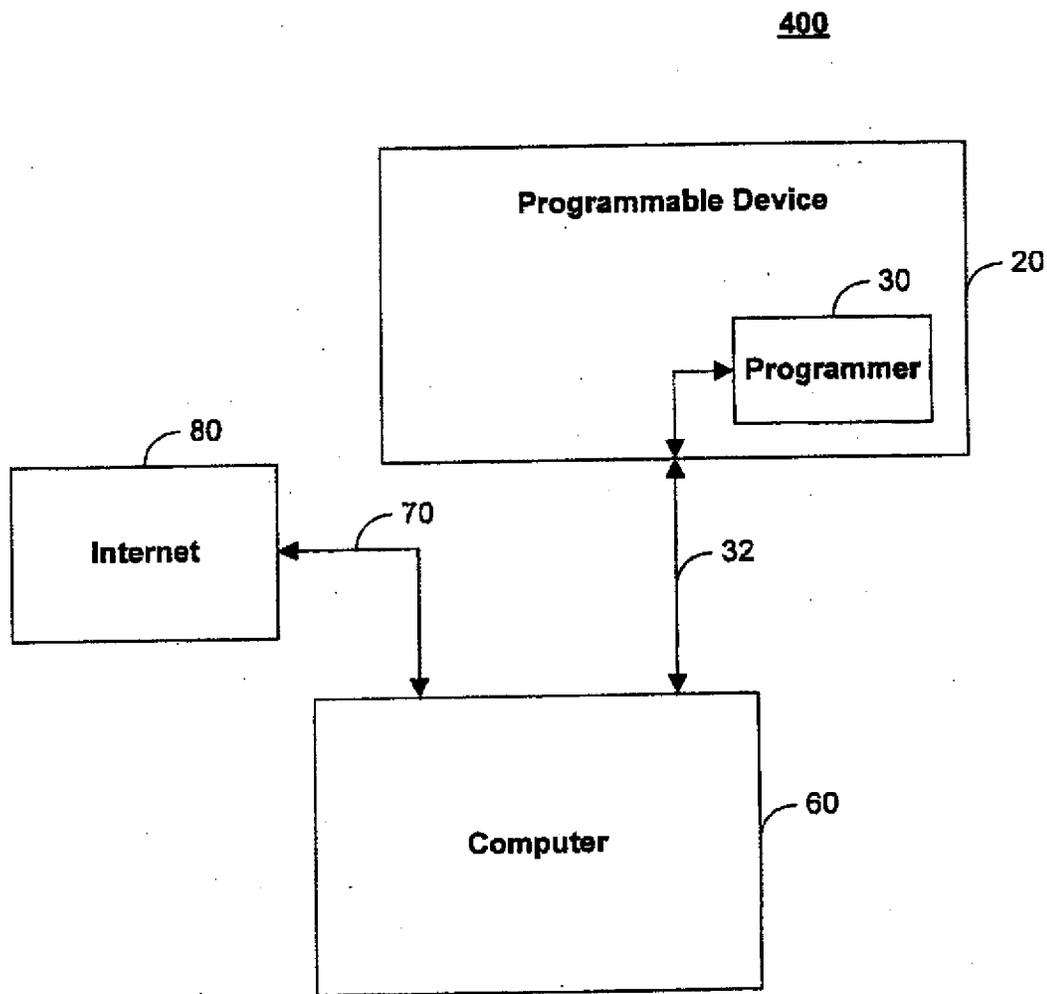


FIG. 6

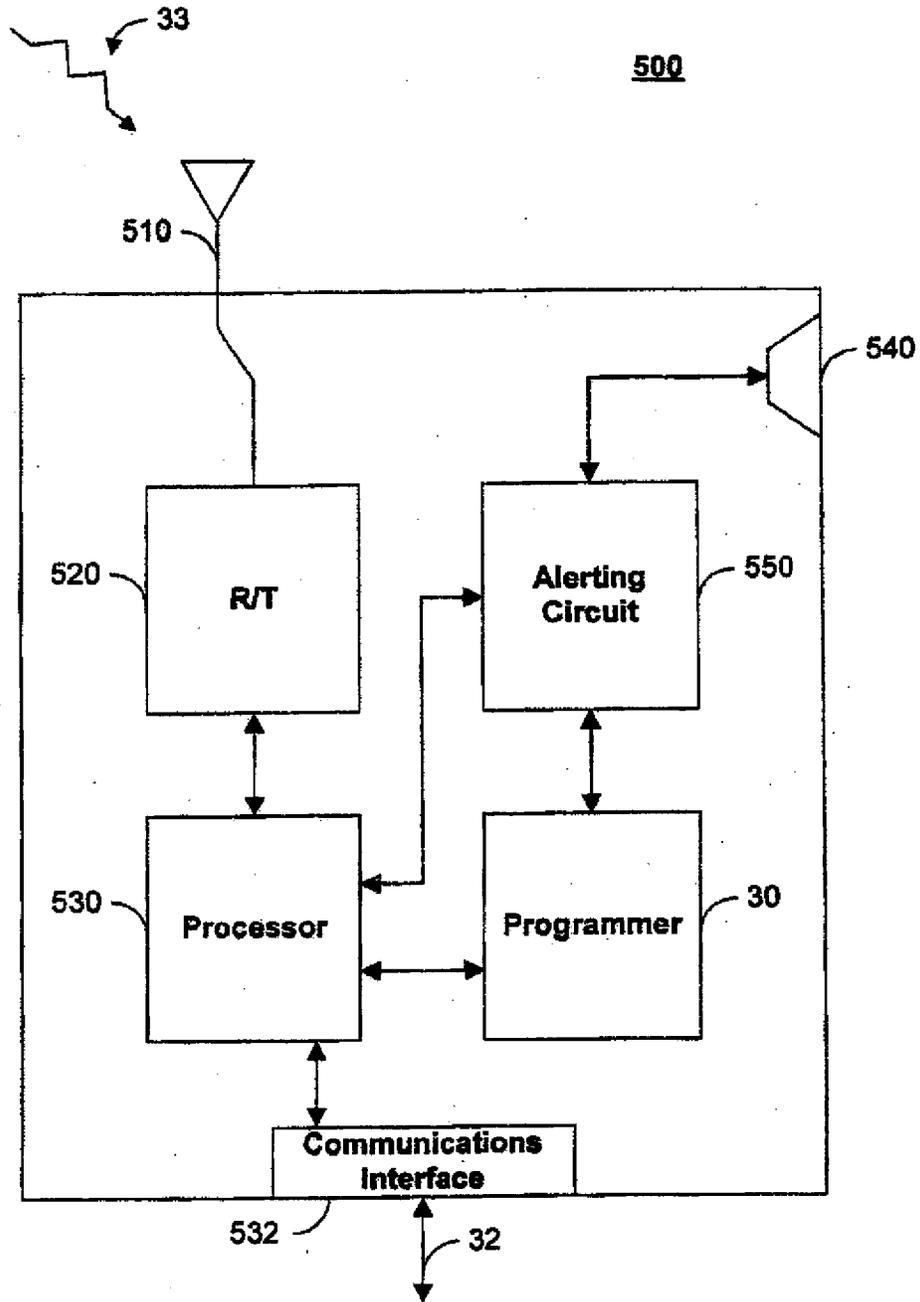


FIG. 7

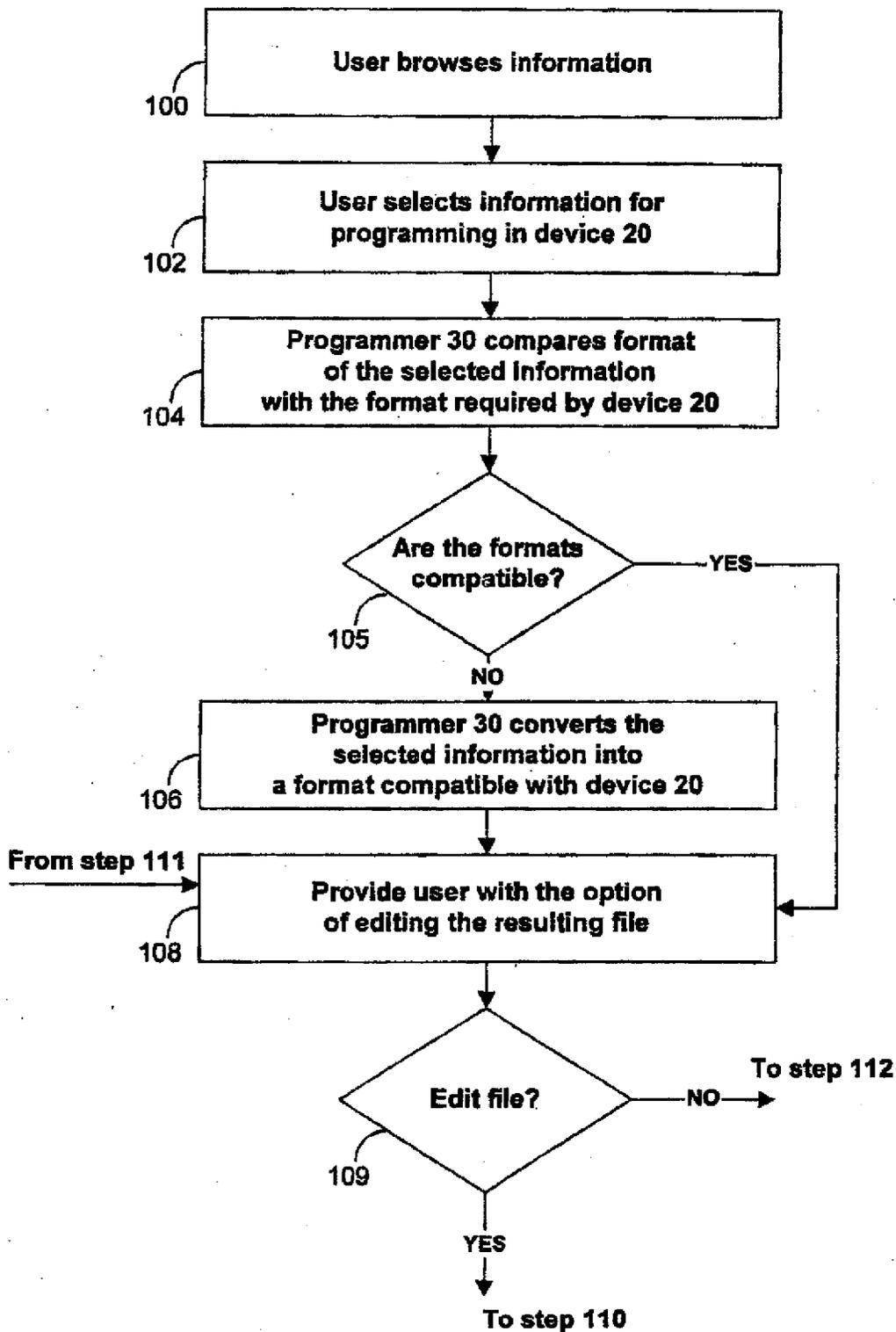


FIG. 8

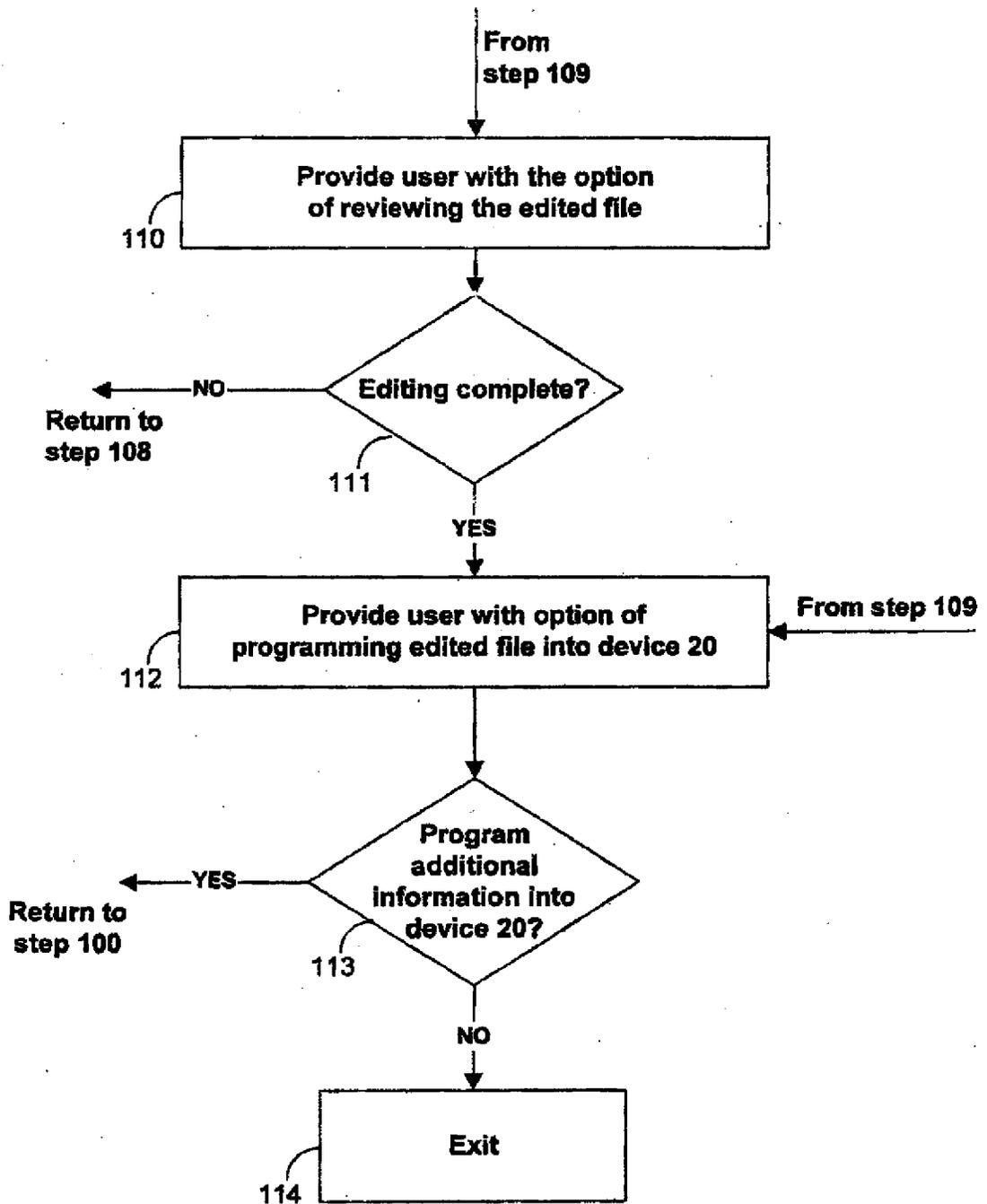


FIG. 9

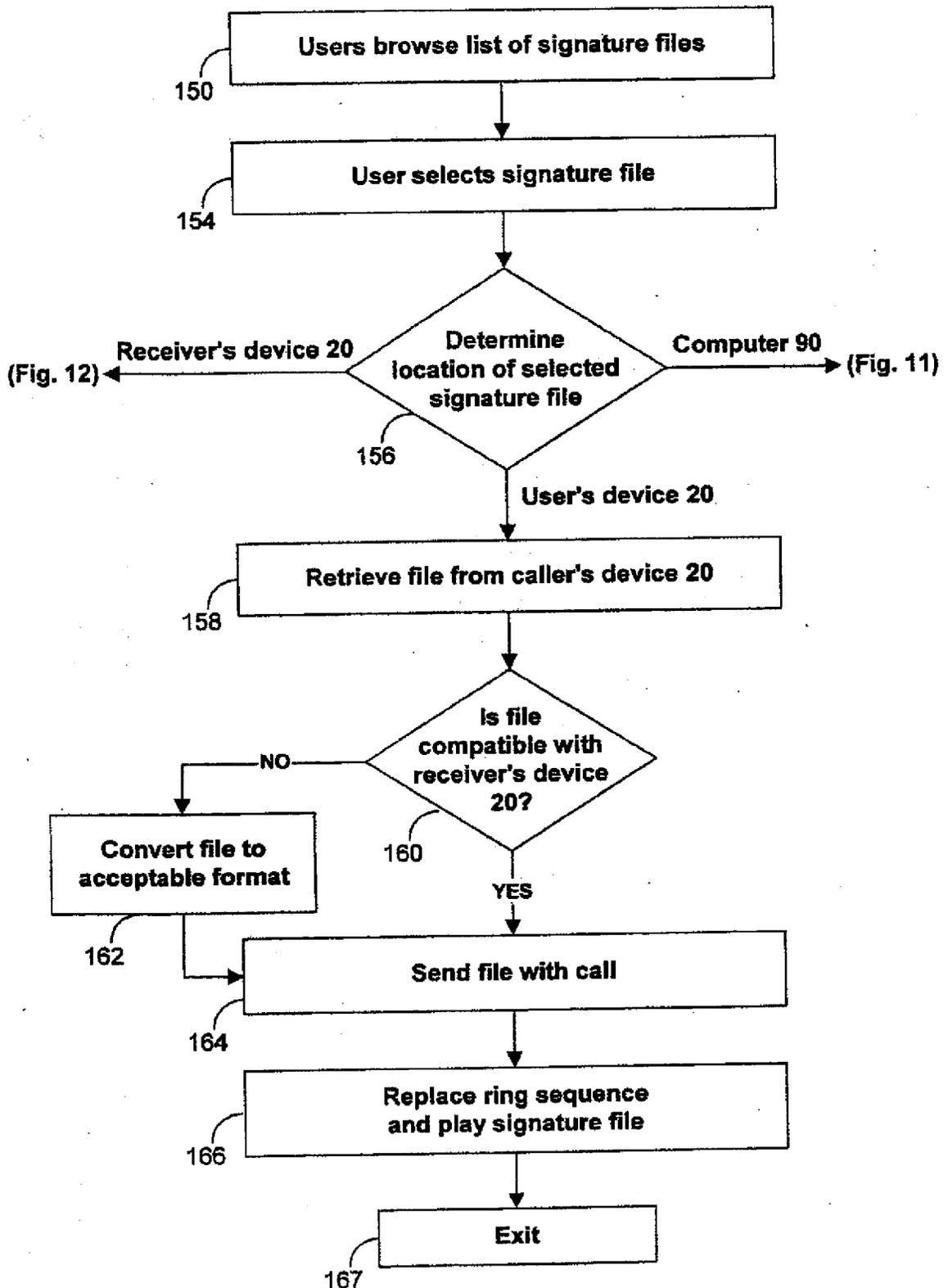


FIG. 10

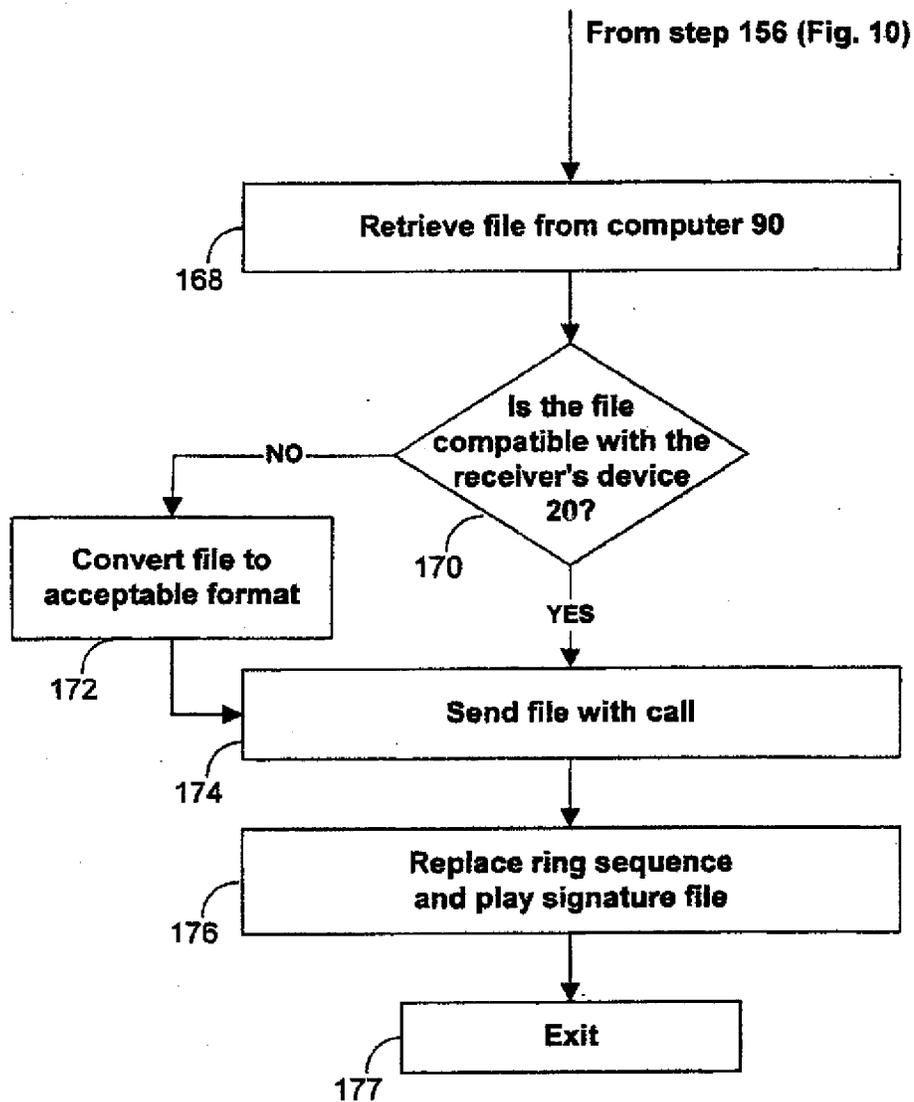


FIG. 11

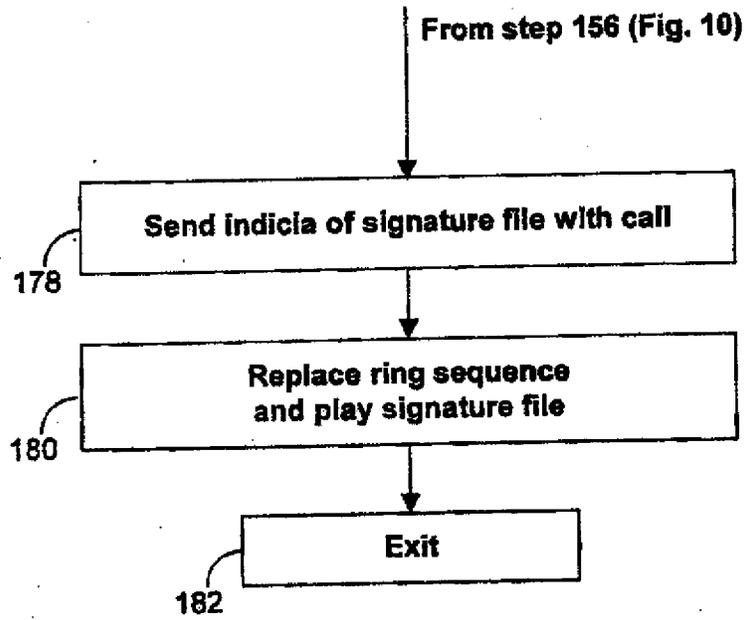


FIG. 12

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT***(Use as many sheets as necessary)***Complete if Known**

Application Number	Not Yet Assigned
Filing Date	05/29/2008
First Named Inventor	Michael E. Shanahan
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	116236-00016

Sheet 1 of 11

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1	US- 4,866,766	09/12/1989	Mitzlaff	
	2	US- 4,868,561	09/19/1989	Davis	
	3	US- 5,220,420	06/15/1993	Hoarty, et al.	
	4	US- 5,247,347	09/21/1993	Litteral, et al.	
	5	US- 5,253,275	10/12/1993	Yurt, et al.	
	6	US- 5,262,875	11/16/1993	Mincer, et al.	
	7	US- 5,341,474	08/23/1994	Gelman, et al.	
	8	US- 5,414,444	05/09/1995	Britz	
	9	US- 5,414,751	05/09/1995	Yamada	
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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	1 ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	20	EP 0851649 A2	07/01/1998	Nokia Mobile Phones Ltd.		
	21	JP 09205471	05/05/1997	Nippon Denki Ido Tsushin		
	22	WO 99/28897	06/10/1999	Voquette Networks Ltd.		
	23	WO 99/43136	08/26/1999	Ericsson, Inc.		
	24	WO 98/11487	03/19/1998	Audible, Inc.		
	25	WO 00/38340	06/29/2000	Kim, et al.		

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		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
		Attorney Docket Number	116236-00016
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		Number-Kind Code ² (if known)			
	26	US- 5,486,686	01/23/1996	Zdybel, Jr., et al.	
	27	US- 5,487,671	01/30/1996	Shapiro, et al.	
	28	US- 5,490,210	02/06/1996	Sasso	
	29	US- 5,490,251	02/06/1996	Clark, et al.	
	30	US- 5,499,288	03/12/1996	Hunt, et al.	
	31	US- 5,508,733	04/16/1996	Kassatly	
	32	US- 5,510,777	04/23/1996	Pilc, et al.	
	33	US- 5,513,272	04/30/1996	Bogosian, Jr.	
	34	US- 5,517,605	05/14/1996	Wolf	
	35	US- 5,524,141	06/04/1996	Braun, et al.	
	36	US- 5,526,620	06/18/1996	Hallsten	
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	39	US- 5,533,115	07/02/1996	Hollenbach, et al.	
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	41	US- 5,537,586	07/16/1996	Amram, et al.	
	42	US- 5,541,917	07/30/1996	Farris	
	43	US- 5,542,046	07/30/1996	Carlson, et al.	
	44	US- 5,544,255	08/06/1996	Smithies, et al.	

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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ *Number ⁴ *Kind Code ⁵ (if known)				
	45	WO 00/36857	06/22/2000	Oy Radiolinja AB		
	46	WO 01/41403	06/07/2001	Shanahan		
	47	CA 2,436,872	10/09/2007	Twenty Year Innovations		

Examiner Signature	Date Considered
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		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
		Attorney Docket Number	116236-00016
		Sheet	3

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		Number-Kind Code ² (if known)			
	48	US- 5,544,322	08/06/1996	Cheng, et al.	
	49	US- 5,548,726	08/20/1996	Pettus	
	50	US- 5,550,577	08/27/1996	Verbiest, et al.	
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	54	US- 5,551,021	08/27/1996	Harada, et al.	
	55	US- 5,553,311	09/03/1996	McLaughlin, et al.	
	56	US- 5,557,675	09/17/1996	Schupak	
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	58	US- 5,563,649	10/08/1996	Gould, et al.	
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	60	US- 5,568,181	10/22/1996	Greenwood, et al.	
	61	US- 5,570,126	10/29/1996	Blahut, et al.	
	62	US- 5,572,571	11/05/1996	Shirai	
	63	US- 5,577,190	11/19/1996	Peters	
	64	US- 5,583,763	12/10/1996	Atcheson, et al.	
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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				

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Substitute for form 1449/PTO		Complete if Known	
		Application Number	Not Yet Assigned
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Filing Date	05/29/2008
		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
		Attorney Docket Number	116236-00016
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U. S. PATENT DOCUMENTS					
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		Number-Kind Code ² (if known)			
	67	US- 5,606,597	02/25/1997	Newland	
	68	US- 5,608,786	03/04/1997	Gordon	
	69	US- 5,612,682	03/18/1997	DeLuca, et al.	
	70	US- 5,613,012	03/18/1997	Hoffman, et al.	
	71	US- 5,613,190	03/18/1997	Hylton	
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	73	US- 5,619,247	04/08/1997	Russo	
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	78	US- 5,661,802	08/26/1997	Nilssen	
	79	US- 5,675,738	10/07/1997	Suzuki, et al.	
	80	US- 5,677,905	10/14/1997	Bigham, et al.	
	81	US- 5,680,325	10/21/1997	Rohner	
	82	US- 5,687,227	11/11/1997	Cohrs, et al.	
	83	US- 5,689,825	11/18/1997	Averbuch, et al.	
	84	US- 5,694,455	12/02/1997	Goodman	
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		Filing Date	05/29/2008
		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
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U. S. PATENT DOCUMENTS					
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		Number-Kind Code ² (if known)			
	86	US- 5,727,047	03/10/1998	Bentley, et al.	
	87	US- 5,732,216	03/24/1998	Logan, et al.	
	88	US- 5,790,423	08/04/1998	Lau, et al.	
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	90	US- 5,793,980	08/11/1998	Glaser, et al.	
	91	US- 5,796,728	08/18/1998	Rondeau, et al.	
	92	US- 5,799,063	08/25/1998	Krane	
	93	US- 5,828,956	10/27/1998	Shirai	
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	99	US- 5,907,604	05/25/1999	Hsu	
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	101	US- 5,926,624	07/20/1999	Katz, et al.	
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	103	US- 5,930,703	07/27/1999	Cairns	
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Sheet 8 of 11	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Application Number</td> <td>Not Yet Assigned</td> </tr> <tr> <td>Filing Date</td> <td>05/29/2008</td> </tr> <tr> <td>First Named Inventor</td> <td>Michael E. Shanahan</td> </tr> <tr> <td>Art Unit</td> <td>Not Yet Assigned</td> </tr> <tr> <td>Examiner Name</td> <td>Not Yet Assigned</td> </tr> <tr> <td>Attorney Docket Number</td> <td>116236-00016</td> </tr> </table>	Application Number	Not Yet Assigned	Filing Date	05/29/2008	First Named Inventor	Michael E. Shanahan	Art Unit	Not Yet Assigned	Examiner Name	Not Yet Assigned	Attorney Docket Number	116236-00016
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U. S. PATENT DOCUMENTS					
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		Number-Kind Code ² (if known)			
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	144	US- 6,222,838	04/24/2001	Sparks, et al.	
	145	US- 6,226,532	05/01/2001	Kim, et al.	
	146	US- 6,229,990	05/08/2001	Toshida, et al.	
	147	US- 6,243,375	06/05/2001	Speicher	
	148	US- 6,253,061	06/26/2001	Helferich	
	149	US- 6,256,378	07/03/2001	Iggulden, et al.	
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	160	US- 6,564,056	05/13/2003	Fitzgerald	
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	162	US- 6,603,985	08/05/2003	Ichihashi	
	163	US- 6,718,021	04/06/2004	Crockett, et al.	
	164	US- 6,754,509	06/22/2004	Khan, et al.	
	165	US- 6,829,618	12/07/2004	Abraham, et al.	
	166	US- 6,845,398	01/18/2005	Galensky, et al.	
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	169	US- 7,020,497	03/28/2006	Deeds	
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	180	US- 6,728,531	04/27/2004	Lee, et al.	

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT***(Use as many sheets as necessary)***Complete if Known**

Application Number	Not Yet Assigned
Filing Date	05/29/2008
First Named Inventor	Michael E. Shanahan
Art Unit	Not Yet Assigned
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Sheet 10 of 11

U. S. PATENT DOCUMENTS

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		Number-Kind Code ² (if known)			
	181	US- 6,192,340	02/20/2001	Abecassis	
	182	US- 6,188,909	02/13/2001	Alanara, et al.	
	183	US- 2005/0054379 A1	03/10/2005	Cao, et al.	
	184	US- 6,496,692	12/17/2002	Shanahan	
	185	US- 7,149,509	12/12/2006	Shanahan	
	186	US- 7,257,395	08/14/2007	Shanahan	
	187	US- 7,289,798	10/30/2007	Shanahan	
	188	US- 7,295,864	11/13/2007	Shanahan	
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	190	US- 2005/0086128 A1	04/21/2005	Shanahan	
	191	US- 2004/0148226 A1	07/29/2004	Shanahan	
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		Application Number	Not Yet Assigned
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		First Named Inventor	Michael E. Shanahan
		Art Unit	Not Yet Assigned
		Examiner Name	Not Yet Assigned
Sheet 11	of 11	Attorney Docket Number	116236-00016

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	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, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	195	Canadian Office Action issued by the Canadian Patent Office on Sept. 19, 2006, in connection with Canadian App. No. 2,436,872 (2 pages)	
	196	Canadian Office Action issued by the Canadian Patent Office on Sept. 28, 2005, in connection with Canadian App. No. 2,436,872 (2 pages)	
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	199	Canadian Office Action issued by the Canadian Patent Office on March 31, 2005, in connection with Canadian App. No. 2,492,727 (3 pages)	
	200	International Search Report of the International Searching Authority mailed Mar. 20, 2002, issued in connection with International Patent Appln. No. PCT/US00/32920 (3 pages)	
	201	International Preliminary Report on Patentability issued Mar. 25, 2002, issued in connection with International Patent Appln. No. PCT/US00/32920 (6 pages)	
	202	Written Opinion of the International Searching Authority mailed Nov. 21, 2001, issued in connection with International Patent Appln. No. PCT/US00/32920 (7 pages)	
	203	SGS Thompson Microelectronics ST 5092 Datasheet, June 1997, pp. 1-29	

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Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices			
First Named Inventor/Applicant Name:	Michael E. Shanahan			
Filer:	Scott Howard Kaliko/Janelle Fava			
Attorney Docket Number:	116236-00016			
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	255	255
Utility Examination Fee	2311	1	105	105
Pages:				
Claims:				
Claims in excess of 20	2202	12	25	300
Independent claims in excess of 3	2201	1	105	105
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 (\$)	840

Electronic Acknowledgement Receipt

EFS ID:	3374210
Application Number:	12128991
International Application Number:	
Confirmation Number:	1294
Title of Invention:	Methods and Apparatuses for Programming User-Defined Information Into Electronic Devices
First Named Inventor/Applicant Name:	Michael E. Shanahan
Customer Number:	27614
Filer:	Scott Howard Kaliko/Janelle Fava
Filer Authorized By:	Scott Howard Kaliko
Attorney Docket Number:	116236-00016
Receipt Date:	29-MAY-2008
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Time Stamp:	14:50:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

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Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 840
RAM confirmation Number	9717
Deposit Account	503571
Authorized User	

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1	Miscellaneous Incoming Letter	Transmittal.pdf	49582	no	2
			7573f0206c9facf756d8ad78e8aa487769f8094c		
Warnings:					
Information:					
2	Oath or Declaration filed	Declaration.pdf	57561	no	1
			46ccc3d3b32445247a750396fec5e9051ed9b37c		
Warnings:					
Information:					
3		Application.pdf	1037719	yes	38
			2119441342c671a473677545dcbec7aedc8aff0		
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	Document Description		Start	End	
	Specification		1	27	
	Claims		28	37	
	Abstract		38	38	
Warnings:					
Information:					
4	Drawings-only black and white line drawings	Drawings.pdf	134117	no	13
			1db6031d5bcc9f163a5b171214b8ad1cc3e912bc		
Warnings:					
Information:					
5	Transmittal of New Application	NewAppTransmittal.pdf	56453	no	1
			73c8b0c0898a81a06b41175c977642da67c79193		
Warnings:					
Information:					
6	Information Disclosure Statement Letter	IDSLetter.pdf	215877	no	7
			6852f3a9086de66373856ab942aa84e55d7edf4a		

Warnings:					
Information:					
7	Foreign Reference	Ref20.pdf	1098315 3791bba5d91531103f842d412e2ecec356aa216e	no	20
Warnings:					
Information:					
8	Foreign Reference	Ref21.pdf	220336 61f91f792d8fbc0bc4c9849f54b049ee8063290b	no	7
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Information:					
9	Foreign Reference	Ref22.pdf	1808757 7703406c7a4d4019e13517c7968492745405861f	no	82
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Information:					
10	Foreign Reference	Ref23.pdf	580091 78e59f8b3c1ec47a981bd6a1637682258469df3	no	27
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14	Foreign Reference	Ref46.pdf	1021187 1352a19e122e7b0f6ea5cbf2c7304794809af709	no	44
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Information:					
15	Foreign Reference	Ref47.pdf 633	2293064 a1e5a3d455e090a4fb0bedf4fad074f7be20c689	no	84

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16	NPL Documents	Ref195.pdf	64574 ce04529a8aec841c8ad11e4e984f5f6d2db659c8	no	2
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17	NPL Documents	Ref196.pdf	69574 f3f21c46b0c5ec4d7222be0fc17b62a167244d87	no	2
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18	NPL Documents	Ref197.pdf	60070 904c2a6dcbd61ad7c3c57b9f0523917ba7dfe4d2	no	2
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Information:					
19	NPL Documents	Ref198.pdf	90041 82579c13bb1119e33988a814971f57132aa91cbd	no	3
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22	NPL Documents	Ref201.pdf	193210 24b81930d8aed7e907cd7aod62349ceafc0ed762	no	6
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Information:					
23	NPL Documents	Ref202.pdf	212764 629bdcd99c027ed0c9eac3db620235b3b331758	no	7
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Information:					
24	Information Disclosure Statement (IDS) Filed	IDS.pdf 634	814716 080a247ef5ba3f136cbfef2d43e9ec3853b88b6b	no	11

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25	NPL Documents	Ref203.pdf	934866 a7ea4fe5993d163d760ae6db5ffe0ebe3 c98a29e	no	29
Warnings:					
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May 29, 2008

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

Customer No.: 27614

Scott H. Kaliko
 T. 973.639.7980
 F. 973.624.7070
 SKaliko@mccarter.com

File: 116236-00016
 Inventor: Michael E. Shanahan
 Title: Method and Apparatuses for Programming User-Defined Information Into
 Electronic Devices

Sir:

Enclosed herewith please find the following documents in the above-identified application for Letters Patent of the United States:

McCarter & English, LLP
 Four Gateway Center
 100 Mulberry Street
 P.O. Box 652
 Newark, NJ 07102
 T. 973.622.4444
 F. 973.624.7070
 www.mccarter.com

- 38 Pages of Specification including claims 1-32 and 1 page of Abstract
- 13 Sheets of Drawings (Figs. 1-12)
- X Utility Patent Application Transmittal Form PTO/SB/05 (1 sheet)
- X Unexecuted Declaration and Power of Attorney (1 sheet)
- X Information Disclosure Statement (7 sheets)
- X Form PTO/SB/08A (10 sheets)
- X Form PTO/SB/08B (1 sheet)
- X Copies of References 20-25 and 45-47 from Form PTO/SB/08A
- X Copies of References 195-203 from Form PTO/SB/08B
- X Transmittal Letter (2 sheets)

- X Applicant claims small entity status

	Basic Filing Fee	\$ <u>75.00</u>
BOSTON	Additional Fees:	
	Utility Search Fee	\$ <u>255.00</u>
	Utility Examination Fee	\$ <u>105.00</u>
HARTFORD	Total number of claims (including multiple dependent claims) <u>32</u>	
	Total number of claims in excess of 20, times \$25 <u>12</u>	\$ <u>300.00</u>
NEW YORK	Number of independent claims <u>4</u>	
	Number of independent claims minus 3, times \$105 <u>1</u>	\$ <u>105.00</u>
	Fee for multiple dependent claims (\$185)	\$ <u>0.00</u>
NEWARK	Fee for each additional 50 sheets exceeding 100 (\$130)	\$ <u>0.00</u>
	TOTAL FILING FEES:	\$ <u>840.00</u>

PHILADELPHIA

PRIORITY CLAIM:

STAMFORD

This is a X Continuation of U.S. Application Serial No. 11/633,142 filed December 2, 2006, which is a continuation of U.S. Patent No. 7,149,509 filed June 20, 2003, which is a

WILMINGTON

Commissioner for Patents
May 29, 2008
Page 2
Customer No. 27614

continuation of U.S. Patent Application Serial No. 09/518,846 filed March 3, 2000, which claims the priority from U.S. Provisional Patent Application Serial No. 60/169,158 filed December 6, 1999.

Please note that this application is being filed with an unexecuted Declaration and Power of Attorney. It is respectfully requested that the NOTICE OF MISSING PARTS-FILING DATE GRANTED pursuant to 37 C.F.R. 1.53 be sent to the undersigned attorney.

Please charge Deposit Account No. 503571 in the amount of \$840.00 to cover the fees associated with this filing. The Commissioner is also authorized to charge any additional fees which may be required, or credit any overpayment, to Deposit Account No. 503571.

Respectfully submitted,
McCARTER & ENGLISH, LLP

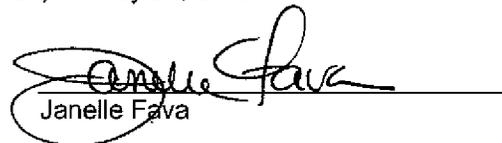


Scott H. Kaliko
Reg. No. 45,786

SHK/jf
Enclosures

CERTIFICATE OF ELECTRONIC FILING

I hereby certify that this correspondence is being electronically filed with the United States Patent and Trademark Office (via EFS-Web) on May 29, 2008.



Janelle Fava

DECLARATION AND POWER OF ATTORNEY
(Patent, Design or C-I-P Application)

As a below-named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are stated below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES** the specification of which

is attached hereto
_____ was filed on _____, as Application Serial No. _____ and was amended on _____
(if applicable)

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

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

COUNTRY	APPLICATION NO.	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. 119
			YES ___ NO ___
			YES ___ NO ___

LISTING OF FOREIGN APPLICATIONS CONTINUED ON PAGE 2 HEREOF: YES ___ NO ___

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

60/169,158 12/06/1999
(Application Serial No.) (Filing Date)

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application or PCT International application in the manner provided by the first page of 35 U.S.C. §112, I acknowledge the duty to disclose material information as defined in 37 C.F.R. §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

<u>11/633,142</u> (Application Serial No.)	<u>12/02/2006</u> (Filing Date)	<u>Pending</u> (Status: patented, pending, abandoned)
<u>10/600,975</u> (Application Serial No.)	<u>06/20/2006</u> (Filing Date)	<u>Patented</u> (Status: patented, pending, abandoned)
<u>09/518,846</u> (Application Serial No.)	<u>03/03/2000</u> (Filing Date)	<u>Abandoned</u> (Status: patented, pending, abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the practitioners associated with Customer Number 27614, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

SEND CORRESPONDENCE TO: Scott H. Kaliko McCarter & English, LLP Four Gateway Center 100 Mulberry Street Newark, NJ 07102		DIRECT TELEPHONE CALLS TO: (973) 639-7980	
Full Name of Inventor #1	Last Name: Shanahan	First Name: Michael	Middle Name: E.
Residence & Citizenship	City: Nyack	State or Foreign Country: NY	Country of Citizenship: USA
Post Office Address	Post Office Address: P.O. Box 381	City: Nyack	State or Country and Zip Code: NY 10960
Full Name of Inventor #2	Last Name:	First Name:	Middle Name:
Residence & Citizenship	City:	State or Foreign Country:	Country of Citizenship:
Post Office Address	Post Office Address:	City:	State or Country and Zip Code:

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

Signature of Inventor #1	Signature of Inventor #2
Date:	Date:

LISTING OF INVENTORS CONTINUED ON PAGE 2 HEREOF: YES ___ NO

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: MICHAEL E. SHANAHAN

5 TITLE: METHODS AND APPARATUSES FOR PROGRAMMING USER-
DEFINED INFORMATION INTO ELECTRONIC DEVICES

SPECIFICATION

10 BACKGROUND OF THE INVENTION

RELATED APPLICATIONS

15 This application is a continuation of U.S. Patent Application Serial No. 11/633,142, filed
December 2, 2006, now U.S. Patent No. _____, which is a continuation of U.S. Patent
No. 7,149,509, filed June 20, 2003, which is a continuation of U.S. Patent Application Serial No.
09/518,846, filed March 3, 2000, now abandoned, which claims the priority from U.S.
Provisional Patent Application Serial No. 60/169,158, filed December 6, 1999, the entire
20 disclosures of which are expressly incorporated herein by reference.

FIELD OF THE INVENTION

This application relates to electronic devices, and more particularly to a programming
apparatus that allows users to program user-defined information into their electronic device.

25

RELATED ART

There are many types of electronic devices available to consumers today that have the
ability to produce both audio sounds and video displays. Many of these devices provide users
with the ability to select and play a particular piece of audio or video. A television viewer, for
30 example, may tune to a TV channel and watch a particular program, or connect a VCR or DVD

player to the television in order to view a specific program not currently being broadcast. Similarly, an audio system user may tune a receiver to a particular radio station to hear a certain genre of music, or connect a CD or tape player to the system in order to hear specific pieces of music. In both cases, the audio and video is user-selectable.

5

Currently, however, there are many electronic products that offer an audio/video playing capability that are not fully user-programmable. Users of such devices (*e.g.*, wireless or cordless telephones, pagers, personal digital assistants (PDAs), hand-held computers and the like) have to choose from a limited selection of pre-programmed information (*e.g.*, audio clips, video clips or
10 frames, *etc.*) placed there by the manufacturer. This severely limits the user's ability to customize the device to suit his or her particular taste. Furthermore, most pre-programmed audio tends to be rather generic and can be confusing when a device of a nearby user generates a sound similar to or the same as that of another user's device. Although a programmable memory within many such electronic devices could support user-defined audio, currently, no system exists for
15 programming such information into an electronic device.

The same is true for user-defined video. For example, certain types of user-defined video information, such as video clips, frames, and other digital or analog images could be programmed into an electronic device (*e.g.*, PDA, wireless phone, or any portable display
20 device) and displayed at a time of the user choosing. Although a programmable memory within such a device could support user-defined video, currently, no system exists for programming such information into the device.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide an apparatus that allows a user to program user-defined audio information into a programmable electronic device.

5 It is a further object of the present invention to provide an apparatus that allows a user to program user-defined video information into a programmable electronic device.

These and other objects of the present invention are accomplished by providing methods apparatuses that allow a user to program user-defined information into his or her electronic
10 device. In one embodiment of the present invention, the programming apparatus includes processing circuitry and first and second communications links. In operation, a user selects a piece of information from a source such as a computer disk drive, the Internet, or a remote database using the first communications link. The programming apparatus may download this information and compare its format with that required by the programmable device to determine
15 format compatibility. If the two formats are compatible, the programming apparatus may download the selected information into the programmable device. If the formats are not compatible, the programming apparatus may convert the downloaded file to a format compatible with that required by the programmable electronic device. The programming apparatus may also provide the user with an opportunity to edit the converted file. Once editing is complete, the
20 resulting file may then be programmed into the programmable device for subsequent use.

In another aspect of the invention, a user may send customized information such as an audio or video file called a "signature" when placing a telephone call. This feature allows a user

to select and send a signature file to the person receiving the telephone call such that the person receiving the call is alerted by that file.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and advantages of the present invention will be apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in
5 which:

FIG. 1 is a generalized block diagram of a system for programming user-defined information into an electronic device in accordance with one embodiment of the present invention.
10

FIG. 2 is a schematic diagram of a programmer constructed in accordance with one possible embodiment of the present invention.

FIG. 3 shows a computer based implementation of a programmer constructed in
15 accordance with one embodiment of the present invention.

FIG. 4a shows an alternate embodiment of a computer based implementation of a programmer constructed in accordance with the principles of the present invention.

FIG. 4b shows an alternate network embodiment of the computer based implementation
20 in shown in **FIG. 4a**.

FIG. 5 illustrates an imbedded implementation of the programmer shown in **FIG. 2**.

FIG. 6 shows yet another embodiment of a computer based implementation the programmer in shown in **FIG. 4b**.

FIG. 7 is a schematic diagram of one possible embodiment of a wireless telephone that
5 can receive and play user-defined audio in accordance with one aspect of the present invention.

FIGS. 8-9 show a flow chart illustrating some of the steps involved in programming user-defined information into an electronic device in accordance with one embodiment of the present invention.

10

FIGS. 10-12 show a flow chart illustrating some of the steps involved in sending and receiving signature information in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows a block diagram of a system **10** for programming user-defined information (e.g., audio, video, or Internet access information, *etc.*) into an electronic device in accordance with one embodiment of the present invention. As shown in **FIG. 1**, system **10** generally includes a programmable electronic device **20**, a device programmer **30**, and a source **50**. Programmer **30** is connected to source **50** via link **31**, and to device **20** via link **32**.

Programmable device **20** may be any portable electronic device (e.g., a wireless telephone, a pager, a handheld computer, personal digital assistant (PDA), *etc.*). Device **20** may also be any device which integrates some or all of the functions of such devices into one device. For example, device **20** may be a PDA capable of making wireless telephone calls, a PDA with paging functions, a wireless telephone with some PDA or paging functions, a handheld or notebook computer with some or all of the functions of a PDA, a pager, and a telephone, *etc.*

In **FIG. 1**, links **31** and **32** may be, for example, communications links (e.g., serial ports, parallel ports, universal serial buses (USB), RS232, GPIB, *etc.*), modems (e.g., any suitable analog or digital modems, cellular modems, or cable modems), a network interface link (e.g., Ethernet links, token ring links, *etc.*), wireless communications links (e.g., cellular telephone links, wireless Internet links, infrared links, *etc.*), or any other suitable hard-wired or wireless Internet or communications links.

Source **50** may be any device or combination of devices suitable for providing user-defined information to programmer **30** (e.g., the Internet, an optical disc player (CD, DVD), a

cassette player, a VCR, a digital camera, or any suitable storage device containing computer programs or files, *etc.*).

In operation, a user may choose certain information, such as Internet configuration
5 information, an audio sample of a popular song, a video clip or frame, *etc.*, that is available from
source **50** and transfer it to programmer **30**. Programmer **30** may then process this information
into a suitable format (or may simply route the information if no format conversion is required),
and program it into a programmable memory within device **20** (not shown). Device **20** may
then retrieve this information when a certain event occurs (*e.g.*, when receiving an incoming
10 telephone call, browsing the Internet, or when programmed to do so by a user, *etc.*).

Programmer **30** may also coordinate or perform certain functions related to the routing
and storing of information within device **20**. For example, programmer **30** may communicate
with (or simply search) device **20** to find available memory locations in which to store the user-
15 defined information. Programmer **30** may also communicate with device **20** to determine which
format the incoming information should be converted to so that the information is compatible
with the downloading requirements of device **20**. For audio files, this may include, but is not
limited to, converting to or from any of the following format types: analog; MIDI; MPEG; PCM;
Windows Media Audio Code (WMA); WAV; or Adaptive Transform Acoustic Coding
20 (ATRAC), or to or from any other suitable audio format, *etc.* For video files, this may include,
but is not limited to, converting to or from any of the following format types: analog; JPEG;
MPEG; GIF; AVI, or to or from any other suitable video format, *etc.* Text files may include, for

example, HTML files, Wireless Markup Language (WML) files, WordPerfect™ files, Microsoft Office™ files, or any other suitable text files.

If multiple blocks of information are being programmed into device **20**, programmer **30** may "tag" the different blocks so that device **20** and/or a user may distinguish among the different blocks stored therein. After the information has been provided, programmer **30** may communicate with device **20** to confirm that the information has been correctly received.

A more detailed diagram of one possible embodiment of programmer **30** is illustrated in **FIG. 2**. As illustrated, programmer **30** may include a transducer **25**, a processor **34**, a programmable memory **36**, an analog-to-digital (A/D) converter **38**, signal processing circuitry (SPC) **40**, an output buffer **42**, and an input buffer **44**. Generally speaking, processor **40** controls the operation of programmer **30**. Programmer **30** may be configured to receive and process both analog and digital signals. It may also acquire acoustic signals via transducer **25** (if installed).

In operation, programmer **30** may download certain user-selected information from source **50** via link **31**. This information, such as audio or video files, in the form of electronic signals, may be received from link **31** and directed to input buffer **44**. As mentioned above, these signals may need to be processed in order to be compatible with the format required by programmable device **20**. For example, if analog input signals are received at input buffer **44** and device **20** requires a digital format, the analog signals may be routed to A/D converter **38** for conversion into a suitable digital form (*e.g.*, into PCM, PAM, *etc.*). Further processing into another digital format (*e.g.*, MP3, ATRAC, WMA, *etc.*) may be accomplished by routing the

converted signals to SPC 40 or processor 34 (discussed in more detail below). On the other hand, if digital input signals are received at input buffer 44 and device 20 requires analog signals, the digital signals may be routed to SPC 40 or to a dedicated digital-to-analog (D/A) converter (not shown) for conversion to the analog domain.

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Processor 34 may route incoming signals from source 50 to memory 36, SPC 40, or directly to output buffer 42 depending on the circumstances. For example, some or all of the input signals received from source 50 may require further processing to meet the downloading specifications of device 20. In this case, the incoming signals that require processing may be routed to SPC 40 for such processing. For example, incoming MP3 or WMA signals may be routed to SPC 40 and converted to ATRAC format (or vice-versa). Once this conversion is complete, the resulting information may be stored in memory 36, or routed to output buffer 42 for programming in device 20. Input signals that do not require a format change may be routed directly from input buffer 44 to memory 36, or output buffer 42. Although not shown in FIG. 2, programmer 30 preferably has a display screen and a data input device, such as a keyboard associated with it so that a user may, among other things, browse and select files, monitor file transfers, and ensure that device 20 has properly received the selected files.

In one embodiment of the present invention, SPC 40 may be programmable so that the conversion and processing protocols contained therein may be periodically updated. Furthermore, in some embodiments, processor 34 may be programmed via software routines in programmable memory 36 to perform some or all of the functions of SPC 40. In this case, an

SPC of reduced processing capacity may be used or SPC 40 may be removed altogether from programmer 30.

Audio signals may also be acquired and processed by programmer 30. Transducer 25 may acquire an acoustic signal from a stereo or other audio source and convert it to an electrical signal. This electrical signal may then be processed in a way similar to the way the above-described analog signal was processed. That is, the electrical signal may be routed to A/D converter 38 and/or SPC 40 and then stored in memory 36 or output buffer 42, for example.

It will be understood that the generalized system shown in FIG. 1 may be implemented in many ways. For example, as shown in FIG. 3, system 100 may be implemented using a computer-based architecture. In this case, some or all of programmer 30 may be installed in or connected to a computer, such as a personal computer. For example, in FIG. 3, programmer 30 may be installed in an expansion slot and connected to an interface bus such as an ISA or PCI bus (not shown) in computer 60. In this configuration, programmer 30 may receive user-defined information via the interface bus in computer 60 and operate as described above with the interface bus acting as part of link 31. Some or all of programmer 30 may also be external to computer 60 and connected to it via a link similar to link 31 (not shown). Furthermore, in certain embodiments, some of the functions of programmer 30 may be distributed between computer 60 and programmer 30. For example, programmer 30 may be constructed such that it partially or fully relies on the processing capability of computer 60. In this type of embodiment, programmer 30 may be constructed without processor 34 or with a processor of reduced capacity. Programmer 30 may also be constructed such that it partially or fully relies on the

memory capacity of computer 60. Moreover, signal processing functions such as those performed by SPC 40 could also be fully or partially carried out by circuitry or software resident within computer 60.

5 As shown in **FIG. 3**, computer 60 may be connected to Internet 80 through link 70. Link 70 may be, for example, a modem (*e.g.*, any suitable analog or digital modem, cellular modem, or cable modem), a network interface link (*e.g.*, an Ethernet link, token ring link, *etc.*), a wireless communications link (*e.g.*, a wireless telephone link, a wireless Internet link, an infrared link, *etc.*), or any other suitable hard-wired or wireless communications link. With this configuration,
10 a user may download information from Internet 80 (*e.g.*, using electronic distribution (ED) services) and/or from a disc drive or other devices (not shown) connected to computer 60 and program that information into device 20 (via programmer 30 and link 32).

 It will be understood, of course, that computer 60, with a suitable communications link,
15 such as link 32, may be programmed with software to function as programmer 30. In this way, a user may take advantage of the fact that many of the components of programmer 30 are resident within computer 60. For example, computer 60 may contain a processor, such as processor 34 and programmable memory circuitry such as memory 36. Computer 60 may also include signal processing circuitry such as SPC 40, or software that instructs processor 34 to perform the
20 necessary format conversions. Computer 60 may include circuitry similar to input buffer 44 and output buffer 42. Such circuitry may include random access memory (RAM) or cache memory in computer 60. Computer 60 also may include internal or external A/D conversion circuitry, such as A/D converter 38, and an internal or external transducer 25.

As shown in **FIG. 4a**, computer **60**, programmed to function as programmer **30**, may be connected to Internet **80** through link **70** and to device **20** through link **32**. This arrangement allows a user to select information from Internet **80** or from a storage device connected to computer **30** (not shown) for programming into device **20**.

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Using the generalized system shown in **FIG. 4a**, user-defined information may be programmed into device **20** in many ways. For example, computer **60** may be part of a communications network **95**, such as a telephone network, that provides Internet and/or telephone access to programmable device **20** (shown in **FIG 4b**). Communications network **95** may be provide hard-wired or wireless telephone or Internet access (or combination of the two). This arrangement is generally illustrated in **FIG. 4b** as architecture **200**, in which computer **90**, for the sake of clarity, represents computer **60**, configured at least in part, to function as programmer **30**.

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With this configuration, a user of device **20** may access Internet **80** and select information for downloading into device **20**. It will be understood, however, that in this implementation, at least a portion of computer **90** is configured to function as programmer **30**, and that computer **90** may continue to perform other functions such as communicating with network computers **82**, communicating with Internet **80**, interfacing with external telephone network **84**, and coordinating wireless Internet and telephone access *etc.*, in addition to performing some or all of the above-described programming functions.

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In operation, computer **90** may communicate with device **20** to determine its format requirements and perform any conversions necessary to make user-selected information compatible with those requirements. This allows a user to select information, such as audio and/or video, that is available on the Internet or on a remote network computer, and program that information into device **20**. This may be accomplished via communications link **33** (which may be any type of link previously described as suitable for link **32**). For example, a user may wish to download video images from an Internet site to a hand-held computer, such as a PDA, or to a wireless telephone. The user may communicate with computer **90** via a wireless link **33** and select information from Internet **80** using an Internet browser installed in device **20**. Such a browser may be a Wireless Application Protocol (WAP) compliant browser for supporting wireless Internet services. Computer **90** ensures format compatibility of the information, transmits the information to device **20**, and may communicate with device **20** to confirm that the selected information has been properly received. Device **20** may provide a visual, audio, or tactile output to indicate the requested information has been successfully received.

Computer **90** may also coordinate information downloading with respect to the memory capacity of device **20**. For example, if the user-selected information exceeds the available memory of device **20**, computer **90** may inform the user, via link **33**, that the selected information is larger than the available memory. In such an event, the user may be prompted to cancel or modify the information request. In certain instances, however, the user may instruct computer **90** to provide the information in a "scrolling" fashion (*i.e.*, provide it in portions) so that all the requested information may be reviewed, albeit in sections. This may be particularly desirable in instances where large files, such as video files, are requested.

In some embodiments of the present invention, computer **90** may simply contact a remote computer or Internet site to fulfill requests for audio or video information in a particular format. Such web sites or remote computers may act as virtual "jukeboxes" of video and audio information, containing extensive lists of such information in a variety of formats available for downloading. Using this approach, a user may select a particular piece of information in a certain format from a list displayed on a screen of programmable device **20**. Computer **90** may receive this as a request via link **33** and handle the information transfer to device **20**. In some embodiments, format selection may be transparent to the user. That is, the user may simply request a piece of information and computer **90** may determine and then request information in a format appropriate for the requesting device.

In another embodiment, a remote computer or Internet site may perform a format conversion of information requested by computer **90** or device **20**. For example, a user may access an Internet site or remote computer using communications network **95** and enter a title or description of the desired audio or video information along with format requirements. The remote computer or Internet site may then search the Internet or other databases to find a file that matches the user's description. Once this file is found, the Internet site or remote computer may convert that file to the requested format, (using a system similar to the described above) and provide it to device **20** via computer **90** and/or link **33**. It will be understood, of course, that embodiments such as these are within the scope of the present invention.

If desired, a user may also employ the systems shown in **FIGS. 4a** and **4b** to download remotely stored information such as Internet access information to device **20**. For example, a

user may have customized bookmarks or web page addresses stored in a remote personal computer or on Internet **80**. The user may employ wireless link **32** or **33** to contact that remote computer or Internet site and then download the Internet access information for use in device **20**. This feature is desirable because it relieves the user of the burden of having to type in complicated Internet access information from the small keyboard of a wireless telephone or hand-held computer. It also spares the user from having to re-enter customized Internet information that is already present in another location, into their electronic device. Moreover, such a feature is convenient when a user wishes to access information on a remote computer that is not currently available in device **20**. For example, a user may wish to view spreadsheet information stored on a remote computer with device **20**. Rather than having to download this information from a hard-wired access point, a user may simply employ wireless link **33** (e.g., a wireless modem or Internet connection) to access that remote computer or Internet site and download that information to device **20**.

Another feature which may be implemented using the embodiments shown in **FIGS. 4a** and **4b** is a "signature" feature. This allows device **20** to send user-defined information, which may be indicative of the user's personal taste or identity, along with other information when performing certain functions. For example, if a user is placing a wireless telephone call or paging someone with device **20**, he or she may select the signature feature in order to send user-defined audio or video along with, or prior to, that call. A user may accomplish this by browsing through a menu on device **20** that displays available signature options, and by choosing a particular file (not shown). If the user chooses an audio file, for example, device **20** may send that selected audio file when a call or page is placed (or a period of time before the call or page is

placed). This audio file may temporarily replace the "ring sequence" of the device receiving the incoming call so that the person receiving the incoming call will be alerted by hearing the audio file sent by the caller. The person receiving the call may be able to discern the identity of the caller or other information from the audio file. After the call is complete, the ring sequence of the receiving device may be returned to its former configuration (either by computer 60 or by the receiving device).

In another embodiment, a user may program certain audio or video files into device 20 that are activated when a certain person calls. For example, a user may program device 20 so that certain signature files are played in response to receiving a characteristic indicative of the caller, such as the caller's telephone number. In this way, a user will be able to identify the caller by the sound and/or display generated by device 20. Users may also program signatures in device 20 to be played at predetermined times. For example, a user (or caller) may program "Happy Birthday" or "Jingle Bells" into device 20 to play on a certain day, or may program device 20 to play a certain signature file at specified time (e.g., as an alarm).

In yet another embodiment, a user, when placing a call, may invoke a menu on device 20, which displays a list of signature files available for the person being called. This list may be defined by the person receiving the call. For example, the person receiving the call may create a signature file list by selecting certain audio and/or video files and placing them in a database of a remote computer such as computer 90 by using, for example, a personal computer connected to the Internet. In some embodiments, signature files may also be stored in a device 20 of the person receiving the call. In this implementation, a list of signature file names may be stored in

computer 90 so that a caller may browse the names of signature files stored in the device of the person receiving the call. Signature files may also be stored in a combination of both computer 90 and device 20.

5 In some embodiments, the signature information may not necessarily be user-defined. For example, a list of pre-selected signature files may stored on computer 90 or a remote computer from which a user of device 20 may choose. Such a list may be created by a wireless service provider, an Internet provider, an Internet site, or a manufacturer of the wireless telephone.

10 With these implementations, the caller may simply select a signature file from the displayed list. The selected file is then sent along with the call by computer 90 (if the selected signature file is stored in computer 90) or associated with the incoming call at device 20 (if the selected signature file is stored in device 20). In some embodiments, the caller may be able to
15 preview signatures before sending them. For example, computer 90 may send the selected signature file to the caller for his or her review.

In systems that have a video capability, a video file containing a video clip or frame may be sent instead of or in addition to the audio sample. This may be accomplished by selecting a
20 video option from a signature menu and choosing a video file. In this case, the person receiving the call is alerted by seeing or hearing the video clip and/or associated audio. It will be appreciated that a video clip may have its own audio portion associated with it so that the video clip (or frame) by itself would be sufficient to alert the person receiving the incoming call.

The above-described signature feature may be implemented in many ways. In some embodiments, for example, the audio or video signatures may be stored in (the caller's) device 20 and sent along with the outgoing call or page via link 33 and computer 90. In other embodiments, however, the signature information may be stored in computer 90 and associated with the outgoing call when it is processed by computer 90. This type of embodiment may be implemented when it is desired to conserve memory space within device 20. In still other embodiments, signature information may be stored in both device 20 and computer 90. In any case, computer 90 may determine the format requirements of the device receiving the incoming call or page and convert the accompanying signature information into a suitable format.

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Another implementation of a system in accordance with this invention may use an architecture 300, which is shown in FIG. 5. Using this arrangement, programmer 30 (or similar circuitry) may be embedded within programmable device 20. User-defined information may be provided to device 20 from source 50 via link 32. Such information may be routed to programmer 30, which may perform some or all of the above-described functions.

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If source 50 is an acoustic source, however, link 32 may not be needed. For example, if a user desires to program an acoustic sound into device 20, the user may place a transducer 25, (e.g., a speaker/ microphone existing within or external to device 20) near the acoustic signal source, place device 20 into an "acquisition mode," and record an audio sample. In this case, transducer 25 converts the acoustic signal into an electrical signal, which is provided to programmer 30 for processing and possibly storage within device 20. A visual, audio, or tactile output may be provided by device 20 to indicate a sample has been successfully loaded. A user

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may employ transducer 25 to acquire and record, for example, a verbal message or sound effect (e.g., laughter, crying, sneezing, etc.) for use as a signature file.

Other embodiments of the present invention may use the embedded architecture of system 400 as shown in FIG. 6. Using this arrangement, user-defined information may be requested by device 20 via link 32 and computer 60. With this approach, a user may select information from Internet 80 or a remote computer and perform any necessary format conversion within device 20.

In addition to selecting user-defined information with programmer 30, a user may customize that information by performing various editing procedures. For example, a user may find an audio track or video clip that suits his or her taste. It may be desired, however, to utilize only a portion of that track or clip. In this case, a user may edit or "sample" a portion of the information to obtain the desired segment. For example, a user may wish to sample a few bars of a popular song and send it along as signature information when making a wireless telephone call. Such editing may be accomplished, for example, by using an application program with programmer 30 or by using known software with computer 60. Furthermore, once the user has edited a particular piece of information, he or she may be given the option to review the piece to ensure it is acceptable. When a user is satisfied with an edited segment, he or she may save it and be given an opportunity to "name" that segment, so that it may be readily identified later by a user of device 20.

It will be appreciated that various other types of editing procedures are also possible. For example, a user may combine and/or further edit the content of segments of information. This may be accomplished using "cut and paste" routines in an application program. Other types of revisions may include modifying the color or content of a portion of video clip or frame, as well as editing the audio track that accompanies a video clip or frame. It may also include revising or combining audio segments or creating customized audio segments to accompany video clips or frames.

In some instances, a user may wish to download large portions of copyrighted audio or video. To prevent improper usage of such material, programmer 30 may include copyright protection software such as software that conforms with the Secure Digital Music Initiative (SDMI). Generally speaking, this may allow an owner of such material to "check out" a finite number of copies so that unauthorized distribution is prevented.

A schematic diagram of a portion of a wireless telephone 500 that can receive and play user-defined audio and/or video is shown in FIG. 7. As illustrated in FIG. 7, telephone 500 may include antenna 510, receiver/ transmitter (R/T) circuit 520, processor 530, communications interface 532, speaker/transducer 540, alerting circuit 550, and optionally, programmer 30 (or similar circuitry).

A user may program information into telephone 500 in several ways. For example, a user may connect telephone 500 to an external programmer 30 (not shown in FIG. 7) via link 32 to program user-defined audio or video in telephone 500 as described above. Processor 530 may

route this information to alerting circuit 550 for storage and subsequent use. Afterwards, the user may configure telephone 500 to play a certain user-defined audio file stored in alerting circuit 550 when receiving an incoming call. Thus, when a call is received, processor 530 may instruct alerting circuit 550 to play the selected file through speaker 540. If a video file is chosen, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display screen on the telephone (not shown). Alerting circuit 550 may include programmable memory circuitry for storing user-defined information and driver circuitry (not shown) for driving speaker 540 and/or a display screen on telephone 500. Telephone 500 may also receive user-defined information from communications network 95 via link 33 and antenna 510. With this implementation, user defined information, such as a signature file, may be received by antenna 510 and demodulated with R/T circuit 520. Processor 530 may then route the demodulated signals to an appropriate location. In the case of a signature file, for example, processor 530 may check the format of the incoming file to ensure it is compatible with the format required by alerting circuit 550. If the format is compatible, the incoming file may be routed to alerting 550 for storage and subsequent use or to speaker 540 for immediate playing. If the format is not compatible, the incoming file may be routed to programmer 30 for conversion. After conversion is complete, processor 530 may instruct programmer 30 to route the converted file to speaker 540 or alerting circuit 550. If a video file was sent as a signature file, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display in telephone 500 (not shown). In some embodiments, speaker 540 may be an enhanced performance speaker (as compared to those currently installed in telephones) with a capacity for generating a full range of audio sounds. Moreover, it will be understood that circuitry similar to

that shown in **FIG. 7** may be installed for use in other communication devices such as PDA's, pagers, notebook computers, *etc.*

Some of the steps involved in programming user-defined information into programmable device **20** as described herein are illustrated in the flow chart of **FIGS. 8-9**. It will be understood that although programmer **30** is used in the following description, computer/programmer **90** may also perform some or all of these (or similar) steps.

At step **100** in **FIG. 8**, programmer **30** allows the user to browse information for potential programming into device **20**. As mentioned above, this may include browsing audio/video information on the Internet, or on a hard, floppy, or optical disc drive of a computer. At step **102**, the user may choose certain files for programming into device **20**. Next, at step **104**, programmer **30** may determine the format requirements of device **20** and compare the format of the selected files to that specified by device **20**. This may be accomplished, for example, by electronically polling device **20**. At step **105**, if the formats are compatible, programmer **30** may go directly to step **108**. If the formats are not compatible, at step **106**, programmer **30** may convert the selected files to a format compatible with device **20**. In some embodiments, the user may be prompted to confirm that the conversion should be performed. In addition, programmer **30** may also prompt the user to supply a name for the converted file. Moreover, if the selected file cannot be converted, programmer **30** may so inform the user.

Next, programmer **30** provides the user with an option of editing the contents of the resulting files at step **108**. If desired, the user may first review the converted file to determine if

editing is warranted. At step 109, if the user chooses not to edit the file, programmer 30 may go directly to step 112 (shown in FIG. 9). If the user decides to edit the file, he or she may do so at step 110. When finished editing, the user may be given the option of reviewing the file at step 111 by returning to step 108 to determine whether the file is acceptable or requires further revision. Programmer 30 may alternate between steps 108-110 until the user is satisfied with the resulting file. When editing is complete, programmer 30 provides the user with the option of programming the file into device 20 at step 112. At this point, (step 113) the user may exit the program at step 114 or return to step 100 to browse more information.

10 It will be understood that these steps are merely illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, it may be desired to edit a file already stored in device 20. In this case, a user may bypass steps 100-106 and go directly to step 108. In some embodiments, selected files may be revised before converting them to format compatible with device 20. This may be desirable when the file's original format facilitates the editing process. In addition, programmer 30 may determine the format requirements of device 20 at any time before the conversion occurs. A user may also name or
15 revise the name of a selected file at any time.

Some of the steps involved in sending signature files to programmable device 20 as
20 described herein are illustrated in the flow chart of FIGS. 10-12.

At step 150 in FIG. 10, device 20 allows the user to browse signature files for potential transmission to device 20 of the person receiving the call (hereinafter the "receiver"). At step

150, the user may be provided with option of creating a new signature file if a suitable signature file not found on the list. At step 154 the user may select a signature file. Once a signature file is selected, computer 90, at step 156, may determine the location of the selected signature file. Such locations may include, but are not limited to, the caller's device 20, the receiver's device 20,
5 or computer 90.

If computer 90 determines that the signature file is located in the user's device 20 (*i.e.*, the caller's device 20) computer 90 may retrieve that file from the user's device 20 at step 158. Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of
10 the retrieved file to determine if they are compatible at step 160. If the formats are compatible, computer 90 may go directly to step 164. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 162. At step 164, the signature file may be sent along with, or somewhat before, the outgoing call. At step 166, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 167, the
15 receiver's ring sequence may be returned to its original setting and the program may exit.

If, however, the signature file is located in computer 90 (step 156), computer 90 may retrieve that file at step 168 (FIG. 11). Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to determine if they are
20 compatible at step 170. If the formats are compatible, computer 90 may go directly to step 174. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 172. At step 174, the signature file may be sent along with, or somewhat before, the outgoing call. At step 176, the receiver's device 20 may replace its ring sequence with the

signature file and play the signature file. At step 177 the receiver's ring sequence may return to its original setting and the program may exit.

On the other hand, if computer 90 determines at step 156 that the signature file is located
5 in the receiver's device 20, computer 90 may transmit an indicia indicative of the selected file to the receiver's device 20 along with the outgoing call at step 178 (FIG. 12). Next, the receiver's device 20 may associate a signature file that corresponds to the indicia, replace its ring sequence with that signature file, and play that signature file at step 180. At step 182, the receiver's ring sequence may be returned to its original setting and the program may exit. It is assumed for the
10 purposes of this illustration that signatures files stored in the receiver's device 20 are already in a suitable format. However, if this is not the case, a conversion step may be added between step 178 and step 180 (not shown).

It will be understood that these steps are merely illustrative, and are not meant to be
15 comprehensive or necessarily performed in the order shown. For example, computer 90 may determine the format requirements of device 20 at any time before the conversion occurs.

Thus, it is seen that a device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as
20 audio, video, or Internet access information into his or programmable device. This allows a user to, among other things, customize his or her device to suit the user's particular taste. It will be understood that the foregoing is only illustrative of the principles of the invention, and that various modifications can be made by those skilled in the art without departing from the scope

and spirit of the invention. For example, it is not necessary that programmable memory within device be a fixed programmable memory. That is, a removable memory module may be programmed externally from a given programmable device and subsequently installed in that device. Furthermore, the many aspects of the invention are suitable for use with hard-wired, 5 cordless, or wireless communications devices. For example, user-defined audio and video and signature files may be used with hard-wired or cordless telephone systems. Accordingly, such embodiments will be recognized as within the scope of the present invention.

Persons skilled in the art will appreciate that the present invention can be practiced by 10 other than the described embodiments, which are presented for purposes of illustration rather than of limitation, and the present invention is limited only by the claims which follow.

CLAIMS

What is claimed is:

1. A method for allowing a wireless communication device to obtain a user customized data
file located on a remote computer having a plurality of user customized data files, the method
5 comprising:
 - allowing the wireless communication device to contact the remote computer;
 - allowing the wireless communication device to select one or more of the user customized
data files;
 - determining a format of the one or more user customized data files selected with the
10 wireless communication device; and
 - downloading the selected one or more user customized data files to the wireless
communication device for subsequent use by a user.

2. The method of claim 1 further comprising determining at least one format compatible
15 with the wireless communication device.

3. The method of claim 2 further comprising comparing the at least one format compatible with the wireless communication device with the format of the one or more user customized data files selected by the wireless communication device to determine whether the one or more user customized data files selected with the wireless communication device are compatible with the
5 wireless communication device.

4. The method of claim 3 further comprising converting the one or more user customized data files selected by the wireless communication device to the at least one format compatible with the wireless communication device if the one or more user customized data files selected by
10 the wireless communication device are not compatible with the wireless communication device.

5. The method of claim 4 wherein converting the one or more user customized data files selected by the wireless communication device includes converting from HTML format to WML format.
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6. The method of claim 1 further comprising allowing the user to review the one or more user customized data files selected with the wireless communication device prior to downloading to the wireless communication device.

7. The method of claim 6 further comprising providing the user with an opportunity to modify the one or more user customized data files selected with the wireless communication device.

5 8. The method of claim 1, accomplished at least in part, using a Wireless Application Protocol (WAP) compliant system.

9. The method of claim 1, wherein the method is periodically performed by the wireless device based on preferences specified in software.

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10. The method of claim 1 wherein the one or more user customized data files include Internet access information.

11. The method of claim 1 wherein the one or more user customized data files include text
15 files.

12. The method of claim 1 wherein the one or more user customized data files include HTML files or WML files.

13. The method of claim 1 wherein the one or more user customized data files include word processing or spreadsheet files.

14. A method for allowing a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the method comprising:

allowing the wireless communication device to contact the remote computer;

allowing the wireless communication device to select one or more of the user customized data files;

10 determining a format of the one or more user customized data files selected with the wireless communication device; and

periodically downloading the selected one or more user customized data files to the wireless communication device for subsequent use by a user based on preferences specified in software.

15 15. The method of claim 4 wherein converting the one or more user customized data files selected by the wireless communication device includes converting the one or more user customized data files selected to a wireless device format suitable for use with the wireless communication device.

16. The method of claim 15 wherein converting the one or more user customized data files selected by the wireless communication device includes converting from HTML format to WML format.

5 17. A computer-readable medium having stored thereon a plurality of sequences of instructions including sequences of instructions which, when executed by one or more processors cause one or more electronic devices to allow a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the plurality of sequences of instructions further comprising instructions which:

10 allow the wireless communication device to contact the remote computer;

allow the wireless communication device to select one or more of the user customized data files;

determine a format of the one or more user customized data files selected with the wireless communication device; and

15 download the selected one or more user customized data files to the wireless communication device for subsequent use by a user.

18. The computer readable medium of claim 18 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to determine at least one format compatible with the wireless communication device.

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19. The computer readable medium of claim 18 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to compare the at least one format compatible with the wireless communication device with the format of the one or more user customized data files selected by the wireless communication device to determine whether the one or more user customized data files selected with the wireless communication device are compatible with the wireless communication device

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20. The computer readable medium of claim 19 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device to the at least one format compatible with the wireless communication device if the one or more user customized data files selected by the wireless communication device are not compatible with the wireless communication device.

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21. The computer readable medium of claim 20 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device from HTML format to WML format.

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22. The computer readable medium of claim 17 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to allow the user to review the one or more user customized data files selected with the wireless communication device prior to downloading to the wireless communication device.

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23. The computer readable medium of claim 22 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to provide the user with an opportunity to modify the one or more user customized data files selected with the wireless communication device.

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24. The computer readable medium of claim 17 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices including the wireless communication device to operate in compliance with a Wireless Application Protocol (WAP).

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25. The computer readable medium of claim 17 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices including the wireless communication device to periodically execute the instructions of claim 17 based on preferences specified in software.

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26. The computer readable medium of claim 17 wherein the one or more user customized data files include Internet access information.

27. The computer readable medium of claim 17 wherein the one or more user customized data files include text files.

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28. The computer readable medium of claim 17 wherein the one or more user customized data files include HTML files or WML files.

29. The computer readable medium of claim 17 wherein the one or more user customized data files include word processing or spreadsheet files.

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30. A computer-readable medium having stored thereon a plurality of sequences of instructions including sequences of instructions which, when executed by one or more processors cause one or more electronic devices to allow a wireless communication device to obtain a user customized data file located on a remote computer having a plurality of user customized data files, the plurality of sequences of instructions further comprising instructions which:

allow the wireless communication device to contact the remote computer;

allow the wireless communication device to select one or more of the user customized data files;

determine a format of the one or more user customized data files selected with the wireless communication device; and

periodically download the selected one or more user customized data files to the wireless communication device for subsequent use by a user based on preferences specified in software.

31. The computer readable medium of claim 30 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device to a wireless device format suitable for use with the wireless communication device.

32. The computer readable medium of claim 31 wherein the plurality of sequences of instructions further comprise instructions which, when executed by one or more processors cause one or more electronic devices to convert the one or more user customized data files selected by the wireless communication device from HTML format to WML format.

ABSTRACT

A device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as user-selected audio, video, or Internet access information into his or her programmable device. Such electronic
5 devices include wireless telephones, pagers, and personal digital assistants. The programmer allows a user to, among other things, customize the device to suit his or her particular taste.

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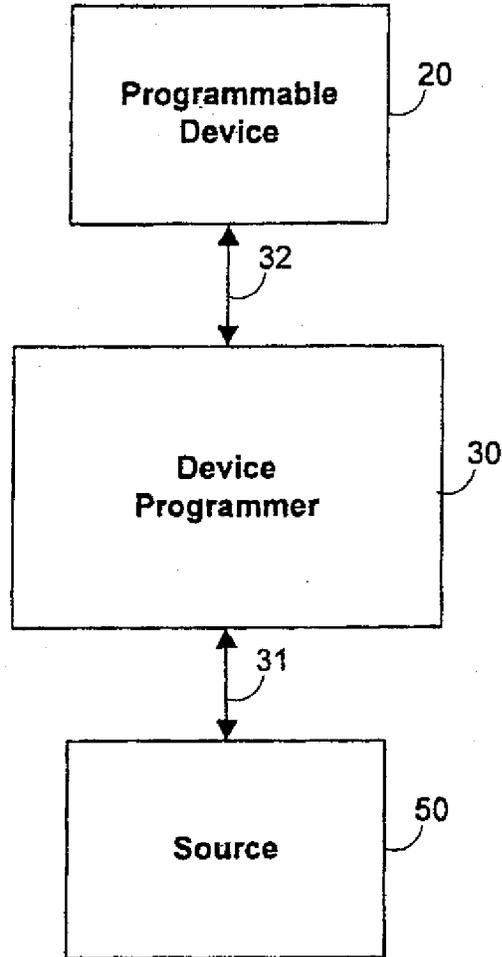


FIG. 1

30

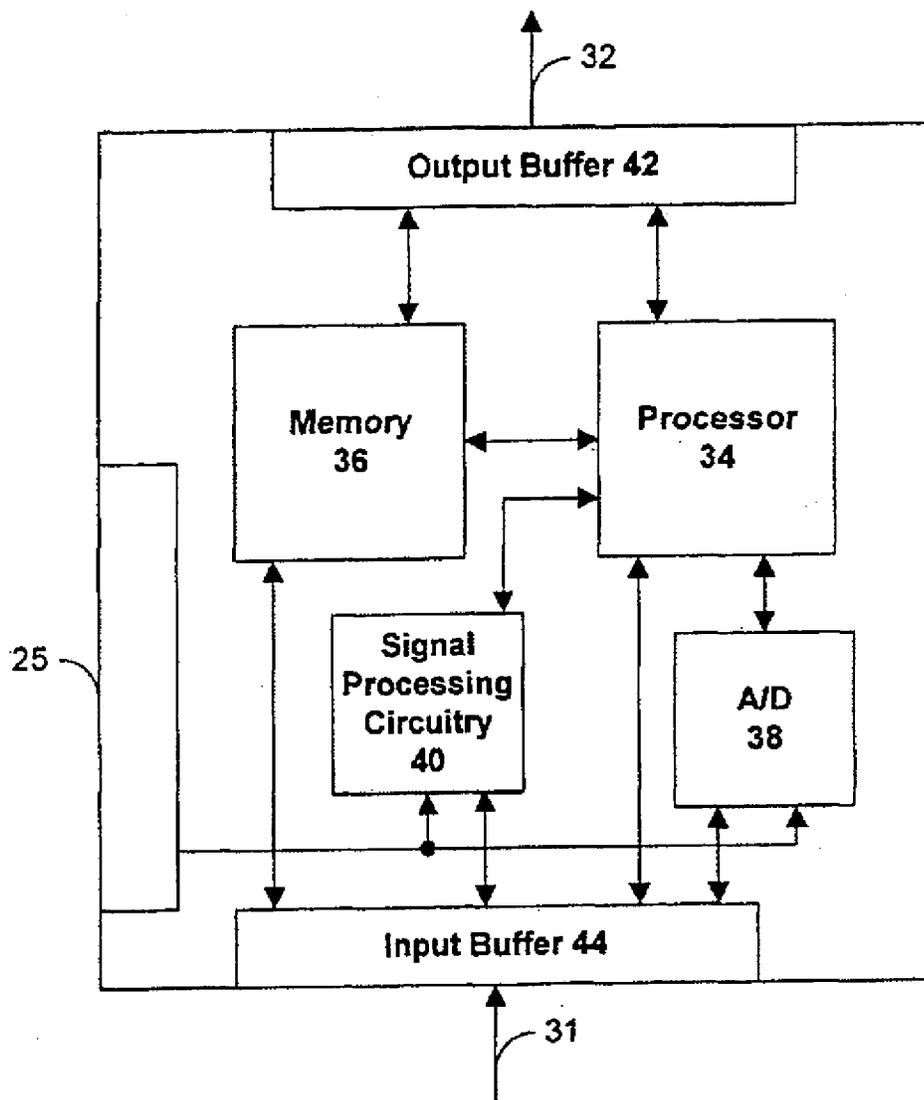


FIG. 2

100

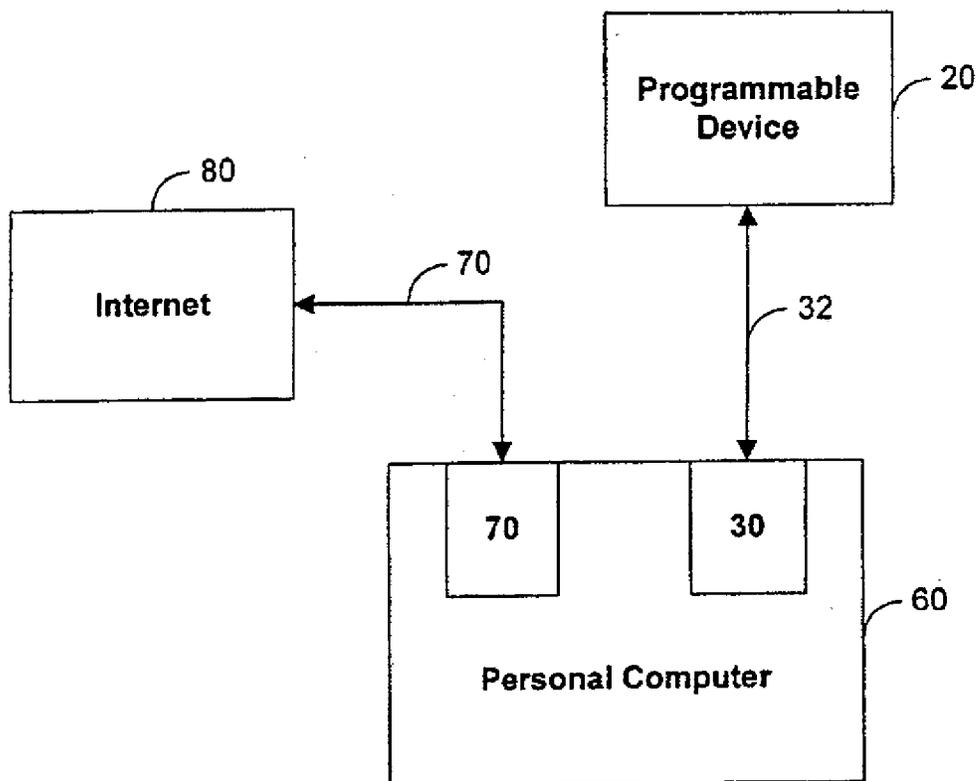


FIG. 3

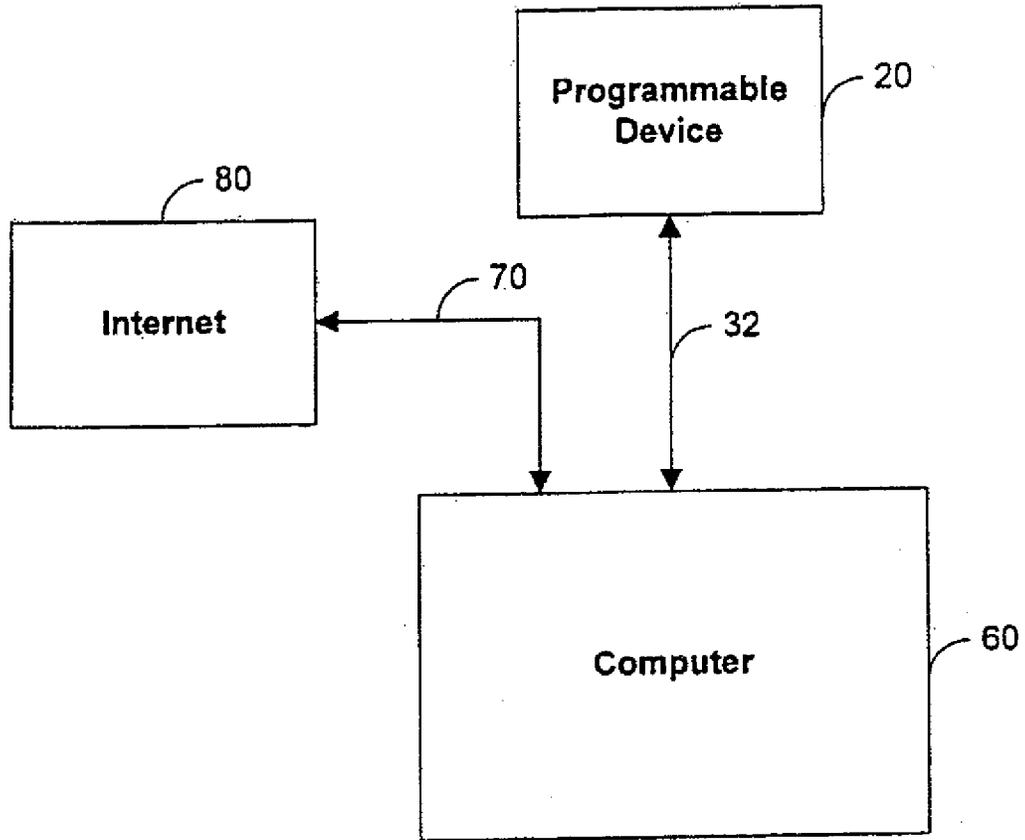


FIG. 4A

200

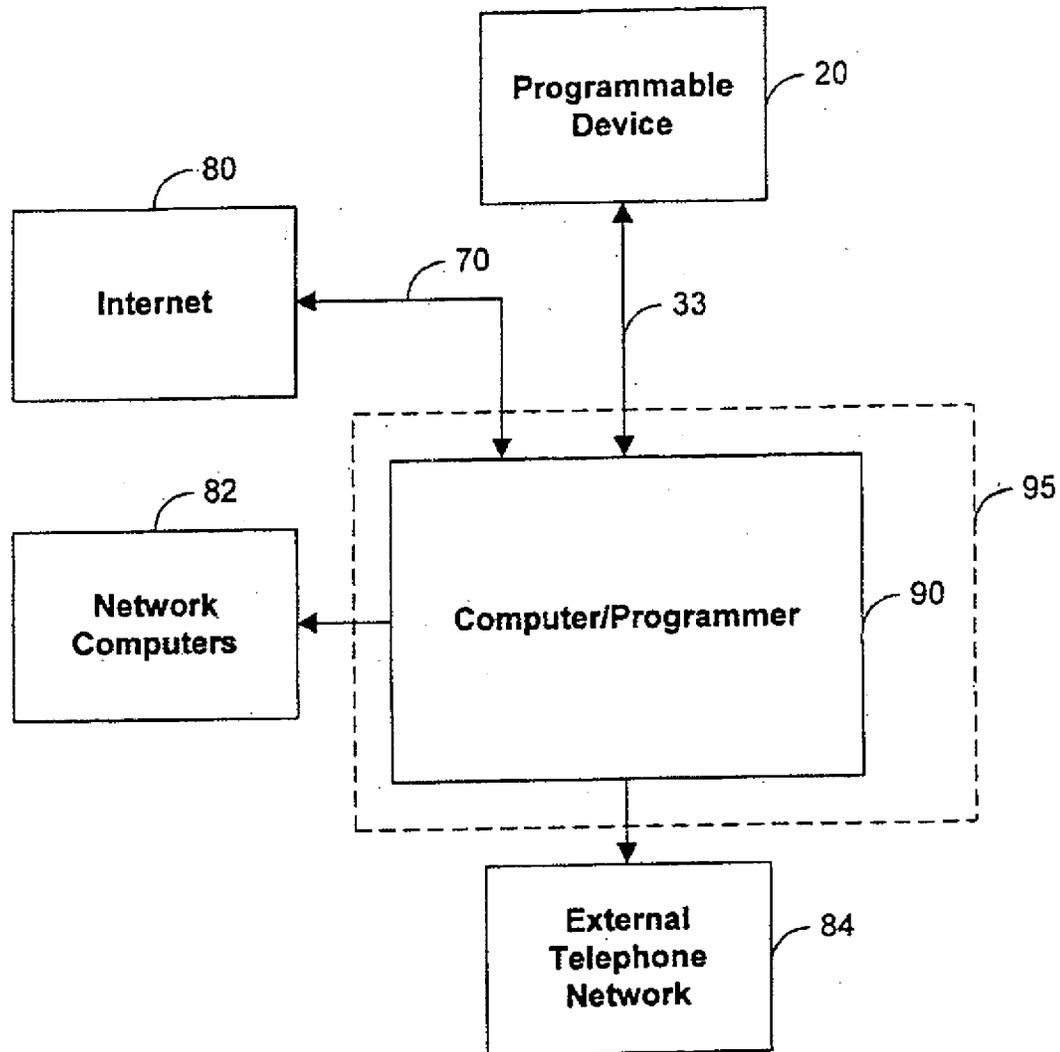


FIG. 4B

300

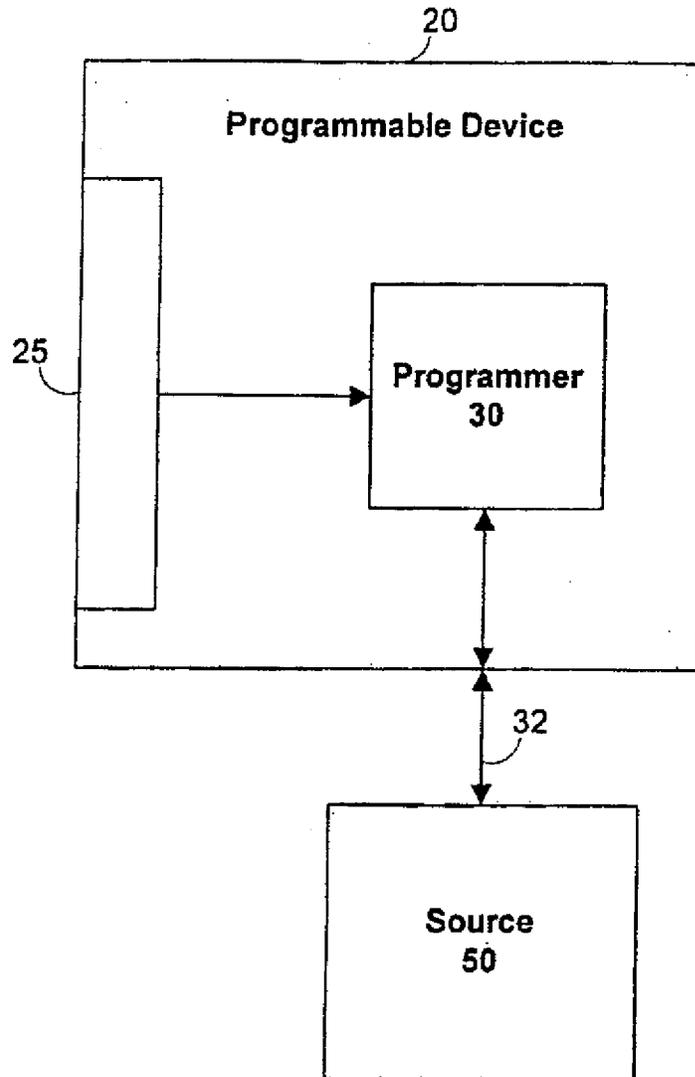


FIG. 5

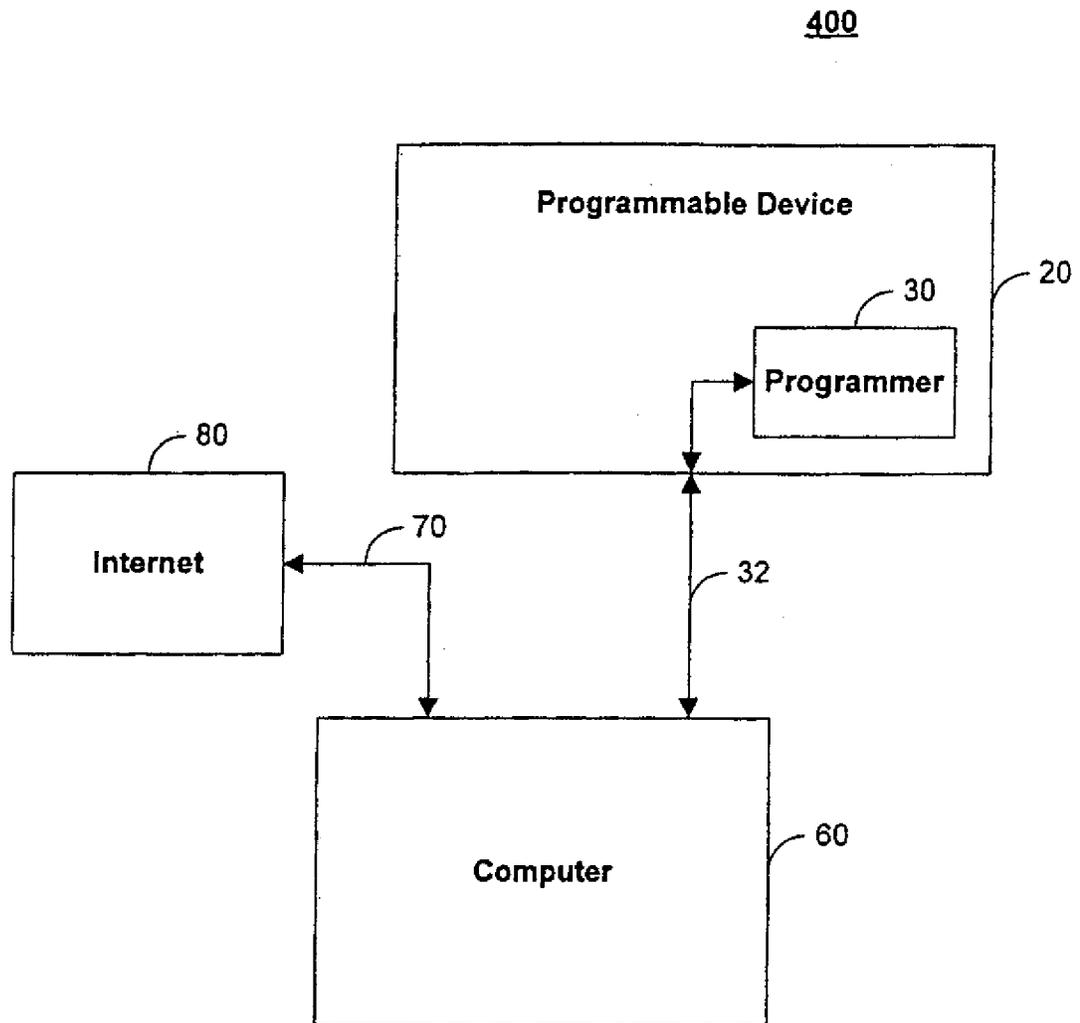


FIG. 6

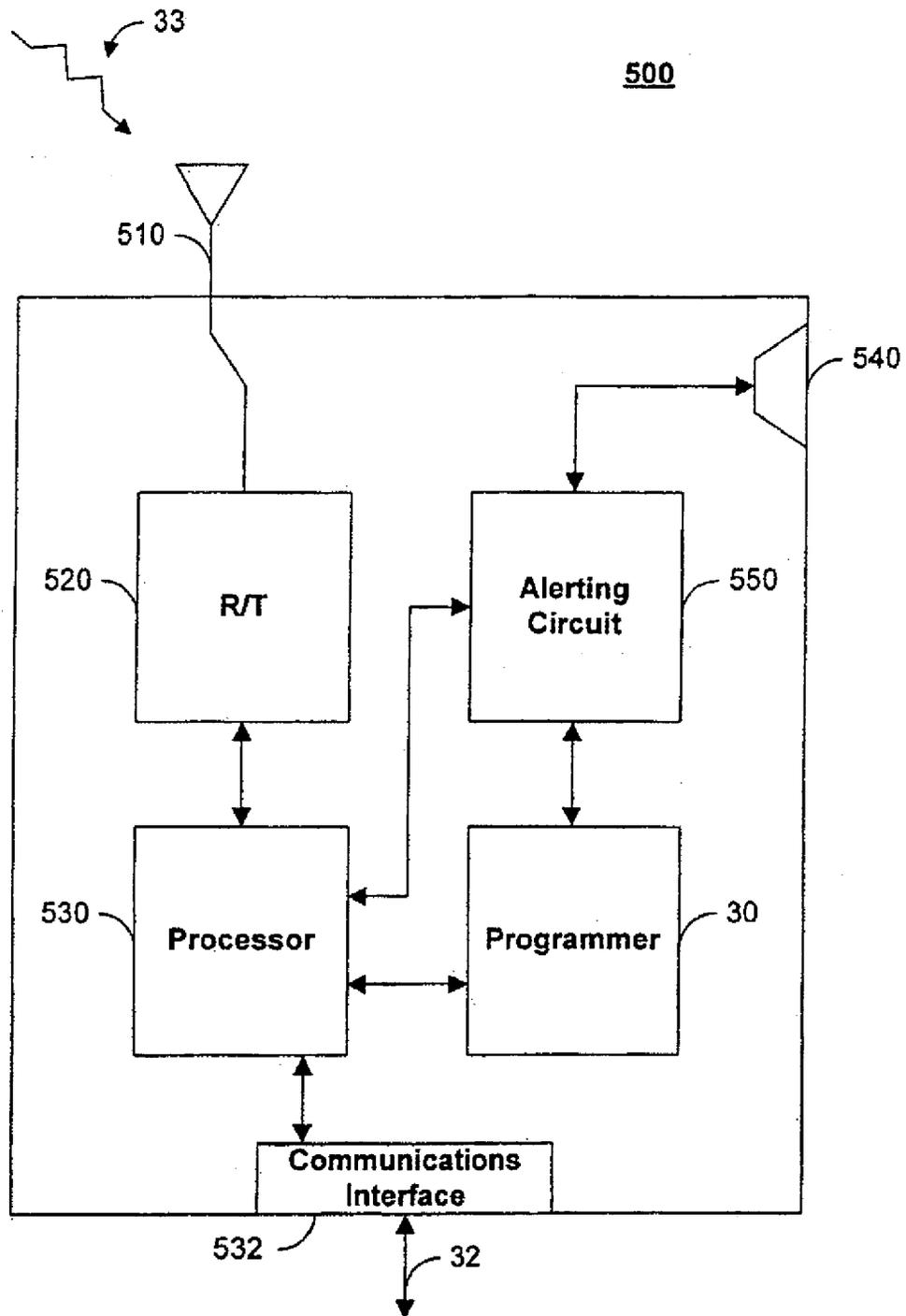


FIG. 7

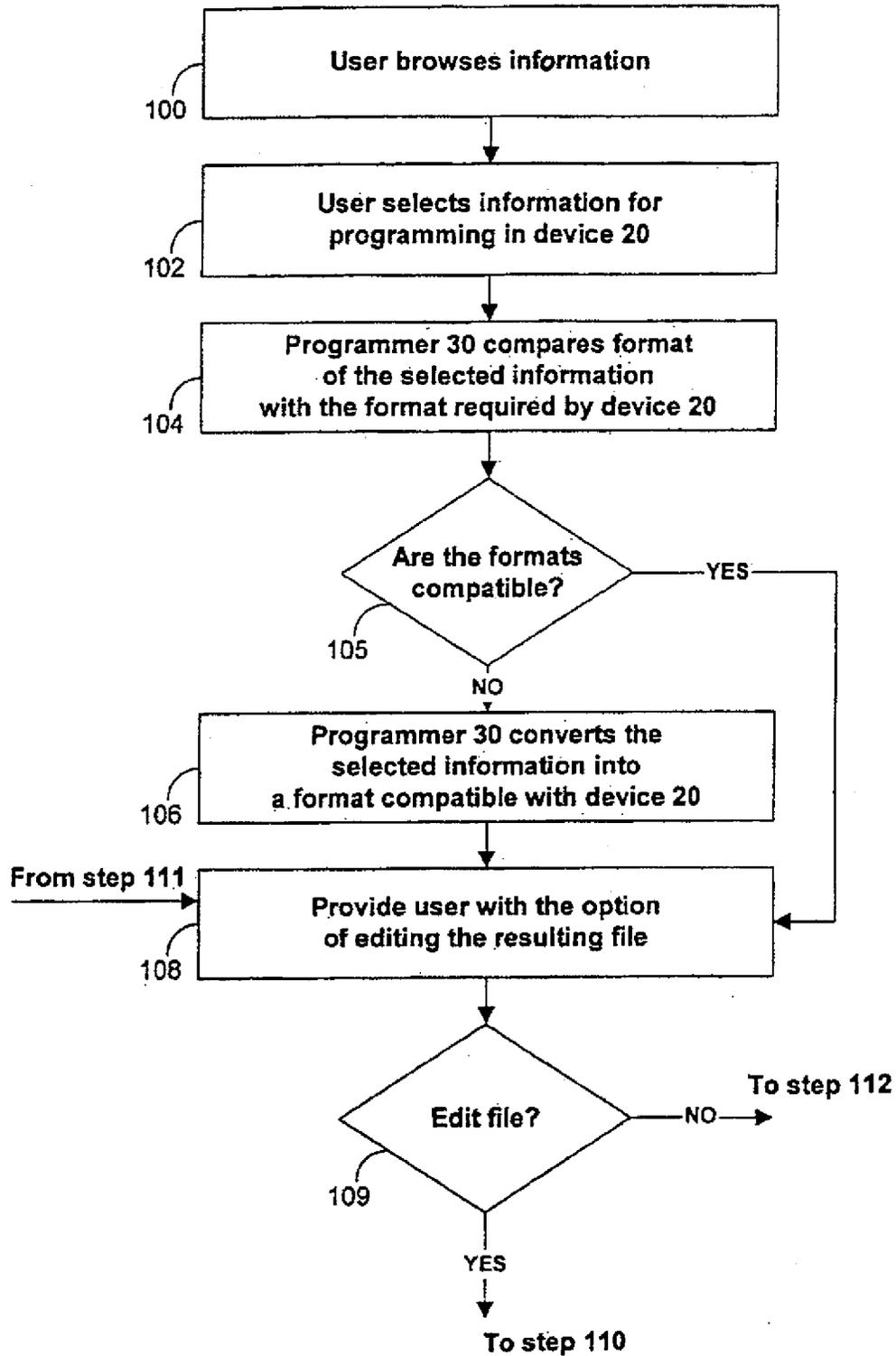


FIG. 8

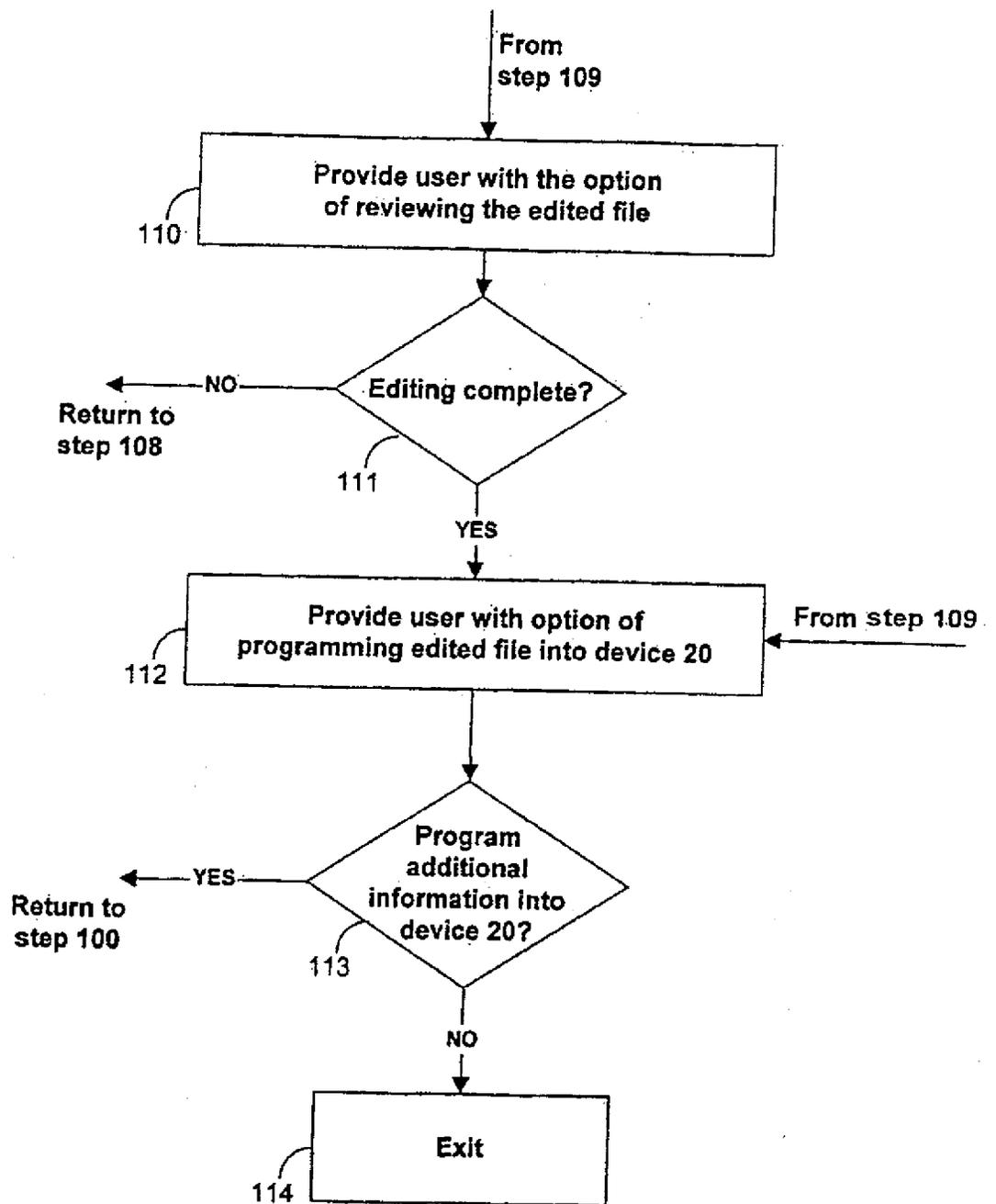


FIG. 9

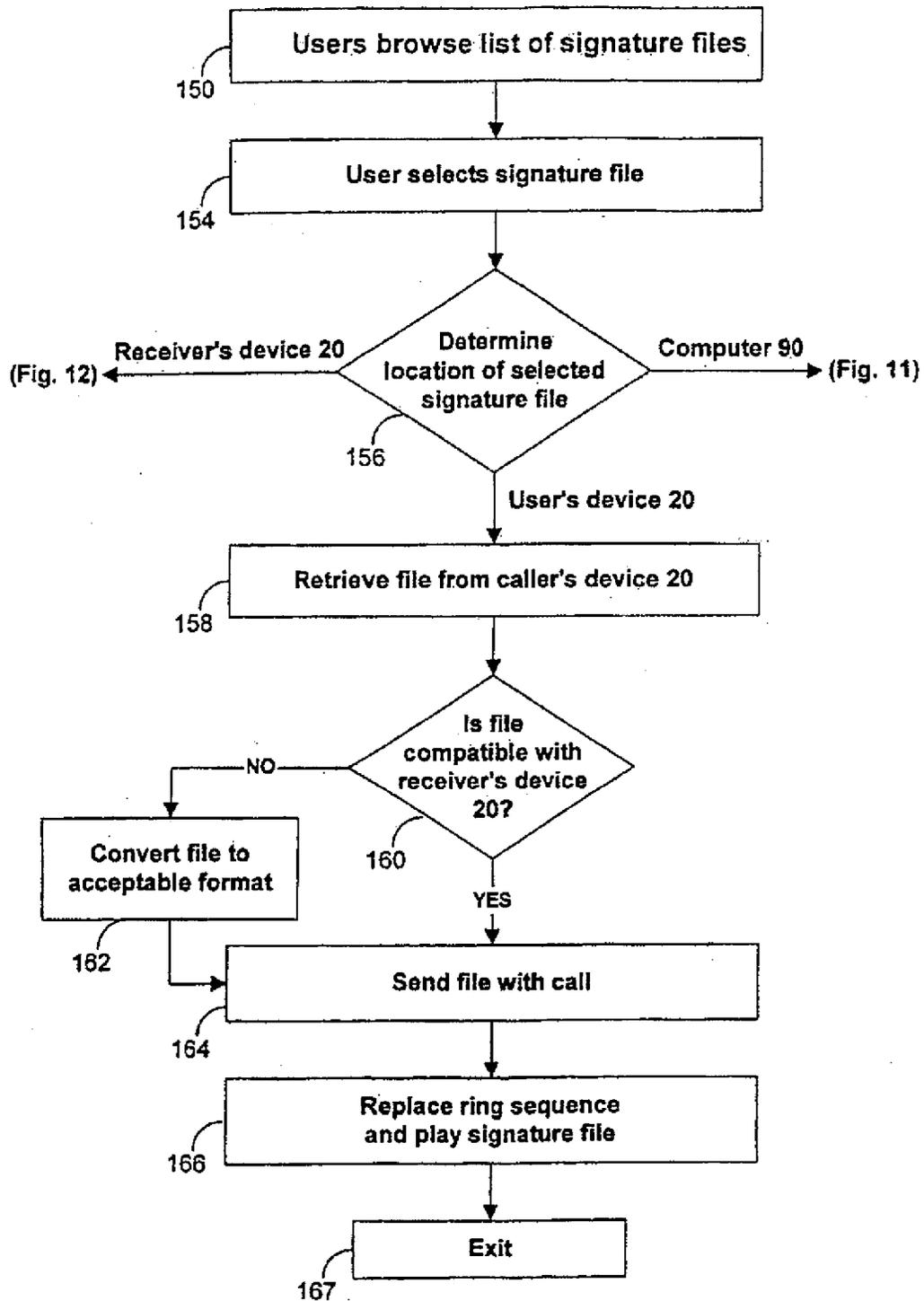


FIG. 10

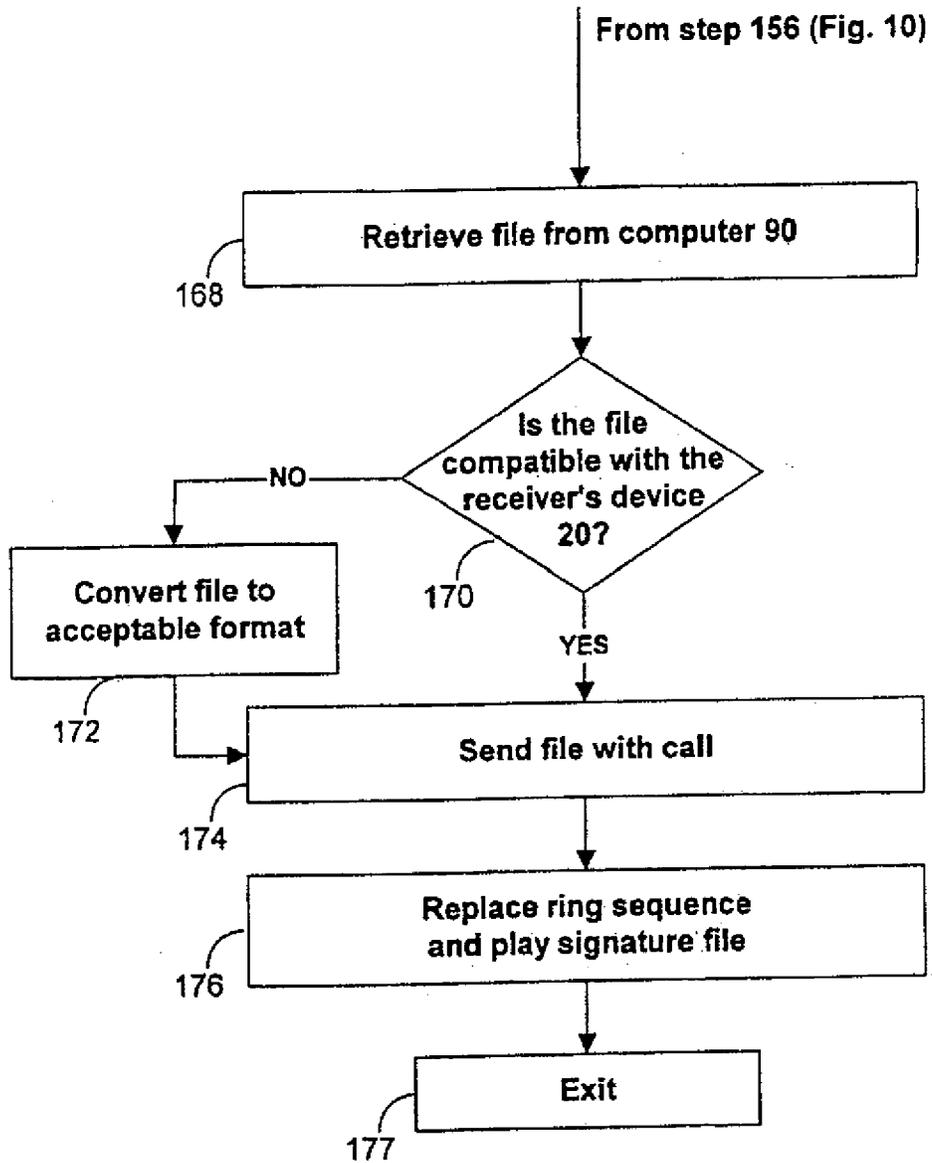


FIG. 11

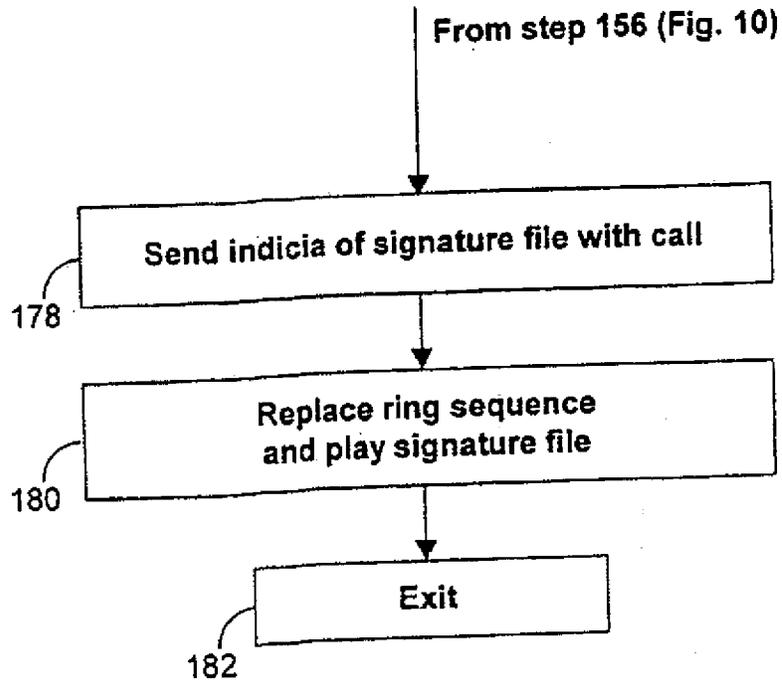


FIG. 12

Filing Date: 05/29/08

Approved for use through 7/31/2006. OMB 0651-0032

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 12/128,991
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APPLICATION AS FILED – PART I			SMALL ENTITY		OTHER THAN SMALL ENTITY	
	(Column 1)	(Column 2)				
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	75	N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	255	N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	105	N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	32	minus 20 =	X\$ 25	300	X\$50	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4	minus 3 =	X\$100	105	X\$210	
APPLICATION SIZE FEE (37 CFR 1.16(s))						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			185		370	
			TOTAL	840	TOTAL	0

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

APPLICATION AS AMENDED – PART II					SMALL ENTITY		OTHER THAN SMALL ENTITY	
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AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	
Total (37 CFR 1.16(i))	*	Minus **	=	X =		X =		
Independent (37 CFR 1.16(h))	*	Minus ***	=	X =		X =		
Application Size Fee (37 CFR 1.16(s))								
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A		N/A		
				TOTAL		TOTAL		
				ADD'T FEE		ADD'T FEE		

APPLICATION AS AMENDED – PART II					SMALL ENTITY		OTHER THAN SMALL ENTITY	
	(Column 1)	(Column 2)	(Column 3)					
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)	ADDITIONAL FEE (\$)	
Total (37 CFR 1.16(i))	*	Minus **	=	X =		X =		
Independent (37 CFR 1.16(h))	*	Minus ***	=	X =		X =		
Application Size Fee (37 CFR 1.16(s))								
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))				N/A		N/A		
				TOTAL		TOTAL		
				ADD'T FEE		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".
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