

**RIAA Exhibit E-101-DP**

**List of Patents Invented or Co-Invented by David Hughes**

<b>U.S. Patent Number</b>	<b>Title</b>
7,043,447	Method for Facilitating a Transaction for Purchasable Content Over an Electronic Network
6,794,567	Audio Quality Based Culling in a Peer-to-Peer Distribution Model
6,791,020	System and Method for Filling Content Gaps
6,748,537	System and Method for Controlling the Use and Duplication of Digital Content Distributed on Removable Media
6,670,537	Media Player for Distribution of Music Samples
6,555,738	Automatic Music Clipping for Super Distribution

**U.S. Patent No. 7,043,447**



US007043447B2

(12) **United States Patent**  
**Hughes et al.**

(10) **Patent No.:** **US 7,043,447 B2**  
(45) **Date of Patent:** **May 9, 2006**

(54) **METHOD FOR FACILITATING A TRANSACTION FOR PURCHASABLE CONTENT OVER AN ELECTRONIC NETWORK**

6,314,409 B1 11/2001 Schnect et al.  
6,345,256 B1 2/2002 Milsted et al.  
6,385,596 B1\* 5/2002 Wisser et al. .... 705/51  
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(75) Inventors: **David A. Hughes**, New York, NY (US);  
**Allen J. Smith**, Garrison, NY (US)

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(73) Assignees: **Sony Corporation**, Tokyo (JP); **Sony Electronics Inc.**, Park Ridge, NJ (US)

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 895 days.

<http://www.digitalriver.com>, retrived via <<http://web.archive.org/web/19990202101534/www.digitalriver.com>, Apr. 24, 1999.\*

(21) Appl. No.: **09/836,094**

(22) Filed: **Apr. 17, 2001**

(Continued)

(65) **Prior Publication Data**

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*Assistant Examiner*—Matthew S Gart  
(74) *Attorney, Agent, or Firm*—Miller Patent Services; Jerry A. Miller

**Related U.S. Application Data**

(60) Provisional application No. 60/198,202, filed on Apr. 19, 2000.

(57) **ABSTRACT**

(51) **Int. Cl.**  
**G06Q 30/00** (2006.01)

(52) **U.S. Cl.** ..... **705/26; 705/27**

(58) **Field of Classification Search** ..... 705/26,  
705/59, 27

See application file for complete search history.

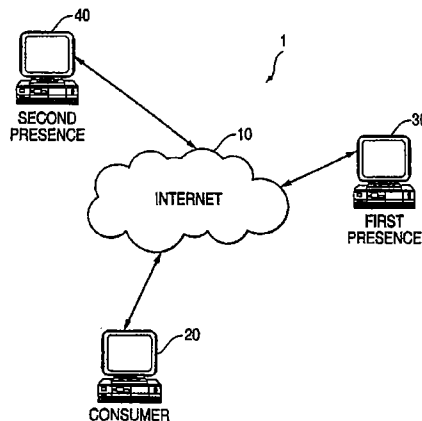
A transaction for purchasable content is facilitated over an electronic network, wherein the purchasable content includes downloadable digital data. A first presence is maintained on the electronic network to which a consumer may connect. A first page is transmitted from the first presence to the consumer over the electronic network, such that the first page includes information concerning the purchasable content. A command is received from the consumer over the electronic network indicating that the consumer wishes the transaction for the purchasable content. The consumer is automatically linked to a second presence on the electronic network in response to the command such that the consumer may interact with the second presence over the electronic network to complete the transaction for the purchasable content.

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**8 Claims, 18 Drawing Sheets**



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1999. Proquest [online] [Retrieved on Sep. 16, 2002].

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FIG. 1

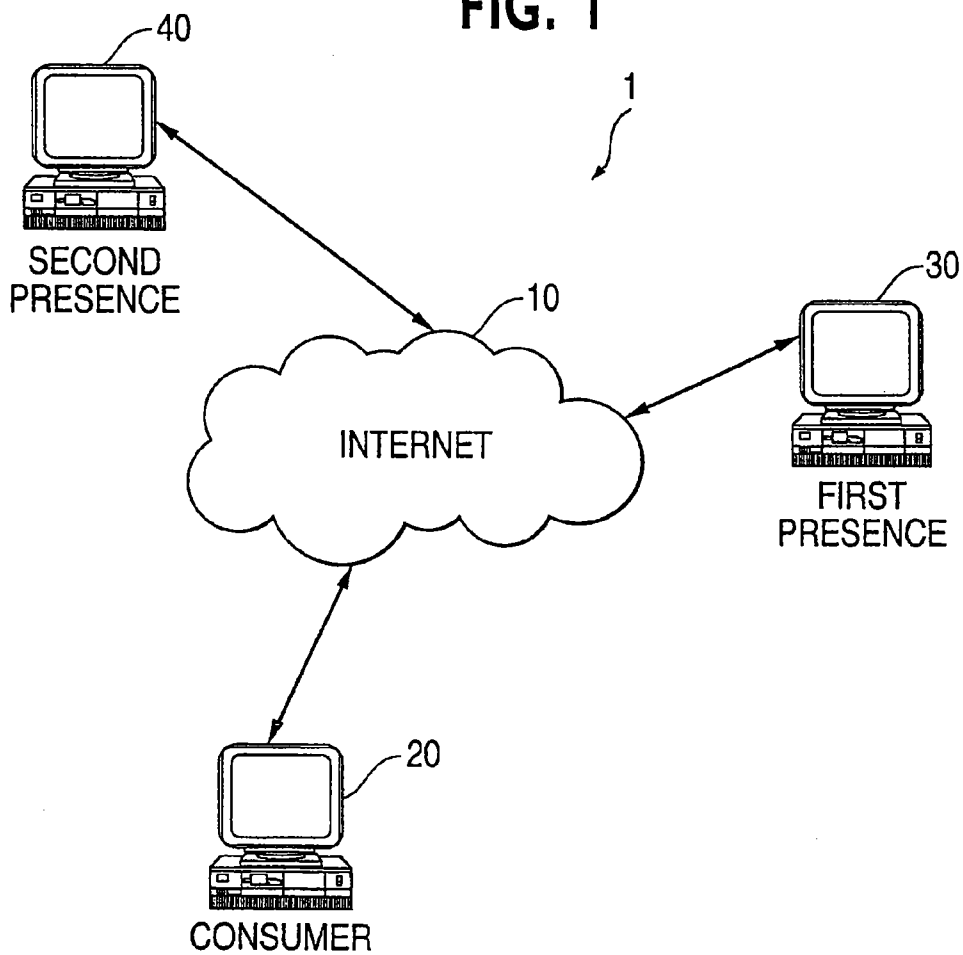


FIG. 2

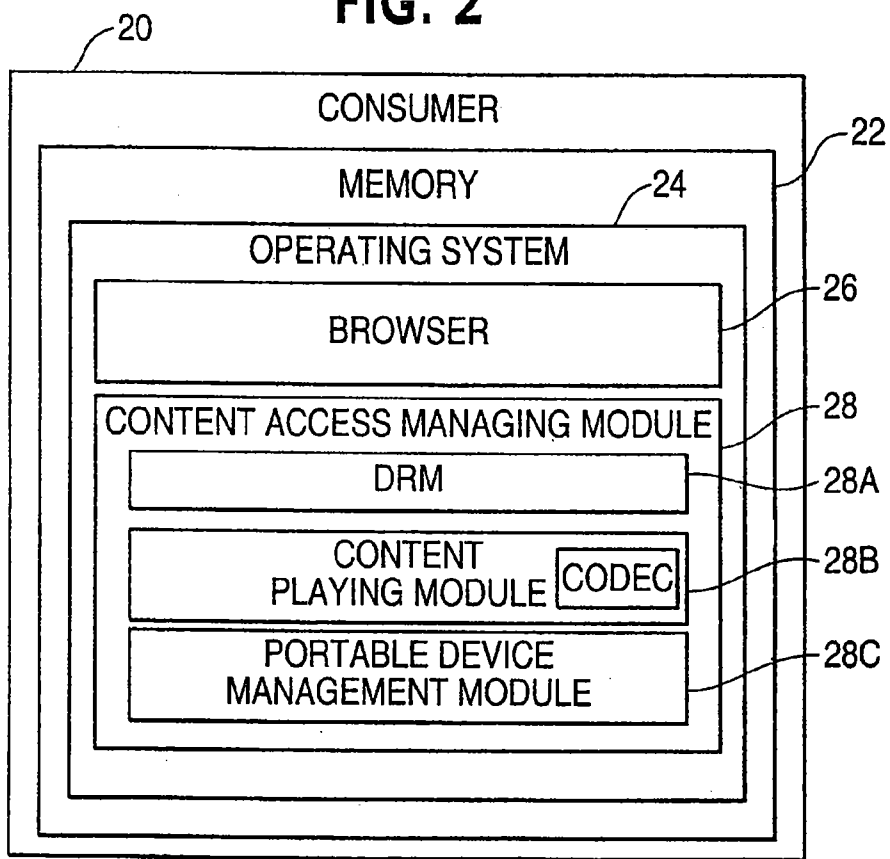


FIG. 3

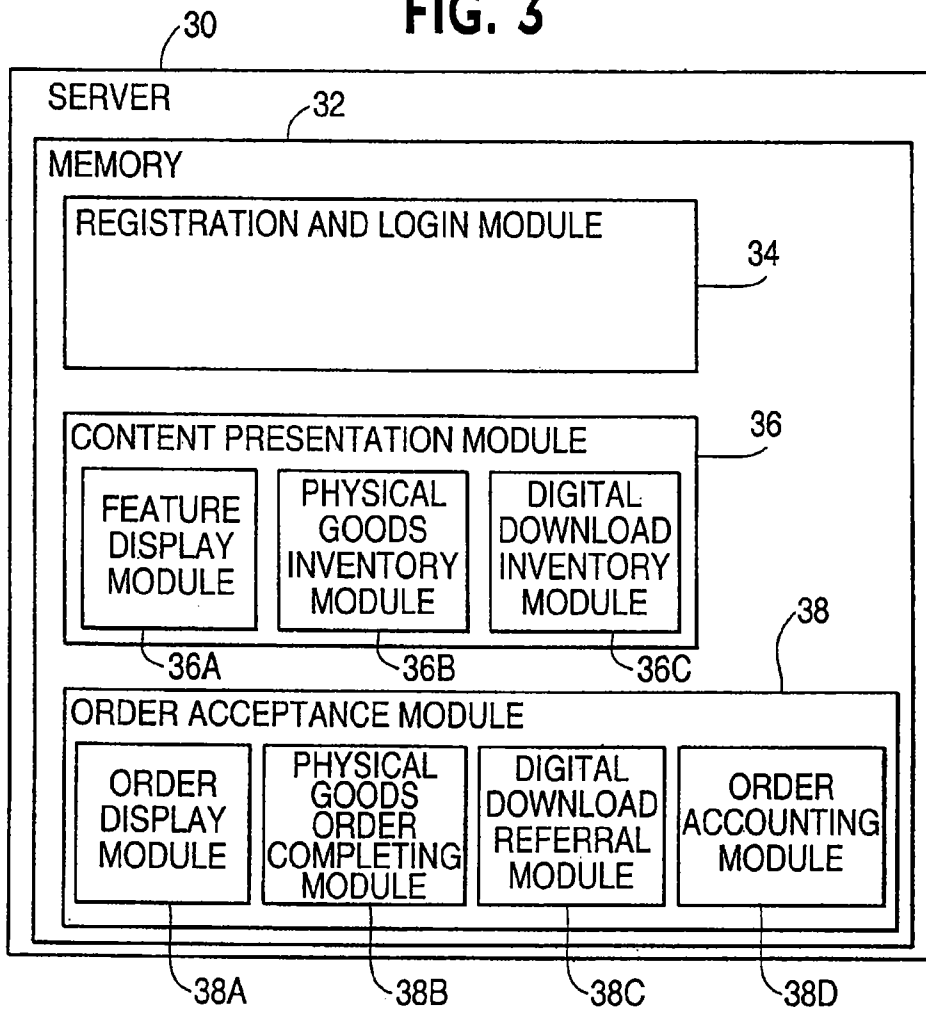
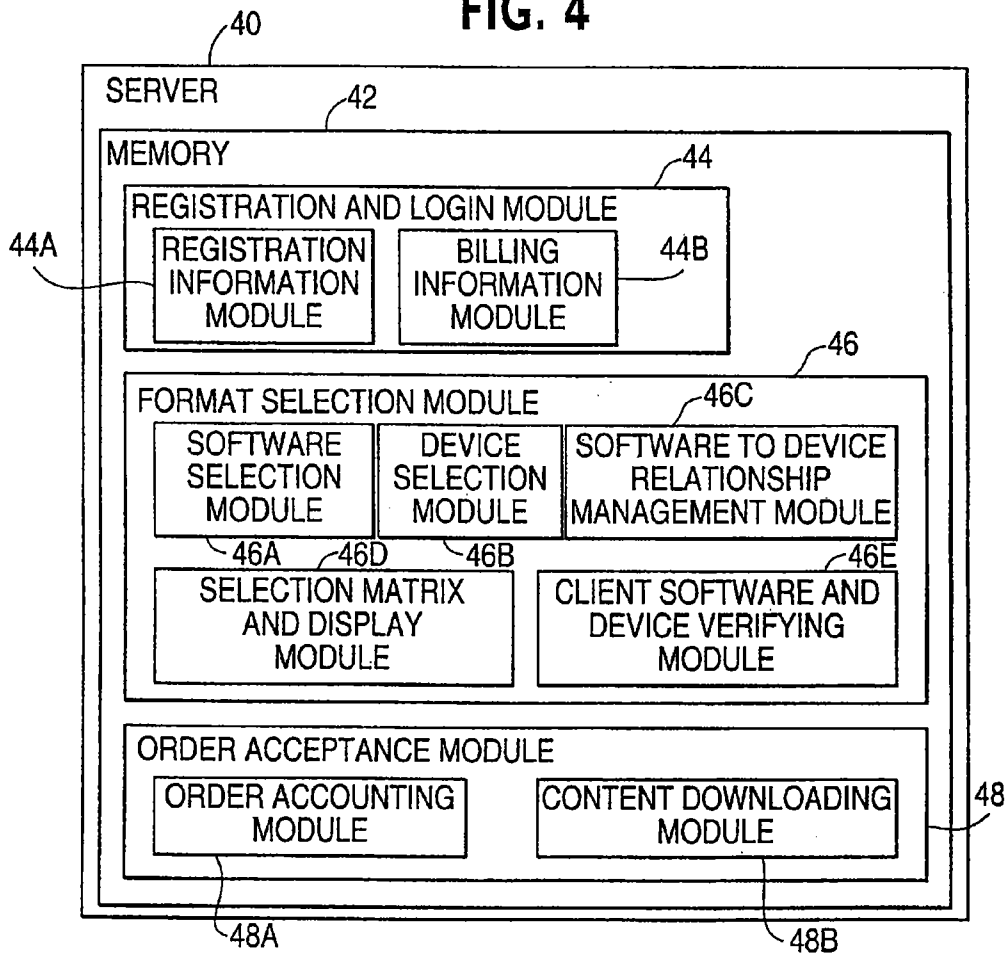


FIG. 4





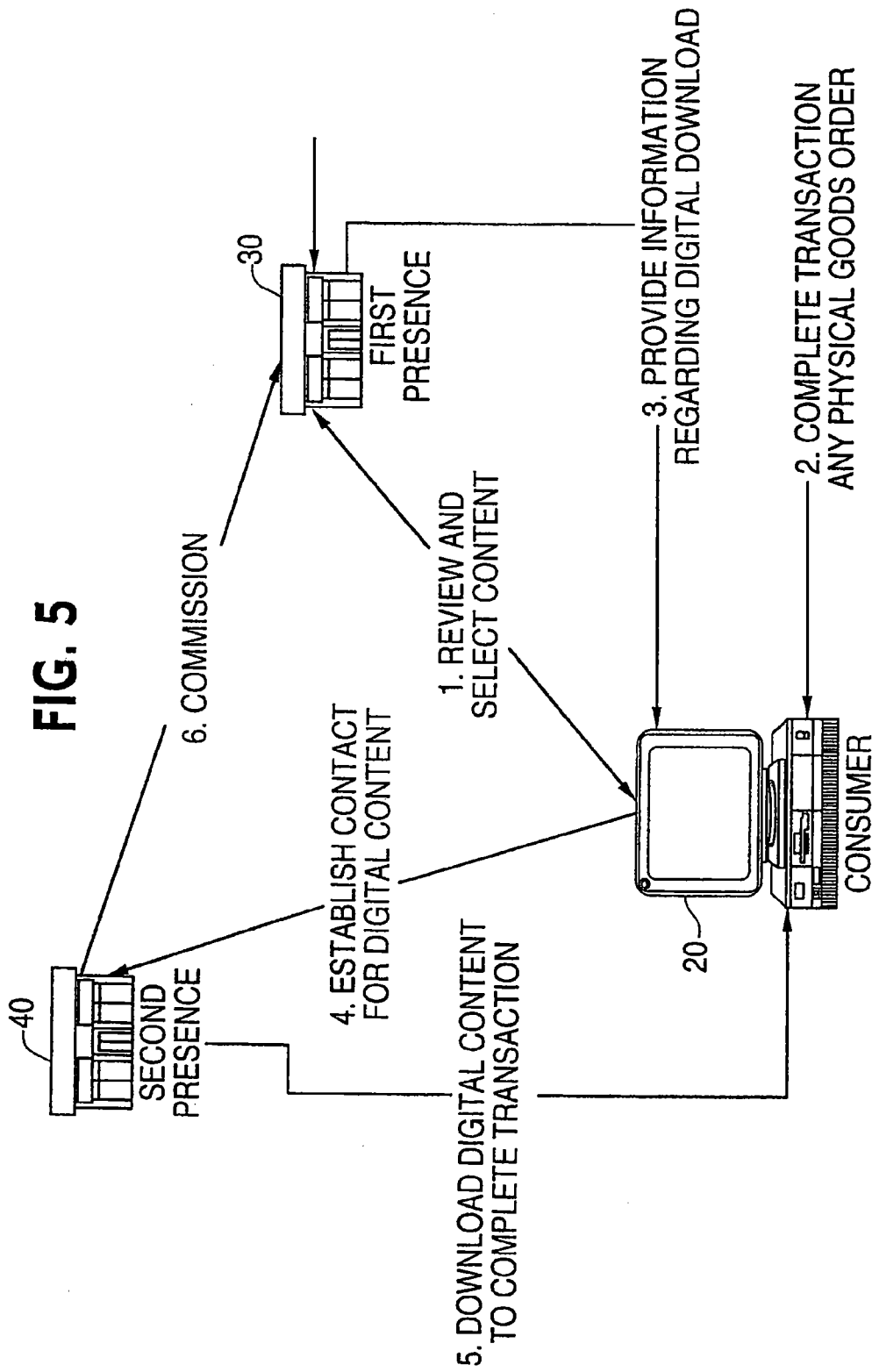


FIG. 6A

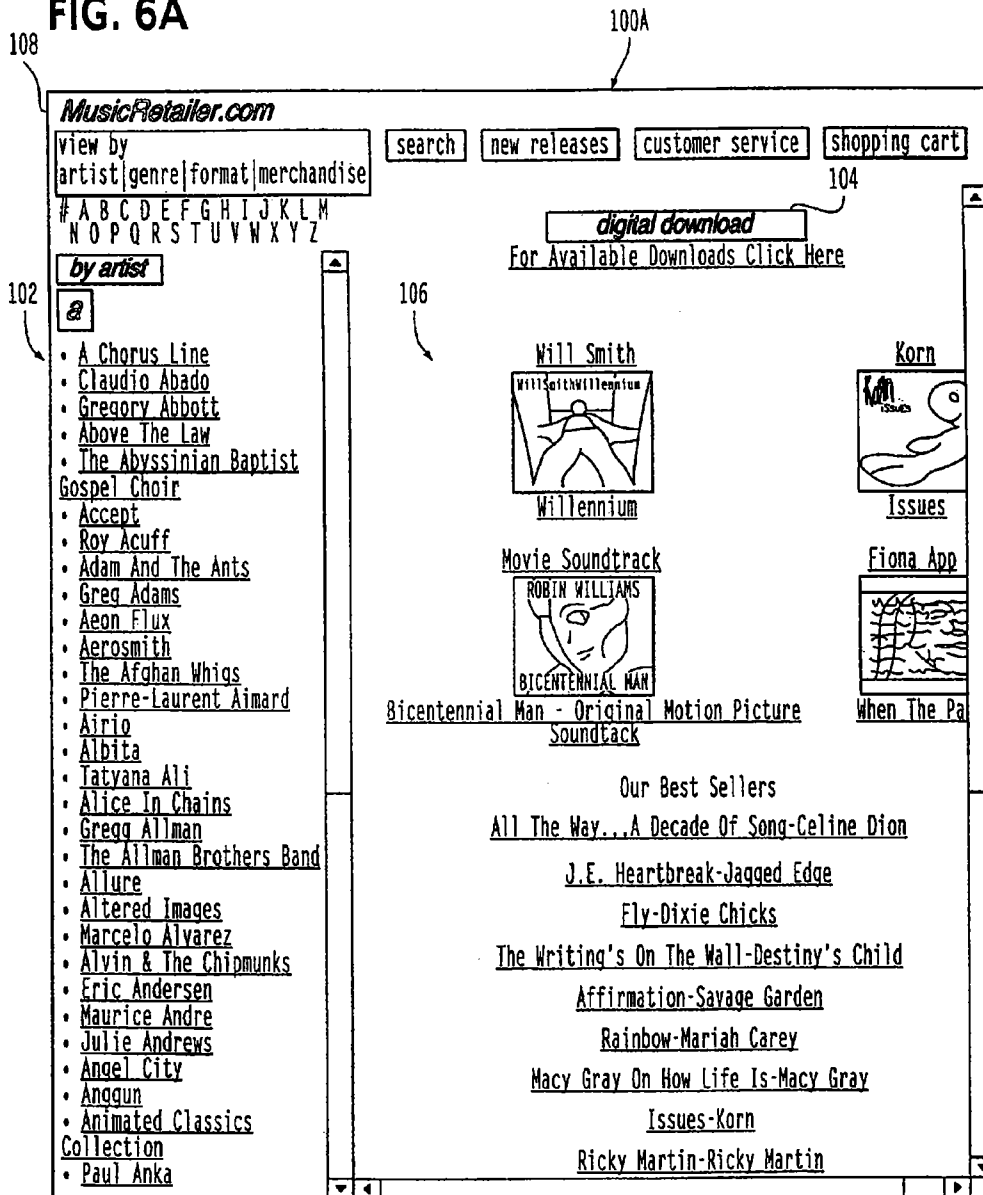


FIG. 6B

1008

**MusicRetailer.com**

view by  search  new releases  customer service  shopping cart

artist|genre|format|merchandise

Your cart has 1 item

# A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

**by artist**

**h**

- Andreas Haefliger
- Harimut Haenchen
- Nina Hagen
- Merle Haggard
- Hilary Hahn
- Taro Hakase
- Daryl Hall
- Jim Hall
- Herbie Hancock
- Hancock, Herbie & Corea.

Chick

- Frederic Hand
- Hanoi Rocks
- Happily Ever After
- Tim Hardin
- Mary Cleere Haren
- Harlem World
- Alvin Youngblood Hart
- Dan Hartman
- CD Hawkins
- Screamin' Jay Hawkins
- Sophie B. Hawkins
- Tramaine Hawkins
- Charles G. Hayes
- Isaac Hayes
- Wade Hayes
- Headswim
- Heart
- Heatwave
- Fletcher Henderson & His Orchestra
- HERBERT VON KARAJAN/MUTTE

**Lauryn Hill**  
Everything Is Everything

**digital download**

RUFFHOUSE JV

120

106

110

Click on a price to order.

112

CD Single  
Digital Download  
(1 Track Only)

Special Offer

114

other songs by this artist  
Track Listing

2 selections on 1 CD Single.

116

118

Everything Is 3:56 **DOWNLOAD**

Everything 4:37

Ex-Factor

~~6.49~~ Special Introductory Offer **\$2.49**

FIG. 6C

100C

**MusicRetailer.com**

view by  
[artist](#) | [genre](#) | [format](#) | [merchandise](#)

[search](#) [new releases](#) [customer service](#) [shopping cart](#)

# A B C D E F G H I J K L M  
 N O P Q R S T U V W X Y Z

**by artist**

**P**

- [P.Y.T.](#)
- [Michael Pabst](#)
- [Patti Page](#)
- [Eduardo Paniaqua](#)
- [Leon Parker](#)
- [Andrew Parker](#)
- [Dolly Parton](#)
- [Jaco Pastorius](#)
- [Mandy Pantinkin](#)
- [Patra](#)
- [Sandi Patty](#)
- [Billy Paul](#)
- [Les Paul](#)
- [Luciano Pavarotti](#)
- [Johnny Paycheck](#)
- [Peach Union](#)
- [Peaches & Herb](#)
- [Pearl Jam](#)
- [Paco Pena](#)
- [Michael Penn](#)
- [M People](#)
- [Murray Perahia](#)
- [Itzhak Perlman](#)
- [Joe Perry](#)
- [Steve Perry](#)
- [Joe Pesci](#)
- [Petra](#)
- [The Philadelphia Brass Ensemble](#)
- [Jill Phillips](#)
- [The Philosopher Kings](#)
- [Chonda Pierce](#)
- [Pink Floyd](#)

Pearl Jam  
 Yield  
 EPIC RECORDS

Your cart has 2 items

Click on a price to order

Vinyl  
 CD  
 Cassette  
 Mini Disc

other songs by this artist  
 Track Listing

Given To Fly

Produced by Brendan O'Brien and Pearl Jam, and engineered by Nick DiDia, Yield was recorded in Seattle and Atlanta. The album contains 13 songs including "Brain of J," "Do The Evolution," "Pilate," "Faithful," "No Way," "All Those Yesterdays" and "Given To Fly."

14 selections on 1 CD.

Brain Of J.	2:59
Faithfull	4:18
No Way	4:19
Given To Fly	4:01
Wishlist	3:26
Pilate	3:00
Do The Evolution	3:54
Red Bar	1:06
Mfc	2:28
Low Light	3:46
In Hiding	5:00
Push Me, Pull Me	2:28
All Those Yesterdays	4:02

FIG. 6D

1000

**MusicRetailer.com**

view by  search  new releases  customer service  shopping cart

artist|genre|format|merchandise

# A B C D E F G H I J K L M  
N O P Q R S T U V W X Y Z

**by artist**

**P**

- [P.Y.T.](#)
- [Michael Pabst](#)
- [Patti Page](#)
- [Eduardo Paniaqua](#)
- [Leon Parker](#)
- [Andrew Parker](#)
- [Dolly Parton](#)
- [Jaco Pastorius](#)
- [Mandy Patinkin](#)
- [Patra](#)
- [Sandi Patty](#)
- [Billy Paul](#)
- [Les Paul](#)
- [Luciano Pavarotti](#)
- [Johnny Paycheck](#)
- [Peach Union](#)
- [Peaches & Herb](#)
- [Pearl Jam](#)
- [Paco Pena](#)
- [Michael Penn](#)
- [M. People](#)
- [Murray Perahia](#)
- [Itzhak Perlman](#)
- [Joe Perry](#)
- [Steve Perry](#)
- [Joe Pesci](#)
- [Petra](#)
- [The Philadelphia Brass Ensemble](#)
- [Jill Phillips](#)
- [The Philosopher Kings](#)
- [Chonda Pierce](#)
- [Pink Floyd](#)

your current order for physical goods is as follows:

product ID	Item	price	quantity	subtotal
68164EK	Yield	\$14.98	<input type="text" value="1"/>	\$14.98

your current order for downloads is as follows:

product ID	Item	price	quantity	subtotal
06639USSM19	Everything Is Everything	\$2.49	1	\$2.49

To change an item's quantity, edit the number and press "Update Order". [       ]

update order clear all [ submit order ]

The total charges for your downloads are \$2.49. After confirming your physical goods purchase, you will be instructed to complete your download transaction.

Shipments made within the U.S. only

100E

FIG. 6E

*MusicRetailer.com*

customer service

shopping cart

continue shopping

The total charges for your physical goods are \$18.87. Please fill in the credit card information and billing address. When you are ready, press the "Submit Order" button to confirm this order and make your purchase.

A special digital download window will appear to guide you through getting your digital downloads once you have completed the information on this page and submit your order.  
**YOU WILL BE BILLED SEPARATELY FOR DOWNLOADS**

Order Summary		Credit Card Information	
<i>charges</i>	<i>total</i>	Name:	John Q. Public
Physical goods Total:	\$14.98	Number:	*****
Tax:	\$0.90	Type:	Master Card
Shipping:	\$2.99	Exp:	Nov 2001
Physical goods sub Total:	\$18.87		
Download sub Total:	\$2.49		
Plus Applicable Sales Tax:			
Download Total:	\$2.49		
Sub Total:	\$21.51		

Billing Address

First Name: John

Last Name: Public

Phone: 201-555-1234

Street: 1 Anywhere Drive

Apt. [ ]

City: Yourtown

State: NEW JERSEY Zip: \*\*\*\*\*

[ submit order ]

FIG. 7

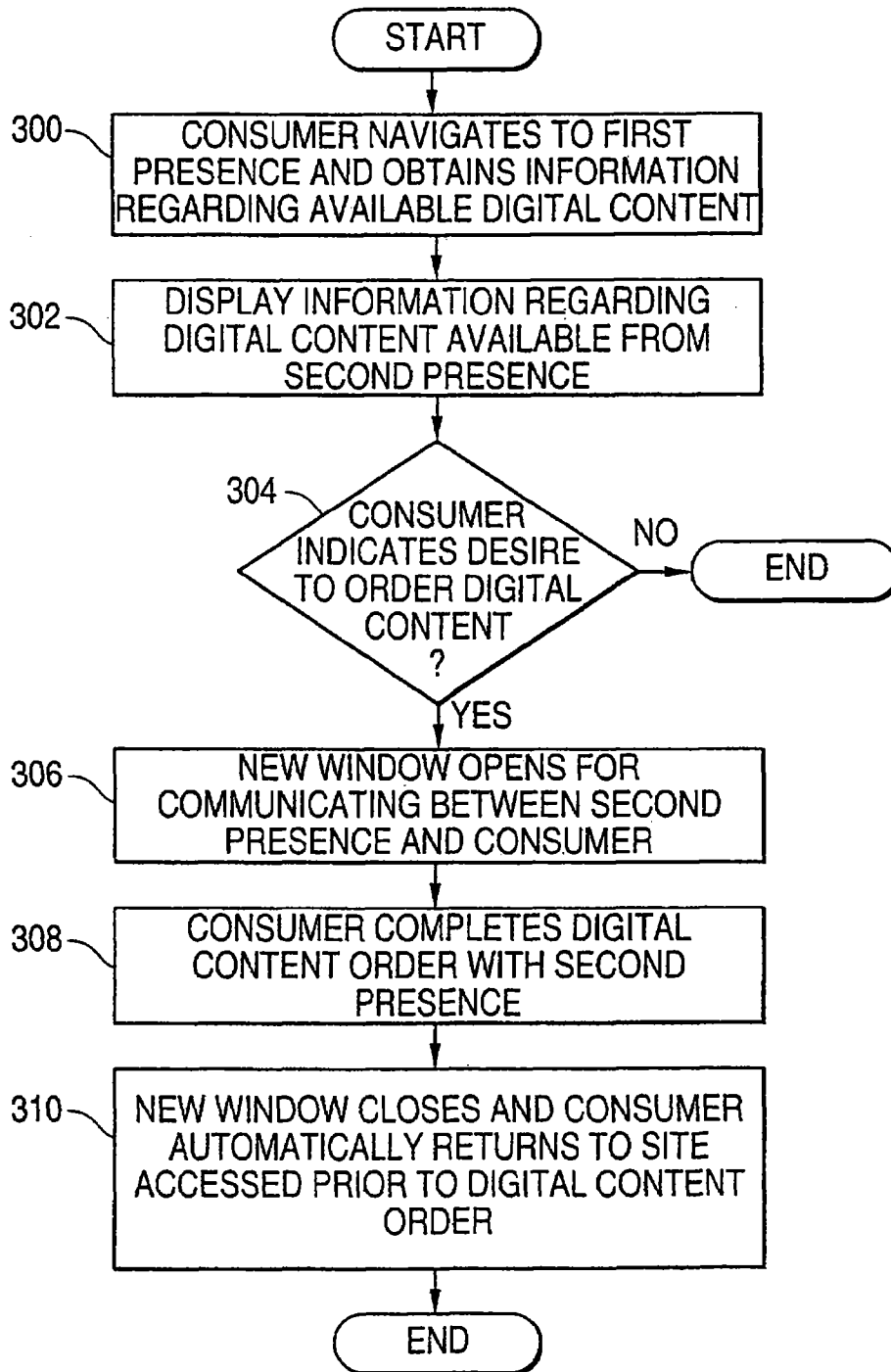


FIG. 8A

200A

SONY MUSIC™

1 registration

downloads

1 2 3 4 HELP

Welcome Sony Music customer

You will need to follow an easy 4-step process to complete the purchase of your Sony Music digital downloads. The first necessary step is to register, or log on to, your Download Services Account. The account will enable our customer service staff to help you with any questions you may have about your purchase.

Please Note:

Your credit card has not yet been charged for your music downloads. If you have any questions about downloading music, click here for FAQ's.

DOWNLOAD SERVICES ACCOUNT

Information regarding your music downloads will be e-mailed to you.

NEW SONY MUSIC DOWNLOAD CUSTOMER

To receive your music downloads all fields must be complete.

Your Name:

Email:

US Zip Code:

Password:

Passwords must be at least 6 characters.

Re-enter password:

Next

RETURNING SONY MUSIC DOWNLOAD CUSTOMER

To receive your music downloads all fields must be complete.

E-mail/ User ID:

Password:

Login

204

206



FIG. 8B

200B

202 **SONY MUSIC™**

**2 billing information**

Your order reference number is 7223750.  
You have selected the following music downloads:

downloads

1 2 3 4 HELP

Please print this page by clicking the printer icons, or write down your order reference number so that we may serve you better.

artist	title	cost
Lauryn Hill	Everything Is Everything	\$2.49
I would like to receive more information on this artist <input type="checkbox"/>		Sub- Total \$2.49
		Sales Tax \$0.00
		Grand Total \$2.49

**BILLING INFORMATION**

To receive your music downloads all required (\*) fields must be complete.

Credit Card:  VISA  MasterCard  American Express

Name on Card:  \*

Card Number:  \*

Expiration: 01 2000 \*

Address:  \*

City:  \*

State: Alabama  \*

U.S. Zip Code:  \*

**Please Note**

Your credit card has not yet been charged for your music downloads

This site uses the industry wide security feature called Secure Sockets Layer protocol ("SSL") in order to further protect your credit card and personal information between your browser and our server.

Next

You will be able to return to this session for the next 48 hours. If necessary by using the link in the e-mail we have sent you with your account information.

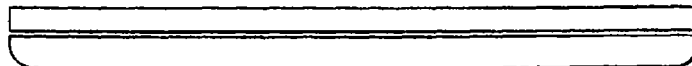


FIG. 8C

200C

SONY MUSIC™ downloads

3 choose format 1 2 3 4 HELP

**CHOOSE FORMAT**

Click below to select the format of your digital downloads.

You may only select one format.

Please Note: Your credit card has not yet been charged for your music downloads.

Computer Desktop Software		SECURE Portable Devices	
<input type="radio"/>	Windows Media Player	<input type="radio"/>	Sony Memory Stick Walkman & VAIO Music Clip
	<input type="checkbox"/> Atrac 3		
	<input type="checkbox"/> Windows		
<input type="radio"/>	Liquid Audio	<input type="radio"/>	Diamond Rio
	<input type="checkbox"/> Comp.		
	<input type="checkbox"/> DRM		
<input type="radio"/>	Real Jukebox	<input type="radio"/>	Creative Nomad II
	<input type="checkbox"/> Comp.		
	<input type="checkbox"/> DRM		
		<input type="radio"/>	SANYO
		<input type="radio"/>	Panasonic

Next

---

---

FIG. 8D

200C

SONY MUSIC™ downloads

3 choose format 1 2 3 4 HELP

**CHOOSE FORMAT**  
Click below to select the format of your digital downloads.  
You may only select one format.  
Please Note: Your credit card has not yet been charged for your music downloads.

Computer Desktop Software	DMAT Portable Devices
<input checked="" type="radio"/> Windows Media Player <span style="float: right;">▽ Atrac 3 ▽ Windows</span>	<input type="radio"/> Sony Memory Stick Walkman & VAIO Music Clip
<input type="radio"/> Liquid Audio <span style="float: right;">▽ Comp. ▽ DRM</span>	<input type="radio"/> Diamond Rio
<input type="radio"/> Real Jukebox <span style="float: right;">▽ Comp. ▽ DRM</span>	<input type="radio"/> Creative Nomad II
	<input type="radio"/> SANYO
	<input type="radio"/> Panasonic

Next

216 { 230 { 232

FIG. 8E

200D



You do not have the proper versions of Window Media Player and ATRAC3 Plug-In installed. You can download the latest versions of each by clicking the link below.

[Windows Media Player and ATRAC3 for Internet Explorer](#)

Once you finish with the installation, click the continue button.

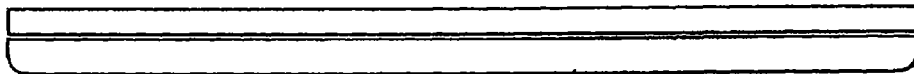
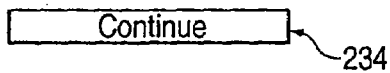


FIG. 8F

200E

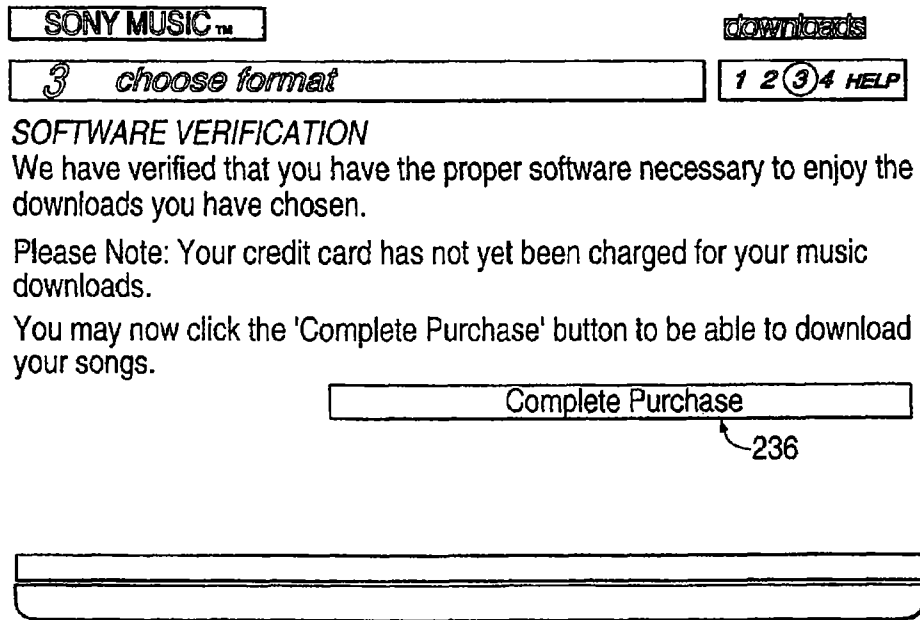


FIG. 8G

200F

SONY MUSIC™	downloads
4 choose format	1 2 3 4 HELP

DOWNLOAD YOUR SONGS

We have charged your credit card.

For each download you should click your mouse on the 'Download Song' link, and then select a location for the song file. After the downloading is complete, go to the location to where you have saved the song, and doubleclick on the file to play the music. It is necessary to do this separately for each download.

artist	title	time	file size	
Lauryn Hill	Everything Is Everything	3:56	3.88 MB	<u>Download Song</u>

238

Estimated time to complete digital download (file size 4 Mb)

Modem Speed	Estimated time
28.8 Kbps	21 mins 20 secs
56.0 Kbps	9 mins 20 secs

1

**METHOD FOR FACILITATING A  
TRANSACTION FOR PURCHASABLE  
CONTENT OVER AN ELECTRONIC  
NETWORK**

**CROSS REFERENCE TO RELATED  
APPLICATIONS**

This application is based on and claims the benefit of U.S. Provisional Patent Application No. 60/198,202, entitled 10 METHODS AND APPARATUSES FOR PRESENTING CONTENT AVAILABLE BY DIGITAL DOWNLOAD, AND FULFILLING DIGITAL DOWNLOAD PURCHASES, filed Apr. 19, 2000, the entire disclosure of which is hereby incorporated by reference.

**BACKGROUND OF THE INVENTION**

The present invention relates generally to facilitating transactions between a consumer and one or more entities over an electronic network. More particularly, the present invention relates to a method and apparatus for presenting and obtaining purchasable content, such as downloadable digital data and physical storage media at least partly by way of the electronic network.

It is known to browse for, and purchase, goods over the Internet. For example, SamGoody.com offers the purchase of CDs, tapes, DVDs, etc. containing music and/or video via the Internet. It is also known to download digital data over the Internet. For example, MP3.com offers various music titles for free downloading in the MP3 format. While free downloading of digital data has proliferated, there remains a need for effective mechanisms and techniques for permitting consumers to access, purchase, and download digital data, such as music, legitimately. Secure, user-friendly arrangements for allowing legitimate purchase of downloadable digital data would attract an untapped audience of purchasers, and would thus expand the market for digital data downloads. In turn, digital data providers would be encouraged to make more digital data available to consumers.

While physical goods, such as CDs, tapes, DVDs, may be purchased over the Internet, a user-friendly arrangement for permitting the purchase of such physical goods and/or the downloading of digital data has heretofore not been adequately developed. A secure, user-friendly arrangement for permitting purchase of physical goods and/or legitimate downloading of digital data would address many issues currently faced by consumers and providers. In particular, in many instances a provider of physical goods does not have custody of downloadable digital data, but would welcome the opportunity to market such digital data (particularly for a fee). Likewise, providers of downloadable digital data may not have the market penetration enjoyed by a provider of physical goods and would welcome the opportunity to market its downloadable digital data to consumers through the provider of physical goods.

**SUMMARY OF THE INVENTION**

A transaction for purchasable content is facilitated over an electronic network, the purchasable content including downloadable digital data. According to the present invention, a first presence is maintained on the electronic network to which a consumer may connect. A page is transmitted from the first presence to the consumer over the electronic network, the page including information concerning the pur-

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chasable content. A command is received from the consumer over the electronic network indicating that the consumer wishes the transaction for the purchasable content. The consumer is then automatically linked to a second presence on the electronic network in response to the command such that the consumer may interact with the second presence over the electronic network to complete the transaction for the purchasable content.

In accordance with one aspect of the present invention, a commission is received from an entity associated with the second presence based on the transaction for the purchasable content.

Other features and advantages of the present inventions will become apparent to one skilled in the art in view of the disclosure herein taken in combination with the accompanying drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention is illustrated in the figures of the accompanying drawings which are meant to be exemplary and not limiting, and in which like reference characters are intended to refer to like or corresponding parts:

FIG. 1 is a block diagram illustrating a system in accordance with the present invention;

FIG. 2 is a block diagram illustrating the structure of an apparatus utilized by a consumer in accordance with the present invention;

FIG. 3 is a block diagram illustrating an apparatus utilized by a provider of purchasable content in accordance with the present invention;

FIG. 4 is a block diagram illustrating an apparatus utilized by another provider of purchasable content in accordance with the present invention;

FIG. 5 is a flow diagram illustrating operations carried out by one or more entities of FIG. 1 in accordance with the present invention;

FIGS. 6A-6E are graphical representations of screen displays illustrating one or more pages that may be transmitted from a first presence to a consumer over an electronic network in accordance with the present invention;

FIG. 7 is a flow diagram illustrating operations carried out by one or more of the entities of FIG. 1 in accordance with the present invention; and

FIGS. 8A-8G are graphical representations of screen displays illustrating one or more pages that may be transmitted from a second presence to a consumer over an electronic network in accordance with the present invention.

**DETAILED DESCRIPTION OF THE  
PREFERRED EMBODIMENTS**

Referring now to the drawings, there is shown in FIG. 1 a block diagram illustrating a system 1 suitable for implementing one or more aspects of the present invention. The system 1 includes an electronic network 10, such as a wireless network, a hard-wired network, an analog network, a digital network, etc. It is preferred that the electronic network 10 is the Internet. The system 1 also includes one or more consumers 20 coupled to the electronic network 10 using any of the known techniques. It is understood that the consumer 20 is illustrated by a computing device coupled to the electronic network 10, but that the computing device may be manipulated by a human being (i.e., a consumer of goods, services, data, etc.). Thus, the consumer 20 will refer herein to the human and/or the computing device as is appropriate. It is noted that the consumer's computing

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device 20 may take on many different forms, such as traditional non-mobile computing devices, including personal computers, set-top boxes, telephones, etc. Mobile computing devices are also contemplated, such as personal digital assistant (PDA) units (e.g., devices/computers such as the Palm Pilot™, etc.); cell phones (including Internet enabled cell phones); hand held computers (e.g., those including wireless modems); laptop computers; etc.

The system 1 also includes at least one of a first presence 30 and a second presence 40, coupled to the electronic network 10 using any of the known techniques. For the purposes of the invention disclosed herein, a "presence" on the electronic network 10 may represent a collection of files (e.g., web site files, pages, etc.) that may be transmitted to entities coupled to the electronic network 10, such as the consumers 20. The pages may be in any appropriate format, such as the Hypertext Markup Language (HTML) and/or the Extensible Markup Language (XML), it being understood that the artisan skilled in the art will recognize alternative programming languages and techniques that are, or may become, available. The term "presence" as used herein may also encompass an apparatus or apparatuses employed to transmit or otherwise make the pages available to the entities over the electronic network 10. For example, network servers are often employed for this purpose. Such servers include one or more processors capable of executing one or more software programs, where the processor(s) are coupled to the electronic network 10 such that the one or more software programs control the creation, manipulation, transmission, etc. of the pages. The server(s) may be implemented using one or more computing devices disposed at one or more geographic locations. The term "presence" as used herein may also refer to one or more entities that maintain, create, control, or are otherwise associated with the server(s) and/or the pages that are to be transmitted over the electronic network 10.

In accordance with one or more aspects of the present inventions, the first presence 30 is preferably a purchasable content marketer, i.e., a presence on the electronic network 10 concerned with marketing and/or retailing purchasable content to the one or more consumers 20. It will be appreciated that the first presence 30 may be an entertainment retailer or marketer, such as TowerRecords.com, CDNow.com, etc.

The purchasable content preferably includes at least one of downloadable digital data (i.e., digital data capable of being transmitted over the electronic network 10 to the one or more consumers 20) and physical storage media (i.e., a product capable of storing digital data or analog data). It will be appreciated that the downloadable digital data and/or the digital/analog data of the physical storage media may include one or more of audio, video, and. It is preferred that the audio data is music. Those skilled in the art will appreciate from the disclosure herein that the physical storage media may be optically readable media (e.g., audio discs, video discs, mini-discs, etc.), electrically readable media (e.g., micro-processor readable memories, memory sticks, etc.), magnetically readable media (e.g., cassette tapes, video tapes, etc.), and mechanically readable media (e.g., vinyl discs, etc.). When the purchasable content relates to music, the phrase "music title" (or single) and the term "album" are often used. It is understood that the phrase "music title" as used herein encompasses respective songs recorded by one or more artists. It is understood that the term "album" as used herein broadly relates to one or more recordings produced as a single unit (e.g., a number of music titles recorded on a single physical storage medium).

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Referring now to FIG. 2, the consumer's computing device 20, a desktop personal computer for example, is illustrated in terms of some of its features and/or functions. In addition to a processing unit (e.g., a CPU, I/O devices, peripherals, etc., not shown), the consumer's computing device 20 preferably includes a memory 22 for storing software resources (or programs), which may be executed by the processing unit to achieve various functions. The memory 22 may store, among other things, an operating system 24, such as any of the known operating systems, Windows 95/98/NT operating systems provided by Microsoft Inc. of Redmond, Wash., Mac-OS, and LINUX being examples.

A browser program 26 may operate on, or be integrated into, the operating system 24, it being understood that the browser program 26 provides the consumer's computing device 20 with the functionality required to obtain pages from the electronic network 10 and manipulate one or more of those pages (for example, by activating one or more icons thereon, inputting text information, or otherwise interacting with one or more of the pages to obtain useful results). Netscape Navigator and Internet Explorer are examples of suitable browser programs 26 for use with the present inventions.

The consumer's computing device 20 also preferably includes a content access managing module 28 having digital rights management (DRM) software 28A, a content playing module (preferably including a CODEC) 28B, and a portable device management module 28C. It is understood that these modules may take the form of software only, hardware only, or a combination of software and hardware as needed. As will be discussed in more detail below, the browser program 26 and the content access managing module 28 are utilized to facilitate a transaction for purchasable content between the consumer 20 and one or both of the first and second presence 30, 40.

Reference is now made to FIG. 3 which illustrates a block diagram of the structure and/or functionality of the first presence 30 in accordance with one or more aspects of the present invention. The first presence 30 preferably includes a computing device, such as a network server, including one or more processors (e.g., CPUs) for executing one or more software programs that imbue the first presence 30 with desirable functionality. Preferably, the first presence 30 includes a memory 32 in which a registration and login module 34, a content presentation module 36, and an order acceptance module 38 are stored. It is understood that these modules may take the form of software only, hardware only, or a combination of software and hardware.

As will be discussed in more detail below, the registration and login module 34 may implement software suitable for receiving and/or managing consumer account information. For example, the module 34 may interface with an integral and/or separate database (or databases) of information concerning respective consumers, the information being utilized to register and/or login to the first presence 30 over the electronic network 10.

The content presentation module 36 preferably includes a feature display module 36A, a physical goods inventory module 36B, and a digital download inventory module 36C. As will be discussed in more detail below, these modules permit the first presence 30 to transmit certain information concerning the purchasable content over the electronic network 10. Preferably, the information is specifically geared towards marketing the purchasable content to the one or more consumers 20 by way of transmission of pages over the electronic network 10.



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The order acceptance module 38 preferably includes an order display module 38A, a physical goods order completing module 38B, a digital download referral module 38C, and an order accounting module 38D. In general, the order acceptance module 38 provides the first presence 30 with the ability to organize and manipulate information concerning the processing of an order from a consumer 20 for purchasable content, such as displaying the specific items of purchasable content desired by the consumer 20, calculating the costs for the purchasable content, etc. Further details regarding the specific functionality of the order acceptance module 38 will be described in more detail hereinbelow.

Reference is now made to FIG. 4 which illustrates a block diagram of the apparatus and/or functionality of the second presence 40. Preferably, the second presence 40 includes a computing device, such as a network server, having one or more processors (e.g., a CPU) capable of executing one or more software programs that imbue the second presence 40 with desirable functionality. Preferably, the second presence 40 includes a memory 42 containing a registration and login module 44, a format selection module 46, and an order acceptance module 48. It is understood that these modules may be implemented in software, hardware, and/or a combination of hardware and software.

Preferably, the registration and login module 44 includes a registration information module 44A and a billing information module 44B. In general, the registration and login module 44 permits the second presence 40 to interface with the one or more consumers 20 over the electronic network 10, such as by collecting registration information, managing existing accounts, etc. Further details on the registration and login module 44 will be presented hereinbelow.

Preferably, the format selection module 46 includes a software selection module 46A, a device selection module 46B, a software-to-device relationship management module 46C, a selection matrix and display module 46D, and a client software and device verifying module 46E. In general, the format selection module 46 preferably imbues the second presence 40 with the capability of transmitting format options for the purchasable content to the one or more consumers 20 over the electronic network 10, the format options including, for example, types of software on which the purchasable content may be executed, types of portable devices on which the purchasable content may be stored, types of compression formats in which the purchasable content may be configured, types of CODECs through which the purchasable content may be processed, and types of digital rights management (DRM) algorithms to which the purchasable content may be subject. Additional details concerning the format selection module 46 will be presented hereinbelow.

The order acceptance module 48 preferably includes an order accounting module 48A and a content downloading module 48B. In general, the order acceptance module 48 preferably imbues the second presence 40 with the capability of interfacing with the one or more consumers 20 over the electronic network 10 in order to download purchasable content of the downloadable digital data variety. Further details of the order acceptance module 48 and its functionality will be presented hereinbelow.

Reference is now made to FIG. 5, which illustrates a flow diagram of some actions between the consumer 20, the first presence 30, and/or the second presence 40 over the electronic network 10 in accordance with one or more aspects of the present invention. It is understood that the actions presented in FIG. 5 do not represent an exhaustive list and that the time order in which they are labeled and/or dis-

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cussed is not restrictive, but rather is presented by way of example only. As indicated at action (1), the consumer 20 may browse for, review, and/or select purchasable content by way of interaction with the first presence 30 over the electronic network 10. With reference to FIGS. 2 and 3, the consumer 20 may execute its browser program 26 in order to connect to the first presence 30 over the electronic network 10. The first presence 30 may transmit one or more pages over the electronic network 10 to the consumer 20, where the one or more pages include information concerning the purchasable content. The content presentation module 36 (FIG. 3) of the first presence 30 may be utilized to produce, manipulate, manage and/or transmit the one or more pages containing the information concerning the purchasable content. If employed, the initial connection by the consumer 20 to the first presence 30 may involve the transmission of a registration and/or login page from the first presence 30 to the consumer 20 over the electronic network 10 (preferably managed by way of registration and login module 34, see FIG. 3). As is known in the art, this registration and/or login page may require that the consumer 20 enter a user name and/or password to obtain further pages from the first presence 30. If the consumer 20 were a first time visitor to the first presence 30, then registration may also be required as is known in the art.

FIG. 6 is an illustrative example of a page 100A suitable for providing information concerning the purchasable content to the consumer 20 over the electronic network 10.

Page 100A is preferably displayed on the consumer's computing device 20 in a first window. The term "window" used herein is a separate viewing area on a display screen (e.g., a screen associated with the consumer's computing device 20), where multiple viewing areas are permitted as part of a graphical user interface. A window can be moved, minimized, maximized and/or varied in size depending on the desire of a user. Preferably, the first window includes a banner portion 108 that may be utilized by the first presence 30 to brand the window, MusicRetailer.com being the brand illustrated. Preferably, page 100A includes information concerning both downloadable digital data, such as music, and physical storage media containing digital or analog data. The downloadable digital data is preferably music available for downloading over the electronic network 10 to the consumer's computing device 20 for storage. The physical storage media, on the other hand, would be shipped to the consumer 20 using known shipping channels.

Page 100A is preferably organized into frames, a left frame 102 preferably listing purchasable content according to artists and genre. The list is preferably presented by way of text indicia. Page 100A preferably includes a main frame area 106 containing additional details concerning the purchasable content. Information concerning downloadable digital data may preferably be obtained by activating an executable icon 104 disposed in an upper portion of the main frame 106. Those skilled in the art will appreciate that activating an executable icon in this context may involve activating a hypertext link that may cause a link with another presence on the electronic network 10 or that may cause one or more additional pages to be transmitted from the first presence 30 to the consumer 20 over the electronic network 10. The main frame 106 of page 100A also preferably includes information concerning physical storage media.

Main frame 106 also preferably contains a listing of "featured" selections that the first presence 30 may want to market to consumers 20. For example, album titles such as Will Smith, Korn, The Bicentennial Man soundtrack, etc. may be listed in main frame 106. The featured selections are

preferably displayed by way of text and/or graphic indicia. Preferably, the indicia associated with the artists, genre, and music titles represent executable icons permitting the consumer 20 to drill down and obtain additional information concerning the purchasable content. For example, when the consumer 20 executes an icon pertaining to the artist Lauryn Hill (e.g. in frame 102), additional information concerning purchasable content by that artist is preferably provided to the consumer 20 over the electronic network 10. The information is preferably provided by way of one or more pages transmitted from the first presence 30 to the consumer 20. By way of example, page 100B of FIG. 6B includes a variety of information concerning purchasable content by the performer Lauryn Hill. As shown, the music title "Everything Is Everything" is identified via text and graphics (still frame and/or motion) indicia at location 110. At location 112, a listing of various forms that the purchasable content may take is provided, namely, CD single or digital download. A hyperlink to obtain information concerning other titles by Lauryn Hill is disposed at location 114.

The consumer 20 may issue a command over the electronic network 10 indicating that he or she wishes a transaction for the purchasable content. This command is preferably initiated by activating an executable icon associated with the purchasable content. In the example illustrated in FIG. 6B, the command may take the form of activating the phrase "Digital Download" (at location 112) associated with the music title "Everything Is Everything." Alternatively, the consumer 20 may activate the phrase "Everything Is Everything" at locations 110, 116 or he or she may activate an icon associated with the price of the purchasable content, e.g., location 118. When the consumer 20 activates an icon indicating that he or she wishes a transaction for the purchasable content (i.e., a command is transmitted over the electronic network 10), the first presence 30 preferably determines whether the command indicates that the consumer 20 wishes a transaction for downloadable digital data or physical storage media and stores that information (e.g., in a virtual "shopping cart"). An indication that the consumer 20 has provided a command indicating that he or she wishes a transaction for an item of purchasable content is provided by way of page 100B, for example, by reciting "Your cart has 1 item" at location 120.

The consumer 20 may browse the first presence 30 and identify other items of purchasable content of interest. For example, when the consumer 20 activates an icon for the artist Pearl Jam, more information regarding that artist is preferably transmitted from the first presence 30 to the consumer 20 over the electronic network 10. This information may take the form of page 100C illustrated in FIG. 6C, which includes text and graphics indicia at location 120. As shown, the album title "Yield" is featured in the main frame 106 and may be purchased in various forms, such as by way of physical storage media (e.g., vinyl discs, CDs, cassettes, mini discs) listed at location 122. Downloadable digital data for this album title might not be available and, therefore, no corresponding indicia or icon would be provided on page 100C.

A list of music titles of the "Yield" album is preferably provided at location 124, namely, Brian Of J., Faithful, No Way, Given To Fly, etc. At location 126, a brief narrative of certain items of interest concerning the album is preferably provided. The narrative may contain information concerning the artist, the production company, the engineers, the recording location, the number of music titles contained on the album, and a listing of at least some of the music titles.

An audio sample of one or more of the music titles contained on the album may preferably be accessed by activating one or more icons at location 128. Preferably, the one or more icons are organized as a pull-down menu of music titles, where one or more of the titles may be activated by the consumer 20. In response to the activation of a music title icon at location 128, the first presence 30 preferably transmits audio data over the electronic network 10 to the consumer 20 such that the consumer 20 may sample the purchasable content. Activating the "other titles by this artist" icon at location 123 preferably causes additional information to be provided on page 100C from the first presence 30.

When the consumer 20 issues a command indicating that he or she wishes a transaction for a further item purchasable content, for example, the album Yield, the first presence 30 preferably again determines whether the command indicates that the consumer 20 wishes to purchase physical storage media or downloadable digital data and stores the information (e.g., in the virtual shopping cart). The first presence 30 preferably provides additional information on page 100C indicating that the consumer 20 issued a command for additional purchasable content, such as providing indicia at location 120 stating "Your cart has 2 items."

The interaction between the consumer 20 and the first presence 30 over the electronic network 10 (e.g., vis-a-vis pages 100A, 100B, 100C) is preferably managed by way of the content presentation module 36 (FIG. 3) of the first presence 30. Preferably, information concerning any featured purchasable content, e.g. that listed in main frame 106 of page 100A (FIG. 6A), is preferably managed by way of the feature display module 36A (FIG. 3). The presentation of information concerning the available physical storage media (e.g., that displayed on pages 100B-C) is preferably managed by way of the physical goods inventory module 36B (FIG. 3) of the first presence 30. The presentation of information concerning the available downloadable digital data, e.g., that listed on page 100B, is preferably managed by way of the digital download inventory module 36C (FIG. 3) of the first presence 30. The content presentation module 36 of the first presence 30 preferably achieves these functions using known software techniques executed on one or more database servers coupled to one or more databases.

When the consumer 20 is finished browsing the first presence 30 for purchasable content, wishes to complete the transaction for purchasable content, or otherwise wishes to review the items of purchasable content in the shopping cart, a summary of information is preferably transmitted from the first presence 30 to the consumer 20 over the electronic network 10. The summary is preferably presented on one or more pages 100D (FIG. 6D) and is preferably visually divided into information concerning physical storage media at location 130 and downloadable digital data at location 132. In the particular example presented herein, the album that the consumer 20 indicated that he or she wished to purchase is preferably listed at location 130 in terms of at least one of product identification number, item (or album) title, price, quantity, and subtotal cost. The summary information for downloadable digital data at location 132 is preferably substantially similar to the information concerning the physical storage media. The consumer 20 is preferably permitted to edit the summary information by adding or deleting items as desired. The order is preferably updated by executing the "update order" icon and the order may be cleared in its entirety by executing the "clear all" icon. The order may be submitted by executing the "submit order" icon. The summary information displayed on page 100D is

preferably managed by way of the order display module 38A contained within the order acceptance module 38 (FIG. 3) of the first presence 30.

In response to the submit order command by the consumer 20, the first presence 30 preferably transmits remittance information concerning the purchasable content that the consumer 20 indicated he or she wished to purchase. Preferably, the remittance information is provided by way of page 100E transmitted from the first presence 30 to the consumer 20 over the electronic network 10. Information concerning the items of purchasable content of the physical storage media type are preferably segregated (e.g., at location 140) from the information concerning the purchasable content of the downloadable digital data type (e.g., at location 144). Preferably, the information as to each type of purchasable content includes at least one of respective costs (e.g., totals), and respective subtotals of aggregate costs to purchase the physical storage media and downloadable digital data. Shipping costs may also be provided concerning the costs of shipping the physical storage media to the consumer 20 using any of the known carriers. Preferably, applicable sales tax is calculated for the purchase of the physical storage media separate from the downloadable digital data. Preferably, the respective subtotals for the physical storage media and the downloadable digital data are calculated as the aggregate of the costs of the respective items of purchasable content, the tax (if any), and the shipping costs.

Preferably, page 100E includes one or more input fields at, for example, locations 144, 146 that are operable to receive remittance information from the consumer 20. It is most preferable that the remittance information is associated only with the physical storage media identified for purchase by the consumer 20. At location 144 remittance information concerning the consumer's credit card is preferably received, such as, the consumer's name, the consumer's credit card number, the type of credit card, and the expiration date. It is understood that other types of remittance information may be requested and/or input at location 144, such as demand deposit account numbers, debit card numbers, etc. At location 146, billing address information is preferably requested and/or received, for example, the name of the consumer 20, a phone number for the consumer 20, a billing and/or delivery address, etc.

Preferably, the functionality discussed above with respect to page 100E is managed by the order accounting module 38D (FIG. 3) of the first presence 30.

Referring again to FIG. 6E, the consumer 20 preferably activates the "submit order" icon (disposed at the lower portion of page 100E) when he or she wishes to complete the transaction for the physical storage media content. It is most preferred that the activation of the submit order icon also initiates additional actions leading to the completion of the transaction concerning the downloadable digital data content. In accordance with one or more aspects of the present inventions, the first presence 30 is capable of completing the transaction as to the physical storage media but is not capable of transmitting the downloadable digital data over the electronic network 10. Rather, it is the second presence 40 that is capable of transmitting the downloadable digital data through the electronic network 10 for reception by the one or more consumers 20. For example, the first presence 30, although being a purchasable content marketer, may not have custody, control, or access to a database (or databases) containing the downloadable digital data. Nevertheless, the first presence 30 may market the downloadable digital data and the physical storage media to the one or more consumers

20 by way of the pages transmitted over the electronic network 10. The second presence 40, therefore, might have custody, control, and/or access to a suitable database (or series of databases) containing the downloadable digital data, although the second presence 40 might not engage in the marketing of the downloadable digital data to the one or more consumers 20 in the same manner as the first presence 30.

With reference to FIG. 5 action (2), when the first presence 30 determines that the consumer 20 has issued a command indicating that he or she wishes to purchase physical storage media or both physical storage media and downloadable digital data, the completion of the transaction as to the physical storage media is preferably completed by way of the first presence 30, but the transaction as to the downloadable digital data is preferably not completed by way of the first presence 30. Rather, as shown at action (3) in FIG. 5, the first presence 30 merely provides information concerning the downloadable digital data (e.g., including at least some of the information provided by way of pages 100A-E of FIGS. 6A-E). It is understood, therefore, that the one or more pages transmitted by the first presence 30 are capable of providing information to, and receiving information from, the consumer 20 sufficient to complete the transaction for the physical storage media content. The completion of the physical storage media transaction is preferably managed by way of the physical goods order completing module 38B (FIG. 3) of the first presence 30.

Those skilled in the art will appreciate that the information concerning the downloadable digital data provided by the first presence 30 to the consumer 20 (action (3) of FIG. 5) may not include an offer to purchase. Instead, only general information concerning downloadable digital data might be provided by the first presence 30, where the consumer 20 obtains further information and opportunities to order the downloadable digital data from the second presence 40.

As shown at action (4) in FIG. 5, the activation of the submit order icon (FIG. 6E) initiates contact between the consumer 20 and the second presence 40 over the electronic network 10. Preferably, the activation of the submit order icon automatically links the consumer 20 to the second presence 40 such that the consumer 20 may interact with the second presence 40 to complete the transaction as to the downloadable digital data. The action of automatically linking the consumer 20 to the second presence 40 over the electronic network 10 is preferably executed only when the consumer 20 has provided a command that indicates that he or she wishes a transaction for downloadable digital data content. Preferably, the action of automatically linking the consumer 20 to the second presence 40 over the electronic network 10 is managed by the digital download referral module 38C of the first presence 30 (FIG. 3).

The automatic link between the consumer 20 and the second presence 40 over the electronic network 10 preferably results in the second presence 40 transmitting at least one page of information over the electronic network 10 to the consumer 20. In accordance with one or more aspects of the inventions, the one or more pages from the second presence 40 are preferably presented to, and manipulated by, the consumer 20 by way of at least one second window on the consumer's computing device 20. The second window is preferably separate from the first window (through which the consumer 20 interacts with the first presence 30). As a general matter, the second window is preferably automatically activated (e.g., opened so that the consumer 20 can interact with the one or more pages from the second pres-

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ence 40) in response to (or proximate to) the automatic link to the second presence 40. For example, the second window may be activated when the one or more pages from the second presence 40 are received by the consumer 20 over the electronic network 10. The first window is preferably not active when the second window is activated.

With reference to FIG. 7, the transition of the consumer's interaction from the first presence 30 to the second presence 40 over the electronic network 10 is described in greater detail. FIG. 7 is a flow diagram illustrating actions that take place prior to, during, and after the transition. At actions 300 and 302, the consumer 20 interacts with the first presence 30 over the electronic network 10 (e.g., as described above with reference to pages 100A-E) via the first window on the display screen of the consumer's computing device 20. At action 304, the first presence 30 determines whether the consumer 20 indicates a desire for a transaction for downloadable digital data. If the first presence 30 determines that the consumer 20 indicates a desire for a transaction for downloadable digital data, then the process flow branches to action 306 where the consumer 20 is automatically linked to the second presence 40 over the electronic network 10. More particularly, the second window automatically opens for facilitating interaction between the consumer 20 and the second presence 40. The interaction between the consumer 20 and the second presence 40 preferably includes completing the transaction for the downloadable digital data (action 308), which will be discussed in greater detail hereinbelow with respect to FIGS. 8A-G.

At action 310, the second window preferably closes after the transaction for the downloadable digital data is complete. Preferably, the first window is again activated when the transaction for the downloadable digital data is completed, and the consumer 20 is automatically linked back to the first presence 30 on the electronic network 10. Alternatively, the consumer 20 may be automatically linked to a third presence on the electronic network 10 after the transaction for the downloadable digital data has been completed. The automatic link between the consumer 20 and the third presence (if implemented) is preferably manifest by way of the first window.

With reference to action (4) of FIG. 5, details concerning the interaction between the consumer 20 and the second presence 40 over the electronic network 10 in response to receiving a command from the consumer 20 indicating that it wishes a transaction for downloadable digital data content will now be discussed. By way of example, the one or more pages of information transmitted by the second presence 40 to the consumer 20 (e.g., in the second window) preferably include page 200A shown in FIG. 8A. Preferably, the second window is branded by an entity associated with the second presence 40. In this example, the second window is branded by Sony Music™, which provides the consumers 20 with an indication of the source of the downloadable digital data. Advantageously, the first and second windows may be branded by different entities and, thus, the consumer 20 will recognize that different sources may provide the purchasable content.

Preferably, page 200A includes an area 204 associated with registering the consumer 20 as a new customer. Area 204 preferably includes a plurality of input fields in which the consumer 20 may enter his or her name, e-mail address, zip code, password verification, etc., it being understood that this list is provided by way of example only. When the consumer 20 is not a new customer, but is a returning customer, page 200A preferably permits the execution of a login procedure at area 206 that enables the consumer 20 to

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receive further pages from the second presence 40. More particularly, area 206 includes one or more input fields including, for example, user identification information (which may be the consumer's e-mail address) and password information. It is preferred that the functionality of areas 204 and 206 of page 200A are managed by way of registration information module 44A (FIG. 4) of second presence 40.

After the consumer 20 has successfully logged into the second presence 40, the second presence 40 preferably transmits another page 200B to the consumer 20 over the electronic network 10. Page 200B preferably provides a summary of billing information concerning the downloadable digital data content identified by the consumer 20 for download when he or she was interacting with the first presence 30 (described hereinabove with respect to FIGS. 6A-6E). In the example hereinabove, the consumer 20 identified the single music title "Everything Is Everything" by the artist Lauryn Hill for download (FIG. 6B). Thus, the music title "Everything Is Everything" is identified at area 208 on page 200B as being an item of purchasable content ready for download. Preferably, the artist's name, respective costs for each item of downloadable digital data content, subtotals for the items, sales tax, and grand total costs for downloading all items of downloadable digital data content are also included at area 208. The consumer 20 is also preferably presented with an opportunity to receive more information on a particular artist at location 210, for example, by way of an executable icon, input field, check-off box, etc.

Preferably, at area 212 of page 200B, separate billing information for completing the transaction for downloadable digital data is obtained from the consumer 20 by way of one or more input fields, executable icons, or the like. For example, information concerning a type of credit card to be used by the consumer 20 for remittance, the credit card name, the credit card number, the expiration date, the consumer address, etc. is preferably entered by the consumer 20 at area 212. In sum, pages 200A-B include at least one of: (i) registration inputs for registering the consumer 20; (ii) login inputs for permitting the consumer 20 access to further portions of the at least one page from the second presence 40; (iii) summary information including at least one of a list of the content selected by the consumer 20, and remittance information for the content selected by the consumer 20; and (iv) billing inputs for receiving information from the consumer 20 concerning a remittance method. For security purposes, the summary information and the billing inputs are included on page 200B, which may be accessed only after the consumer 20 has logged in. It is preferred that the functionality and/or information of page 200B is managed by way of billing information module 44B (FIG. 4) of the second presence 40.

When the billing information at area 212 has been entered, the consumer 20 preferably advances the download process by executing the "Next" icon at location 214 on page 200B. This preferably prompts the second presence 40 to transmit another page 200C to the consumer 20 over the electronic network 10. Page 200C preferably includes an interactive area 216 that facilitates the selection of various format options concerning the downloading of the downloadable digital data content. The format options preferably include types of software on which the downloadable digital data content may be executed. By way of example, these types of software are identified on page 200C as "Computer Desktop Software", it being understood that the consumer's computing device 20 might not be a desktop, but might be another appropriate computing device. The types of soft-

ware are preferably listed at location 218 and include, for example, Windows Media Player, Liquid Audio, and Real Jukebox, it being understood that any other of the known types of software, or software developed in the future, may be listed on page 200C without departing from the scope of the inventions. The types of software on which the downloadable digital data may be executed preferably correspond with respective players for converting at least one of the audio data, the video data, and the text data of the downloadable digital data content into one or more forms perceivable by the consumer 20. In use, the software programs are preferably part of, or are otherwise in communication with, the content playing module 28B (FIG. 2) of the consumer's computing device 20.

The format options also preferably include types of portable devices on which the downloadable digital data content may be stored, secure portable device being most preferred. By way of example, a list of secure portable devices is provided at location 220 on page 200C, the list including, but not being limited to, Sony Memory Stick Walkman & VAIO Music Clip, Diamond Rio, Creative Nomad II, SANYO, Panasonic, etc. In use, the portable devices are preferably associated with, or are otherwise in communication with, the portable device management module 28C (FIG. 2) of the consumer's computing device 20. Preferably, the portable devices on which the downloadable digital data may be stored are compliant with Secured Digital Music Initiative (SDMI) specifications. SDMI is a forum of many companies and organizations representing information technology, consumer electronics, security technology, the world wide recording industry, and Internet service providers. SDMI's charter is to develop open technology specifications that protect the playing, storing, and distribution of digital music. Digital Music Access Technology™ (DMAT) is a trademark for products that are compliant with SDMI specifications.

The format options also preferably include types of compression formats in which the downloadable digital data content may be configured and/or the types of CODECs through which the downloadable digital data may be processed. Preferably, these types of compression formats and/or types of CODECs are listed on page 200C in correspondence with one or more of the types of software (or players) on which the downloadable digital data may be executed. For example, the types of compression formats and/or types of CODECs usable with the Windows Media Player software are preferably listed in association with one another. The association may preferably take the form of listing the types of compression formats and/or CODECs in proximity to the respective types of software (or players). For example, the Atrac 3 compression format (and/or other compression formats) usable on the Windows Media Player software are listed at location 222 of page 200C near the Windows Media Player indicia. Likewise the compression formats and/or CODECs usable with the Liquid Audio software (or player) are preferably listed at location 218 proximate to the Liquid Audio indicia. When more than one compression format and/or CODEC may be usable with a given type of software (or player), they are preferably listed by way of a drop-down box that may be activated by the consumer 20. In use, the software programs are preferably part of, or are otherwise in communication with, the content playing module 28B (FIG. 2) of the consumer's computing device 20.

The format options also preferably include types of digital rights management (DRM) algorithms to which the downloadable digital data content may be subject. DRM algorithms are known in the art to facilitate the transmission of

downloadable digital data over an electronic network while preserving copyright protection, if any, of the content. The types of digital rights management algorithms are preferably listed in association with the software programs (or players) with which they are compatible. For example, the Windows DRM associated with the Windows Media Player is located at location 224. When more than one digital rights management algorithm is usable with a corresponding software program (or player), they are preferably listed by way of a drop-down box that may be activated by the consumer 20. In use, the digital rights management algorithm is preferably part of, or otherwise in communication with, the DRM module 28A (FIG. 2) of the consumer's computing device 20.

Preferably, each type of software, each type of compression format, each type of digital rights management algorithm and/or each type of portable device is displayed on page 200C and selectable by way of activation by the consumer 20. For example, the format options listed at area 216 by way of indicia are preferably highlightable or are otherwise selectable by way of check-off boxes 230. For example, the consumer 20 may opt to select the Windows Media Player software program (player) on which the downloadable digital data may be executed by clicking on check-off box 230 adjacent to the indicia for that software program. This preferably highlights that indicia (or "greys out" the other software programs), for example, as shown in FIG. 8D. To that end, the Windows Media Player indicia is shown in bold or darker contrast, while the Liquid Audio and Real Jukebox indicia are in lighter contrast.

Page 200C preferably includes an active matrix feature which permits the consumer 20 to select only from among compatible types of portable devices when a particular software program, in this case the Windows Media Player program, is selected. By way of example, only the Sony Music Stick Walkman & VAIO Music Clip and the Diamond Rio portable devices are selectable once the Windows Media Player software program has been selected by the consumer 20. This is preferably made known to the consumer 20 by highlighting these portable devices and/or graying out the other portable devices, etc. To that end, Sony Memory stick indicia and the Diamond Rio indicia is shown in darker contrast as compared to the Creative Nomad III indicia, the Sanyo indicia, or the Panasonic indicia.

More generally, a given type of software might be compatible with only respective subsets of the types of compression formats, the types of digital rights management algorithms, and/or the types of portable devices. The active matrix feature permits selection by the consumer 20 from among only the compatible subsets of types of portable devices, types of digital rights management algorithms and/or types of compression formats. Advantageously, this avoids the potential frustration of having the consumer 20 select invalid format options and greatly simplifies the process for downloading the downloadable digital data content.

Preferably, the active matrix feature is multi-directional (or multi-dimensional). For example, a given type of portable device may be compatible with only respective subsets of types of software, types of compression formats, and/or types of digital rights management algorithms. Accordingly, when the consumer 20 selects a given type of portable device, the consumer 20 may be permitted to select from among only the compatible respective subsets of types of software, types of compression formats, and/or types of digital rights management algorithms. Likewise, a given type of compression format may be compatible with only

respective subsets of the types of software, the types of digital rights management algorithms and/or the types of portable devices. Thus, when a given type of compression format is selected by the consumer 20, the consumer 20 may be permitted to select from only among the compatible respective subsets of the types of software, the types of digital rights management algorithms, and/or the types of portable devices. Still further, a given type of digital rights management algorithm may be compatible with only respective subsets of the types of software, the types of compression formats, and/or the types of portable devices. Thus, when the consumer 20 selects a given type of digital rights management algorithm, the consumer 20 is preferably only permitted to select from among the compatible respective subsets of the types of software, the types of compression formats, and the types of portable devices.

With reference to FIG. 4, the functionality of page 200C is preferably managed by way of the format selection module 46 of the second presence 40. The software program listing and selection functions are preferably managed by way of software selection module 46A of the second presence 40. The listing and selection functions are preferably managed by way of device selection module 46B of the second presence 40. The active matrix feature is preferably managed by way of selection matrix and display module 46D of the first presence 40. The selection matrix and display module 46D preferably interfaces with the software-to-device relationship management module 46C in order to produce and display the compatible selections available after a particular selection has been made by the consumer 20. The software-to-device relationship management module 46C identifies the relationships among the information displayed to the consumer 20, such as which types of software programs (players), CODECS, compression algorithms, DRM algorithms, and portable devices that are compatible and available for combination.

Referring again to FIG. 8D, when the consumer 20 has selected one or more of the format options, and the selection is received by the second presence 40 (e.g., by way of the consumer 20 activating the "Next" icon 232), the process for downloading the downloadable digital data content preferably advances. A next step in this process may include a check as to whether the consumer's computing device 20 contains an appropriate version of the selected software program, e.g., the Windows Media Player software program, and/or whether the consumer's computing device 20 includes an appropriate version of the selected compression format, or portable device, etc. If one or more required or desirable software resources are not resident on the consumer's computing device 20, the second presence 40 preferably transmits another page 200D (FIG. 8E) to the consumer 20 over the electronic network 10 which includes a hyperlink to one or more locations on the electronic network 10 from which the consumer 20 may download the resource(s). When the consumer 20 has downloaded the resource(s), the process for downloading the downloadable digital data preferably advances (for example, by way of the consumer 20 activating the "Continue" icon 234). A next step in the process may include providing verification that the consumer's computing device 20 includes all necessary or desirable software resources as, for example, by way of page 200E shown in FIG. 8F. The software resource check and verification functions are preferably managed by way of client software and device verifying module 46E (FIG. 4) of the second presence 40.

When the consumer 20 is ready to complete the download process, he or she preferably activates the "Complete Pur-

chase" icon 236 of page 200E (FIG. 8F) which preferably prompts the second presence 40 to transmit another page 200F (FIG. 8G) to the consumer 20 over the electronic network 10. Page 200F preferably includes a list of the selected titles (in this example the music title "Everything Is Everything"), the artists, the time, the file size, and/or an estimate of time to complete the download (preferably as a function of modem speed). The consumer 20 preferably initiates the download by executing the "Download Song" icon 238, which preferably prompts the second presence 40 to transmit the downloadable digital data to the consumer 20 over the electronic network 10 in a format consistent with at least one of the selected type of software, the selected type of compression format, the selected type of digital rights management algorithm, and the selected type of portable device.

With reference to FIGS. 8C-D, the consumer 20 may preferably select two or more types of software programs, two or more types of compression formats, two or more types of digital rights management algorithms, and/or two or more types of portable devices. In response, the second presence 40 preferably transmits the downloadable digital data content to the consumer 20 over the electronic network 10 in formats consistent with the selected types of software programs, the selected types of compression formats, the selected types of digital rights management algorithms, and/or the selected types of portable devices.

The downloading action (5) of FIG. 5 further illustrates the interaction between the second presence 40 and the consumer 20 during the downloading phase. The downloading process is preferably managed by way of content downloading module 48B (FIG. 4) of the second presence 40.

Preferably, the format selection module 46 (FIG. 4) of the second presence 40 stores the selected format options (e.g., at least one of the selected type(s) of software, the selected type(s) of compression format(s), the selected type(s) of digital rights management algorithm(s), and the selected type(s) of portable device(s)) and designates the stored format options as default format options. The second presence 40 preferably transmits the default format options to the consumer 20 over the electronic network 10 at a later time in response to another command from the consumer 20 indicating that he or she wishes to purchase downloadable digital data. Advantageously, the consumer 20 may easily accept the default format options by simply activating the "Next" icon 232 (FIG. 8D), thereby quickly advancing the process for downloading the downloadable digital data content. Alternatively, the consumer 20 may edit the default format options as desired.

Preferably, order accounting module 48A (FIG. 4) of the second presence 40 manages the final accounting and settlement of the transaction for downloadable digital data content. This preferably includes the settlement of the consumer's account, for example, by way of his or her credit card, DMA account, etc. It is most preferred that the accounting and settlement function includes the calculation of (and/or designation of) a commission from an entity associated with the second presence 40 to an entity associated with the first presence 30 such that the first presence 30 may receive a commission for the marketing and/or retail of the downloadable digital data content. The commission feature is further illustrated by way of action (6) of FIG. 5.

One skilled in the art will appreciate from the above disclosure that the present invention covers a method of carrying out one or more actions by the first presence 30 vis-à-vis its interaction with one or both of the consumer 20 and the second presence 40 for facilitating the purchase of

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content by the consumer 20 over the electronic network 10 (such as the actions discussed with respect to FIGS. 5, 6A-E, and 7). The skilled artisan will appreciate from the disclosure herein that the present invention also covers a system for facilitating the purchase of content by the consumer 20 over the electronic network 10. By way of example, a block diagram of one such system was presented and discussed with reference to FIGS. 1 and 3 hereinabove. In accordance with one or more aspects of the invention, such a system may generally include at least one processor capable of executing one or more software programs, where the software programs cause the system to perform one or more of the actions discussed hereinabove with respect to FIGS. 5, 6A-E, and 7.

One skilled in the art will appreciate from the disclosure hereinabove that the present invention covers a method of carrying out one or more actions by the second presence 40 vis-à-vis its interaction with one or both of the consumer 20 and the first presence 30 for facilitating the purchase of content by the consumer 20 over the electronic network 10 (such as the actions discussed with respect to FIGS. 5, 7, and 8A-G). The skilled artisan will appreciate from the disclosure herein that the present invention also covers a system for facilitating the purchase of content by the consumer 20 over the electronic network 10. By way of example, a block diagram of one such system was presented and discussed with reference to FIGS. 1 and 3 hereinabove. In accordance with one or more aspects of the invention, such a system may generally include at least one processor capable of executing one or more software programs, where the software programs cause the system to perform one or more of the actions discussed hereinabove with respect to FIGS. 5, 7 and 8A-G.

Although the invention herein has been described with reference to particular embodiments, it is to be understood that these embodiments are merely illustrative of the principles and applications of the present invention. It is therefore to be understood that numerous modifications may be made to the illustrative embodiments and that other arrangements may be devised without departing from the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A method for facilitating a transaction for purchasable musical content over an electronic network, the method comprising:
  - maintaining a first network server that hosts a first web page on the electronic network to which a consumer may connect;
  - transmitting the first web page from the first network server to the consumer over the electronic network, the first web page including a listing of purchasable musical content, the purchasable musical content including two types, the first type comprising downloadable digital musical data and the second type comprising physical musical media, wherein the first network server is enabled to allow the consumer to complete a purchase transaction for the physical musical media, but is not enabled to allow the consumer to complete a purchase transaction for the downloadable digital musical data;
  - allowing the consumer to browse the listing of purchasable musical content at the first web page on the electronic network;
  - receiving a command at the first network server from the consumer over the electronic network indicating that

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- the consumer has selected certain of the purchasable musical content to purchase;
- determining by the first network server based on the received command if the selected purchasable musical content is either the first type being downloadable digital musical data or the second type being physical musical media;
- executing a computer program stored in the first network server, the computer program comprising instructions for receiving the determination, and if the selected purchasable musical content is determined by the first network server to be the first type of purchasable musical content, the computer program automatically linking the consumer to a second network server which maintains custody of the selected downloadable digital musical data and hosts a second web page on the electronic network, the second web server:
  - transmitting the second web page to the consumer over the electronic network;
  - allowing the consumer to complete a purchase transaction at the second web page for the selected purchasable content, wherein the consumer enters transaction information at the second web page, and after the purchase transaction is complete, the second server transferring custody of the downloadable digital musical data from the second network server through the electronic network to the consumer;
- executing a computer program stored in the first network server, the computer program comprising instructions for receiving the determination, and if the selected purchasable musical content is determined by the first network server to be the second type of purchasable music content, the first web server:
  - allowing the consumer to complete a purchase transaction at the first web page for the selected purchasable content, wherein the consumer enters transaction information at the first web page, the transaction information including at least the consumer's mailing address, and after the purchase transaction is complete, the first server causing the physical musical media to be physically mailed to the mailing address entered by the consumer.
- 2. The method of claim 1, further comprising displaying the first web page in a first window and the second page in a second window.
- 3. The method of claim 2, wherein the first and second windows are displayed simultaneously on a monitor display.
- 4. The method of claim 2, wherein the first window is branded by a first entity and the second window is branded by a second entity.
- 5. The method of claim 2, wherein the second window is activated when the second web page is received by the consumer over the electronic network and the first window is not active when the second window is activated.
- 6. The method of claim 1, wherein the physical musical media include at least one of optically readable media, magnetically readable media, and mechanically readable media.
- 7. The method of claim 1, wherein the second web page includes at least one of: (i) registration inputs for registering the consumer; (ii) login inputs for permitting the consumer access to further portions of the second page; (iii) summary

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information including at least one of a list of the purchasable content selected by the consumer, and remittance information for the purchasable content selected by the consumer; and (iv) billing inputs for receiving information from the consumer concerning a remittance method.

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8. The method of claim 7, wherein the summary information and the billing inputs are included on the further portions of the second web page.

\* \* \* \* \*



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

PATENT NO. : 7,043,447 B2  
APPLICATION NO. : 09/836094  
DATED : May 9, 2006  
INVENTOR(S) : Hughes et al.

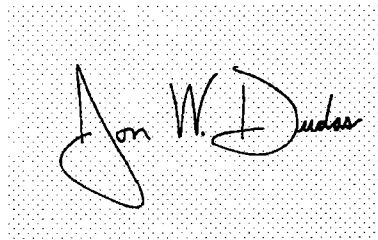
Page 1 of 1

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

Col. 17, line 55, delete "downioadable" and insert -- downloadable -- therefor.

Signed and Sealed this

Twenty-ninth Day of August, 2006

A handwritten signature in black ink on a light gray dotted background. The signature reads "Jon W. Dudas" in a cursive style.

JON W. DUDAS

*Director of the United States Patent and Trademark Office*

**U.S. Patent No. 6,794,567**



US006794567B2

(12) **United States Patent**  
**Hughes et al.**

(10) **Patent No.:** **US 6,794,567 B2**  
(45) **Date of Patent:** **Sep. 21, 2004**

(54) **AUDIO QUALITY BASED CULLING IN A PEER-TO-PEER DISTRIBUTION MODEL**  
(75) **Inventors:** **David A. Hughes**, New York, NY (US); **Matthew A. Carpenter**, New York, NY (US); **Phuong L Nguyen**, Wayne, NJ (US)

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(73) **Assignees:** **Sony Corporation**, Tokyo (JP); **Sony Music Entertainment, Inc.**, New York, NY (US)

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(74) *Attorney, Agent, or Firm*—Mayer Fortkort & Williams, PC; Karin L. Williams, Esq.

(\* ) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 64 days.

(57) **ABSTRACT**

Electronic Music Distribution (EMD), wherein music stored as digital files is downloadable by end users from retail computer databases or from Peer to Peer "file sharing" databases such as Napster, has developed rapidly in the recent past as an alternative to the traditional distribution channels for recorded music. While EMD holds great promise as a distribution vehicle, certain limitations exist with regard to the capability of existing distribution models to classify or characterize the audio quality of the files available for download. This limitation is particularly acute in the Peer-to-Peer context where the downloadable database consists of files from a multiplicity of sources. The present invention utilizes an objective measure of audio quality that is, in one embodiment, presented as part of a response to a user or subscriber search query.

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(22) **Filed:** **Aug. 9, 2002**

(65) **Prior Publication Data**

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(51) **Int. Cl.**<sup>7</sup> ..... **G10H 7/00**; A63H 5/00; G04B 13/00

(52) **U.S. Cl.** ..... **84/609**

(58) **Field of Search** ..... 84/600, 609

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,758,027 A \* 5/1998 Meyers et al. .... 706/26

**19 Claims, 4 Drawing Sheets**

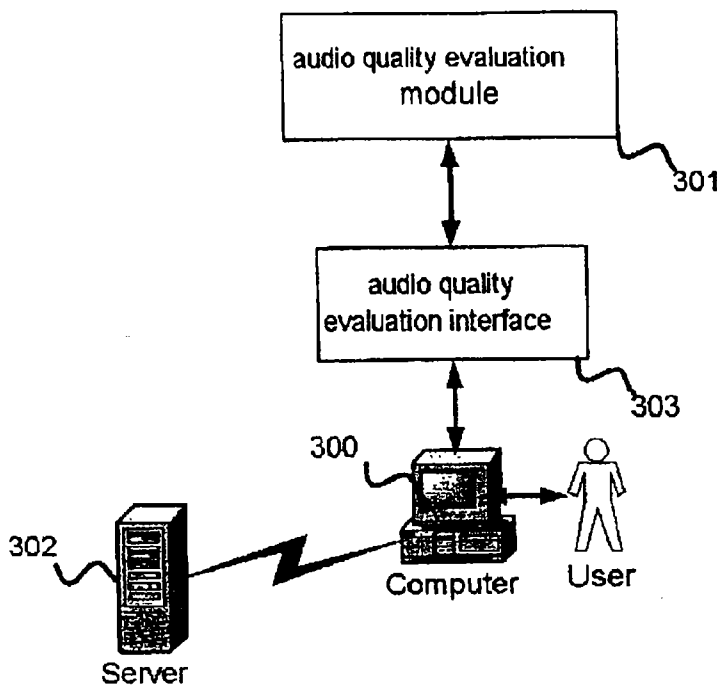


FIG 1

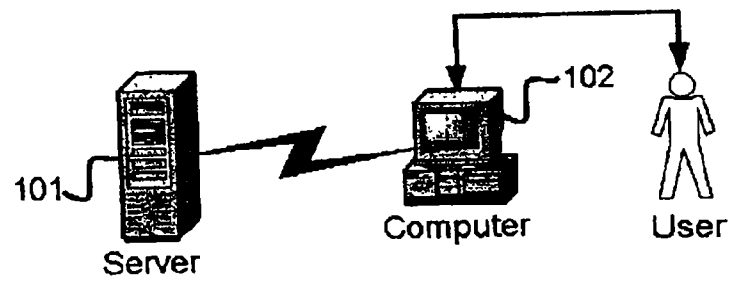


FIG 2

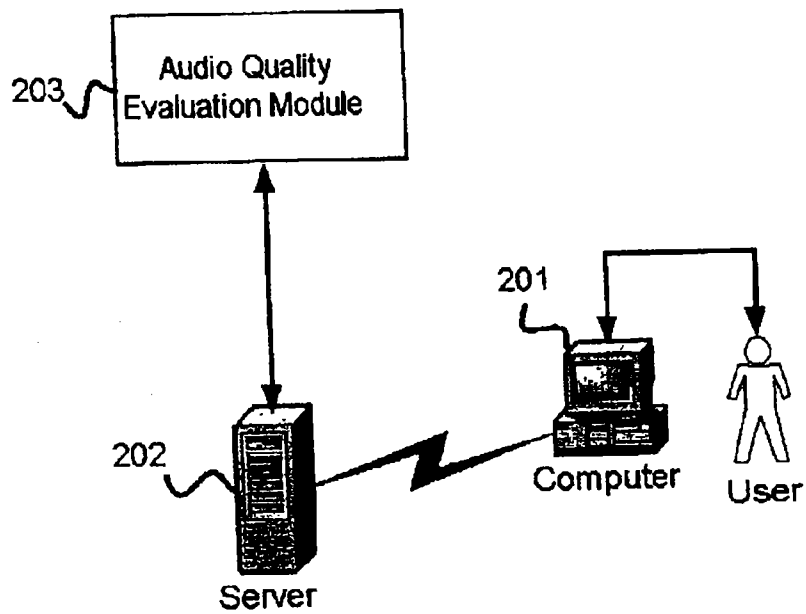
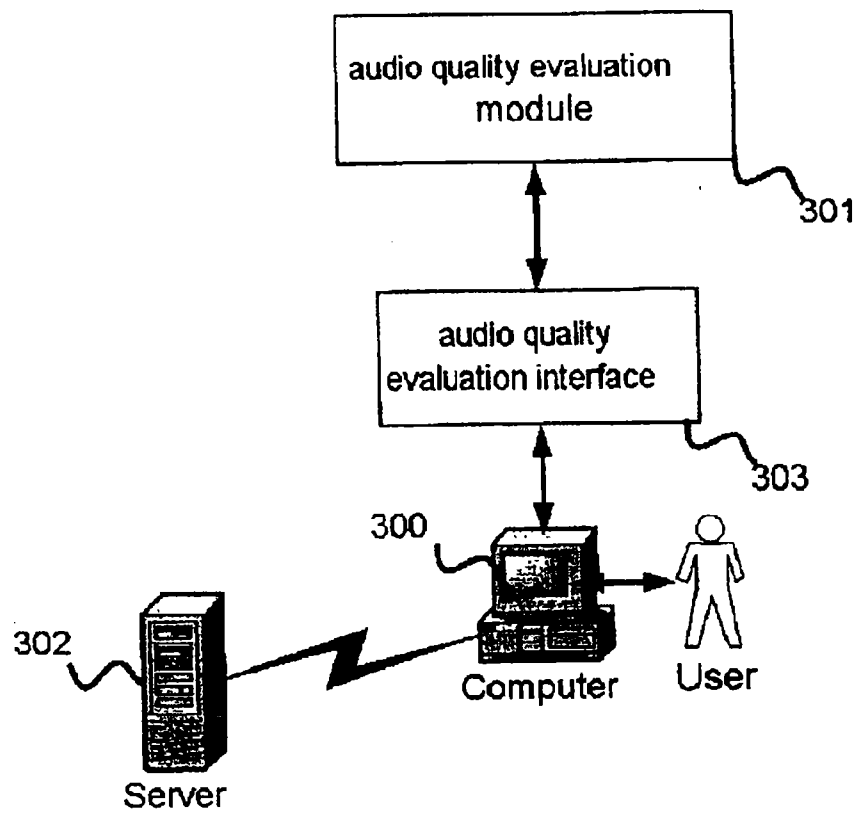
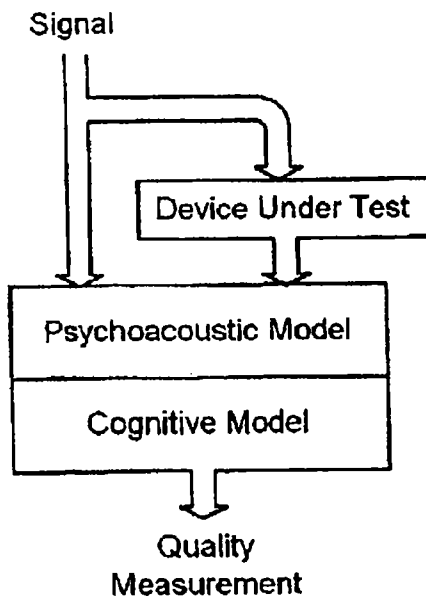


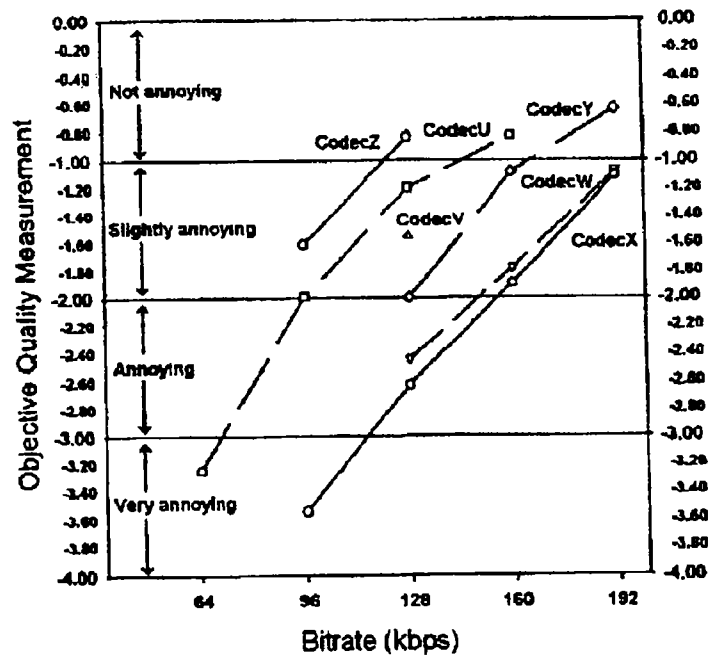
FIG 3





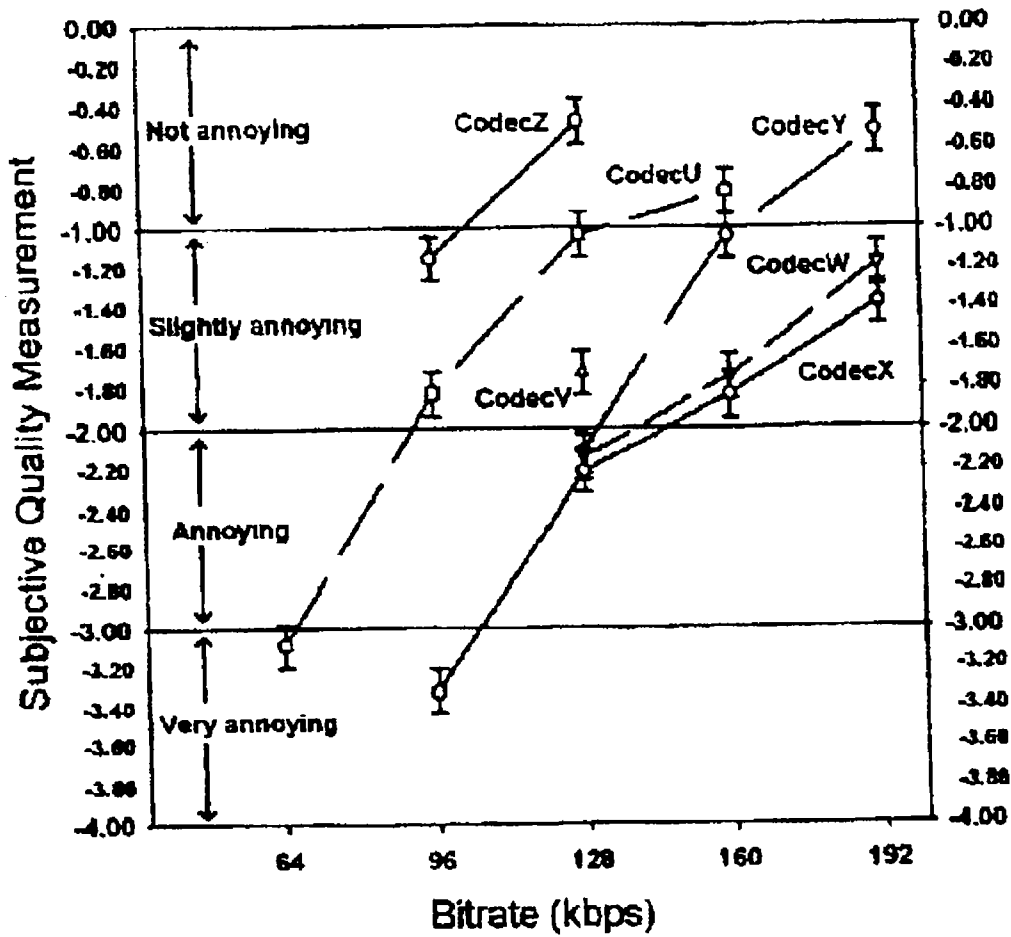
**FIG 4**

Objective Quality Measurements



**FIG 5**

### Subjective Quality Measurements



# FIG 6

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## AUDIO QUALITY BASED CULLING IN A PEER-TO-PEER DISTRIBUTION MODEL

### FIELD OF THE INVENTION

The present invention relates generally to the field of Electronic Music Distribution.

### BACKGROUND OF THE INVENTION

Electronic Music Distribution (EMD), wherein music stored as digital files is downloadable by end users from retail computer databases or from Peer to Peer "file sharing" databases such as Napster, has developed rapidly in the recent past as an alternative to the traditional distribution channels for recorded music. While EMD holds great promise as a distribution vehicle, certain limitations exist with regard to the capability of existing distribution models to classify or characterize the audio quality of the files available for download. This limitation is particularly acute in the Peer to Peer context where the downloadable database consists of files from a multiplicity of sources.

In a Peer-to-Peer distribution model such as that used by Napster, for example, the database comprises digital music files submitted by database users and is searchable by song title, group, artist and genre. Each successful search yields at least one result and in most instances, several results for the same song or search request. Each data file corresponding to a song listing is detailed with certain attributes such as Frequency and Bitrate for example.

Frequency and file size are measures of how long it will take to download a specific audio file. The Frequency of an audio file corresponds to the number of sound samples per second in the archived audio file. The bitrate is a loose measure of the sound quality for the subject file wherein files with higher bitrate values have better sound quality overall.

Since the audio files in Peer-to-Peer file sharing databases come from a large number of disparate sources, there is a large variation in audio quality between audio files. Current file sharing applications offer no meaningful technique, other than bitrate values, as a guide to the audio quality of the file to be downloaded. Hence, a user, faced with multiple choices for each title searched, possesses no accurate measure by which to make an accurate choice of which file to download. Often, this dilemma results in the user having to first download a file, and then ascertain its audio quality by listening during playback. In many instances, a downloaded file may not meet a user's personal audio quality criteria, thus requiring the user to re-download the same title from a different "peer" in an effort to find the desired title with the desired audio quality. This trial and error approach is uncertain and time consuming. Moreover, it wastes bandwidth resources.

The present invention is therefore directed to the problem of providing an objective criteria by which a user can ascertain, prior to downloading, the audio quality of a file to be downloaded before the file is transferred from the Peer-to-Peer database to a user's storage and playback system.

### SUMMARY OF THE INVENTION

The present invention solves this and other problems by providing a method by which the audio quality of archived audio files in an Electronic Music Distribution database can be ascertained prior to downloading, either by the user requesting an audio file, or a user uploading an audio file to a database.

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According to one aspect of the present invention, a method for searching an electronic music distribution database includes four steps. First, a database search is executed in response to a search query. Second, audio files corresponding to the search query are identified. Third, an audio quality evaluation protocol is executed on the identified audio files to generate audio quality data corresponding to the files. Fourth, the identified audio files are displayed along with their corresponding audio quality data.

According to another aspect of the present invention, in the above method the evaluation protocol comprises the Perceptual Evaluation of Audio Quality (PEAQ) evaluation method.

According to another aspect of the present invention, in the above method the audio quality data includes the Objective Difference Grade variable.

According to another aspect of the invention, a method of evaluating audio files for archiving in a database includes three steps. First, at least one file is selected for evaluation. Second, an audio quality evaluation protocol is executed on the selected file to generate audio quality data corresponding to the audio file. Third, the selected audio file is archived along with the audio quality data.

According to another aspect of the present invention, in the above method, the evaluation protocol includes the PEAQ evaluation method.

According to another aspect of the present invention, in the above method, the audio quality data includes the Objective Difference Grade variable.

According to another aspect of the present invention, a device for evaluating the audio quality of an audio file includes a computer, which has an audio quality evaluation interface and the capability to communicate with an electronic music distribution database containing audio files. When instructed by a user, the interface performs an evaluation of one or more audio files in the database or in the P.C. of the subscriber uploading the file, and generates data corresponding to the audio quality of the files evaluated.

According to another aspect of the present invention, in the above device, the evaluation interface includes the capability to perform PEAQ measurements.

According to another aspect of the present invention, in the above device, the computer communicates with the database via a modem.

According to another aspect of the present invention, in the above device, the computer communicates with the database via a server.

According to another aspect of the present invention, in the above device, the data corresponding to the audio quality includes the Objective Difference Grade variable.

According to another aspect of the present invention, a system for retrieving audio files in an electronic music distribution database includes a server containing an archive of audio files and a computer, having an audio quality evaluation interface and the capability to communicate with the server. When instructed by a user of the computer, the server identifies one or more audio files. Once identified by the server, the files are then evaluated for audio quality by the evaluation interface. Based on this evaluation, the computer determines whether or not to retrieve the identified audio files.

According to another aspect of the present invention, in the above system, the audio quality interface includes the capability to perform PEAQ measurements.

According to another aspect of the present invention, in the above system, the instruction executed by the server includes a title, artist or genre search.



According to another aspect of the present invention, in the above system, the computer communicates with the server via modem.

According to another aspect of the present invention, in the above system, the computer communicates with the server via a Point-of-Presence server.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts a user interface of a conventional EMD database.

FIG. 2 depicts a block diagram of an exemplary embodiment of the present invention.

FIG. 3 depicts a block diagram of a second exemplary embodiment of the present invention.

FIG. 4 depicts a block diagram of a PEAQ process.

FIG. 5 depicts objective quality measurements from a PEAQ process.

FIG. 6 depicts subjective quality measurements from a PEAQ process.

#### DETAILED DESCRIPTION

It is worthy to note that any reference herein to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" are not necessarily all referring to the same embodiment.

The embodiments of the invention include inter alia a method and apparatus for evaluating the audio quality of audio files from an electronic music distribution database and generating an objective measure of the audio quality of archived audio files. In one embodiment of the present invention, audio quality of stored audio files is determined using the standardized methodology known as the Perceptual Evaluation of Audio Quality (PEAQ).

##### Overview of PEAQ

A perceptual measurement method called PEAQ provides a method for an objective measurement of audio quality. PEAQ includes measures of nonlinear distortion, linear distortion, harmonic structure, distance to masked threshold and changes in modulation. These variables are mapped by a neural network to a single measure of audio quality. One objective quality variable generated by a PEAQ evaluation is the Objective Difference Grade (ODG) variable.

PEAQ—the ITU Standard for Objective Measurement of Audio Quality

The limitations imposed by available bandwidth can affect the quality and responsiveness of digital audio communication systems. The need to conserve bandwidth has led to developments in the compression of the audio data to be transmitted. Various encoding methods remove both redundancy and perceptual irrelevancy in the audio signal so that the bit rate required to encode the signal is significantly reduced. These compression algorithms take into account knowledge of human auditory perception, and typically achieve a reduced bit rate by ignoring audio information that is not likely to be heard by most listeners. A psychoacoustic model is used to predict how this information is masked by louder audio content adjacent in time and frequency. The degree of compression permitted by a codec (coder/decoder) depends, to some extent, on the sophistication of the model employed.

The perceived quality of decoded audio may suffer when a compression algorithm pushes the limit with respect to bit

rate reduction. The performance typically varies with different types of audio content, and some implementations may be more successful than others in the use of psychoacoustic knowledge. Subjective tests are most reliable for assessing the quality of decoded audio. However, the expense and time to conduct such tests often prohibit their use. Therefore, a fast and reliable method for objective measurement of perceived audio quality has been developed.

The International Telecommunications Union (ITU) describes in detail a standard method for measuring the quality of wide bandwidth audio (ITU Recommendation BS.1387, "Method for Objective Measurements of Perceived Audio Quality," which is hereby incorporated by reference as if repeated herein in its entirety, including any figures). The method is the result of a joint effort among laboratories in Canada, The Netherlands, France, and Germany. The acronym for the measurement model is PEAQ (Perceptual Evaluation of Audio Quality).

The psychoacoustic model employed in the method produces a number of variables based on comparisons between a reference signal and the same signal processed by a particular device such as a codec. These variables are used to predict the subjective quality rating that would be assigned to the processed signal if a formal listening test were conducted. The objective quality measurement was calibrated using results from a number of listening tests conducted using a standard methodology also recommended by the ITU.

The ITU recommendation describes two variations of the method. The Basic Version is intended to be fast enough for real-time monitoring, while the Advanced Version is computationally more demanding but is expected to give slightly more reliable results. The high level structure of both the Basic Version and the Advanced Version is shown in FIG. 4. As in the listening tests, the quality of the test signal is measured relative to the reference signal. Each signal is transformed into a time-frequency representation by the psychoacoustic model. Then a task-specific model of auditory cognition reduces these data to a number of scalar variables, some of which are mapped to the desired quality measurement.

The psychoacoustic model in the Basic Version uses a Discrete Fourier Transform (DFT) to transform the signal to a time-frequency representation, while the Advanced Version uses both a DFT and a filter bank. The data from the DFT is mapped from the frequency scale to a pitch scale, the psychoacoustic equivalent of frequency. For the filter bank, the frequency to pitch mapping is implicitly taken into account by the bandwidths and spacing of the bandpass filters. The input energy is spread over adjacent pitch regions as a function of the level of the input.

Simultaneous masking is achieved via the masked threshold concept as well as by comparison of internal representations. The approach based on the masked threshold concept calculates a level dependent masked threshold for the reference signal at any pitch value using a predefined psychophysical masking function. Additional energy in the test signal is deemed to be audible if the representation of that energy exceeds the masked threshold. In the approach based on the comparison of internal representations, the energies of both the test and the reference signal are spread to adjacent pitch regions in order to obtain excitation patterns, and are non-linearly compressed to approximate loudness. Non-simultaneous forward masking is implemented by smearing the excitation patterns over time prior to compression. The difference between the resulting inter-

nal representations models the energy in the test signal that is not masked by the reference audio content.

The cognitive model compares the internal representations and calculates scalar variables that summarize psychoacoustic activity over time. Important information for making the quality measurement is derived from the differences between the frequency and pitch domain representations of the reference and test signals. In the frequency domain, the spectral bandwidths of both signals are measured and the harmonic structure in the error is determined. In the pitch domain, error measures are derived from the excitation envelope modulations, the excitation magnitudes, and the excitation derived from the error signal calculated in the frequency domain. The quality measurement is based on eleven variables for the Basic Version, and on five variables for the Advanced Version.

An example of the performance of this method may be seen in FIGS. 5-6 where objective codec quality measurements are compared with corresponding subjective ratings.

U.S. Pat. No. 5,758,027 discloses a method and apparatus for performing a PEAQ analysis, and is hereby incorporated by reference as if repeated herein in its entirety including the drawings.

#### Exemplary Embodiment

An exemplary embodiment of one aspect of the present invention incorporates PEAQ as a measurement tool in the electronic distribution of audio files. In current electronic music distribution systems, such as Napster and as shown in FIG. 1, a user or subscriber connects to a server 101 that contains a database of audio files via a personal computer 102 or similar terminal. In response to a search query by the user or subscriber, the server 101 searches the database and lists "hits" or audio files corresponding to the search query initiated by the subscriber.

It is quite common in Peer-to-Peer (P2 P) distribution systems, such as Napster for example, for a search query to yield multiple hits corresponding to the user request. These hits, however, do not all possess the same audio quality since they were sourced from different subscribers to the distribution databases with correspondingly different quality levels of equipment. Thus, for any given query a subscriber is faced with many examples corresponding to the user's query and no real tool to determine the quality of the audio file represented by each hit.

Typically, listings are detailed with attributes such as frequency and bit rate. The frequency of an audio file corresponds to the number of sound samples per second in the archived audio file and is a measure of how long it will take to download the specific audio file in question. The bitrate, on the other hand, is a loose measure of the sound quality for the subject file wherein files with higher bitrate values have better sound quality overall.

The present invention utilizes an objective measure of audio quality that is, in one embodiment, presented as part of a response to a user or subscriber search query.

In particular, and with reference to FIG. 2, one embodiment of the present invention comprises a computer 201 in communication with a server 202 via communication means such as a modem or other conventional communication means (not shown). The server 202 comprises a database of archived audio files and includes an audio quality evaluation module 203. In response to a search query-initiated by a user or subscriber via computer 201 and communicated to server 202, audio quality evaluation module 203 performs an evaluation of all archived audio files corresponding to the user search query and the server 202 in turn, displays the archived audio files corresponding to the user search query

along with the results of the evaluation step performed by the audio quality evaluation module 203. The search query can contain a broad spectrum of information or may contain no more than a desired song title, artists name or genre. The user can also designate a minimum threshold level of audio quality desired, thereby eliminating from display results that do not meet the minimum designated audio quality.

The audio quality evaluation module preferably evaluates the audio quality of the results of the search query using the PEAQ evaluation protocol. In this manner, the subscriber or user is presented with a listing of all downloadable audio files corresponding to the search query along with an objective measure of the audio quality of the archived audio files corresponding to the search query. While PEAQ is a preferred audio evaluation protocol in the present invention, it should be clear to one skilled in the art that alternative audio quality evaluation protocols and methods can be substituted for PEAQ as an alternative audio quality evaluation tool.

In second embodiment of the present invention and with reference to FIG. 3, the present invention comprises a computer 300 operated by a user or subscriber to an EMD. The computer 300 comprises an audio quality evaluation module 301 that interfaces with the computer via an audio quality evaluation interface 303. The computer 300, audio quality evaluation module 301 and the audio quality evaluation interface 303 are in communication with a server 302 via communication means such as a modem or other conventional communicating means (not shown). In response to a search query initiated by the user, server 302 displays all archived digital audio files corresponding to the search query. The search query can contain a broad spectrum of information or may contain no more than a desired song title, artists name or genre. The user can also designate a minimum threshold level of audio quality desired, thereby eliminating from display results that do not meet the minimum designated audio quality.

Once results corresponding to a search query are displayed, the user can select an archived audio file corresponding to the search query in conventional fashion. However, prior to storage of the archived audio file in computer 300, Audio quality evaluation module 301, in conjunction with audio quality evaluation interface 303 perform an audio quality evaluation of the digital audio file being downloaded, and display the result of the evaluation to the user as a preview of the audio quality of the file being downloaded. This procedure allows the user to objectively evaluate the audio quality of the digital audio file selected for downloading and reject the selection if it does not meet the user's preferences.

All the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps or any method or process so disclosed may be combined in any combination, except combinations where at least some of the features and or steps are mutually exclusive. Each feature disclosed in this specification (including any accompanying claims, abstract, and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

Moreover, although various embodiments are specifically illustrated and described herein, it will be appreciated that modifications and variations of the invention are covered by the above teachings and within the purview of the appended claims without departing from the scope of the invention.

What is claimed is:

1. A method for searching an electronic music distribution database comprising:

- executing a database search in response to a search query;
  - identifying audio files corresponding to said search query;
  - executing an audio quality evaluation protocol on said audio files;
  - generating audio quality data corresponding to said audio files; and
  - displaying said audio files and said corresponding audio quality data,
- wherein said audio quality evaluation protocol comprises the Perceptual Evaluation of Audio Quality (PEAQ) method.

2. The method according to claim 1, wherein said audio quality data comprises the Objective Difference Grade (ODG) variable.

3. A method for evaluating audio files for archiving in a database comprising:

- receiving an identification of audio files corresponding to a search query initiated by a user;
- selecting, by the user, at least one of the identified audio files for evaluation;
- executing, subsequent to the step of selecting, an audio quality evaluation protocol on said selected at least one identified audio file;
- generating audio quality data corresponding to said at least one identified audio file; and
- archiving said at least one identified audio file and said corresponding audio quality data.

4. The method according to claim 3, wherein said evaluation protocol comprises the PEAQ perceptual method.

5. The method according to claim 3, wherein said audio quality data comprises the Objective Difference Grade variable.

6. A device for evaluating the audio quality of an audio file comprising:

- a computer having an audio quality evaluation interface, an audio quality evaluation module and a communicator for communicating with an electronic music distribution database, said database comprising a plurality of digital audio files,

wherein said computer is configured to: (1) communicate with said database via said communicator, (2) to receive through the communicator an identification of audio files corresponding to a search query initiated by a user, (3) to receive an indication of at least one user-selected audio file, and to (4) perform an evaluation of the audio quality of the at least one user-selected audio file using the audio evaluation module to generate data corresponding to audio quality.

7. The device according to claim 6, wherein said audio quality evaluation interface comprises an evaluator for performing PEAQ evaluations.

8. The device according to claim 6, wherein said communicator comprises a modem.

9. The device according to claim 6, wherein said data corresponding to said audio quality comprises the Objective Difference Grade variable.

10. The device according to claim 9, wherein said communicator composes a server.

11. A system for retrieving audio files in an electronic music database comprising:

- a server including a searchable database storing a plurality of digital audio files; and

- a computer including an audio quality evaluation module to evaluate an audio quality value of a designated audio file and a communicator to communicate with said server,

wherein in response to at least one instruction from said computer via said communicator, (1) said server searches said plurality of digital audio files to identify any of said plurality of audio files corresponding to said instruction, (2) said evaluation module determines an audio quality value of any identified audio file, and (3) said computer determines whether said identified audio file corresponds to a minimum threshold level of audio quality specified in said instruction.

12. The system according to claim 11, wherein said audio quality evaluation module performs a Perceptual Evaluation of Audio Quality calculation.

13. The system according to claim 11, wherein said at least one instruction comprises at least one of a title, artist and genre search.

14. The system according to claim 11, wherein said communicator comprises a modem.

15. The system according to claim 11, wherein said communicator comprises a Point-Of-Presence (POP) server.

16. The system according to claim 11, wherein said communicator comprises a computer network.

17. The system according to claim 11, wherein said communicator comprises the Internet.

18. The system according to claim 11, wherein said audio quality is referenced in terms of the Objective Difference Grade variable.

19. The method according to claim 3 further comprising the step of:

- downloading the at least one identified audio file selected by the user, prior to the step of executing an audio quality evaluation protocol.

\* \* \* \* \*

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

PATENT NO. : 6,794,567 B2  
DATED : September 21, 2004  
INVENTOR(S) : David A. Hughes et al.

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:

Column 5.

Line 35, change "(P2 P) to -- (P2P) --.

Column 6.

Lines 4 and 33, before "name", change "artists" to -- artist's --.

Line 41, after "computer 300," change "Audio" to -- audio --.

Line 43, change first word "perform" to -- performs --.

Line 44, change "display" to -- displays --.

Column 7.

Line 7, after "audio", change "flies" to -- files --.

Line 9, change first word "flies" to -- files --.

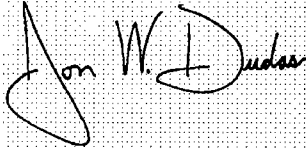
Column 8.

Line 9, correct dependency from "claim 9" to -- claim 6 --.

Line 10, change "composes" to -- comprises --.

Signed and Sealed this

First Day of March, 2005

A handwritten signature in black ink on a light gray grid background. The signature reads "Jon W. Dudas" in a cursive style.

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*

**U.S. Patent No. 6,791,020**



US006791020B2

(12) **United States Patent**  
**Hughes**

(10) **Patent No.:** US 6,791,020 B2  
(45) **Date of Patent:** Sep. 14, 2004

- (54) **SYSTEM AND METHOD FOR FILLING CONTENT GAPS**
- (75) **Inventor:** David A. Hughes, New York, NY (US)
- (73) **Assignees:** Sony Corporation (JP); Sony Music Entertainment Inc., New York, NY (US)
- (\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 21 days.

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- (21) **Appl. No.:** 10/219,008
- (22) **Filed:** Aug. 14, 2002
- (65) **Prior Publication Data**  
US 2004/0031378 A1 Feb. 19, 2004
- (51) **Int. Cl.<sup>7</sup>** ..... G10H 7/00; G04B 13/00; A63H 5/00
- (52) **U.S. Cl.** ..... 84/609; 709/231
- (58) **Field of Search** ..... 84/609; 709/231; 370/468, 395.21

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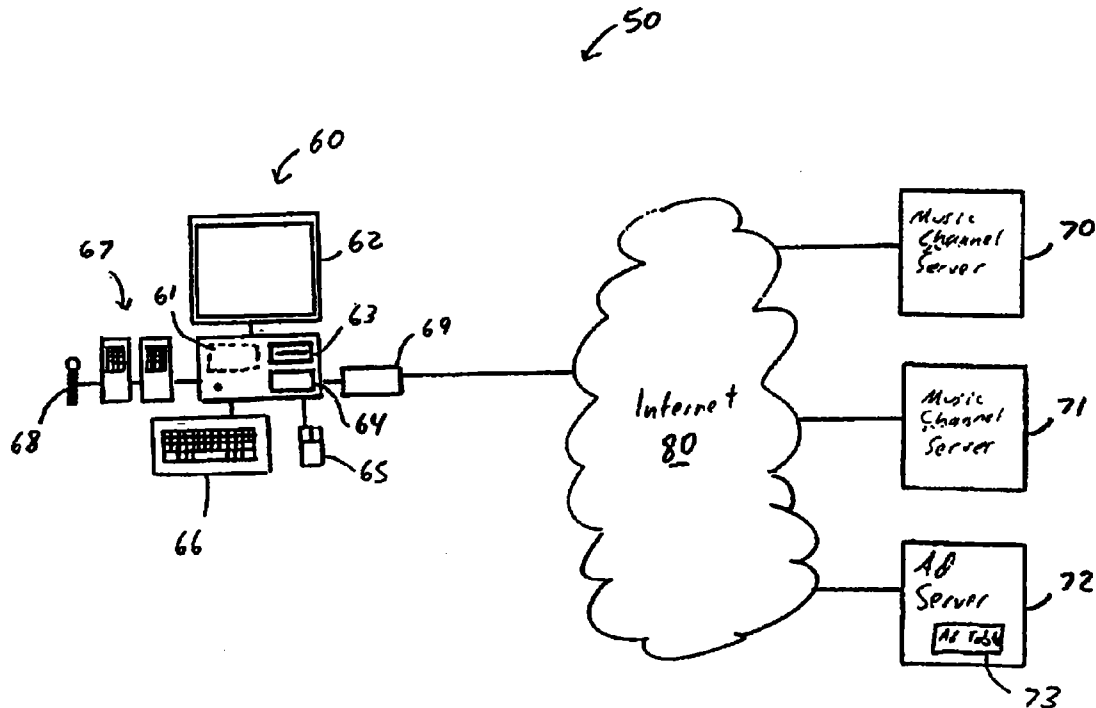
*Primary Examiner*—Jeffrey Donels  
(74) *Attorney, Agent, or Firm*—Lerner, David, Littenberg, Krumboltz & Mentlik, LLP

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(57) **ABSTRACT**

A system and method including an agent for selecting at least two songs among simultaneously streaming songs based on user information and inserting additional content in the duration of time between the end of the earlier song and the start of the later song.

**43 Claims, 4 Drawing Sheets**



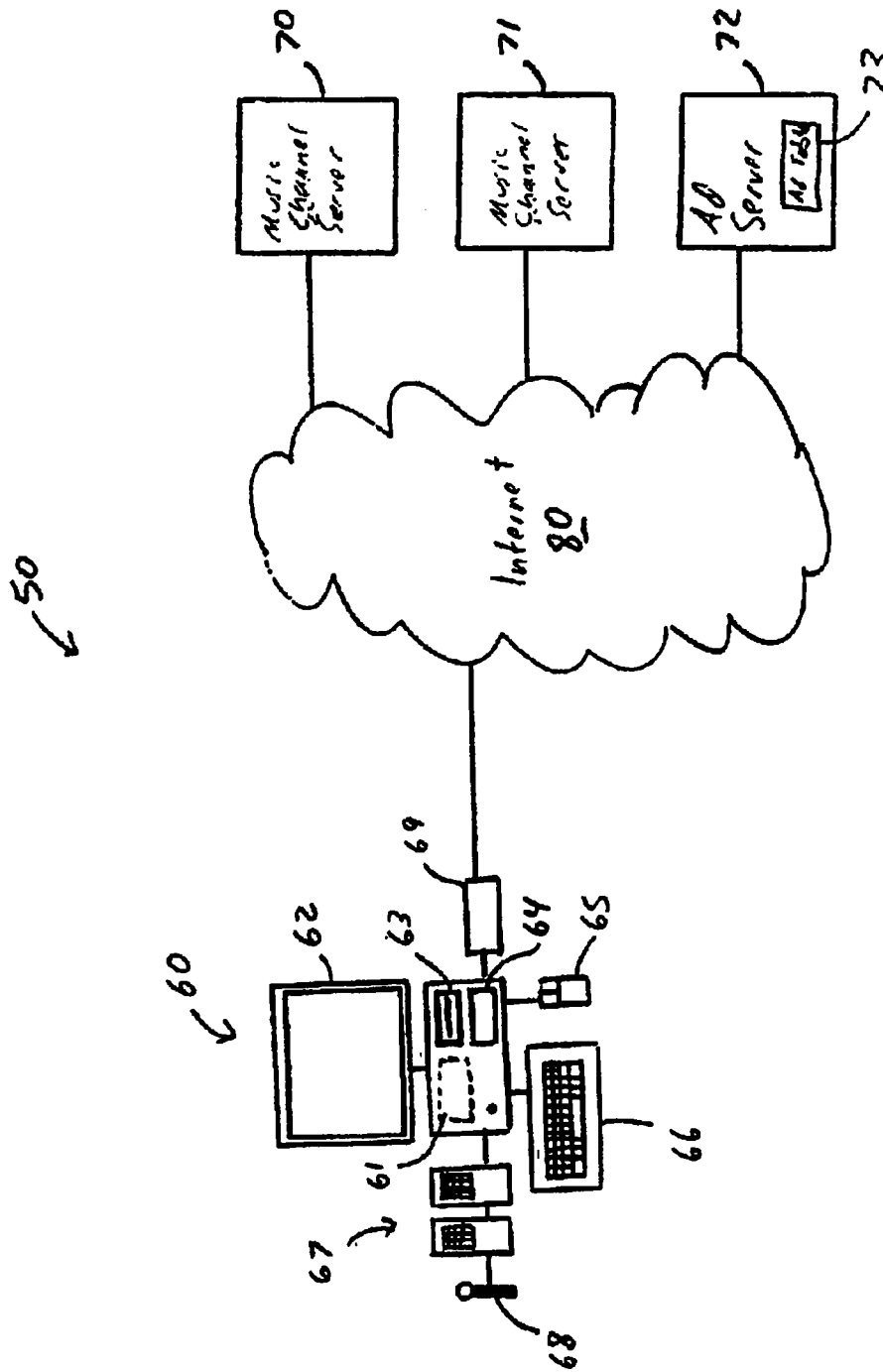


Figure 1

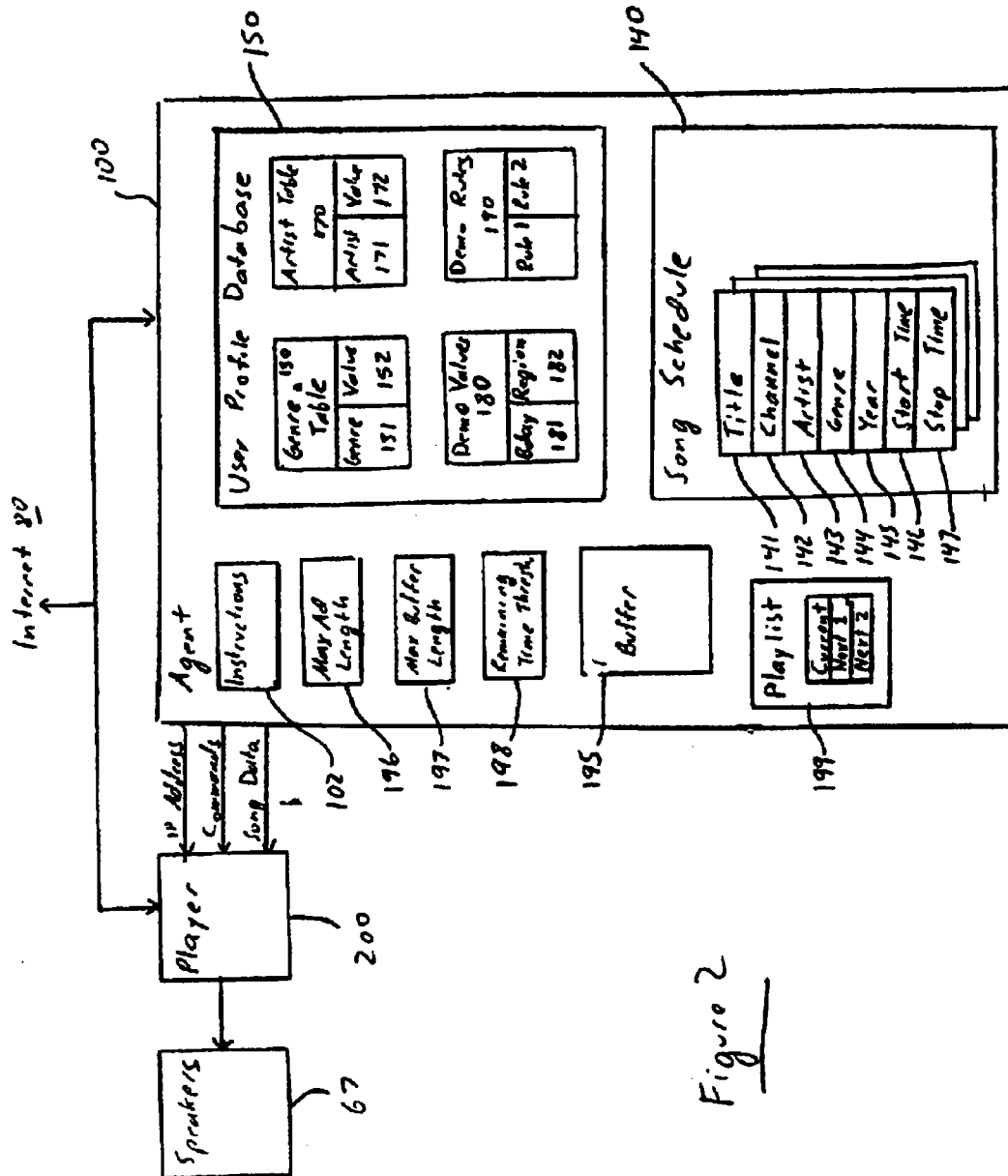


Figure 2



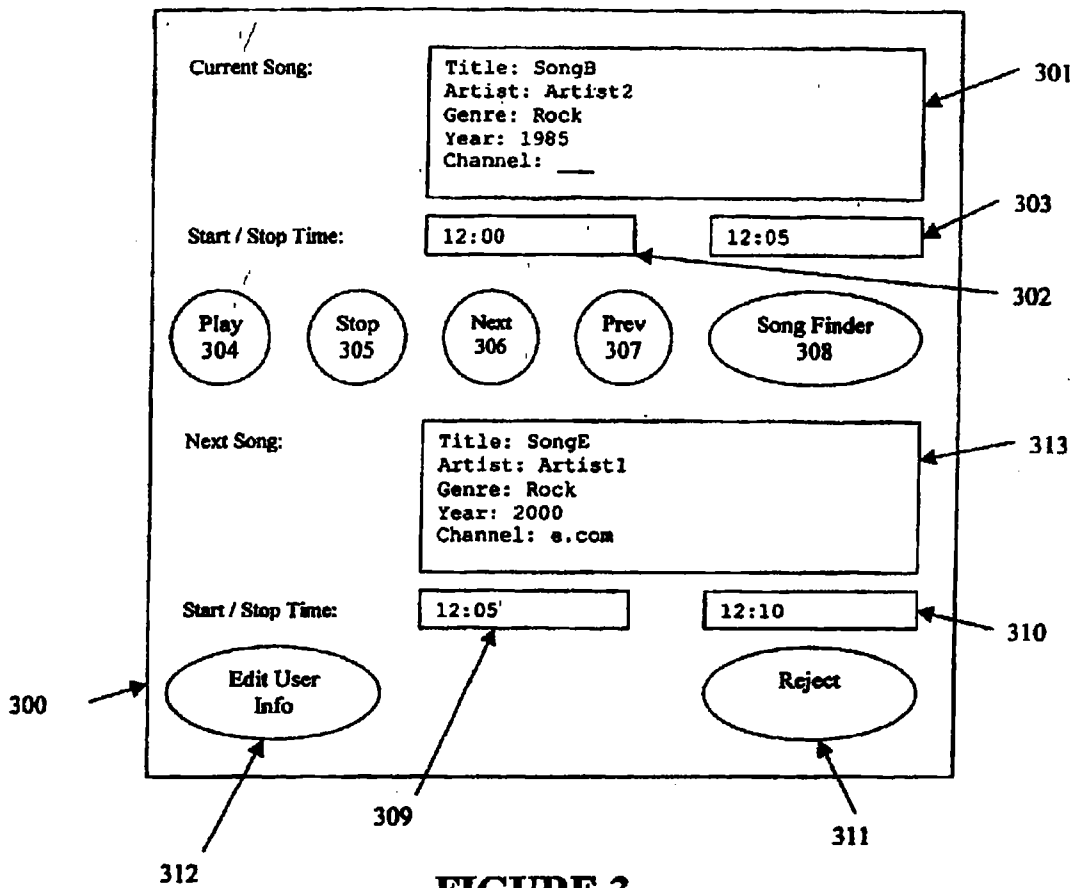


FIGURE 3

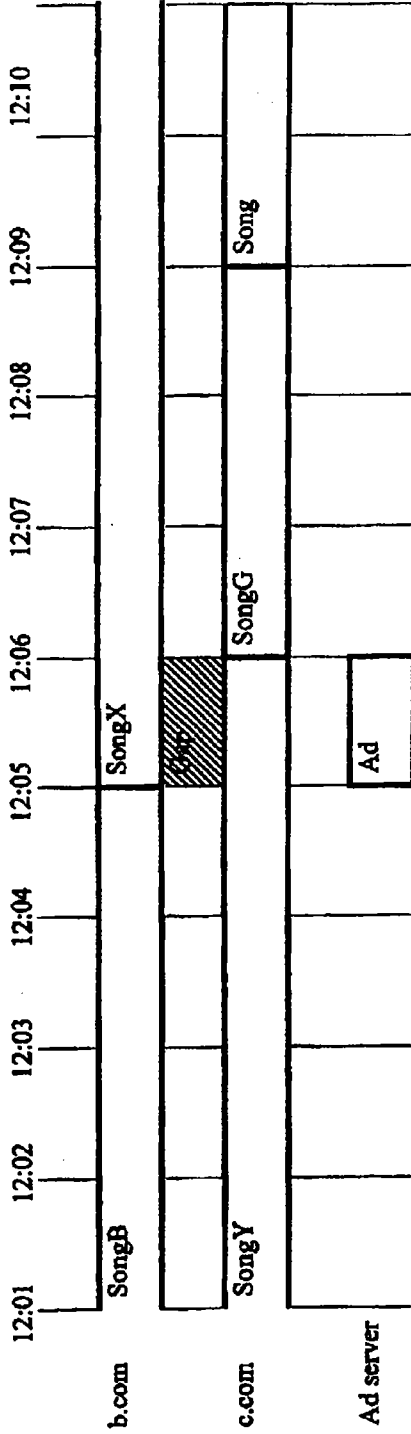


FIGURE 4

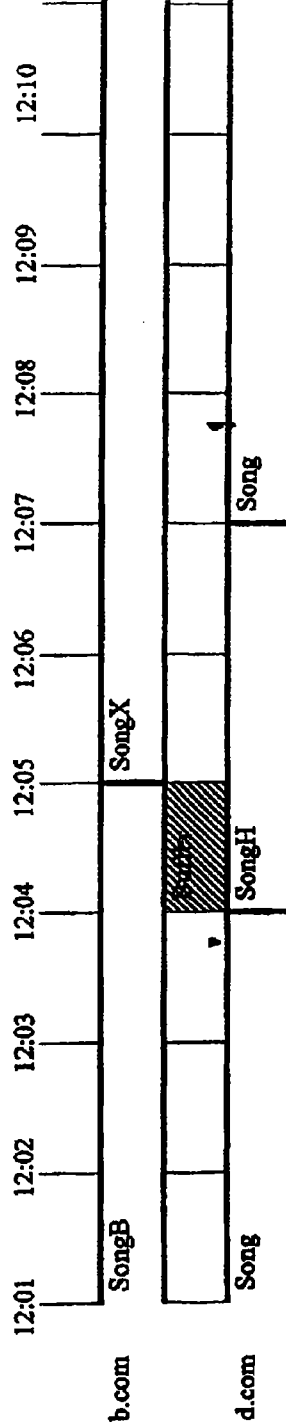


FIGURE 5

## SYSTEM AND METHOD FOR FILLING CONTENT GAPS

### BACKGROUND OF THE INVENTION

A variety of web sites transmit music over the Internet. One manner in which this occurs involves an end user computer connected to the Internet which sends a request for music to a radio station web site. When the web site gets that request, it "sends" music to the user by sending various digitally-encoded packets. Typically, the radio web site transmits whatever music is broadcast at the time by the radio station. In this scenario, the user is not getting files of specific songs, but rather the opportunity to listen to a radio broadcast over the Internet instead of airwaves. When the packets arrive at the end user's computer, the packets are reassembled in the correct order and converted into audio signals. The audio signals are then provided to the speakers connected to the computer.

There are many services which specialize in streaming music over the Internet, such as www.NetRadio.com. These services typically make a number of different audio streams available to end users. They may also be played using typical audio playing software such as RealNetworks, Inc.'s Real Player 7 and Microsoft's Windows Media Player 7.

It is common to analogize the availability of songs from different sources or the same source as "channels". Each channel may be considered to represent the connection between two computers whereby one computer sends audio signals to another over a network. For example, one channel on the web site www.a.com may stream rock songs whereas another channel on www.b.com may stream pop songs. When a user's computer connects to www.a.com, the web server hosting that web site will stream the currently-playing rock song to the computer. Channels may be available from URL's with different Internet domain names. Alternatively, two channels may originate from the same web site and server. In other words, two channels may comprise a computer simultaneously accessing two different songs from the same web server at the same time. For example, each of the two songs may be divided into discrete pieces of data, with a piece of the first song arriving, then a piece of the second song arriving, then another piece of the first song arriving, then another piece of the second song arriving, etc.

One of the current problems with Internet music channels is the number of available channels. There may be hundreds of channels to choose from and it is often difficult for the user to find a song they want to hear. Moreover, even if the user finds a song on a channel they like, the next song on the channel may not be as interesting to the user as another song on another channel.

### SUMMARY OF THE INVENTION

The present invention addresses the foregoing issues. In one aspect, a method of selecting content is provided and includes: playing first data representative of first content having a beginning and an end, the first data streaming via a first channel during a first time period; selecting second data representative of second content having a beginning and an end, the second content streaming via a second channel during a second time period such that the beginning of the second time period occurs a duration of time after the end of the first time period; retrieving third content based on the length of the duration of time; between the start time and stop time of the first song, accessing streaming data associated with the first song; between the start time and stop time of the second song, accessing streaming data associated with the second song; playing the first song; playing the third content after the first content; and playing the second content after the third content.

In another aspect, a method of transitioning between songs includes: playing a first song; identifying a second song to be streamed after the end of the first song; if the second song begins a duration of time after the end of the first song, retrieving audio information; at the end of the first song, playing the retrieved audio information; and playing the second song after it begins streaming and after the end of the retrieved audio information.

A further aspect relates to a method of transitioning between songs. This method includes playing a first song; identifying, based on information relating to a user, a second song to be streamed after the end of the first song; if the second song begins a duration of time after the end of the first song, then retrieving audio information based on the duration and playing the retrieved audio information between the end of the first song and the beginning of the second song; and if the second song begins before the end of the first song, then storing the second song in memory as it streams and playing, from the memory, the second song after the end of the first song.

Yet another aspect provides a system for playing songs having a processor capable of executing instructions and a connection to a network streaming songs. The instructions include: identifying a second song to be streamed after the end of a first streaming song, if the second song begins a duration of time after the end of the first song, retrieving audio information based on the duration of time and, at the end of the first song, playing the retrieved audio information followed by the second song.

Yet a further aspect provides a computer-readable medium including instructions for: playing a first song; identifying a second song to be streamed after the end of the first song; if the second song begins a duration of time after the end of the first song, retrieving audio information based on the duration of time; at the end of the first song, playing the retrieved audio information; playing the second song after it begins streaming and after the end of the retrieved audio information.

It is understood that both the foregoing general description and the following detailed description are exemplary and are intended to provide further explanation of the invention claimed.

The accompanying drawings, which are incorporated in and constitute part of this specification, are included to illustrate and provide a further understanding of the system and method of the invention. Together with the description, the drawings serve to explain the principles of the invention.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a functional diagram of a system in accordance with one embodiment.

FIG. 2 is a functional diagram of an agent and player in accordance with one embodiment, including the relationship of the agent and player to speakers and a network.

FIG. 3 is user interface in accordance with an one embodiment.

FIG. 4 is a graph of exemplary song start and stop times.

FIG. 5 is a graph of exemplary song start and stop times.

### DETAILED DESCRIPTION OF THE EMBODIMENTS

As shown in FIG. 1, a system 50 in accordance with one embodiment of the invention comprises a network of computers such as end user personal computer 60 which communicates with web servers 70-72 via Internet 80. Although only a few computers are depicted in FIG. 1, it should be appreciated that a typical system can include a large number of connected computers. Preferably, end user computer 60 is

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a general purpose computer having all the internal components normally found in a personal computer such as, for example, central processing unit (CPU) 61, display 62, CD-ROM 63, hard-drive 64, mouse 65, keyboard 66, speakers 67, microphone 68, modem 69 and all of the components used for connecting these elements to one another. Although CPU 61 is shown as a single processor, the instructions may actually be distributed to a number of different components or processors for execution.

End user computer 60 communicates with the Internet 80 via modem 69. End user computer 60 may comprise any device capable of processing instructions and transmitting data to and from humans and other computers, including network computers lacking local storage capability, PDA's with modems and Internet-capable wireless phones.

Web servers 70-72 contain hardware for sending and receiving information over the World Wide Web, such as web pages or files. The web servers 70-72 may be typical web servers or any computer network server or other automated system capable of communicating with other computers over a network, including the Internet, wide area networks or local area networks. For example, the system described above in connection with end user computer 60 may also function as a web server.

As shown in greater detail in FIG. 2, the user computer 60 contains instructions and a variety of data. Preferably, the instructions and data are stored as a program on a medium such as the hard drive 64 of the computer 60. Although the data is shown separately from instructions 102, the data may be modified by the program. The functions, methods and routines of the program are explained in more detail below.

One set of data and instructions comprises streaming audio player 200. When provided with the IP address of a server providing streaming audio, player 200 requests and accesses that information in a manner known to those of ordinary skill in the art. These IP addresses may be the TCIP/IP number address (such as 204.171.64.2), the URL associated with that address (such as www.Sony.com) or any other identifier which identifies a node of the applicable network.

Agent 100 comprises a set of instructions and data for, among other things, selecting songs. Agent 100 comprises instructions 102 which are executed by processor 61 in accordance with the steps described below. These instructions use and manipulate a variety of data. One of the data items is User Profile Database 150. The User Profile Database contains information about the user which the agent may find helpful in choosing songs. For example, the User Profile Database 150 contains Genre Table 160. Genre Table 160 associates certain genres with a metric that is indicative of how much the user likes a particular genre of music. For example, Genre Table 160 may include a set of records where each record has two fields: genre field 161 which identifies the genre and value field 162 which stores the metric. For ease of discussion, sample values for the table are shown below. It is not necessary for the table to contain every possible genre.

GENRE TABLE 150	
Genre 151	Value 152
Rock	30
Pop	10
Country	20

User Profile Database 150 may also contain information representing how much a user likes or dislikes a particular

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artist. In this regard, Artist Table 170 associates certain artists with a metric that is indicative of how much the user likes a particular genre of music. For example, Artist Table 170 may include a set of records where each record has two fields: artist field 161 which identifies the artist and value field 162 which stores the metric. For ease of discussion, sample values for the table are also shown in FIG. 2. The negative value indicates that the user dislikes the artist. It is not necessary for the table to contain every possible artist.

ARTIST TABLE 170	
Artist 171	Value 172
Artist1	40
Artist3	20
Artist10	-20

Artist Table 170 and Genre Table 160 associates information which is directly applicable to songs with a value indicative of user interest. For example, most songs fall into a genre and are performed by an artist. However, User Profile Database 150 advantageously also contains information that is not directly applicable to music but may be useful in finding songs which the user is likely to be interested in.

Other song-specific information may also be used. By way of example, if a user has indicated that they like a particular artist, then the agent may select songs of related artists. For example, the related artist may be an ex-member of the original artist. Similarly, the agent may be aware that users who like one particular band are highly likely to enjoy another particular band.

Demographic Values 180 contains information about the user. For example, Demographic Values 180 may include data representing the user's gender, birthday and the geographic region in which the user resides.

Demographic Rules 190 contains information regarding how the information about the user can be used to find songs the user may like. This information may be represented by a set of rules. By way of example, if it was believed that people tended to like songs that were popular when they were 18 years old, a rule may add or subtract points to a song based on when it came out relative to a person's 18th birthday. The rule is stored in the system in a syntax which can be interpreted by the system. Thus, a rule stating that a point is deducted from a song for each year the song came out before or after a user's 18th birthday might be represented as the string: "Points decrement=Abs([Song Publication Date]-[User Birth Year]-18)." Points and the foregoing sample rule are explained in more detail below.

In addition to storing information about the user, agent 100 also stores a schedule which identifies a collection of songs which can be streamed to player 200. Preferably, Song Schedule 140 associates the identity of a song with the channel it will be streamed on and the time it will be streamed. This information may be stored in tabular form containing a variety of fields such as the song's title 141, the song's channel 142, the artist name 143, the genre 143, the year it was copyrighted 145, the time at which the song will begin streaming 146 and the time at which the song will stop streaming 147. For the purposes of illustration, exemplary values are shown below (time values being in hh:mm:ss).

Song Schedule 140

Song Title	Channel	Artist	Genre	Year	Start Time	Stop Time
141	142	143	144	145	146	147
SongA	a.com	Artist1	Rock	1999	12:00:01	12:03:00
SongB	b.com	Artist2	Pop	1985	12:00:02	12:05:00
SongC	c.com	Artist3	Country	2001	12:01:03	12:06:00
SongD	a.com	Artist4	Pop	1995	12:03:00	12:05:00
SongH	d.com	Artist6	Rock	1989	12:04:00	12:07:00
SongE	e.com	Artist1	Rock	2000	12:05:00	12:10:00
SongF	a.com	Artist4	Rock	2000	12:05:00	12:08:00
SongG	c.com	Artist5	Country	1985	12:06:00	12:09:00

As songs are selected, they are added to a Playlist 199. The Playlist identifies the songs and the order they are to be played in.

Another set of data comprises buffer 195 which stores digital audio information for later use by player 200. Preferably, the buffer is a FIFO buffer, i.e., it outputs information to the player 200 in the same order as it is stored in the buffer. The buffer is not limited structurally. For example, it may comprise a specialized circuit devoted to buffering music data. On the other hand, the buffer may also comprise a set of instructions executable by the processor which stores the incoming audio information on the hard drive of a general purpose computer and then retrieves the information from the hard drive in the order it was stored.

The agent may store other data as well, such as the values identified as Maximum Ad Length 196, Maximum Buffer Length 197 and Remaining Time Threshold 198. This data is discussed in more detail below.

The data structures described herein, such as the foregoing tables, are exemplary only. Other data structures, such as different fields and tables or completely different methods of storing information such as XML or the like, may be used instead.

In addition to maintaining the aforementioned data, the agent also sends information to the player 200. As discussed more below, this information may include the IP address of a streaming music channel, commands (such as instructions to play music) and data representing music.

Although some of the operations of the agent are automatic, other operations may be instigated by a user. For these sorts of operations, the agent provides a user interface such as the user interface 300 shown in functional form in FIG. 3. Information relating to the currently playing song is shown in textbox 301, with its start and stop times shown in textboxes 302 and 303, respectively. A user may play or stop or song, or go to the next or previous song, by activating buttons 304-307, respectively. Some of the buttons may be disabled based on the state of the agent. For example, if the player is only streaming currently available songs, the previous song button 307 may be disabled by the agent. Song finder button 308 is used to search for a new song. Information about the next song to be displayed is shown in textbox 301, with the start and stop times of the next song shown in textboxes 309 and 310 respectively. The reject button 311 allows a user to inform the agent that the user does not like the next song. Clicking the edit user info button 312 would open a window or launch a program which allows the user to edit the information contained in the User Profile Database 150.

Web server 72 provides a variety of audio advertisements in response to requests from other computers on the network. The ads are of various durations and stored so that when a request for an ad is provided along with a particular

duration, an audio file meeting that criteria can be sent to the user. The ads are stored in a manner which associates certain durations of times with audio files such as Ad Table 73. Exemplary values for Ad Table 73 follow for the purposes of illustration.

ADVERTISEMENT TABLE

Duration	File
58 seconds	Ad1.mp3
59 seconds	Ad2.mp3
60 seconds	Ad3.mp3
61 seconds	Ad4.mp3
62 seconds	Ad5.mp3

In operation, the agent obtains the music schedules from various music channels. For example, each web site may provide a schedule of the songs to be played on the channels it hosts. Alternatively, the agent may obtain the information from a central storage facility providing a list of various songs on various channels. Indeed, the agent may not be able to determine the start and stop time of songs that are scheduled to play in the future. Rather, and particularly if there are legal benefits to doing so, the music channel servers 70-71 may only release textual information (title, artist, genre, remaining length, etc.) about the song while it is playing. Accordingly, the schedule may only comprise songs which are currently playing, and may not include the stop time of the song.

The steps of actually selecting and playing a song may start in any number of ways, including the user indicating that they would like to hear a song. In such an instance, the user will click the Song Finder button 308 of user interface 300 (FIG. 3). The agent interprets this command as requiring the agent to immediately start playing the song which best matches the user's preferences.

once the user indicates that they want the agent to find the best song, the agent will create a list of the currently playing songs. One manner in which this may be performed is for the agent to query Song Schedule Table 140 for all songs having start times before the current time and stop times after the current time. For example, if the current time is 12:02:05 pm, the agent would pull the following set of records from Song Schedule Table 140.

SongA	a.com	Artist1	Rock	1999	12:00:01	12:03:00
SongB	b.com	Artist2	Pop	1985	12:00:02	12:05:00
SongC	c.com	Artist3	Country	2001	12:01:03	12:06:00

Preferably, the agent will filter out (either before or during the step of retrieving current songs) those songs which are almost over. This filtering may occur by not including songs whose remaining time is less than a particular value, or whose remaining time is less than a particular percentage compared to the entire length of the song. Regardless, the threshold value may be stored in Remaining Time Threshold 198. For example, if the threshold value is 61 seconds, then SongA would not be included in the list of currently playing songs because its end time (12:03:00) will occur less than 61 seconds from the current time (12:02:05). Thus, the remaining possibilities include SongB and SongC.

Once a list of currently-playing songs is compiled, the agent chooses the best song to play based on the user's profile. One manner in which this step may be performed is by assigning point values to each song based on the information contained in User Profile Database 150 and then

choosing the song with the greatest point value. For example, based on the exemplary values contained in Genre Table 160, 10 points are assigned to SongB because it is a member of the "Pop" genre and 20 points are assigned to SongC because it is a member of the Country genre.

The agent also uses the Demographic Rules and Values to select a song the user is likely to be interested in. The agent retrieves a rule from Demographic Rules 190 and applies the rule to the information it has about the user and song. Using the example above, for each song, the agent retrieves the user's birthday 181, the year 145 of the song and the rule "Points decrement=Abs([Song Publication Date]-[User Birth Year]-18)." If the user was born in 1970 and the current year is 2001, then the exemplary rule for SongC is realized as follows: "Points decrement=Abs(2001-1970-18)." In other words, the rule indicates that 13 points are to be decremented from the total points associated with SongC (reflecting the difference between the song's year of publication and the user's 18th birthday). For SongB which was published in 1985, the points decrement is far less, i.e. 2 points. Thus, SongB's total is 20-2=+18 and SongC's total is 10-13=-3. Based on these point, the agent will choose SongB.

Accordingly, song agent 100 can choose a song based not only on the user's music-specific preferences but also based on information relating to the user which is not music specific. Moreover, the song agent is able to prioritize the songs that it finds. Based on the artist and demographic information, for example, the agent may determine that the user would be interested in any number of songs. However, using the weighted values, the agent can pick the "best" song.

Once the song is chosen, song agent 100 sends the IP address of the selected channel to player 200 thus causing the player to access the data streaming from that IP address. Using the foregoing example, song agent would send the URL address "www.b.com" to player 200. Agent 100 simultaneously commands the music player 200 to begin playing whatever music is being streamed to it.

Song agent 100 also stores the information regarding the current song in Playlist 199 in a manner which identifies the current song. Thus, after SongB is selected, the playlist may appear as follows:

Playlist 199							
Current Song	SongB	b.com	Artist2	Pop	1985	12:00:02	12:05:00
Next Song							

Information relating to the current song is also displayed in the user interface 300. As shown in FIG. 3, the information relating to the current song is displayed in the text box 301, the start time in text box 302 and the stop time in text box 303.

Preferably, the agent does not wait for the current song to end before it starts looking for the next one. Rather, it immediately begins searching for the next song to play after the current one ends.

In one aspect, the agent will limit the next song to those songs that begin immediately after the current one ends. Specifically, agent 100 queries the Song Schedule Table 140 for all songs having a start time which is equal to the stop time of the current song. Using the example values for Song Schedule Table 140, the agent would thus select the following songs as possible songs to play when SongB ends:

SongE	e.com	Artist1	Rock	2000	12:05:00	12:10:00
SongF	a.com	Artist4	Rock	2000	12:05:00	12:08:00

Once a list of the next possible songs to play is retrieved, agent 100 selects a song from the list in the same manner it chose a song from the list created in response to the user clicking song finder button 308. Using the exemplary values contained in the Artist Table 170, the agent would choose SongE over SongF because the user has assigned positive points to Artist1 and Artist4 is unlisted.

Once the next song is chosen, agent 100 stores the information relating to the next song in Playlist 199. Thus, after SongE is selected, the playlist may appear as follows:

Playlist 199							
Current Song	SongB	b.com	Artist2	Pop	1985	12:00:02	12:05:00
Next Song	SongE	e.com	Artist1	Rock	2000	12:05:00	12:10:00

Information relating to the next song is also displayed in the user interface 300. As shown in FIG. 3, the information relating to the current song is displayed in the text box 313, the start time in text box 309 and the stop time in text box 310.

Once the current song is done playing, agent 100 modifies playlist 199 so that the next song is now the current song. Thus, as described above, the agent sends the IP address of the selected channel of the newly current song to player 200, thus causing the player to access the data streaming from that IP address. Using the foregoing example, song agent would send the URL address "www.e.com" to player 200 and simultaneously command the music player 200 to begin playing the music streamed from that channel.

As the newly current song is playing, agent 100 will search for the next song and the process will continue as described above. Alternatively, rather than keeping only two songs in the playlist (i.e., the current and next song), agent 100 may fill playlist 199 with a stack of songs to be played one after the other.

In another embodiment, the agent does not limit itself to songs which begin immediately after the current song ends. Rather, the agent may also select songs which begin some duration of time after the current song ends. If one song is better than the other but starts a little later, a user may not mind waiting for the better song. For example, SongG was omitted from the list of possible songs to play after SongB ends because SongG starts at 12:06:00 and SongB ends at 12:05:00. However, based on the User Profile Database, it may be that SongG is more likely to be interesting to the user than the songs (SongE and SongF) which begin immediately after the current song ends.

Accordingly, agent 100 queries the Song Schedule Table 140 for all songs whose start time minus the current song's stop time is less than some threshold duration. This threshold duration may be stored by the agent as Maximum Ad Length 196. Using the foregoing example, if the Maximum Ad Length were 61 seconds, then agent 100 would select the following songs as possible songs to play when SongB ends because each song has a start time which is less than 61 seconds after the SongB stop time:

SongE	e.com	Artist1	Rock	2000	12:05:00	12:10:00
SongF	a.com	Artist4	Rock	2000	12:05:00	12:08:00
SongG	c.com	Artist5	Country	1985	12:06:00	12:09:00

The Maximum Ad Length could be set to any time. For example, ads are more likely to be thirty seconds in length.

The agent then selects the best song to play from this expanded list based on the user's profile information and the song information as discussed above. It shall be assumed for the purposes of example that the agent would choose SongG over the other songs after it performs the process of evaluating the songs for the potential desirability to the user.

Advantageously, the agent does not simply switch to the channel streaming the next song upon the end of the current song. If it did, the gap between the songs would cause the player to play only portions of a song. Specifically, if the agent switches from a first channel to a second channel at the end of the current song, then the user will hear the end of the current song on the second channel before the next selected song begins. On the other hand, if the agent switches from a first channel to a second channel at the beginning of the next selected song, then the user will hear the beginning of the next song on the first channel before the next selected song begins.

FIG. 4 illustrates the gap using the foregoing example. As shown by the shaded portion, there is a gap of one minute between the end of SongB on channel b.com and the beginning of SongG on channel c.com. If agent 100 instructs player 200 to switch from channel b.com to channel c.com when SongB ends at 12:05, the user will hear the beginning of the next song on channel b.com (SongX) until the switch occurs. Once the switch occurs, SongX will be interrupted in the middle in the song. On the other hand, if agent 100 waits until the beginning of SongG (12:06) before it instructs player 200 to switch from channel b.com to channel c.com, then the user will be dropped into the middle of SongY on channel c.com. In either instance, the user will hear either the beginning or end of a song that the agent never selected. This has the potential of being disruptive to the listening experience.

The agent addresses the problem by inserting audio information from a different source into the gap. For example, as soon as the current song ends, the agent sends a message via the Internet to ad server 72. The message requests an advertisement having a duration equivalent to the length of the gap between selected songs. Upon receipt of the request, advertisement server 70 selects an advertisement based on the requested duration. For example, in response to a request for a 60 second advertisement, advertisement server 70 would stream the audio information represented by the file Ad3.mp3 to the end user computer 60. If an ad having that exact duration is not available, the server may stream the closest file it has to that duration. Preferably, it would stream the largest file it has which still fits within the gap. Alternatively, the agent may stack advertisements together to fill the gap. For example, if the gap between songs is 90 seconds and the longest ads on the advertisement server are 30 seconds, then the agent may play three 30-second ads in a row to fill the 90-second gap.

Agent 100 simultaneously instructs player 200 to access the data streaming from Ad Server 70. Accordingly, the user will hear the selected advertisement while the user is waiting for the next selected song to begin. Once the next selected song begins, agent 100 instructs player 200 to access the data streaming the channel carrying the next selected song.

There also may be instances where the next best song does not start immediately or some time after the end of the

current song ends, but rather starts before the end of the current song. For example, SongH was omitted from the list of possible songs to play after SongB ends because SongH starts at 12:04:00 and SongB ends at 12:05:00. However, based on the User Profile Database, it may be that SongH is more likely to be desired by the user than the songs which begin immediately (SongE and SongF) or a short time (SongG) after the end of the current song (SongB).

In another embodiment, the agent adds such songs to the list of possible songs for selection. When selecting possible next songs, agent 100 chooses a range of acceptable start times. To determine the bottom end of the range, the agent may take the end time of the current song and subtract a threshold duration stored in Maximum Buffer Length 197. To determine the top end of the range, the agent takes the end time of the current song and adds the threshold duration stored in Maximum Ad Length 196. The agent then queries the Song Schedule Table 140 for all songs whose start time falls within that range. Using the exemplary values of Song Schedule 140, the agent would select the following songs as possible songs to play when SongB ends if the Maximum Buffer Length 197 and Maximum Ad Length 196 are both set at 61 seconds:

SongH	d.com	Artist6	Rock	1989	12:04:00	12:07:00
SongE	e.com	Artist1	Rock	2000	12:05:00	12:10:00
SongF	a.com	Artist4	Rock	2000	12:05:00	12:08:00
SongG	c.com	Artist5	Country	1985	12:06:00	12:09:00

Agent 100 then selects the next song to play from this expanded list in the same manner as described above. It shall be assumed for the purposes of example that the agent would choose SongH over the other songs after it performs the process of evaluating the songs.

Advantageously, the agent does not simply switch to the channel streaming the next song if the next song has already started. If it did, the user would miss the beginning of the next selected song. For example, as shown in FIG. 5, SongH starts at 12:04, i.e. one minute before SongB ends. The shaded portion in FIG. 5 represents the amount of overlap between the selected songs.

Instead of simply switching at the specific start and stop times, the next song is placed in an anticipatory buffer. Specifically, while the current song is being streamed to player 200 on one channel, agent 100 simultaneously requests streaming audio associated with the selected next song on the other channel as soon as the next song begins. However, the agent does not instruct the player to play the audio on the other channel. Rather, agent 100 stores the streaming data in Buffer 195. For example, at 12:05 pm, agent 100 accesses the streaming data from www.d.com.

Once the current song ends, agent 100 then streams the audio information out of buffer 195 directly to the player 200 and commands the player to play the data streamed from agent 100. Because buffer 195 outputs data in the order it was received, the buffer will stream the audio information it is storing to the player, starting with the beginning of the song. For example, player 200 will play SongH from beginning to end based on the information contained in buffer 195.

While the next song is streaming from the buffer to the player, the agent is not idle. Rather, agent 100 begins the foregoing steps of selecting songs all over again.

Advantageously, the buffer may be used even if a schedule of upcoming songs is unavailable. For example, even if the music channel servers only provide information about the currently playing song, computers and computer networks will often be fast enough to begin buffering the song

as soon as information about it become available. This is particularly true if the textual information describing the song is made available at least a short duration of time before the song starts.

The various embodiments provide numerous advantages. In one aspect, the agent intelligently chooses songs for a user from the hundreds of possible channels and it makes that decision by evaluating the likelihood of the user enjoying the song. Moreover, rather than simply relying on information which is particular to the song, the agent preferably uses a variety of categories of data to arrive at its conclusion including: information which is specific to the song regardless of the user information (such as the song's genre); information which is specific to the user's preferences with respect to music (such as the extent of a user's preference for a particular genre); and information which is related to the users regardless of the user's music-specific preferences (such as the user's age).

Another advantage is its ability to give the user seamless transitions between selected songs which have a gap between the end of one and the start of the other. Rather than disrupting the user with interrupted songs, the agent intelligently chooses audio to play in the gap so the user has a seamless user experience. The agent simultaneously uses the gap in a manner which makes the invention attractive not only to users but also marketers. For example, the audio to be played in the gap may include an advertisement which is chosen and maintained by an advertising company.

Another advantage of the agent is its ability to handle songs which overlap. Rather than simply abandoning good songs because they have already started, the agent plans ahead by putting the next overlapping and selected song in a buffer while the currently selected song is playing. Accordingly, the user is not deprived of hearing a song they are likely to be interested in.

Yet another unique advantage of the agent is the way it synergistically combines all of these aspects and advantages to create a whole which rises above the sum of its parts. The agent is able to select the best song regardless of overlaps and gaps. It seamlessly moves from buffering one minute to playing advertisement in gaps the next.

The features also complement one another. For example, the invention may also be used when the length of a gap between songs is not known. If the start time of the second song is not known, the agent may continuously play advertisements until the second song starts. If the second song suddenly begins and an advertisement is still playing, the agent may buffer the second song until the end of the current advertisement, thus providing a seamless transition.

Another advantage is the numerous alternatives and options which can be implemented, making the agent extremely flexible.

For instance, if the user initiates some action on the user interface 300 which causes the selected song to stop playing, the agent 100 may record that indication in the User Profile Database 150. For example, if the user clicked the song finder button 308 while SongB was playing, the agent 100 may add a record to artist table 170 which associates Artist2 with a negative value. The next time that artist comes up in the list of possible choices, all other things being equal the artist's song would not be selected.

The user may also reject the next chosen song by clicking the reject button 311. This would cause the agent to search for a new song and the action would be stored in the User Profile Database.

The invention may also be used to search for specific songs. For example, the user may indicate that they are only interested in songs from a particular artist such as Madonna. Alternatively, the user may indicate that they are only

interested in dance songs from the 1980's. In either instance, the agent will only select songs which satisfy the search criteria.

Moreover, it is not necessary for the gap-filling audio information to be streamed from a remote location during the gap. Rather, the gap-filling audio may be downloaded while the current song is playing and stored in buffer 195 so that it is immediately available when the current song ends.

Moreover, in one aspect, the gap-filling information is not obtained from an outside source at all. Rather, the agent may search end user computer 60 to see if it has any audio information, such as other songs, stored on hard drive 64 which fit the gap. If so, rather playing an advertisement the player may play a locally stored song. This is particularly advantageous if the agent discovers a particularly large gap between two songs of if there is an unanticipated (or anticipated) break in the transmission of data over the network.

Indeed, rather than having the player connect directly to the network, the agent may obtain all of the audio data destined for player 200 and store it in buffer 195. When two songs overlap, the buffer would contain the audio information for both songs. The data associated with the next selected song would be streamed to player 200 after the current song is finished playing.

It is also not necessary to consider the agent and player to be different programs. Rather all of the functionality can be included in a single product. Alternatively, the agent and player may be provided by completely different companies, one specializing in audio players and the other specializing in song selectors.

In fact, it is not necessary that the agent and player be limited to software for a general purpose computer. The player may be solid-state digital music player such as Sony's Memory Stick™ Walkman which connects to a personal computer. The agent could run on the PC and automatically download the selected songs to the player. Or instead, the agent could be stored on the dedicated device if the device is able to connect to a network.

It is also preferable for the agent to run in the background of the user's computer, constantly or periodically searching and updating song schedules while other applications are running. The advantage of searching for songs in the background is that the Song Schedule 140 will be up to date and ready for access in an instant; the user will not have to wait for the agent to search the network when they click the song finder button.

Although the agent is particularly advantageous when used with songs and other musical works, the agent may also be used in connection with other audio information. For example, the invention may select poems or news reports instead. The agent may also be used to select non-audio streaming content, such as music videos as well.

Unless stated to the contrary, any use of the words such as "including," "containing," "comprising" and the like, means "including without limitation" and shall not be construed to limit any general statement that it follows to the specific or similar items or matters immediately following it. References to a "plurality" of things means at least two of the things.

Except where the context indicates to the contrary, all exemplary values are intended to be fictitious, unrelated to actual entities and are used for purposes of illustration only.

Most of the foregoing alternative embodiments are not mutually exclusive, but may be implemented in various combinations to achieve unique advantages. As these and other variations and combinations of the features discussed above can be utilized without departing from the invention as defined by the claims, the foregoing description of the



embodiments should be taken by way of illustration rather than by way of limitation of the invention as defined by the claims.

What is claimed is:

1. A method of selecting content comprising:
  - playing first data representative of first content having a beginning and an end, the first data streaming via a first channel during a first time period;
  - selecting second data representative of second content having a beginning and an end, the second content streaming via a second channel during a second time period such that the beginning of the second time period occurs a duration of time after the end of the first time period;
  - retrieving third content based on the length of the duration of time;
  - between the start time and stop time of the first content, accessing streaming data associated with the first content;
  - between the start time and stop time of the second content, accessing streaming data associated with the second content;
  - playing the first content;
  - playing the third content after the first content; and
  - playing the second content after the third content.
2. The method of claim 1 wherein the content includes audio information.
3. The method of claim 2 wherein the first and second content includes songs.
4. The method of claim 1 wherein the third content is an advertisement.
5. The method of claim 4 wherein the first content and second content are not advertisements.
6. The method of claim 1 wherein the second content is selected based on a user's preference for particular types of content.
7. The method of claim 6 wherein the type is the genre of the song.
8. The method of claim 6 further including the step of determining the user's preference based on demographic information relating to the user.
9. The method of claim 8 wherein the demographic information includes the user's age.
10. The method of claim 8 wherein the demographic information includes the user's geographic region.
11. The method of claim 8 wherein the user demographic information includes the user's gender.
12. The method of claim 1 wherein the content is accessed via a connection over a network.
13. The method of claim 12 wherein the network is the Internet.
14. The method of claim 1 wherein the step of selecting includes obtaining information about the second content over a network.
15. The method of claim 14 wherein the information is obtained by accessing text over the network.
16. The method of claim 15 wherein the text is available for transmission when the content associated with the text is available for access.
17. The method of claim 16 wherein the text includes the title of the content.
18. The method of claim 1 wherein the first and second data are streamed from servers associated with different URL domains.
19. The method of claim 18 wherein the network is the Internet.
20. The method of claim 18 wherein the first content is streamed on a first Internet channel and the second content is streamed on a second Internet channel.

21. A method of transitioning between songs comprising:
  - playing a first song;
  - identifying a second song to be streamed after the end of the first song;
  - if the second song begins a duration of time after the end of the first song, retrieving audio information;
  - at the end of the first song, playing the retrieved audio information; and
  - playing the second song after it begins streaming and after the end of the retrieved audio information.
22. The method of claim 21 wherein the retrieved audio information is an advertisement.
23. The method of claim 21 wherein the retrieved audio information comprises at least two stacked advertisements.
24. The method of claim 21 wherein the first song and second song are streamed over a network.
25. The method of claim 24 wherein the retrieved audio information is accessed via the network.
26. The method of claim 25 wherein the retrieved audio information is streamed via the network.
27. The method of claim 24 wherein the retrieved audio information is not retrieved over the network.
28. The method of claim 27 wherein the retrieved audio information is a locally stored song.
29. The method of claim 21 wherein the retrieved audio information is a song.
30. The method of claim 21 wherein retrieved audio information is selected so that the duration of the retrieved audio information is about equal to the duration of time between the end of the first song and the start of the second song.
31. The method of claim 30 wherein the step of retrieving audio information includes retrieving a plurality of advertisements whose total combined time is about equal to the duration of time between the end of the first song and the start of the second song.
32. The method of claim 21 further including retrieving and playing additional audio information if the retrieved audio information ends before the second song starts streaming.
33. A method of transitioning between songs comprising:
  - (a) playing a first song;
  - (b) identifying, based on information relating to a user, a second song to be streamed after the end of the first song;
  - (c) if the second song begins a duration of time after the end of the first song, then retrieving audio information based on the duration and playing the retrieved audio information between the end of the first song and the beginning of the second song; and
  - (d) if the second song begins before the end of the first song, then storing the second song in memory as it streams and playing, from the memory, the second song after the end of the first song.
34. The method of claim 33 wherein, if the second song begins before the end of the first song, then the second song is played upon the end of the first song.
35. The method of claim 33 wherein the information relating to a user includes the user's demographic information.
36. The method of claim 33 wherein the information relating to a user includes the user's music preferences.
37. The method of claim 36 wherein the user's music preferences include at least one of the following preferences: the user's preferred artists, the user's preferred song titles and the user's preferred music genre.

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38. A system for playing songs comprising:  
a processor capable of executing instructions; and  
a connection to a network streaming songs, the instructions including: identifying a second song to be  
streamed after the end of a first streaming song, if the  
second song begins a duration of time after the end of  
the first song, retrieving audio information based on the  
duration of time and, at the end of the first song, playing  
the retrieved audio information followed by the second  
song.

39. The system of claim 38 further comprising a connection to a network.

40. The system of claim 38 wherein the system is a general purpose computer.

41. The system of claim 38 further including a content server connected to the network, the content server streaming the first song.

42. The system of claim 38 further including a server connected to the network, the server providing the audio

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information to be retrieved in response to a request initiated by the processor.

43. A computer-readable medium including instructions for:

playing a first song;

identifying a second song to be streamed after the end of the first song;

if the second song begins a duration of time after the end of the first song, retrieving audio information based on the duration of time;

at the end of the first song, playing the retrieved audio information; and

playing the second song after it begins streaming and after the end of the retrieved audio information.

\* \* \* \* \*

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

PATENT NO. : 6,791,020 B2  
DATED : September 14, 2004  
INVENTOR(S) : David A. Hughes

Page 1 of 5

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

Drawings.

Please replace the drawings with the enclosed formal drawings.

Column 5.


Line 60, "info botton" should read -- info button --

Column 6.

Line 37, "once the" should read -- Once the --

Signed and Sealed this

Fifth Day of April, 2005

A handwritten signature in black ink on a light gray dotted background. The signature reads "Jon W. Dudas" in a cursive style.

JON W. DUDAS

*Director of the United States Patent and Trademark Office*

FIG. 1

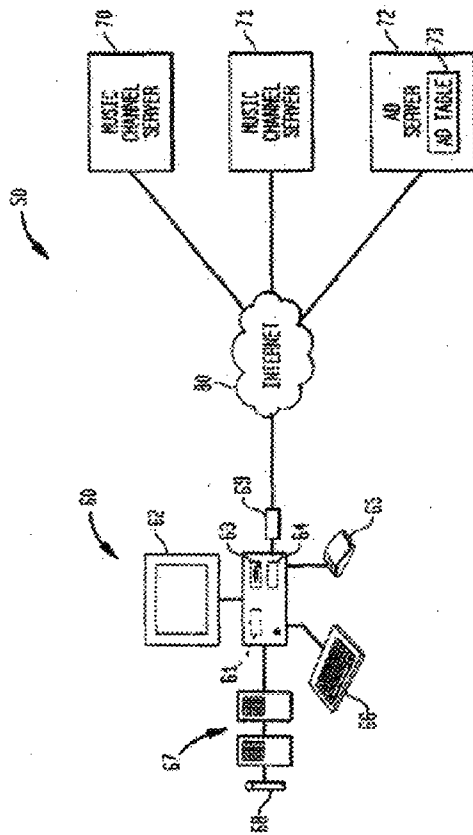


FIG. 2

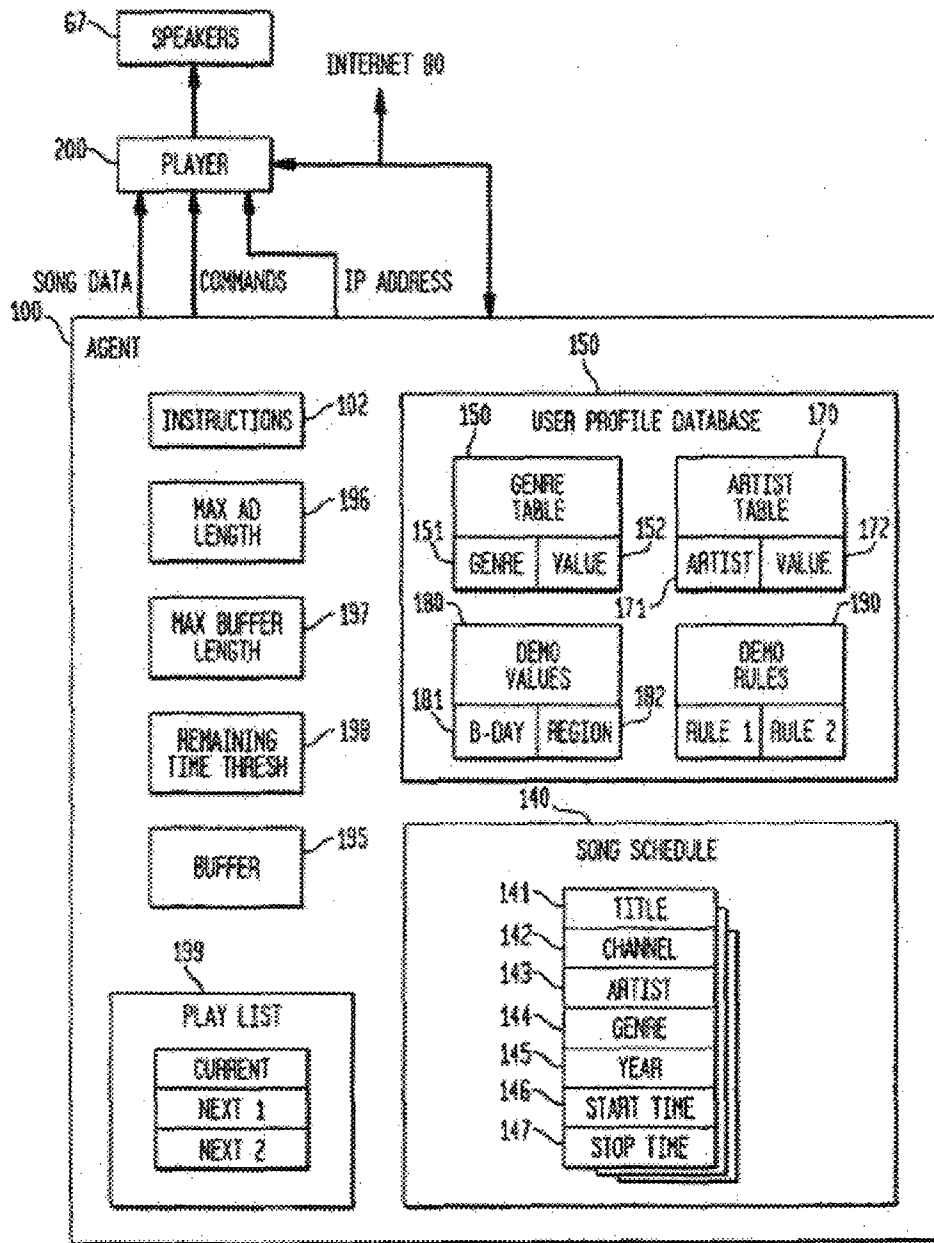


FIG. 3

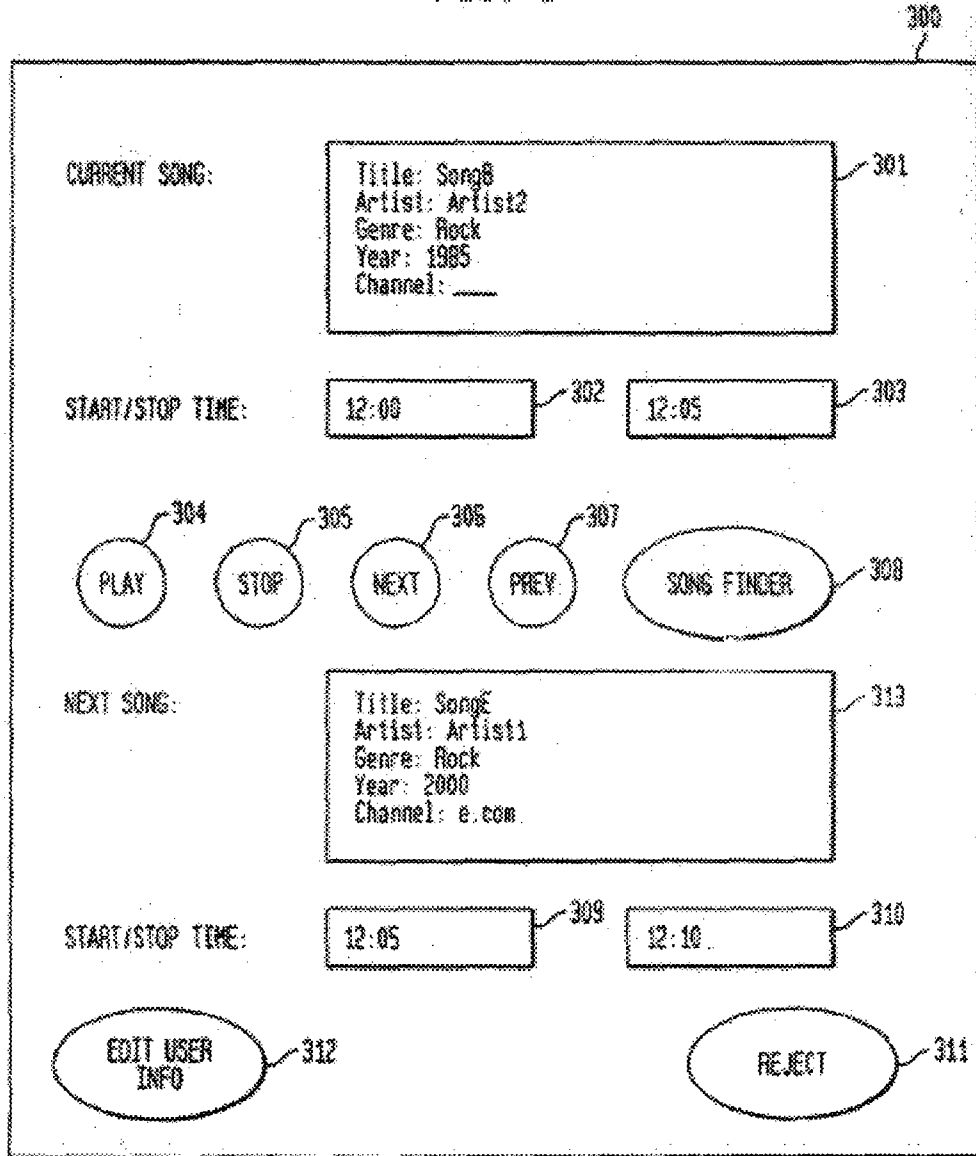


FIG. 4

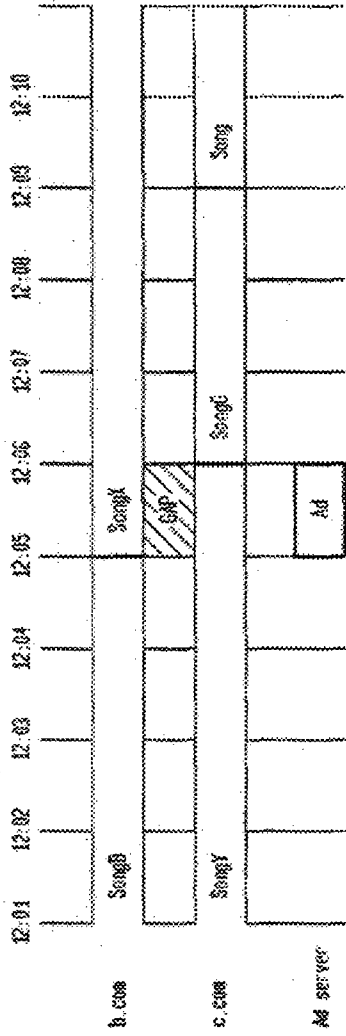
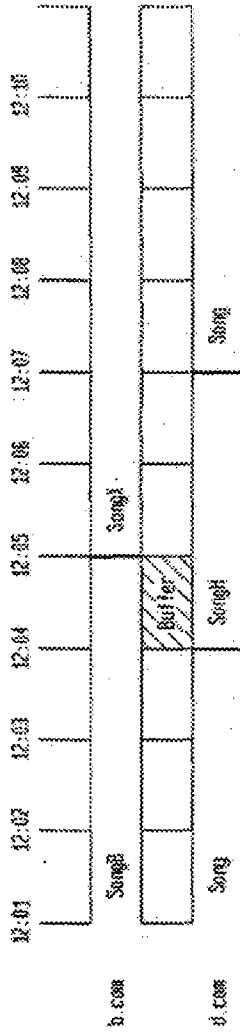


FIG. 5



**U.S. Patent No. 6,748,537**





US006748537B2

(12) **United States Patent**  
**Hughes**

(10) **Patent No.: US 6,748,537 B2**  
(45) **Date of Patent: Jun. 8, 2004**

(54) **SYSTEM AND METHOD FOR CONTROLLING THE USE AND DUPLICATION OF DIGITAL CONTENT DISTRIBUTED ON REMOVABLE MEDIA**

(75) **Inventor: David Hughes, New York, NY (US)**

(73) **Assignees: Sony Corporation, Tokyo (JP); Sony Music Entertainment, Inc., New York, NY (US)**

(\* ) **Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.**

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(51) **Int. Cl.<sup>7</sup> ..... H04L 9/00**

(52) **U.S. Cl. .... 713/193; 713/200; 705/51; 705/1; 705/50**

(58) **Field of Search ..... 705/50, 51, 57; 713/200, 193; 380/200, 201, 202, 203, 30**

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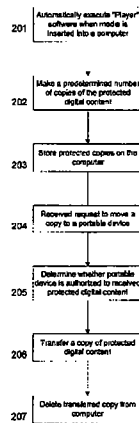
*Primary Examiner—Ly V. Hua*

(74) *Attorney, Agent, or Firm—Kenyon & Kenyon*

(57) **ABSTRACT**

Systems and methods for controlling the use and duplication of digital content distributed on removable media are described. In accordance with embodiments of the present invention digital content is protected by allowing a particular number of protected (e.g., encrypted) copies of the digital content to be made. Typically, these copies may only be used on and moved between authorized devices. In one embodiment, if copies are desired, the maximum number of allowable copies of the protected digital content are made and stored on a computer's hard drive when the storage medium (e.g., a CD) containing the content is inserted into the computer. Each copy can then be moved but not copied to other devices (e.g., portable solid state devices). In an alternative embodiment, the storage medium containing the digital content is writable (e.g., a CD-R). When the storage medium is inserted into the computer, the computer writes information to the storage medium which regulates future copying and playing of the digital content on the storage medium.

**44 Claims, 4 Drawing Sheets**



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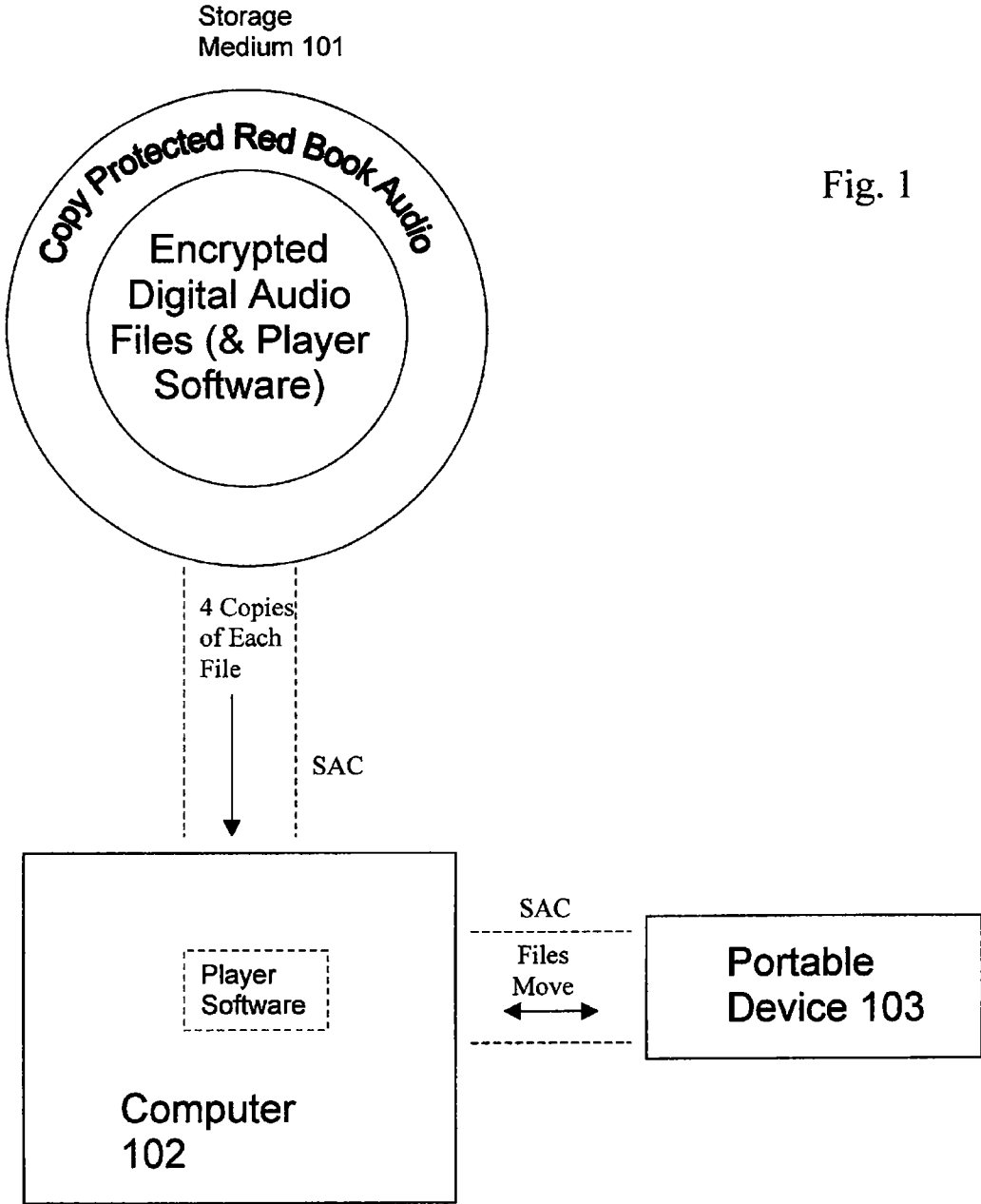


Fig. 1

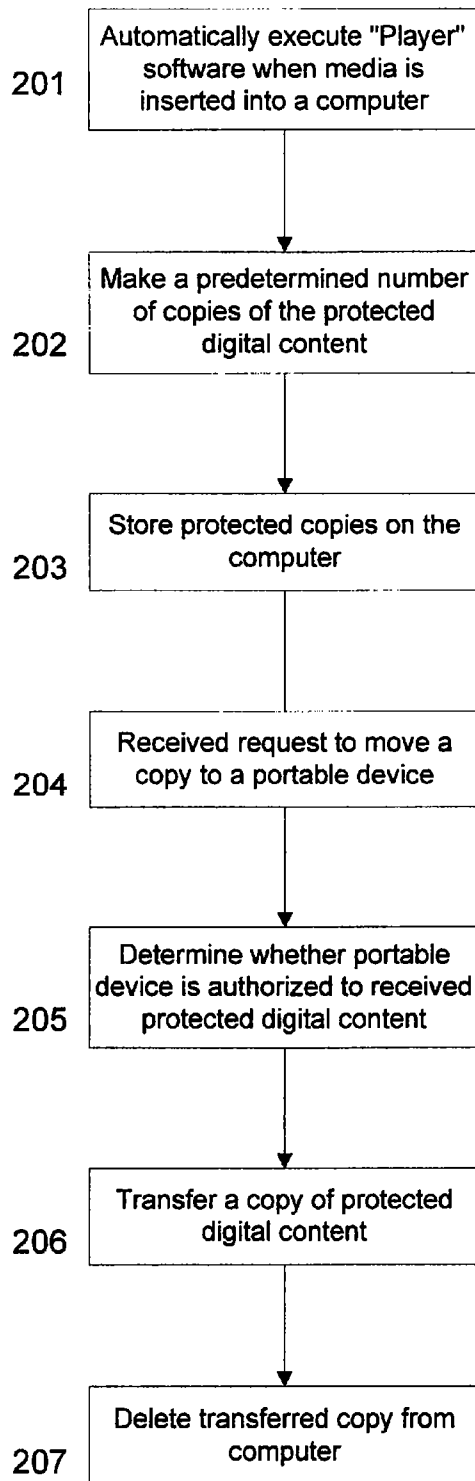


Fig. 2

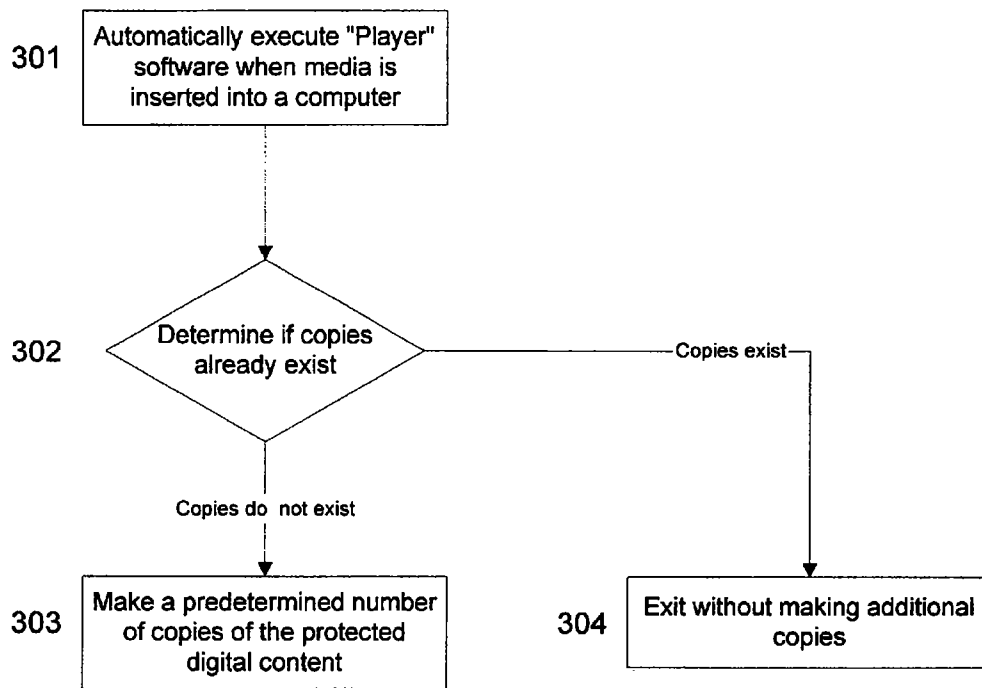


Fig. 3

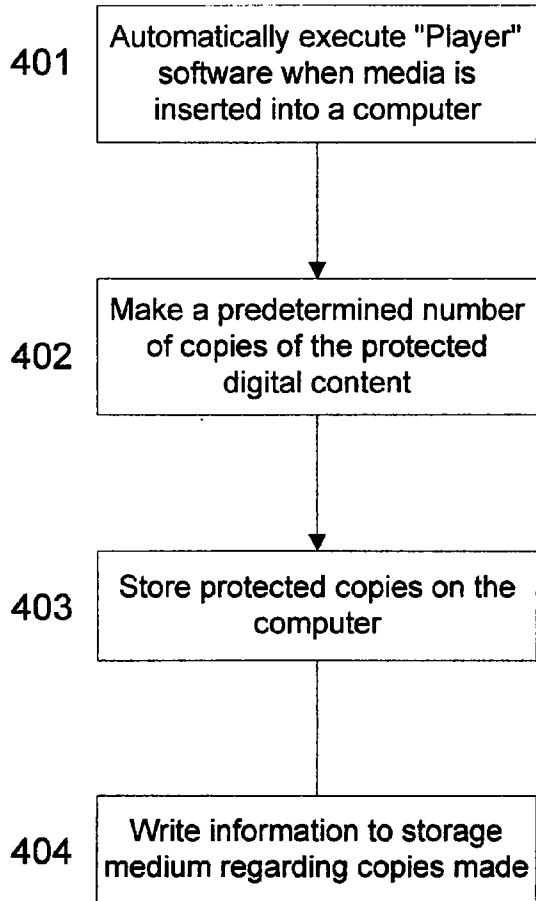


Fig. 4

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**SYSTEM AND METHOD FOR  
CONTROLLING THE USE AND  
DUPLICATION OF DIGITAL CONTENT  
DISTRIBUTED ON REMOVABLE MEDIA**

This application claims the benefit of U.S. Provisional Application No. 60/335,112, entitled "System And Method For Controlling The Use And Duplication Of Digital Content Distributed On Removable Media", filed Nov. 15, 2001, which is incorporated herein by reference.

**FIELD OF THE INVENTION**

The present invention is generally directed to controlling the use and copying of digital content which is distributed on removable media.

**BACKGROUND**

In recent years, the development of digital audio compression technology coupled with the introduction of inexpensive portable audio devices has allowed consumers to carry, literally in their pocket, entire libraries of high quality music to be enjoyed almost anywhere while engaged in almost any activity. These portable devices generally use solid-state memory or miniature computer hard drives to hold hundreds or thousands of megabytes of compressed audio. In order to move music from traditional media (e.g., a Compact Disc™ containing Redbook audio) to the portable device, a consumer generally uses computer software to "rip" the CD and create files containing the compressed audio using an algorithm such as Moving Picture Experts Group (MPEG) Audio Layer 3 (commonly known as MP3). These files may then be copied to the portable device.

An unfortunate side effect of this revolution in audio compression technology has been a substantial increase in copyright infringement and piracy through file swapping over the Internet. Although sharing music with friends and acquaintances via recordable cassette tape and other physical media has been going on for years, high quality audio compression technology combined with one of any number of file swapping software programs can now allow a single consumer to purchase a single copy of an album and almost instantaneously share it with thousands of other individuals worldwide. While some sharing of music among acquaintances can serve to promote a new album or musical act resulting in increased sales, virtually unlimited sharing can drastically erode sales.

A number of potential solutions have been proposed to combat copyright infringement and unlimited copying. Many of these solutions include digital rights management (DRM) schemes which manage virtually every use of the digital content. However, in their present form, these solutions can be difficult and inconvenient to use. Other solutions simply use "anti-ripping" technology to prevent the Redbook audio of a CD from being read by a computer (thus preventing the CD from being ripped) while still allowing it to be read by home stereo equipment. However, this prevents the consumer from making a personal-use copy for use only on the consumer's portable device.

It would be useful to have a solution which prevents or reduces the unlimited file swapping that results in copyright infringement while preserving flexibility and ease of use for the consumer.

**SUMMARY**

The present invention provides devices, systems and methods for controlling the use of digital content so that, for

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example, the number of copies made of the content may be controlled or limited without greatly restricting the consumer's ability to use and enjoy the content. This may be accomplished by, for example, storing on a medium a protected copy of the digital content along with a copy of the digital content which is unreadable by a computer system.

In one possible embodiment of the present invention, the removable medium is a CD that contains both standard Redbook audio tracks which have been protected with anti-ripping technology (i.e., the section of the CD with these tracks cannot be read by a computer CD drive or computer DVD drive, but can be read by, for example a stereo system) as well as a computer readable section of the CD. The computer readable section of the CD contains protected versions of the same audio tracks in a compressed format. Software for playing, using or making copies of these compressed tracks may also be provided on the CD. The CD may be used like a conventional CD in stereo equipment or may be used in a computer to provide the consumer with a limited number of copies of the digital content for use in a portable device or on other computers.

When the removable media is placed in the consumer's computer system, the software may allow the consumer to play or otherwise use the content directly as well as allowing the consumer to make a limited number of copies which may be transferred to a portable device or transferred to another computer. The number of copies that can be made may be limited by one or more of a number of factors including, for example, the number of copies currently on the computer, the number of copies ever made, or whether copies were previously made on another computer. These copies are all stored on the computer when they are made and may then be transferred to the portable device or to another computer, or they may simply be played by the software without the removable medium needing to be in the computer.

In another possible embodiment of the present invention, the removable media is a writable CD, for example a CD-R or CD-RW that contains protected Redbook audio, a protected, compressed version of the same audio, and software for accessing the compressed audio. The CD may be used like a conventional CD in stereo equipment or may be used in a computer to provide the consumer with a limited number of copies of the digital content for use in a portable device or on other computers. The software may then write information onto the CD about the copies made or the circumstances under which the copies were made.

These embodiments and variations to them, as well as other possible embodiments, are described in more detail below.

**BRIEF DESCRIPTION OF THE FIGURES**

FIG. 1 illustrates an overview of an example of one embodiment of the present invention.

FIG. 2 illustrates a flowchart of one aspect of an embodiment of the present invention.

FIG. 3 illustrates a flowchart of one aspect of an embodiment of the present invention.

FIG. 4 illustrates a flowchart of one aspect of an embodiment of the present invention.

**DETAILED DESCRIPTION**

In accordance with example embodiments of the present invention, a medium, especially a removable storage medium, such as a CD, stores digital music files on it that have been encrypted or protected from unauthorized access

in some other fashion. The digital files may contain, for example, audio music that has been compressed using a well-known audio compression algorithm such as Sony's ATRAC™, MP3, Microsoft Windows' Media Audio™ (WMA), but the audio may be at "normal" CD fidelity. The CD may also contain software for decrypting and playing the digital files. In addition, the CD may contain standard Redbook audio that has been protected using, for example, Macrovision, Inc.'s SafeAudio™ or some other "anti-ripping" technology to prevent copying the CD using a computer. This allows typical home or car stereo equipment to play the Redbook audio directly from the CD with little to no loss of fidelity without compromising the security and control features of the present invention. The removable storage medium is not limited to CDs, but may also include MiniDisc™, Digital Versatile Disc (DVD), and other forms of removable storage media. The digital content is not limited to music but may also include other content, such as audio, video, or multimedia.

For example, as shown in FIG. 1, an embodiment of the present invention may include a storage medium 101 containing protected Redbook audio, which is unreadable on a computer, as well as computer readable, encrypted digital audio files (and possibly the "player" software required to use the encrypted digital audio files). The storage medium 101 may be used in a computer 102 which may communicate with a portable device 103. The computer 102 may already have the player software on it or it may be installed from the storage medium. The player software may be used to transfer copies of the encrypted digital audio files to the portable device 103 as further described below.

In one example embodiment of the present invention, control over the copying of digital content on a removable storage medium is achieved by making a limited number of protected copies of the digital content, storing the copies on a computer, and allowing the copies to be moved to other devices with no further copies being made. In this embodiment (as briefly illustrated in FIGS. 1 and 2), when the storage medium is inserted into or connected to a computer, the player software on the CD is automatically executed (Step 201). The player software installs itself on the computer and then may make a predetermined number of copies (e.g., 4 copies) of the digital files on the CD (Step 202) and stores them on the computer (e.g., on the hard drive) (Step 203). Each copy of the digital files is encrypted and may be decrypted and played only by the player software or other authorized software. The player software may also be used to move (not copy) the digital files to other devices. All copying and moving of the digital files may be performed using a secure authenticated channel (SAC). For example, as illustrated in FIG. 2, a user may connect a portable device to the computer and request that a digital file be transferred to the device (Step 204). The player software may contact the portable device and verify that the device is authorized to receive the digital content (Step 205). For example, the player software may verify that the device has certain content protection and/or tamper resistance capabilities so that the content will not be vulnerable to unauthorized access while stored in the device. The player software can also perform an identity authentication routine to insure that the portable device is not an "imposter" using, for example, a unique authentication ID number or similar means. Once the device has been authenticated, the player software transmits one of the copies of the requested digital file and the information necessary to use it (e.g., its decryption key) to the portable device (Step 206). After or contemporaneously with transmission of the copy of the digital file, the player

software deletes that copy from the hard drive of the computer (Step 107); thus, the digital file is "moved" to the portable device and no additional copies have been created.

The movement of the copies to other devices may also be controlled. For example, the player software may be configured such that copies of digital files can only be moved to authenticated portable devices. Alternatively, the player software may be configured to allow copies to be moved to any authenticated device including other computers that are equipped with authenticated player software, thus allowing some limited file swapping. The player software may also be configured to allow copies to be moved only once using, for example, controls similar to those of Serial Copy Management Systems (SCMS) (e.g., when the copy is moved to another device, the copy is marked in some fashion so that the device to which it is moved will not allow it to be moved again).

Additionally or alternatively, copies of files made by the player software may also include additional information that may be used to track unauthorized copies or copies that have had their encryption or protection broken. For example, each copy may include information that uniquely identifies the computer on which the copy was originally made. Alternatively, a unique identification number may be encoded on the storage medium and then transferred to each of the copies of the digital files. Thus, each copy would contain information that would uniquely identify the particular storage medium from which it was originally made. This identification information may be stored in various ways within the copies. For example, the decryption key for each file may be based on the identification information such that the identification information could be later extracted from the key, if desired.

The number of copies of the digital files that are made when the storage medium is placed in the computer may be determined in several ways. For example, the player software may be configured to make a particular number of copies (e.g., 4 copies) of every digital file on a CD, every time the CD is inserted into a computer. Alternatively, the player software may be configured to set a maximum or default number of copies that may be made and the user may be able to elect to have a smaller number of copies made due to a limited amount of available storage space on the computer, for example. The number of copies to be made may also vary based on the storage medium. For example, each CD may be encoded with information that specifies how many copies the player software may make.

In this example embodiment, as illustrated in FIG. 3, when the storage medium is inserted into the computer (Step 301), the player software may also determine if copies of the digital files already exist on the computer from, for example, a previous use of the storage medium in the computer (Step 302). If copies do not exist the player software will make the predetermined number of copies (Step 303). If copies already exist, the player software will not make additional copies (Step 304). Alternatively, the player software may be configured to use the same filenames and place copies in the same location every time copies are made. Thus, the player software need not check for existing copies, but if any did exist they would simply be overwritten by the new copies.

The player software may also be configured so that it can play the digital files directly from the storage medium without making any copies. Thus, if a user does not wish to make any copies or if the maximum number of copies have already been made from the storage medium, the storage medium may still be used to play the audio, so long as the storage medium is in the computer at the time.



In an alternate embodiment, control over the copying of digital content on a removable storage medium is achieved by writing information to the storage medium upon the first use of the storage medium and using that information to determine future usage (e.g., copying, moving, playing, viewing) of the digital content. In this embodiment the removable storage media may include, for example, a writable medium such as CD-R or MiniDisc. In this embodiment as illustrated in FIG. 4, for example, when a CD is placed into a computer, the player software on the CD is automatically executed and installs itself on the computer (Step 401). The player software may then make copies of the digital files on the CD and store them in the computer (e.g., on the hard drive) (Steps 402 and 403. Contemporaneously with the copies being made, the player software writes information to the CD (Step 404). The next time the player software is run (e.g., the next time the storage medium is placed into a computer), the player software can read the information from the CD and use it to determine if more copies of the digital files can be made. Any copies of the digital files made under this embodiment may be moved but not copied, similar to the previously described embodiment.

The information written to the storage medium may include information that uniquely identifies the computer on which the copies were made such as an identification number (e.g., the serial number of the operating system) or a hardware description of the computer (e.g., a list of the hardware components in the computer such that it is unlikely that two computers would be identical). Thus, for example, the storage medium may be "bound" to the computer. Alternatively, the information may include how many copies have been made of the digital files, or how many additional copies may be made of the digital files. For example, the player software may not allow copies of the digital files to be made on any computer other than the one on which copies were made initially, or the player software may not allow more than 4 total copies to be made regardless of on which computer they are made. Another alternative is that once the maximum number of copies have been made, the player software may erase the digital files or the decryption keys from the storage medium.

The player software used by embodiments of the present invention may be universal software that could be used with any storage medium that used the protection system of the invention. For example, each protected CD may have a copy of the same player software on it and that player software reads the digital files and their respective decryption information off of the CD for installation on the computer. If the universal player software already exists, it is not necessary to copy the software again and merely the digital files and any information necessary to use them is copied. File copies and decryption information for multiple CDs may then be maintained by a single copy of the player software using, for example, a secure database. Alternatively, it may be desirable to have multiple versions of the player software, for example, one specific to each music distributor. Under this alternative, each music distributor may be responsible for its own software, reducing the amount of coordination necessary to successfully implement embodiments of the present invention. The software would work similarly to the universal player, but each specific version would only work with CDs produced by a particular company. The present invention may also be implemented with player software versions that are unique to each particular album and are maintained separately from the software for all other albums. These unique versions may have special features such as enhanced or increased security levels. Optionally,

the player software may also be downloaded over a network such as the Internet.

In accordance with example embodiments of the invention, the integrity of the player software is maintained in order to ensure the security and control provided by the invention. If the player software is tampered with, it may be possible to gain access to the digital content in an unprotected form. When the player software is executed directly from the storage medium, it is unlikely to have been tampered with. However, once installed on the computer, it becomes vulnerable to reverse engineering and other tampering. One possible method of authenticating the integrity of the player software is to have the player software or some portion of the player software be reinstalled on the computer each time the storage medium is inserted into the computer. Any existing player software that may have been tampered with is simply overwritten, erased, or disabled. Another method of protecting the player software is to have part of the player software, or another software program on the storage medium that executes when the medium is inserted, check the player software previously installed on the computer using a digital signature, a checksum, or any other well known method of integrity checking. If the player software fails the integrity check, it is rejected or overwritten. Alternatively, the integrity checking software may connect to a central server using a network and request that server to perform an integrity checking routine on the player software and even the storage medium itself.

In the example embodiments of the present invention, the copies of the digital files may be encrypted or protected in a variety of ways. One possible method of protecting the files is to encrypt each copy of each file with a unique key. For example, the player software loads each encrypted song or track from a CD, decrypts it using the appropriate key, makes 4 copies of the track, and then encrypts each copy with a different key. This method would provide the greatest level of security against unauthorized access, but would also require more time to perform the copying operation and would require managing a much greater number of keys. Alternatively, all the copies of a particular track made on a particular computer could be encrypted with the same key or all copies of a track could be encrypted with the same key regardless of what computer on which they were made. The encryption keys may be generated locally on the computer performing the copying, downloaded from a central server, or already present on the storage medium. The encryption algorithm used could be, for example, any symmetric or asymmetric encryption algorithm that provides a balance of adequate protection without being so computationally intensive that it adversely affects the performance of the computer or portable device.

The present invention is not limited to the specific embodiments described. It is expected that those skilled in the art will be able to devise other implementations that embody the principles of the present invention and remain within its scope.

What is claimed is:

1. A digital storage medium having stored thereon digital data comprising:
  - a plurality of segments of digital content data stored on the storage medium and adapted to be unreadable on a computer system;
  - a protected version of the plurality of segments of digital content data stored on the storage medium and readable on the computer system; and
  - a plurality of instructions stored on the storage medium and adapted to be executed by the computer system, the

instructions which, when executed, define a series of steps to be used to control the use of the protected version of the plurality of segments of digital content data, said steps comprising:

automatically producing at least one copy, but no more than a predetermined maximum number of copies, of the protected version of the plurality of segments of digital content data;  
 automatically storing said at least one copy on a storage device connected to the computer system; and  
 controlling access to said at least one copy.

2. The digital storage medium of claim 1 wherein the plurality of segments of digital content data are Redbook audio tracks.

3. The digital storage medium of claim 2 wherein the Redbook audio tracks are adapted to be readable only on stereo equipment.

4. The digital storage medium of claim 2 wherein the protected version of the plurality of segments of digital content data are encrypted, compressed copies of the Redbook audio tracks.

5. The digital storage medium of claim 1 wherein said access is controlled by preventing copying of the at least one copy.

6. The digital storage medium of claim 5 wherein a transferred copy is marked to indicate that it may not be further transferred.

7. The digital storage medium of claim 1 wherein said access is controlled by only allowing the at least one copy to be transferred to an authenticated device.

8. The digital storage medium of claim 7 wherein said authenticated device is another computer system.

9. The digital storage medium of claim 7 wherein said authenticated device is a portable audio device.

10. A The digital storage medium of claim 1, said steps further comprising:

writing information to said digital storage medium regarding the production of the at least one copy.

11. The digital storage medium of claim 10, said steps further comprising:

determining the predetermined maximum number of copies to be produced based on information previously written to the digital storage medium.

12. The digital storage medium of claim 11 wherein said information written to the digital storage medium includes information identifying the computer system.

13. The digital storage medium of claim 12 wherein said information identifying the computer system includes information about the computer system's hardware configuration.

14. The digital storage medium of claim 11 wherein said information written to the digital storage medium includes information identifying the number of copies made.

15. A method for controlling the use of protected digital content distributed on a removable medium, comprising:

reading the removable medium with a computer system; automatically producing a plurality of protected copies of the digital content;

limiting the plurality of protected copies automatically produced of the digital content to a predetermined maximum determined by a provider of the digital content;

automatically storing said protected copies on a storage device connected to the computer; and

moving at least one of said protected copies to another device.

16. The method of claim 15 wherein the predetermined maximum is determined based on information stored on the removable medium.

17. The method of claim 16 wherein the information stored on the removable medium includes information identifying a computer system on which copies were previously made.

18. The method of claim 17 wherein said identifying information includes information about the hardware components in the computer system.

19. The method of claim 16 wherein the information stored on the removable medium includes information about how many copies have been previously made.

20. The method of claim 15 wherein moving at least one of said protected copies to another device comprises:

copying said at least one of said protected copies to another device; and

deleting said at least one of said protected copies from the computer system.

21. The method of claim 15, further comprising:

authenticating said another device before moving said at least one of said protected copies.

22. The method of claim 21 wherein authenticating said another device includes determining whether said another device is authorized to receive protected copies of the digital content.

23. The method of claim 22 wherein said another device is another computer system.

24. The method of claim 22 wherein said another device is a portable device.

25. The method of claim 15, further comprising:

executing software stored on the removable medium to perform the steps of producing and storing said plurality of protected copies.

26. The method of claim 25, further comprising authenticating the integrity of the software stored on the removable medium.

27. The method of claim 26, further comprising:

installing, on the computer system, the software stored on the removable medium.

28. A method for controlling the use of protected digital content distributed on a removable medium, comprising:

reading the removable medium with a computer system; automatically producing at least one protected copy, but no more than a predetermined maximum number of protected copies, of the digital content;

automatically storing said at least one protected copy on a storage device connected to the computer system;

controlling access to said at least one protected copy based on control information stored on the removable medium.

29. The method of claim 28 wherein the control information includes information identifying a computer system on which copies were previously made.

30. The method of claim 29 wherein said identifying information includes information about the hardware components in the computer system.

31. The method of claim 28 wherein the control information includes information about how many copies have been previously made.

32. The method of claim 28 further comprising:

transferring at least one of said at least one protected copy to an authenticated device.

33. The method of claim 28 further comprising:

including identification information in each of said at least one protected copy identifying the particular removable medium from which it was copied.

- 34. The method of claim 33 further comprising:  
including identification information in each of said at least one protected copy identifying the computer system on which it was made.
- 35. The method of claim 28 further comprising:  
including identification information in each of said at least one protected copy identifying the computer system on which it was made.
- 36. A digital storage medium having stored thereon digital data comprising:
  - a plurality of segments of digital content data adapted to be unreadable on a computer system;
  - a protected version of the plurality of segments of digital content data readable on the computer system; and
  - a plurality of instructions stored on the storage medium and adapted to be executed by the computer system, the instructions which, when executed, define a series of steps to be used to control access to said protected version of the plurality of segments of digital content data, said steps comprising:
    - automatically producing a predetermined number of copies of said protected version of the plurality of segments of digital content data; and
    - allowing the predetermined number of copies to be transferred to authenticated devices so long as no additional copies are produced.
- 37. A method for controlling the use of protected digital content distributed on a removable medium, comprising:
  - when the removable medium is inserted into a computer system, automatically executing a set of instructions; according to the instructions, automatically producing a predetermined number of copies of the protected digital content;
  - according to the instructions, storing the predetermined number of copies of the protected digital content in the computer system; and

- according to the instructions, allowing no more than the predetermined number of copies of the protected digital content to be stored in the computer system at any given time.
- 38. The method of claim 37 wherein if copies of the protected digital content already exist on the computer system, those copies are overwritten.
- 39. The method of claim 37 wherein the set of instructions is stored on the removable medium.
- 40. The method of claim 37 wherein the predetermined number of copies of the protected digital content are stored on the hard drive of the computer system.
- 41. A method for controlling the use of protected digital content distributed on a removable medium, comprising:
  - receiving, by a computer system, the removable medium; upon receiving the removable medium, and without user input, automatically producing a plurality of copies of the protected digital content; and
  - storing the plurality of copies of the protected digital content in the computer system.
- 42. The method of claim 41 further comprising:
  - allowing no more than a predetermined number of copies of the protected digital content to be stored in the computer system at any given time.
- 43. The method of claim 41 further comprising:
  - allowing the user to move at least one of the copies of the protected digital content to another device; and
  - automatically deleting the at least one of the copies of the protected digital content from the computer system when the user moves the at least one of the copies of the protected digital content to another device.
- 44. The method of claim 41 wherein the plurality of copies of the protected digital content are stored on the hard drive of the computer system.

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**U.S. Patent No. 6,670,537**



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(12) **United States Patent**  
**Hughes et al.**

(10) **Patent No.:** **US 6,670,537 B2**  
(45) **Date of Patent:** **Dec. 30, 2003**

- (54) **MEDIA PLAYER FOR DISTRIBUTION OF MUSIC SAMPLES**
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- (73) Assignees: **Sony Corporation**, Tokyo (JP); **Sony Electronics, Inc.**, Park Ridge, NJ (US)

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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- (65) **Prior Publication Data**

US 2002/0152876 A1 Oct. 24, 2002

- (51) **Int. Cl.**<sup>7</sup> ..... **A63H 5/00; G04B 13/00; G10H 7/00**
- (52) **U.S. Cl.** ..... **84/609; 705/26**
- (58) **Field of Search** ..... **84/609-614, 634-638, 84/645, 477 R, 478; 434/307 A; 707/104; 705/26, 27**

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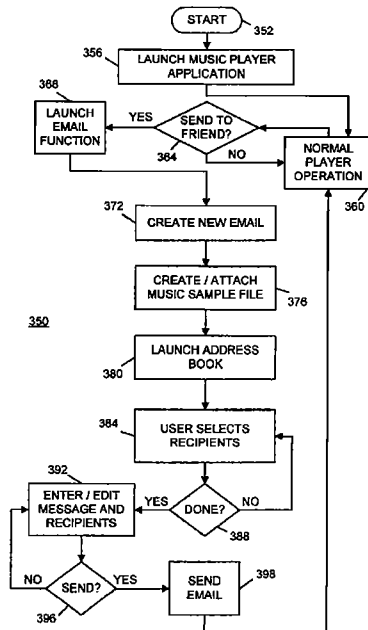
*Primary Examiner*—Jeffrey Donels

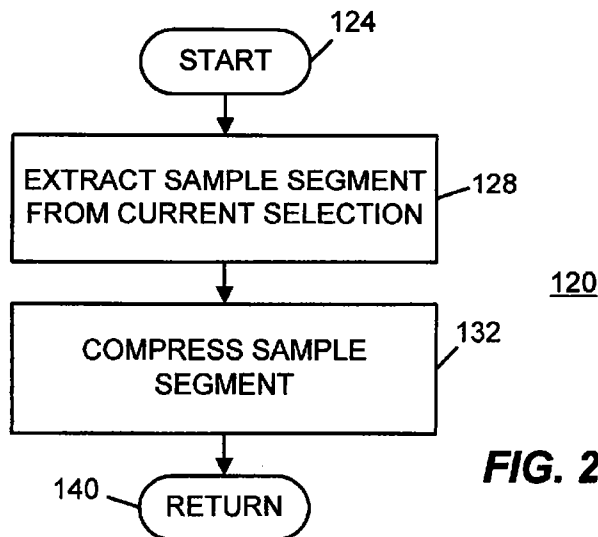
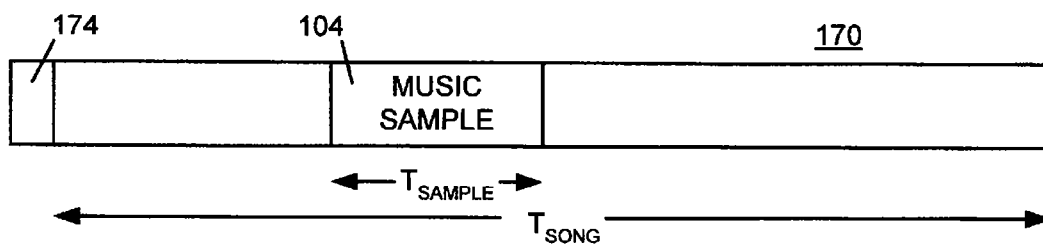
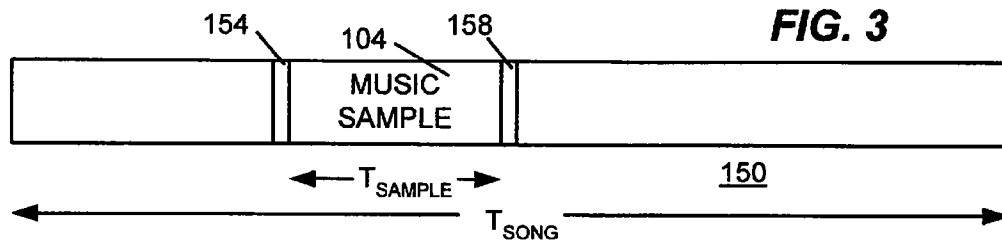
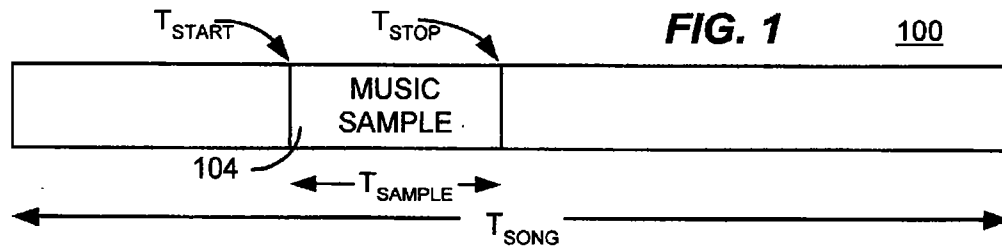
(74) *Attorney, Agent, or Firm*—Miller Patent Services; Jerry A. Miller

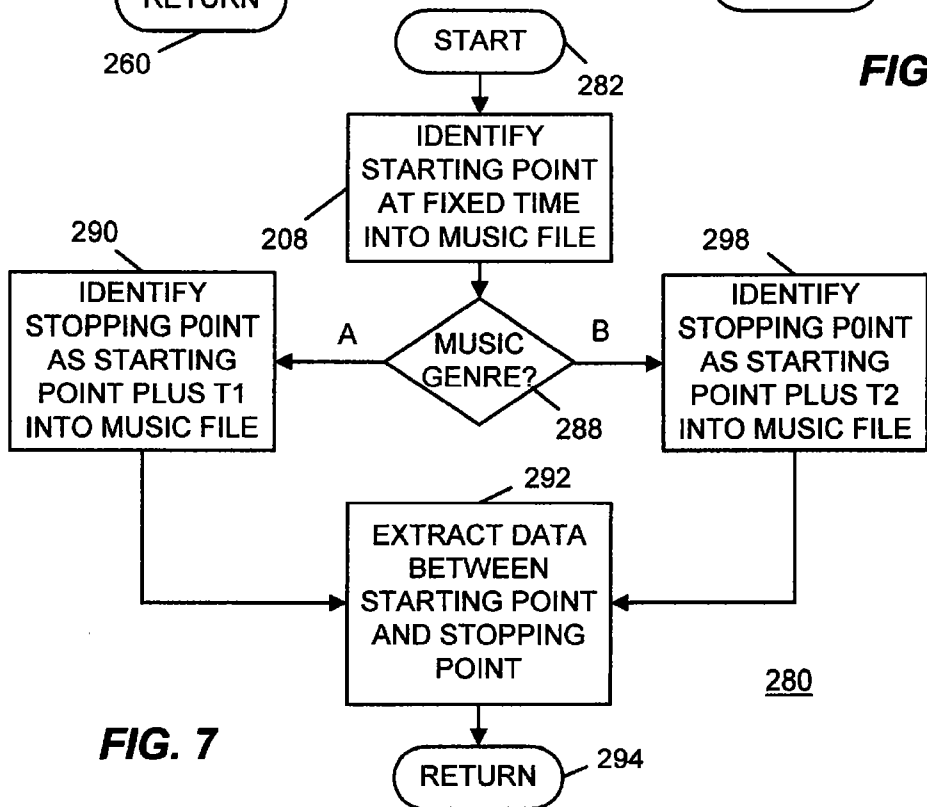
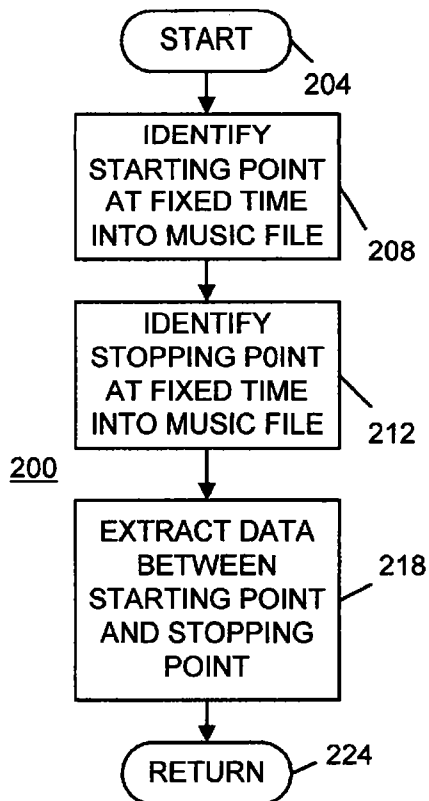
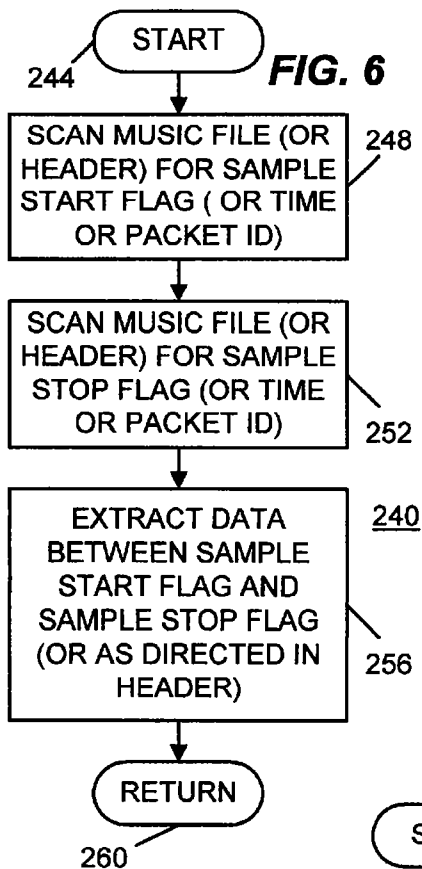
(57) **ABSTRACT**

A method and apparatus of music distribution from a media player. A media player is provided with a "send to friend" icon. In one embodiment, when the icon is selected, a clipping of the currently playing music selection is taken from a predetermined location in the music selection and compressed using a fidelity reducing compression technique to produce a sample of the current selection suitable for distribution. The compressed clipping is sent to a selected recipient or recipients by email in the background while the music selection continues to play. The recipient(s) can be either a default recipient(s) or a recipient(s) selected from a list as in an address book application.

**41 Claims, 14 Drawing Sheets**







310

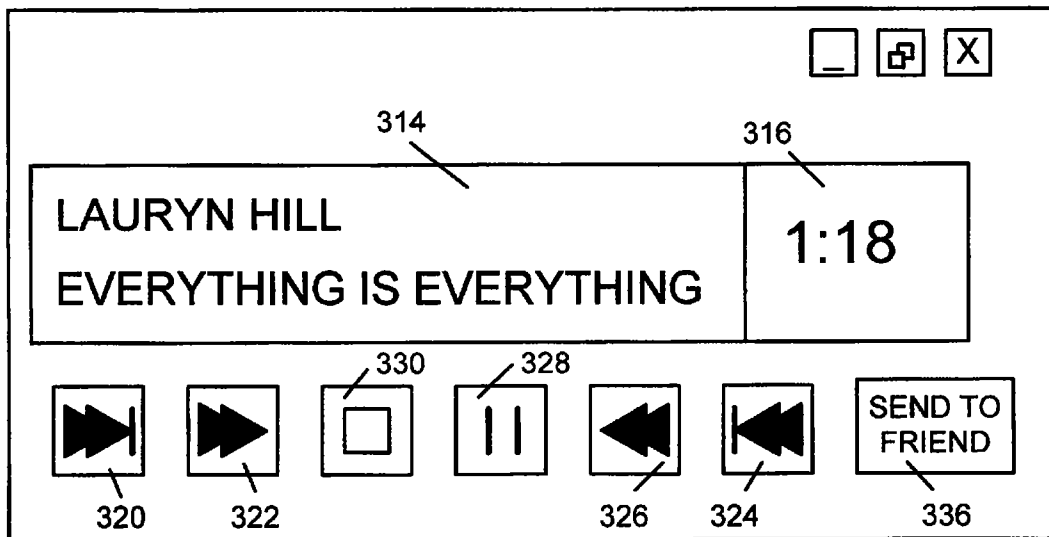
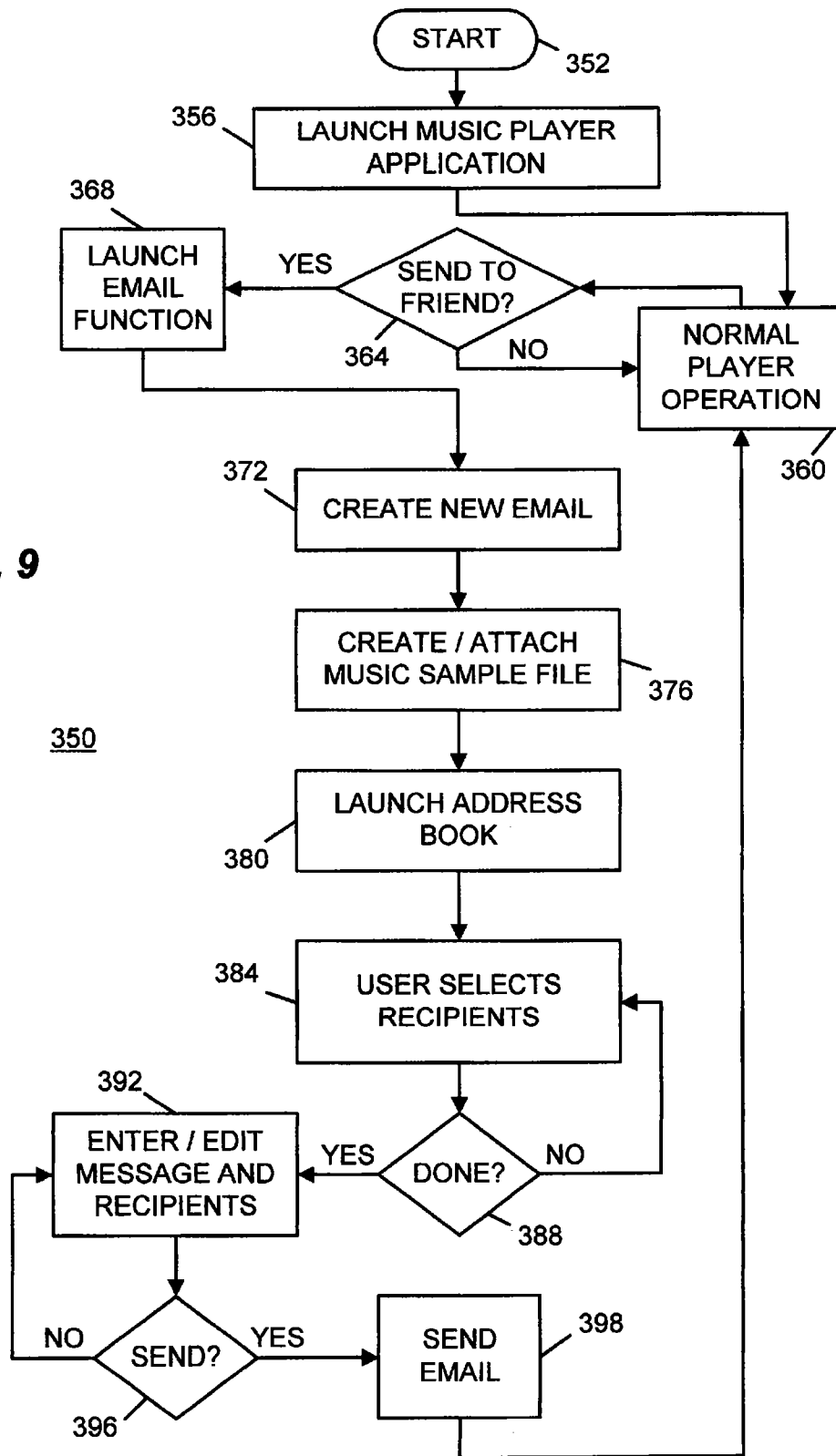


FIG. 8



FIG. 9



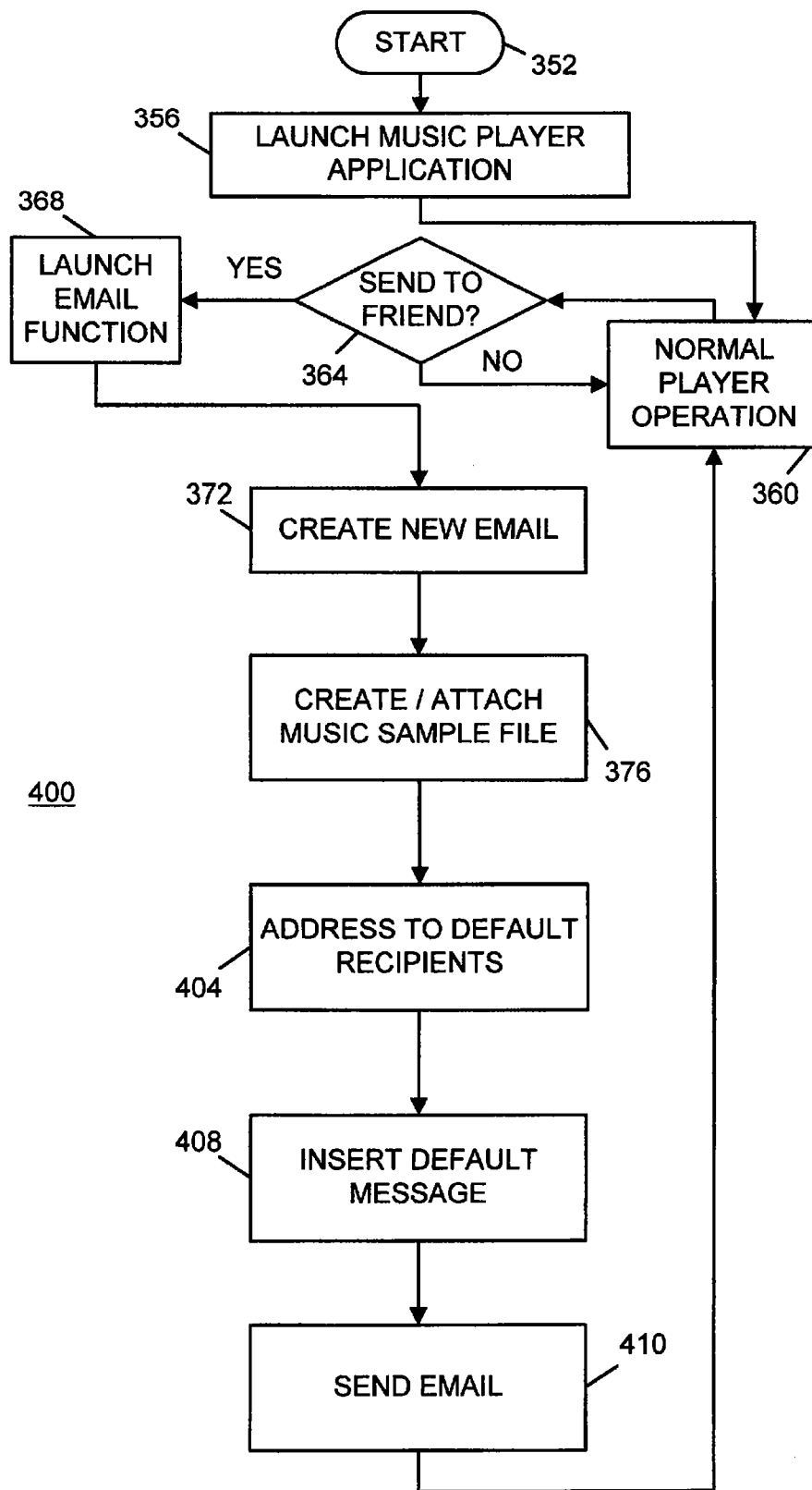


FIG. 10

400

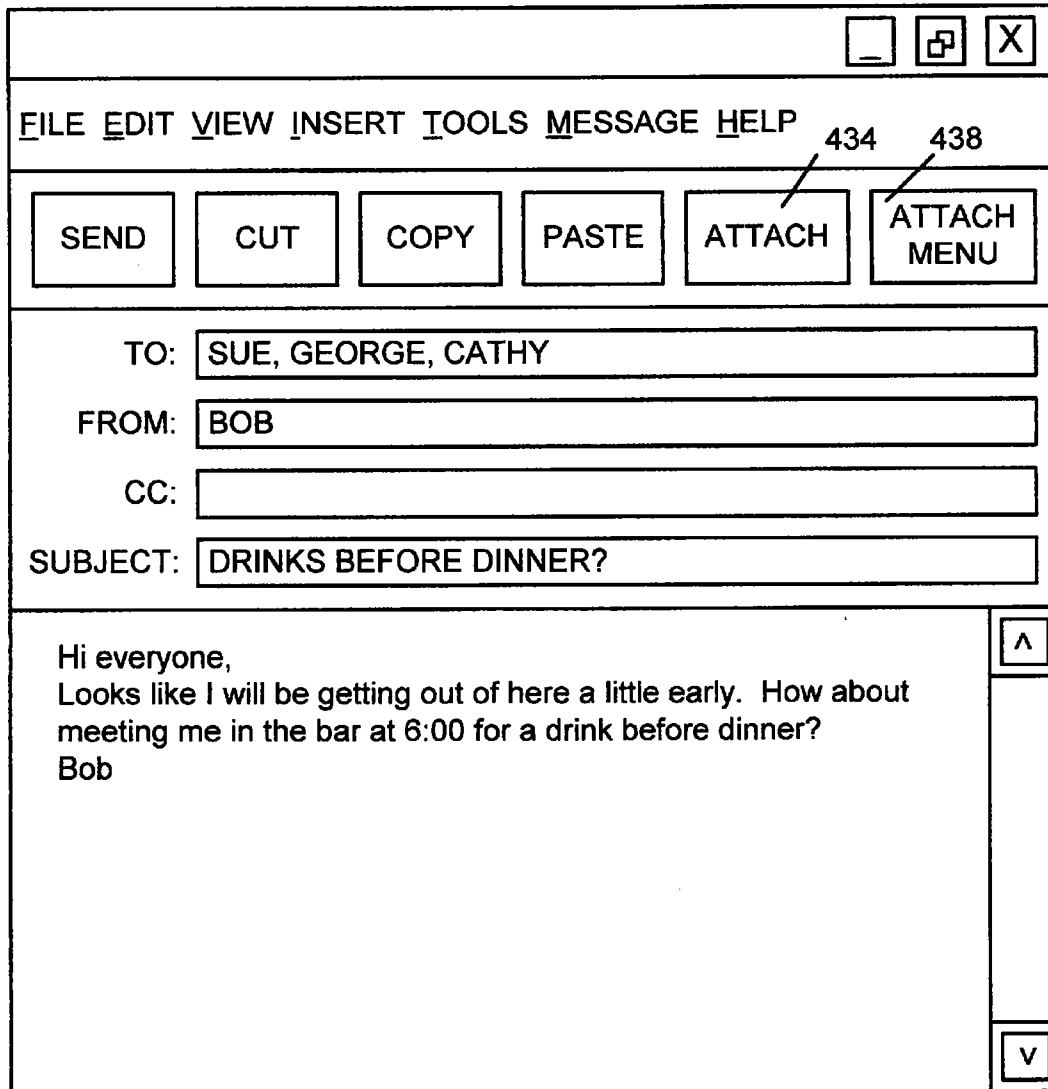


FIG. 11

430

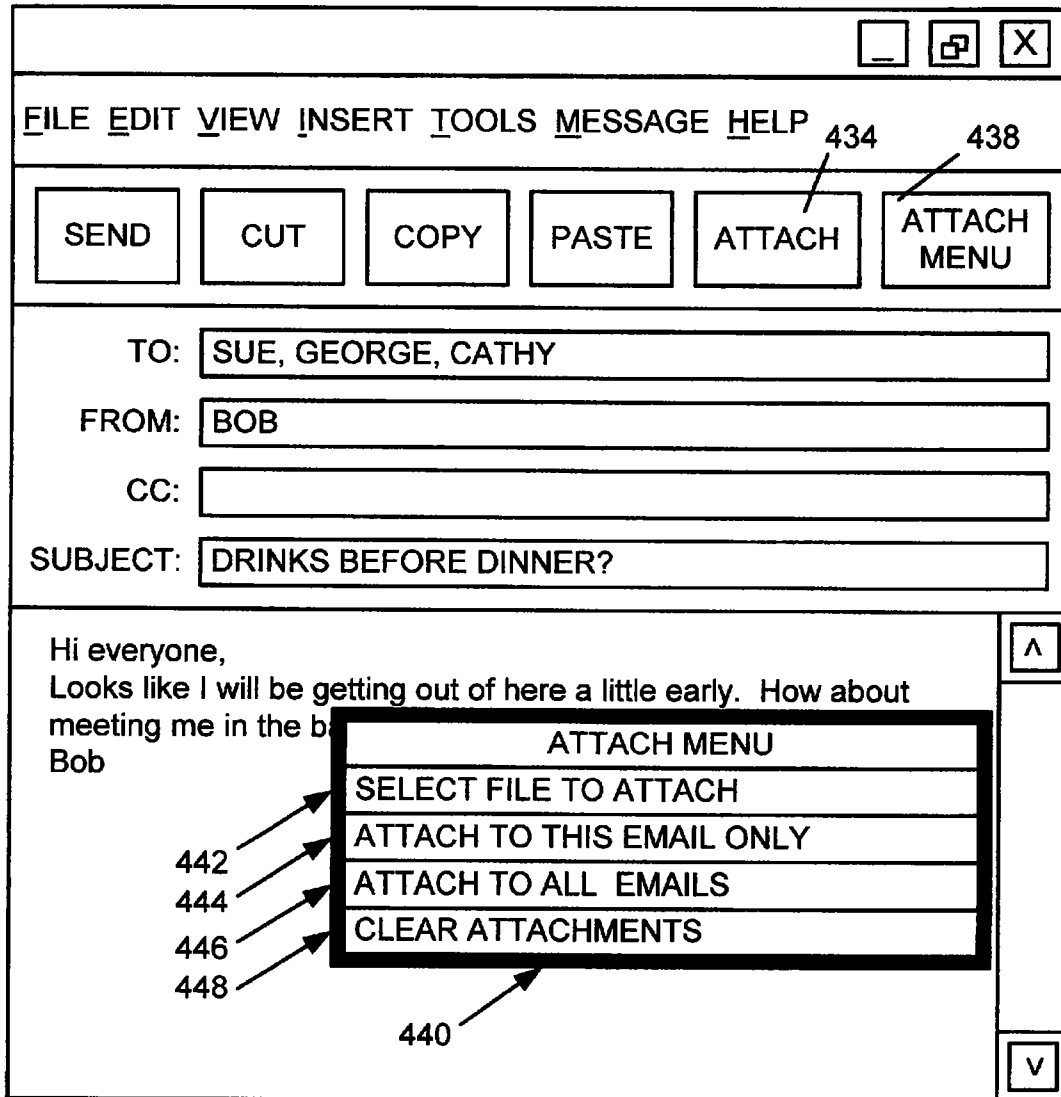


FIG. 12

430

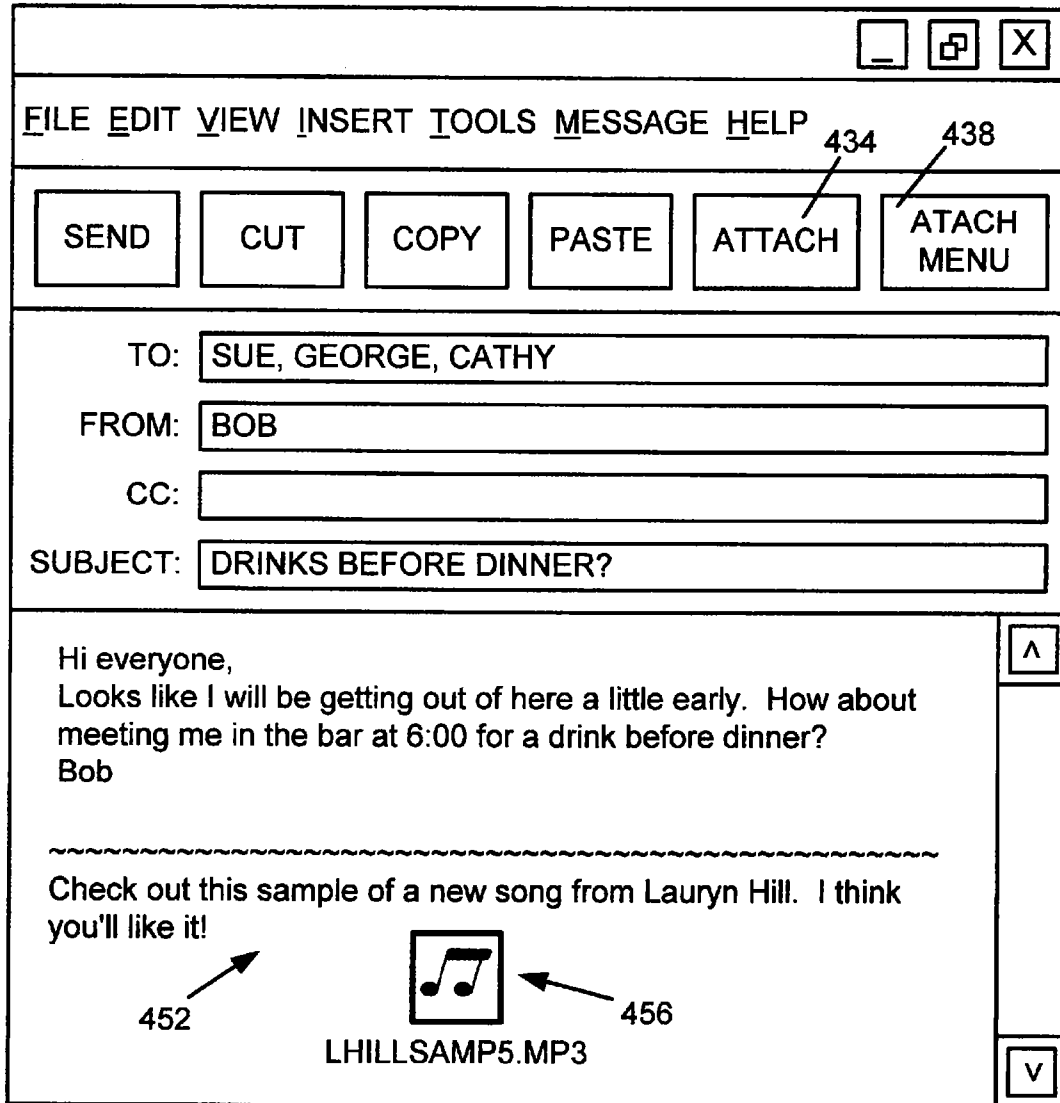


FIG. 13

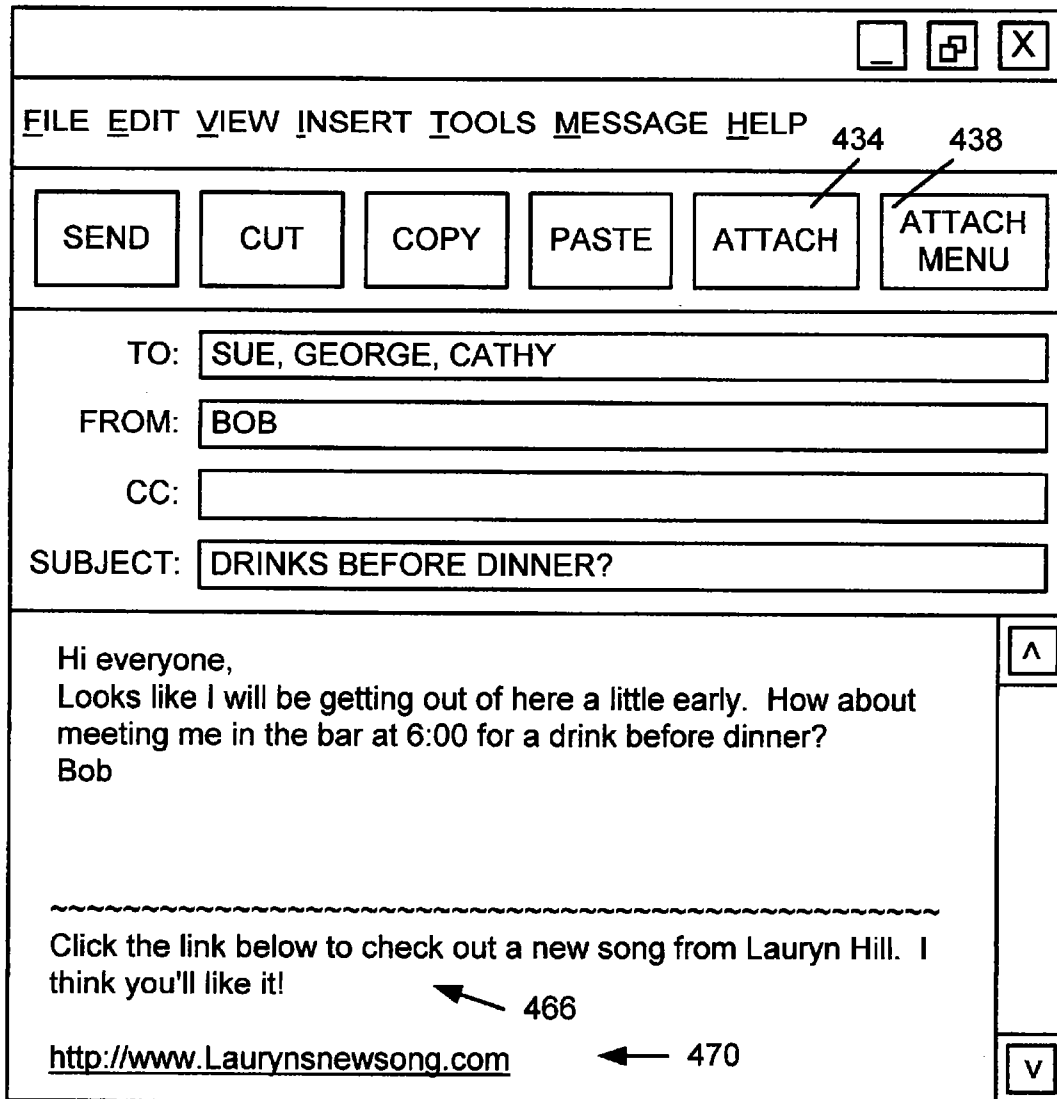


FIG. 14

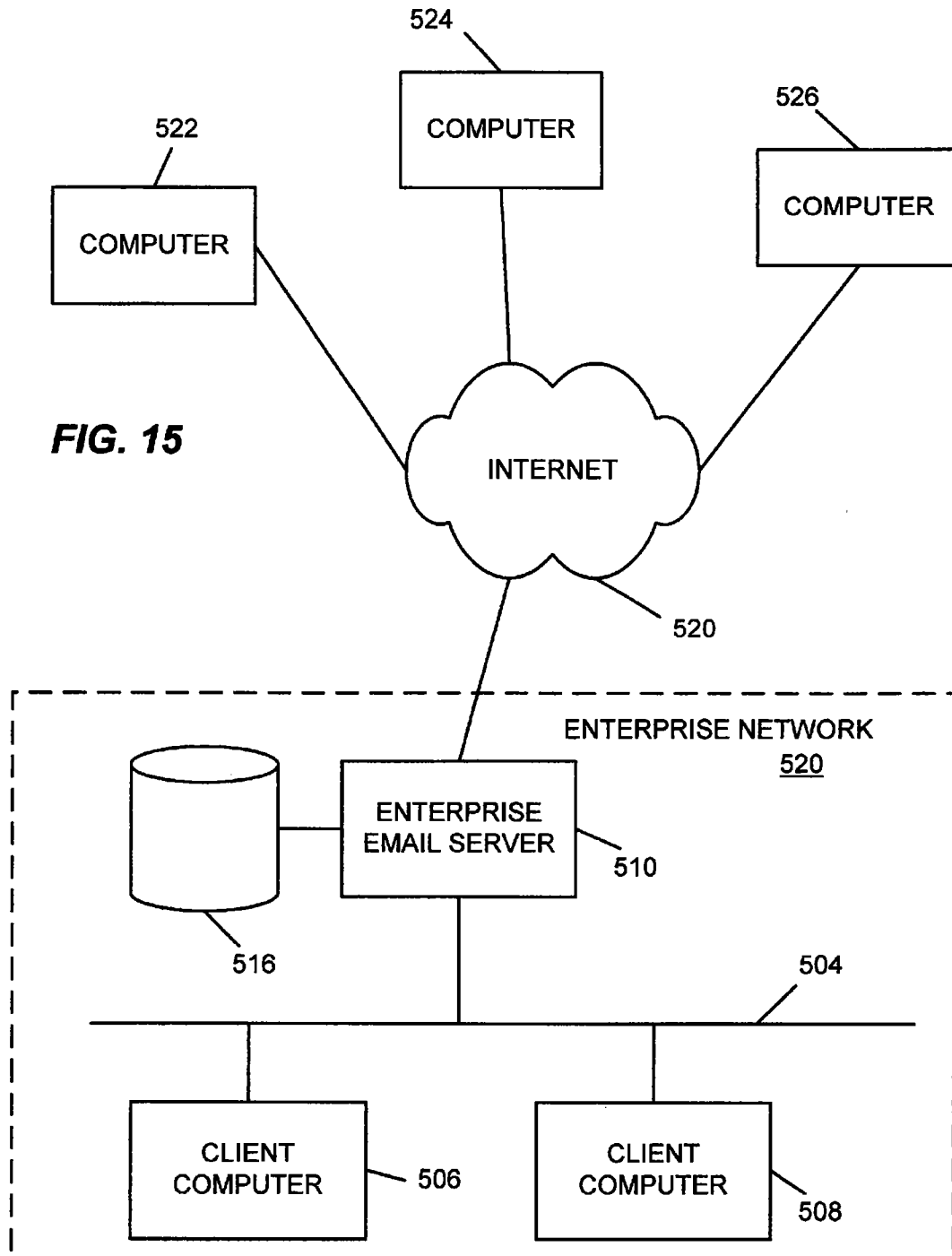
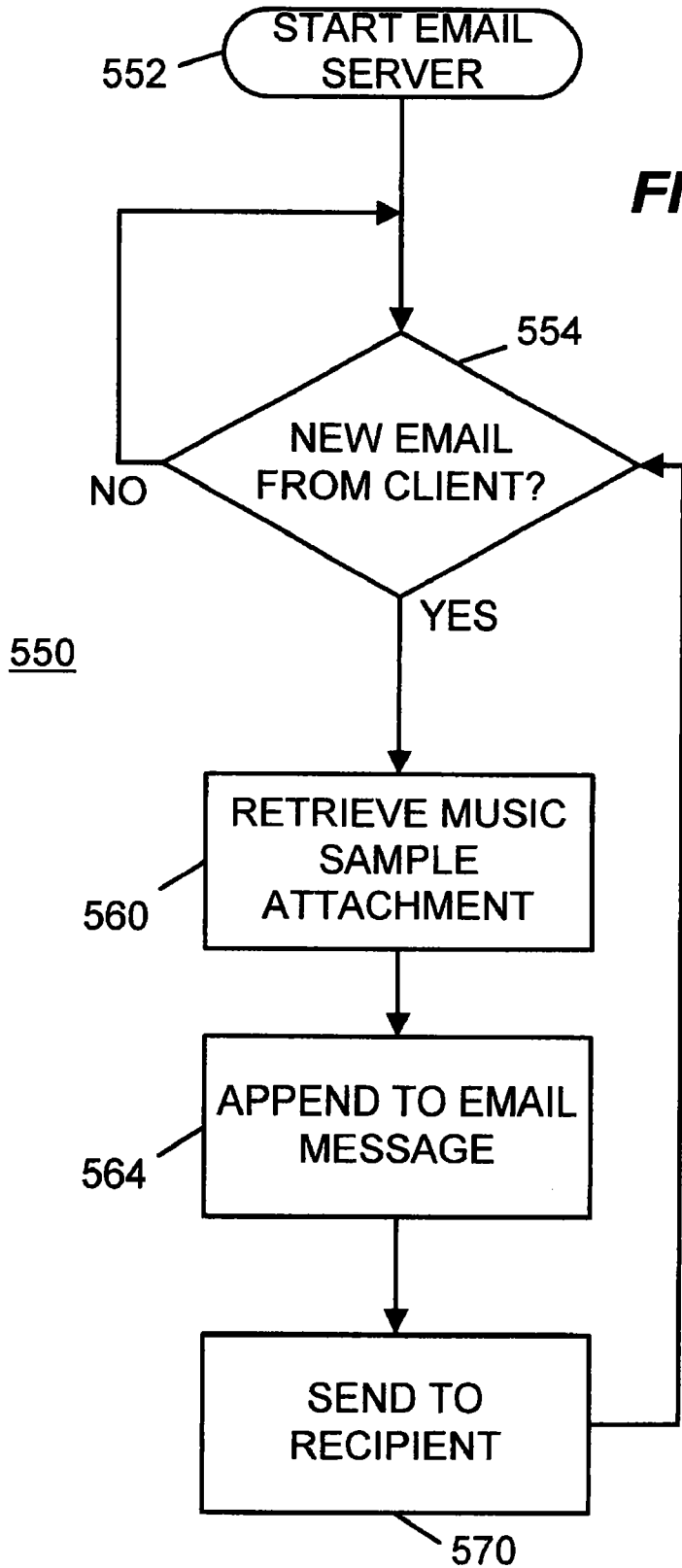


FIG. 15

FIG. 16





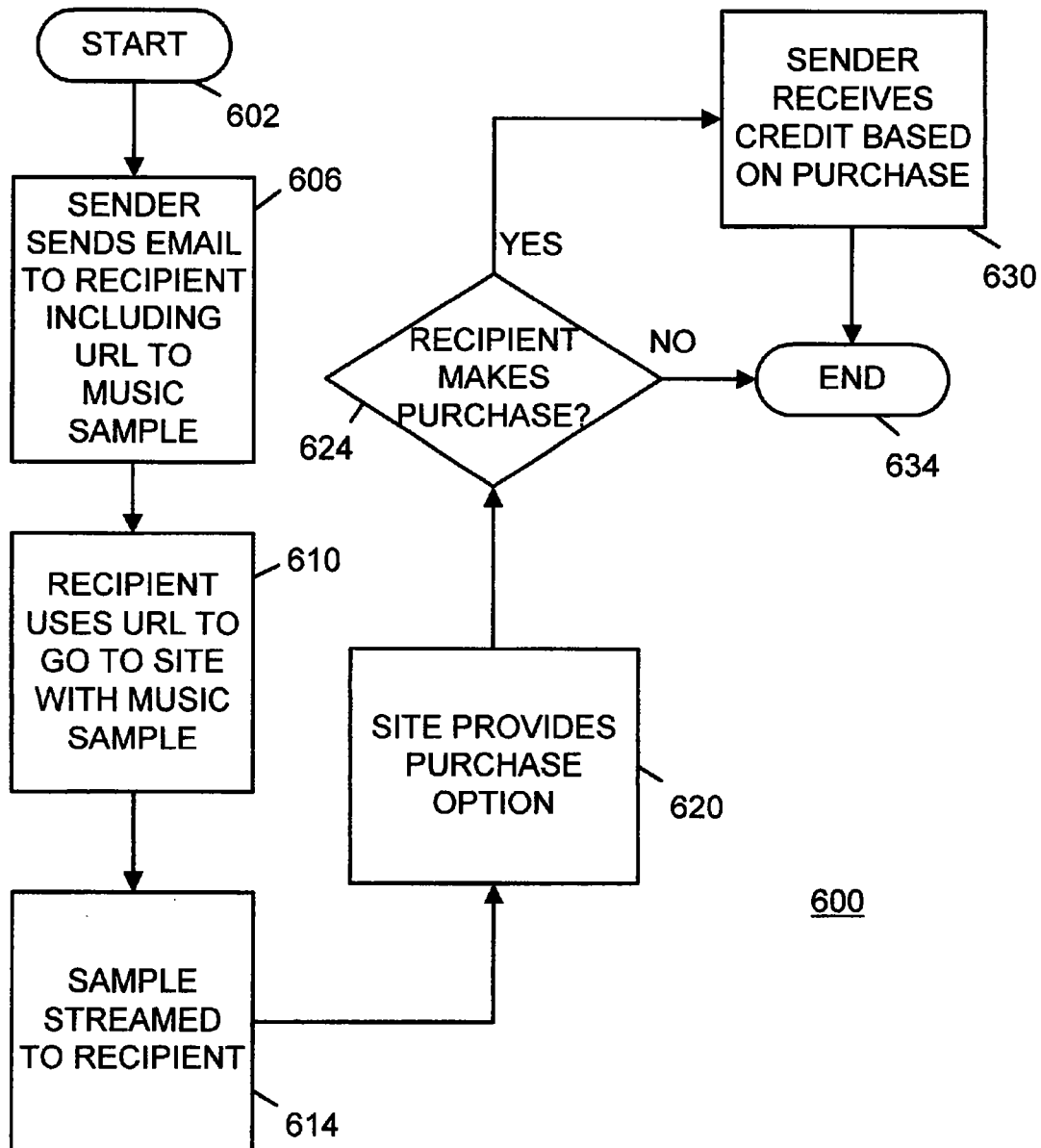
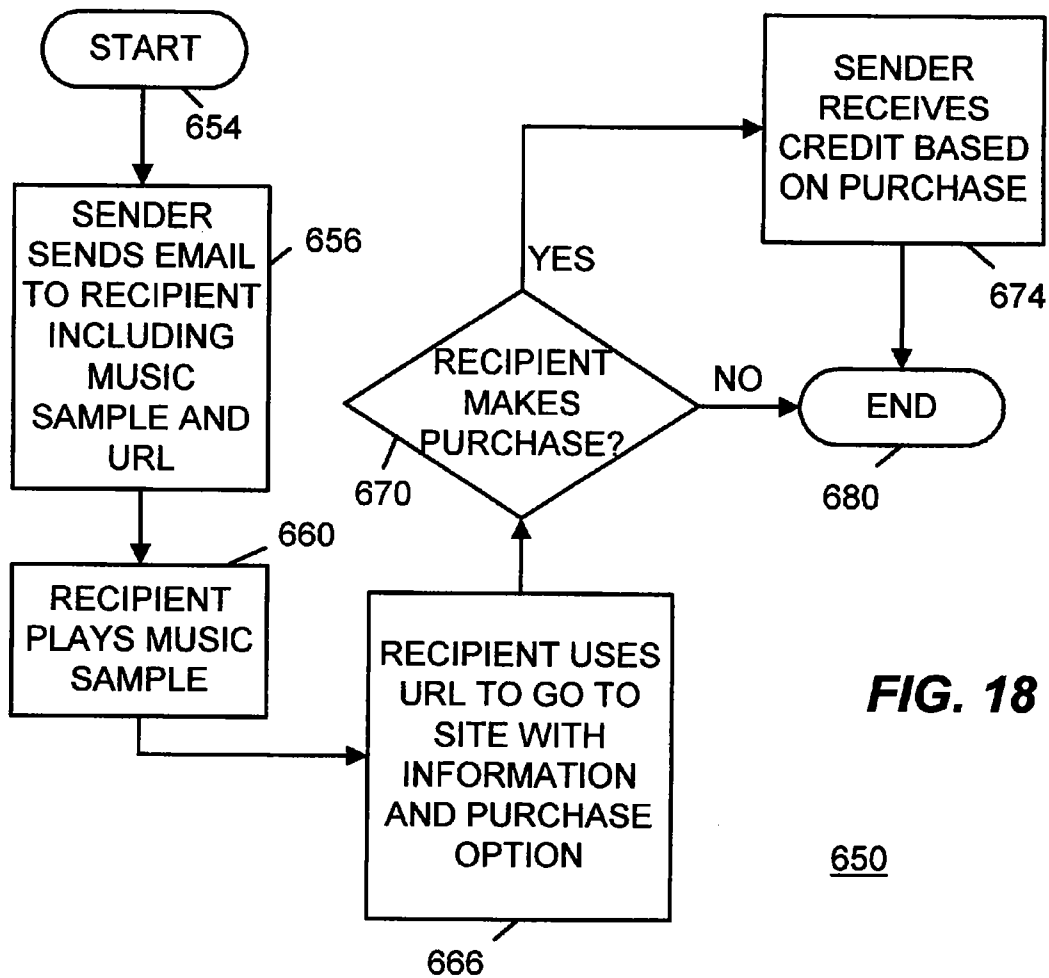


FIG. 17



**FIG. 18**

650

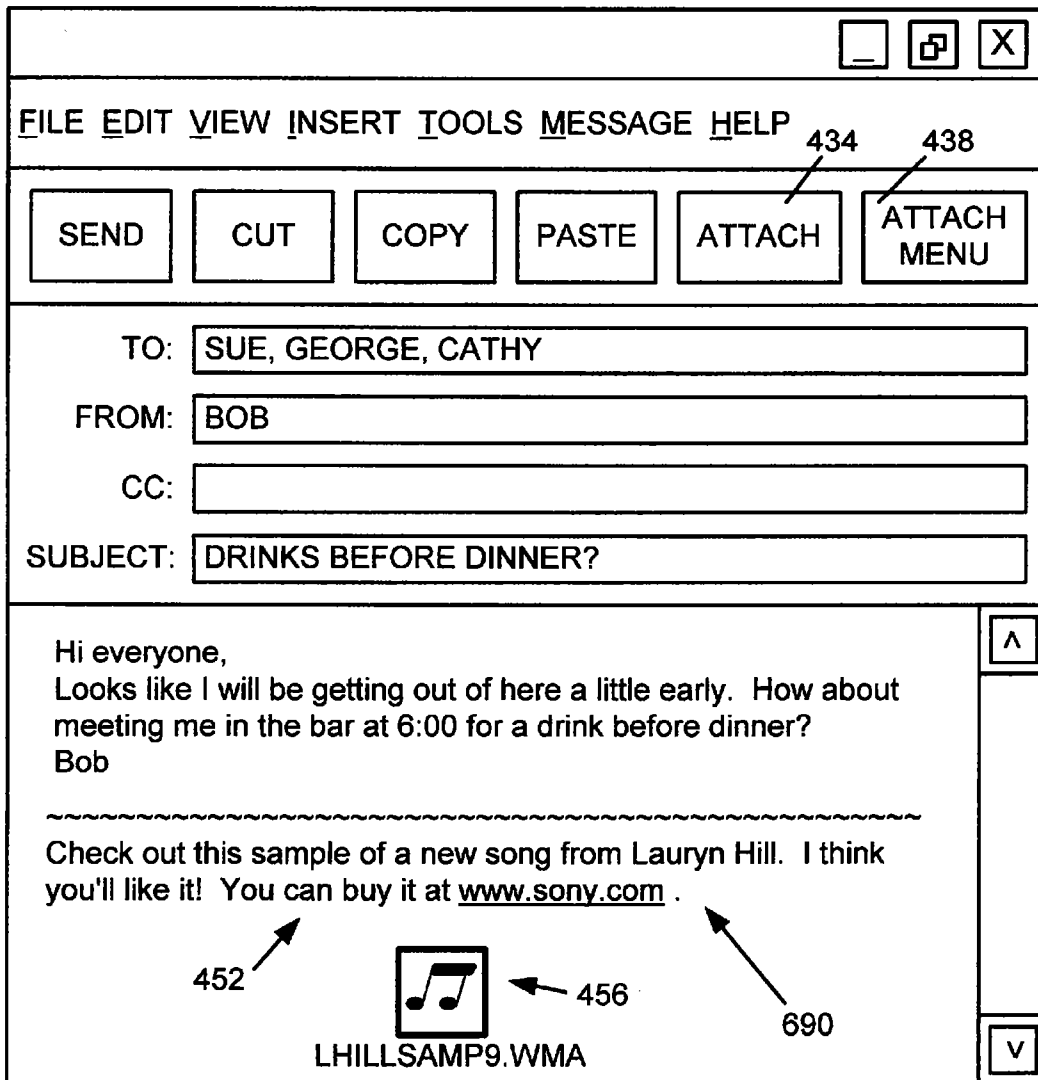


FIG. 19

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## MEDIA PLAYER FOR DISTRIBUTION OF MUSIC SAMPLES

### FIELD OF THE INVENTION

This invention relates generally to the field of electronic distribution of audio (or video) recordings. More particularly, this invention relates to a so-called super distribution techniques.

### BACKGROUND OF THE INVENTION

In recent years, providing samples of a musical selection has become a popular marketing tool for record companies as well as other organizations marketing music. By creating electronic samples of a computer readable music file, the samples can be distributed as a marketing tool according to various electronic schemes often referred to as super distribution. Unfortunately, current software applications do not provide a convenient mechanism for a user to distribute such music samples. This limits the effectiveness of certain super distribution techniques.

### SUMMARY OF THE INVENTION

The present invention relates generally to electronic distribution of audio and other content. Objects, advantages and features of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of the invention.

A method of transmitting an audio sample, consistent with an embodiment of the invention includes, within a media player application program, playing an audio selection; upon receipt of a command from a user, launching an email application from within the media player; generating an email message; attaching a sample of the audio selection to the email; and sending the email and the attached audio sample to a recipient.

A media player, consistent with an embodiment of the present invention includes a programmed processor with a media player application running on the programmed processor to enable a user to play content. A user interface for the media player includes an icon or other control mechanism, that when selected causes the media player application to launch an email application and send a sample of the content from a sender to a recipient.

An electronic storage medium consistent with an embodiment of the invention contains instructions which, when executed on a programmed processor, carry out a method of transmitting a content sample from within the media player, by playing a content selection; upon receipt of a command from a user, launching an email application from within the media player; generating an email message; attaching a sample of the content selection to the email; and sending the email and the attached content sample to a recipient.

Embodiments of the present invention provide a method and apparatus of music distribution from a media player. A media player is provided with a "send to friend" icon. In one embodiment, when the icon is selected, a clipping of the currently playing music selection is taken from a predetermined location in the music selection and compressed using a fidelity reducing compression technique to produce a sample of the current selection suitable for distribution. The compressed clipping is sent to a selected recipient or recipients by email in the background while the music selection continues to play. The recipient(s) can be either a default recipient(s) or a recipient(s) selected from a list as in an address book application.

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The above summaries are intended to illustrate exemplary embodiments of the invention, which will be best understood in conjunction with the detailed description to follow, and are not intended to limit the scope of the appended claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

The features of the invention believed to be novel are set forth with particularity in the appended claims. The invention itself however, both as to organization and method of operation, together with objects and advantages thereof, may be best understood by reference to the following detailed description of the invention, which describes certain exemplary embodiments of the invention, taken in conjunction with the accompanying drawings in which:

FIG. 1 illustrates a music or other audio sample within a digital music file.

FIG. 2 is a high level flow chart of a music clipping process consistent with embodiments of the present invention.

FIG. 3 illustrates a music sample within a digital audio file using start and stop flags.

FIG. 4 illustrates a music sample within a digital audio file using a header to define a sample.

FIG. 5 is a flow chart of an embodiment of a sampling technique consistent with certain embodiments of the invention.

FIG. 6 is a flow chart of another embodiment of a sampling technique consistent with certain embodiments of the invention.

FIG. 7 is a flow chart of a third embodiment of a sampling technique consistent with certain embodiments of the invention.

FIG. 8 illustrates an exemplary embodiment of a user interface of a media player that can employ a music clipping process according to embodiments of the present invention.

FIG. 9 is a flow chart illustrating a music clipping and distribution process consistent with certain embodiments of the present invention.

FIG. 10 is a flow chart illustrating another music clipping and distribution process consistent with certain embodiments of the present invention.

FIG. 11 illustrates an exemplary embodiment of a user interface of an electronic mail application consistent with certain embodiments of the present invention.

FIG. 12 illustrates an exemplary embodiment of a user interface of an electronic mail application showing an "Attach Menu" consistent with certain embodiments of the present invention.

FIG. 13 illustrates an exemplary embodiment of a user interface of an electronic mail application showing an attached audio file consistent with certain embodiments of the present invention.

FIG. 14 illustrates an exemplary embodiment of a user interface of an electronic mail application showing an attached link to an audio sample consistent with certain embodiments of the present invention.

FIG. 15 is an exemplary system block diagram of an email system using an enterprise email server according to certain embodiments of the invention.

FIG. 16 is a flow chart illustrating the operation of the email server of FIG. 15 according to an embodiment of the present invention.

FIG. 17 is a flow chart illustrating a process for awarding affinity points consistent with certain embodiments of the present invention.

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FIG. 18 is a flow chart illustrating another process for awarding affinity points consistent with certain embodiments of the present invention.

FIG. 19 illustrates an exemplary embodiment of a user interface of an electronic mail application showing an attached audio file and link to purchase options consistent with certain embodiments of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail specific embodiments, with the understanding that the present disclosure is to be considered as an example of the principles of the invention and not intended to limit the invention to the specific embodiments shown and described. In the description below, like reference numerals are used to describe the same, similar or corresponding parts in the several views of the drawings.

Referring now to FIG. 1, a music file, or other audio file, is generally represented as 100. The music file can be viewed as a linear file of data extending from left to right as time increases in FIG. 1. When streamed from a server or disc drive or the like, the music file 100 will play for a time duration shown as  $T_{SONG}$ . The desired music sample including the so-called "hook" (i.e., a memorable passage of the music that is likely to attract a potential buyer's attention), can be represented as a segment of the file shown as "music sample" 104 starting at times  $T_{START}$  and ending at time  $T_{STOP}$ . Depending on the individual music selection and also dependent in general upon the particular genre of music, the start of the hook is generally located somewhere around 45 to 60 seconds into a typical 3 minute popular music selection. With other genres of music, such as jazz or classical music, the hook might appear significantly later or earlier. Additionally, for example, 1950s rock and roll hooks typically occur somewhat sooner. Thus, the start time for the sample may range from about 30 to about 60 seconds.

Generally speaking, current mass marketed music that may benefit most from the music sampling described herein falls within the category of popular music. In this case, the hook typically starts, as previously noted, between 45 and 60 seconds into the selection. Thus, a music sample of approximately 30 seconds can be generated by simply taking a clipping from the original music file starting at approximately 45 to 60 seconds (or slightly earlier, e.g., 5 to 15 seconds earlier) and lasting for a duration of approximately 30 seconds. For jazz or classical selections, it is beneficial to take a longer music selection of perhaps 45 to 60 seconds since a 30 second clip may not present a representative sample of the music selection.

Referring now to FIG. 2, an overall process for creating a music clipping suitable for super distribution is illustrated as process 120 that starts at 124. Generally the music sample is extracted as a segment of the music selection file 100 at 128. At 132 the selected sample segment is compressed using any suitable compression technique to reduce the file size. Any suitable compression technique can be utilized for this purpose including lossy compression techniques and reduction of the data rate (the streaming data rate) associated with the music selection. In general, although such compression degrades the fidelity of the resulting sample segment, it is more desirable to degrade the sample quality somewhat than to have a resulting sample file that is large and thus more difficult to readily distribute (for example, over the Internet). At 140 the process terminates to return a

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music clipping for use. This process can be carried out by the end user, retail establishment, record company, publicist, marketing concern, artist or other private or commercial entity interested in promoting the audio selection.

In accordance with the embodiment illustrated in FIG. 1, a fixed starting time is defined (e.g., 45 seconds from the start of the music selection) for extracting the music sample and the sample duration  $T_{SAMPLE}$  is also predefined (e.g., 30 seconds) to create a generally applicable music clipping. However, other techniques can also be utilized to perform the initial extraction of the sample segment (i.e. 128 of FIG. 2). FIG. 3 illustrates a second technique for creating a music sample (or other audio or video sample) consistent with the embodiment of the present invention. In this embodiment, the sample is defined in the production and manufacturing process. In this technique, a preferred music sample 104 is preceded by a start flag shown as 154 and may also be followed by a stop flag shown as 158. Alternatively, only a start flag 154 may be used in conjunction with a predefined sample time defining the stopping point. In this embodiment, the sample can be automatically extracted from the file 150 by simply scanning the file for the location of start flag 154 and possible stop flag 158. Such flags can be readily embedded in a music file and can be ignored by the music file playing or, if interpreted by the player as music data, these flags are of such short duration as to be unlikely to be noticed by the human ear. The recorded audio along with start and stop flags can be recorded on any suitable electronic storage medium such as a compact disc.

A third technique for extracting a sample segment as in 128 of FIG. 2 is illustrated in connection with the use of file 170 of FIG. 4. In this example, the music file 170 (or other audio or video file) includes a header 174 containing data relating to the music file 170. A portion of this data in header 174 can be defined to be either a starting packet number or starting time associated with the music sample as well as possibly an ending packet number or ending time associated with the music sample. Alternatively, a sample duration could be specified. The recorded audio along with start and stop flags can be recorded on any suitable electronic storage medium such as a compact disc. Many variations of these techniques will occur to those skilled in the art and can be adapted for use with video as well as audio.

Referring now to FIG. 5, a process for deriving a music sample as illustrated in FIG. 1 is shown as process 200. The process starts at 204. At 208, a starting point  $T_{START}$  is identified as a fixed time from the beginning of the music file. At 212, a stopping point  $T_{STOP}$  is identified as a fixed time into the audio file or equivalently a fixed time at  $T_{START}$ . At 218, the data between the starting point  $T_{START}$  and the stopping point  $T_{STOP}$  is extracted to define the segment of music to be used in creation of the sample. The process then returns at 224. Of course, those skilled in the art will appreciate that the extraction of the data may begin as soon as the starting point is identified. The extraction can then proceed until the sample time has expired or until the stopping point  $T_{STOP}$  is encountered.

Referring now to FIG. 6, a process 240 starting at 244 describes the processes for extracting a sample segment from file 150 of FIG. 3 in file 170 of FIG. 4. At 248 the header 174 is scanned for a sample start flag for starting time or starting packet identifier. At 252 the music file or header is scanned for the sample stop flag (or time or packet ID.) At 256 the data between the sample start and sample stop indicators (flag, time or packet ID) to define the sample segment to be used for ultimate creation of music clippings. The process returns at 260. Of course, those skilled in the art

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will appreciate that the extraction of the data may begin as soon as the starting point is identified. The extraction can then proceed until the sample time has expired or until the stopping point  $T_{STOP}$  is encountered.

Referring now to FIG. 7, a variation of process 200 of FIG. 5 is illustrated starting at 282. At 208, the starting point is identified as a fixed time from the beginning of the music selection. Control then passes to 288 where the music genre is identified. This can be accomplished by data supplied in a header such as header 174, by user selection or any other suitable mechanism. In the case of genre A, control passes to 290 where a stopping point is identified as the starting point plus a fixed time  $T1$  into the music file. Control then passes to 292 where the data is extracted between the starting point and stopping point to provide the sample segment from the current music selection and the process returns at 294. However, if the music genre is determined to be B at 288, control passes to 298 where the stopping point is identified as the starting point plus a different time  $T2$  into the music file. Control then passes to 292 as previously. In accordance with this embodiment, multiple types of music can be sampled to generate a more suitable sample based upon the type of music being sampled. Thus, genre A may be considered popular music while genre B may be classical music with  $T1$  equaling 30 seconds and  $T2$  equaling 60 seconds. While the process 280 is illustrated as having only two selections A and B, those skilled in the art will appreciate that any number of such selections are possible and can be defined to most closely match an appropriate time period for the selection of the sample based upon the particular type of music, audio video or other program material.

Samples created in accordance with any of the processes described above can be carried out by the end user, retail establishment, record company, publicist, marketing concern, artist or other private or commercial entity interested in promoting the audio selection.

The process just described can be implemented as a computer program or script operating as a portion of, for example, a computer media player. However, many other implementations are possible without departing from the present invention. In one alternative embodiment, an email enabled personal audio player can embody the functionality of the present invention, with email facilities provided via wireless or wired communication. The compressed music sample previously described can be generated as part of a media player in one embodiment of the invention so that a user can advantageously produce a music sample of a currently playing music selection and with a single click of a computer screen icon, push of a button or other interface, initiate a process for sending that music sample to a friend (or potential customer).

FIG. 8 shows a simplified user interface for a media player 310. Media players similar to those provided by Microsoft, Real Networks as well as ATI and other corporations can be modified to provide this function. In the illustrative interface 310 shown in FIG. 8, a display window 314 displays the artist and the name of the selection being played for an audio selection. Other media players can also play video selections, and the present invention can be used with such media players for sending video samples. The present invention can be generally applied to any such content. Window 316 displays the elapsed time in this selection. Various play control buttons are provided such as search forward button 320, scan forward button 322, search backwards button 324, scan backwards button 326, pause button 328 and start/stop button 330 in a familiar arrangement. In addition, the interface includes a button labeled as

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"send to friend" button 336. In other embodiments an icon such as an email envelope icon or the like can be also utilized. In this embodiment, the media player can send a sample of the currently playing selection to a friend, acquaintance or potential purchaser by use of the button 336. Those skilled in the art will appreciate that other user interfaces could also be used without departing from the invention.

FIG. 9 illustrates a process 350 starting at 352 for utilizing the media player 310 to send an email music sample to a friend or other recipient. At 356 the music player application associated with interface 310 of FIG. 8 is launched and proceeds to normal player operation at 360. The media player at 360 operates in a normal fashion under control of the user to play compact discs, .MP3 files, .AAC files, .WMA files or other recorded media in a conventional manner until such time as the user operates the "send to friend" control 336 as detected at 364. When this occurs, an email application is launched at 368, which automatically creates a new email message at 372. Control then passes to 376 where a music sample file is attached (if it currently exists) or is created according to one of the processes previously described (or any other suitable process) and then attached to the new email. Control then passes to 380 where an address book function is launched so that the user can select recipients at 384. The user continues to select recipients for the email at 384 until completed at 388 at which point the user is passed to a conventional email edit screen wherein a new message can be created or edited at 392. The email functions just described can be carried out using an adaptation of software programs such as Microsoft Outlook™, Microsoft Outlook Express™ or Lotus Notes™ as well as other email programs commercially available.

When the user has completed entering and editing the email message and recipients at 392, then the user elects to send the email by clicking a send button at 396 to cause the email to be sent at 398. Control then returns to 360 for normal media player operation. While FIG. 10 illustrates a sequential process wherein the normal media player operation is illustrated as a functional block that is separate and distinct from the process of sending the email, in preferred embodiments of the invention, the media player continues to play the music selection in the background while the creation of the email is carried out. This can be accomplished using various known techniques including buffering of the music and running the media player application as a background task. Other techniques can also be employed to permit the user to continue listening to music throughout the process described by 364 through 410 without departing from the invention. In other embodiments, the email can be created and buffered for later transmission when an email application is opened. Other variations will occur to those skilled in the art.

FIG. 10 illustrates a process 400 for carrying out a simplified process similar to that of process 350 of FIG. 9. However, in process 400, a single click of the "send to friend" icon 336 initiates the creation and/or attachment of the music sample file at 376. Control then passes to 404 where the email is addressed to one or more default recipients. A default message (e.g., "Here is a song sample I think you might like.") is inserted at 408 and the email is sent at 410 without any user intervention after clicking "send to friend". Of course, this presupposes that there has been an initial creation of default messages, default recipients, etc. In accordance with the embodiment of process 400, a pre-defined list of recipients automatically receives the music sample whenever the user clicks on the "send to friend" icon

336 with no further action required by the user. Those skilled in the art will recognize that numerous variations of this process are possible wherein, for example, a default message and recipient list is provided but the user is given the opportunity to edit them prior to actually sending the email. (For example, a window can be displayed giving the user, e.g., 5 seconds to click a button to change from defaults. Otherwise, the default message is sent to the default recipient along with the sample.) Moreover, process 350 and process 400 can be varied as to the order of the specific operations carried out without departing from the invention.

FIG. 11 illustrates another use for the music sample created as previously described within the context of conventional electronic mail. FIG. 11 shows a window used to create electronic mail message in an exemplary email software application. This exemplary user interface is similar to that used by numerous commercially available email applications and includes conventional addressing and editing functions as well as an "attach" icon 434 plus an "attach menu" icon 438. In this embodiment, the "attach" icon 434 is used to attach a default music sample and message to the current email. The "attach menu" icon 438 is used to produce the default attachment and determine that it is to be sent to all emails or simply the emails selected using the "attach" icon 434.

Referring now to FIG. 12, "attach menu" icon 438 can be utilized to produce a drop down "attach" menu 440, and simplifies the process of attaching music sample files to an email message. In this embodiment, the drop down menu 440 permits the user to select a particular music file for attachment at 442 and provides the option of attaching the sample to a single email at 444 or to save the attachment as a default to be attached to all outgoing emails at 446 or whenever icon 434 is selected from within an email document. The "select file to attach" selection 442 can operate using a conventional browsing function as is commonly provided in Microsoft Windows compatible applications or using any other suitable mechanism. Selections 444 and 446 may provide access to a text editing function for providing a remark or comment to be attached as, for example, a footer to the email along with the sample file and further determines that the sample is attached to a single email or all emails. Whenever 444 or 446 is selected, the attachment created becomes the default attachment if so desired by the user (e.g., by checking a "default attachment" box in the attachment creation process) until cleared using selection 448. Whenever 446 is selected, the attachment including a music sample is attached to all emails sent out by the user until the selection is changed.

FIG. 13 illustrates a completed email message including a footer-like comment 452 regarding the music sample attachment and a music sample file illustrated as an icon 456 which the recipient of the email can click (e.g., with a mouse) in order to play or save the sample file.

FIG. 14 illustrates another embodiment of a completed file in which rather than sending a sample file such as 456, the user is able to provide a footer including a text message 466 along with a Universal Resource Locator (URL) 470 that directs the recipient to a web site or web page on the Internet identified by URL 470. In this example, the URL 470 will, in one embodiment, provide the user with a streaming audio sample of the song desired. In this case, the song sample might be provided by a record company, record production company, retail music outlet, electronic retailer (e-tailer), etc. and may also provide the recipient with access to a purchase option and/or other information regarding the music selection being sampled.

The format of email 430 described in connection with FIG. 14 is also conducive to an email music marketing arrangement as illustrated in FIG. 15. FIG. 15 illustrates an Enterprise network 500, which might represent a music company, retail establishment, e-tailer or other Enterprise with interests in promoting a particular recording. The Enterprise includes a network 502 of computers attached by some common local network and/or wide area network, wiring arrangement illustrated as 504. Attached to this network may be a plurality of client computers and servers shown as 506 and 508. In addition, the Enterprise utilizes an Enterprise email server 510 having an associated database 516. For Enterprise 500, all electronic mail passes through the Enterprise email server 510 and is then either routed back to internal computers for the target address or sent out over the Internet 520 or other suitable network to reach destination computers such as 522, 524 and 526. In accordance with this embodiment, if the Enterprise wishes to promote a particular artist, the Enterprise email server 510 can be utilized to attach a footer to each outgoing email message incorporating a music sample or URL to a particular music sample. In this manner, the Enterprise can capitalize upon hundreds or thousands of electronic email messages going out each day from the Enterprise to various recipients as a marketing tool to further promote a particular artist.

FIG. 16 illustrates a process 550 as just described wherein the email server is started at 552 and then awaits receipt of a new outgoing email from a client computer at 554. Once a new email message is received from a client computer for distribution either internally (if desired) or over Internet 520, a music sample attachment (or URL to a sample) is retrieved at 560 from the servers storage system 516. The email message is then appended to the email at 564 before forwarding the email to the recipient at 570. Thus, each email transmitted by the Enterprise can be used as a marketing tool for a particular artist. If desired, the particular song sample being sent can be varied randomly, in accordance with time or according to any other suitable scheme that fits the marketing strategy of the Enterprise.

In another embodiment consistent with the present invention, the general population can be enlisted as marketers for music marketing. Referring back to FIG. 14, an email message as illustrated can be used as a basis to accumulate affinity points (similar to frequent flyer miles or hotel club miles) for participating in promotion of a favorite artist. Consider, for example, that the sender (Bob) of email 430 signs up with a music marketing concern to help promote their music. By sending music samples out along with all of Bobs' email, he may generate interest in the song and album from which a particular sample is taken. In this case, Bob may, for example, register his own samples with the music marketing concern or may receive the samples periodically by email or from a web site, for example, from the marketing concern. A process such as that illustrated in FIG. 17 can then be used to accumulate "credits" for an affinity program associated with the music marketing concern. Such credits may, for example, provide the user with discounts, free merchandise or contest entries from the marketer to encourage the distribution of samples.

Process 600 starts at 602 after which the sender sends an email to a recipient with the email including a Universal Resource Locator to a music sample at 606. Upon receipt of this email, the recipient may use the URL at 610 to visit the site with the music sample and either receive a download of the music sample or receive the music sample as a streaming audio sample from the site at 614. The site also may provide

a purchase option at 620 to the sample recipient as well as providing other information and/or offers. At 624, if the recipient decides to make a purchase, the sender may receive an affinity credit based upon the purchase at 630. The process ends at 634.

There are many ways of implementing the process just described. For example, the recipient may be required to supply the email address of the sender of the email in order for the recipient to receive a discount toward the purchase of the music selection or other purchases at the web site. This provides the merchant with the sender's identifying information so that the sender's account can be credited with affinity credits. In another embodiment, invoking the URL 470 actually invokes a Java applet which extracts the source of the email and forwards it to the web site in a manner transparent to the user as the user is directed to the web site to receive this streaming audio sample. Those skilled in the art will recognize that there are many other ways of implementing the present invention.

FIG. 18 illustrates a variation of the embodiment shown in FIG. 17 as process 650 starting at 654. At 656 the sender sends an email to the recipient including an actual music sample plus a URL that directs the user to a web site wherein a full copy of the selection can be purchased. At 660 the recipient plays the music sample and at 666 the recipient uses the URL to separately go to a site with information and purchase options. Should the recipient make a purchase at 670, the sender receives credits from the site to his affinity account based upon the purchase at 674 and the process ends at 680. A sample email illustrating use of a URL as well as a music sample is illustrated in FIG. 19. In this illustration, the footer also includes remarks 452 as well as an icon 456 for accessing the music sample. In addition, the remarks include a link to a web site 690 where the user can make a purchase of the full selection.

The mechanics of an actual purchase, as well as the nature of the sample can be varied in many ways without departing from the present invention. For example, the sample may be a small part of a full file containing the entire music selection. In such an embodiment only a small portion of the file is readily available for play by the recipient. In order to make the purchase of the full version of the music selection; the user need not download a full copy since a full copy is already available. The user merely purchases a key used to decrypt the song. Numerous variations on this theme are also possible. For example, the entire file may be available for sampling in its entirety with an encryption function that only permits one play until it is decrypted after paying for the music.

Those skilled in the art will recognize that the present invention has been described in terms of exemplary embodiments based upon use of a programmed processor such as that residing in a personal computer or personal music player. However, the invention should not be so limited, since the present invention could be implemented using hardware component equivalents such as special purpose hardware and/or dedicated processors which are equivalents to the invention as described and claimed. Similarly, general purpose computers, microprocessor based computers, micro-controllers, optical computers, analog computers, dedicated processors and/or dedicated hard wired logic may be used to construct alternative equivalent embodiments of the present invention.

Those skilled in the art will appreciate that the program steps used to implement the embodiments described above can be implemented using disc storage as well as other forms

of storage including Read Only Memory (ROM) devices, Random Access Memory (RAM) devices; optical storage elements, magnetic storage elements, magneto-optical storage elements, flash memory, core memory and/or other equivalent storage technologies without departing from the present invention. Such alternative storage devices should be considered equivalents.

The present invention is preferably implemented using a programmed processor executing programming instructions that are broadly described above in flow chart form and which can be stored in any suitable electronic storage medium. However, those skilled in the art will appreciate that the processes described above can be implemented in any number of variations and in many suitable programming languages without departing from the present invention. For example, the order of certain operations carried out can often be varied, and additional operations can be added without departing from the invention. Error trapping can be added and/or enhanced and variations can be made in user interface and information presentation without departing from the present invention. Such variations are contemplated and considered equivalent.

While the invention has been described in conjunction with specific embodiments, it is evident that many alternatives, modifications, permutations and variations will become apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended that the present invention embrace all such alternatives, modifications and variations as fall within the scope of the appended claims.

What is claimed is:

1. A method of transmitting an audio sample, comprising: within a media player application program, playing an audio selection; upon receipt of a command from a user, launching an email application from within the media player; generating an email message; attaching a sample of the audio selection to the email; and sending the email and the attached audio sample to a recipient.
2. The method according to claim 1, wherein the audio sample comprises a computer file containing a compressed audio sample.
3. The method according to claim 2, wherein the audio sample further comprises a link to a source for purchase of a product containing a representation of the audio sample.
4. The method according to claim 3, wherein if the recipient makes a purchase from the source, an affinity credit is awarded to the sender.
5. The method according to claim 1, wherein the audio sample comprises a link to a source of streaming audio.
6. The method according to claim 5, wherein the link further provides access to a source of purchase of a product containing a representation of the audio sample.
7. The method according to claim 6, wherein if the recipient makes a purchase from the source, an affinity credit is awarded to the sender.
8. The method according to claim 1, wherein a single command comprising clicking an icon generates the launching, generating, attaching and sending without further user commands.
9. The method according to claim 1, wherein the recipient is a default recipient.
10. The method according to claim 1, wherein the recipient is one of a plurality of potential recipients, and further comprising selecting the recipient from the plurality of potential recipients.



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11. The method according to claim 1, further comprising creating the sample of the audio selection.

12. The method according to claim 11, wherein the creating comprises clipping a segment from the audio selection and compressing the clipping.

13. The method according to claim 12, wherein the clipping comprises:

selecting a starting point a predetermined time from the start of the audio selection as the start of the segment; and

selecting a stopping point a predetermined time from the start of the segment.

14. The method according to claim 13, wherein the compressing comprises applying a fidelity reducing compression technique.

15. A media player, comprising:

a programmed processor;

a media player application running on the programmed processor to enable a user to play content;

a user interface for the media player;

an icon, forming a part of the user interface, that when selected causes the media player application to launch an email application and send a sample of the content from a sender to a recipient.

16. The media player according to claim 15, wherein upon selection of the icon, the media player launches an email application, generates an email message, attaches a sample of the content to the email, and sends the email and the attached content sample to the recipient.

17. The media player according to claim 15, wherein the content sample comprises a computer file containing a compressed music sample.

18. The media player according to claim 15, wherein the content sample further comprises a link to a source for purchase of a product containing a representation of the content sample.

19. The media player according to claim 18, wherein if the recipient makes a purchase from the source, an affinity credit is awarded to the sender.

20. The media player according to claim 15, wherein the content sample comprises a link to a source of streaming music.

21. The media player according to claim 20, wherein the link further provides access to a source of purchase of a product containing a representation of the content sample.

22. The media player according to claim 21, wherein if the recipient makes a purchase from the source, an affinity credit is awarded to the sender.

23. The media player according to claim 15, wherein a single command comprising clicking an icon generates the launching and sending without further user commands.

24. The media player according to claim 15, wherein the recipient is a default recipient.

25. The media player according to claim 15, wherein the recipient is one of a plurality of potential recipients, and further comprising means for selecting the recipient from the plurality of potential recipients.

26. The media player according to claim 15, wherein the content comprises a music selection further comprising means for creating the sample of the content.

27. The media player according to claim 26, wherein the creating means comprises means for clipping a segment from the music selection and means for compressing the clipping.

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28. The media player according to claim 27, wherein the means for clipping comprises:

means for selecting a starting point a predetermined time from the start of the music selection as the start of the segment; and

means for selecting a stopping point a predetermined time from the start of the segment.

29. The media player according to claim 27, wherein the means for compressing comprises means for applying a fidelity reducing compression technique.

30. A media player, comprising:

a programmed processor;

a media player application running on the programmed processor to enable a user to play a music selection;

a user interface for the media player;

an icon, forming a part of the user interface, that when selected causes the media player application to launch an email application, generate an email message, create a sample of the music selection, attach the sample of the music selection to the email, and send the email and the attached music sample to a selected recipient;

wherein the selected recipient is a recipient selected from a plurality of potential recipients;

wherein, the music sample comprises a computer file containing a compressed music sample and a link to a source for purchase of a product containing a representation of the music sample;

wherein the sample is created by:

selecting a starting point a predetermined time from the start of the music selection as the start of the segment,

selecting a stopping point a predetermined time from the start of the segment, and

compressing data between starting point and the stopping point using by applying a fidelity reducing compression technique; and

wherein if the recipient makes a purchase from the source, an affinity credit is awarded to the sender.

31. An electronic storage medium containing instructions which, when executed on a programmed processor, carry out a method of transmitting a content sample from within the media player, comprising:

playing a content selection;

upon receipt of a command from a user, launching an email application from within the media player;

generating an email message;

attaching a sample of the content selection to the email; and

sending the email and the attached content sample to a recipient.

32. The electronic storage medium according to claim 31, wherein the content comprises music and wherein the content sample comprises a computer file containing a compressed music sample.

33. The electronic storage medium according to claim 32, wherein the music sample further comprises a link to a source for purchase of a product containing a representation of the music sample.

34. The electronic storage medium according to claim 31, wherein the content comprises music and wherein the content sample comprises a link to a source of streaming music.

35. The electronic storage medium according to claim 31, wherein a single command comprising clicking an icon generates the launching, generating, attaching and sending without further user commands.

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36. The electronic storage medium according to claim 31, wherein the recipient is a default recipient.

37. The electronic storage medium according to claim 31, wherein the recipient is one of a plurality of potential recipients, and further comprising selecting the recipient 5 from the plurality of potential recipients.

38. The electronic storage medium according to claim 31, wherein the content comprises a music selection and further comprising creating the sample of the music selection.

39. The electronic storage medium according to claim 38, 10 wherein the creating comprises clipping a segment from the music selection and compressing the clipping.

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40. The electronic storage medium according to claim 39, wherein the clipping comprises:

selecting a starting point a predetermined time from the start of the music selection as the start of the segment; and

selecting a stopping point a predetermined time from the start of the segment.

41. The electronic storage medium according to claim 40, wherein the compressing comprises applying a fidelity reducing compression technique.

\* \* \* \* \*

**U.S. Patent No. 6,555,738**



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**Hughes et al.**

(10) **Patent No.: US 6,555,738 B2**  
(45) **Date of Patent: Apr. 29, 2003**

(54) **AUTOMATIC MUSIC CLIPPING FOR SUPER DISTRIBUTION**

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(52) **U.S. Cl. .... 84/609; 84/649; 705/26; 705/27**

(58) **Field of Search ..... 84/609-614, 634-638, 84/649-652, 666-669, 645, 603-607; 705/26, 27**

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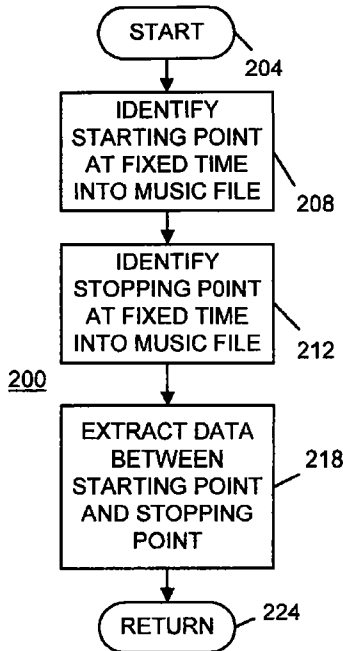
*Primary Examiner*—Stanley J. Witkowski

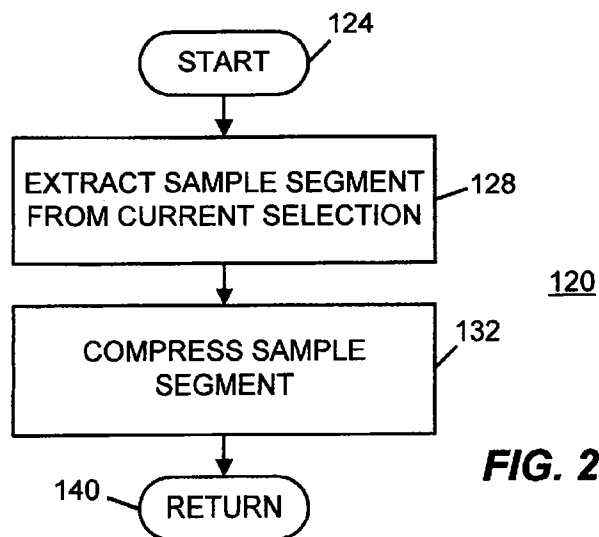
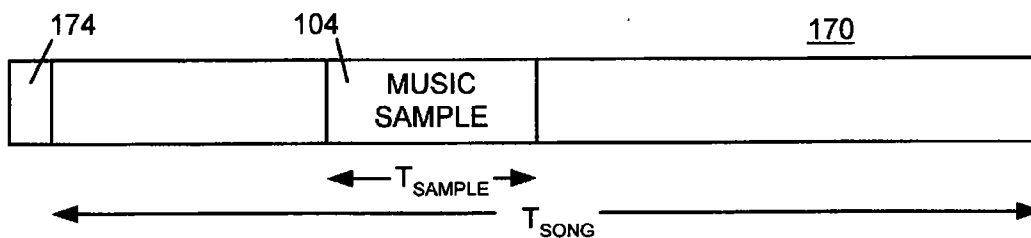
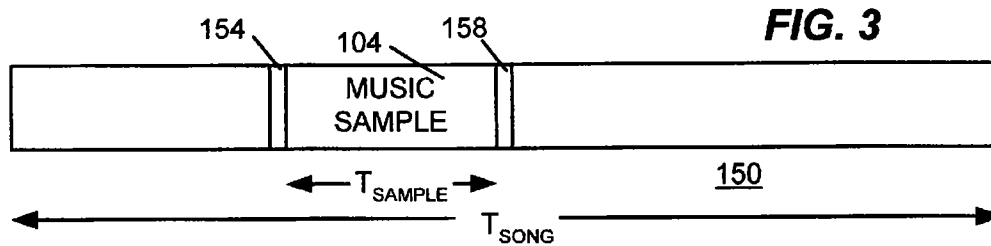
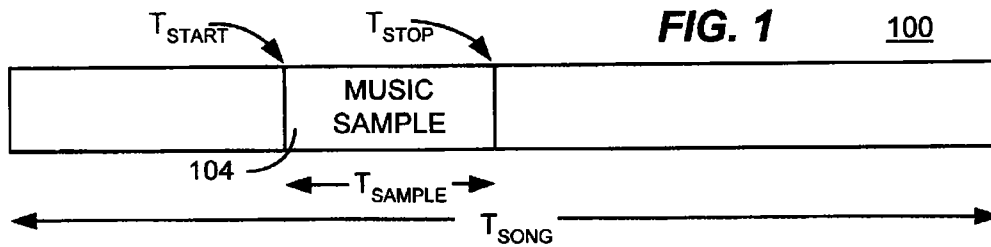
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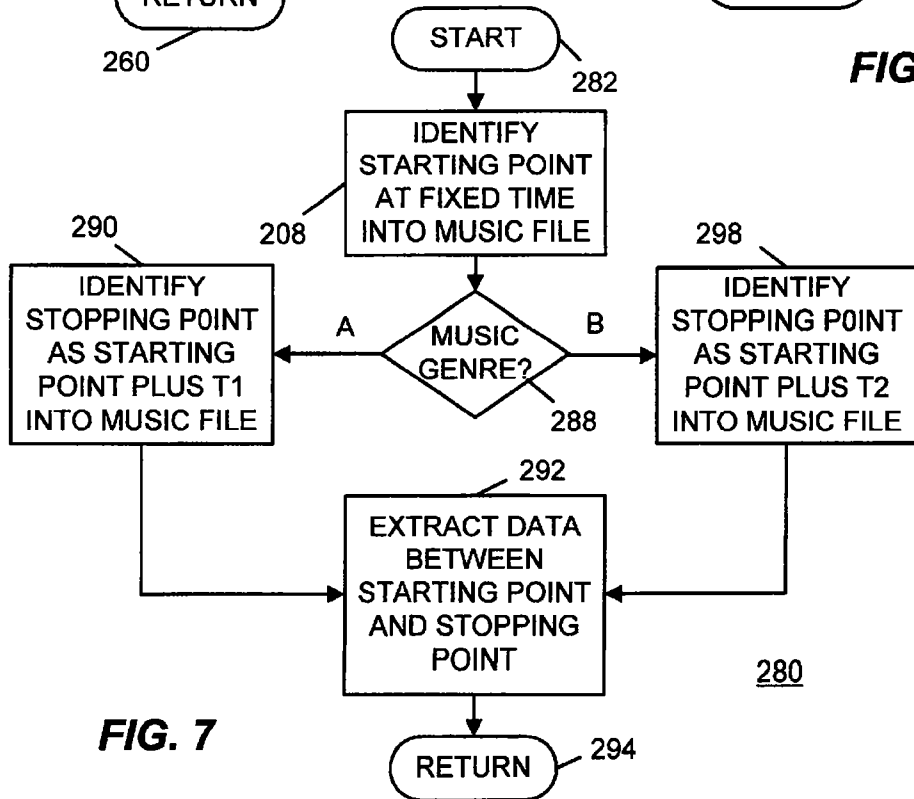
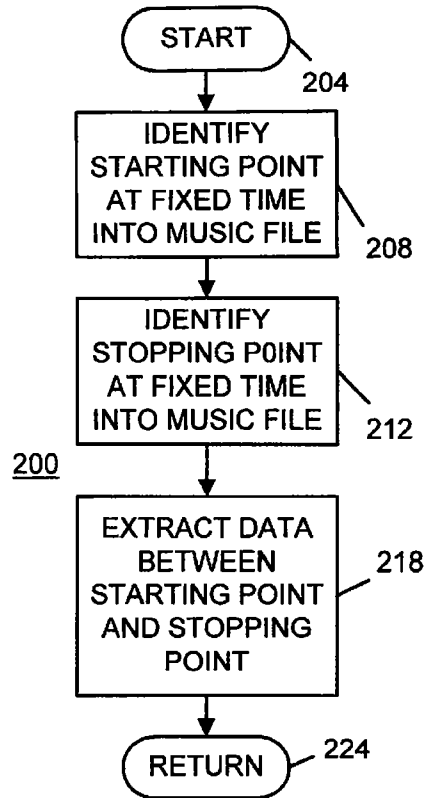
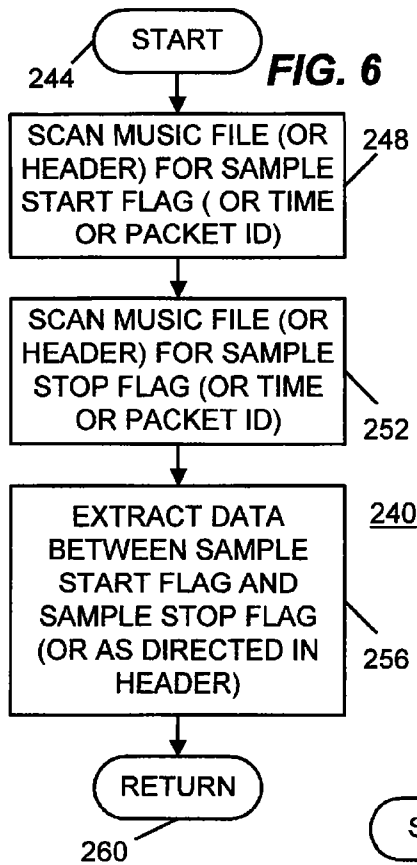
(57) **ABSTRACT**

A method of sampling a music selection to produce a music clipping suitable for super distribution. A computer readable music file is sampled by defining a starting point for the sample at a fixed time from the beginning of the music selection. The stopping point is similarly selected as a fixed time from the starting point for the sample. The actual fixed times can be varied based upon the genre of the music when another embodiment flags or headers can be used to define the starting and ending time of the sample. Once the sample has been defined, data from the sample is extracted and compressed to reduce the file size to a size suitable for super distribution.

**58 Claims, 5 Drawing Sheets**







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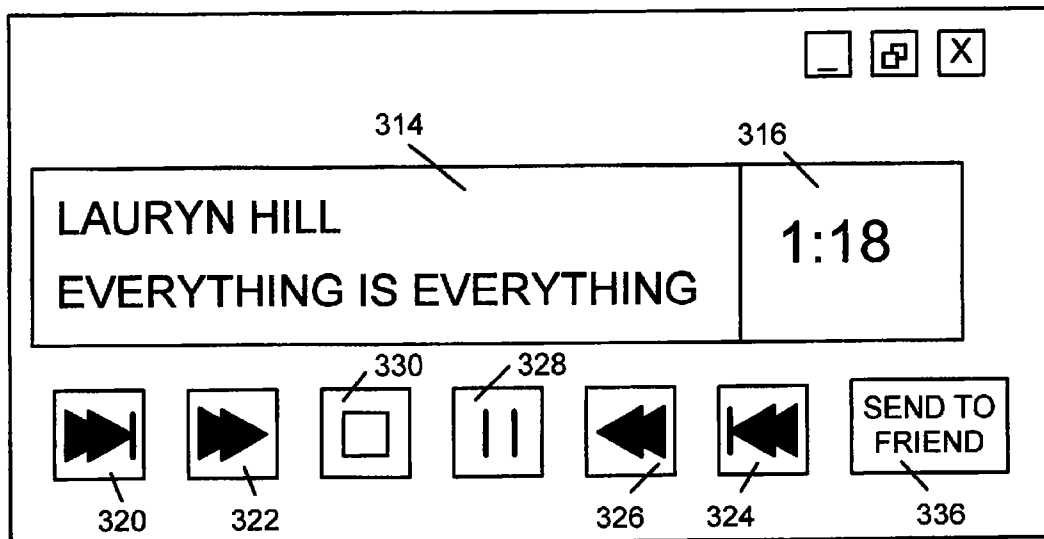


FIG. 8

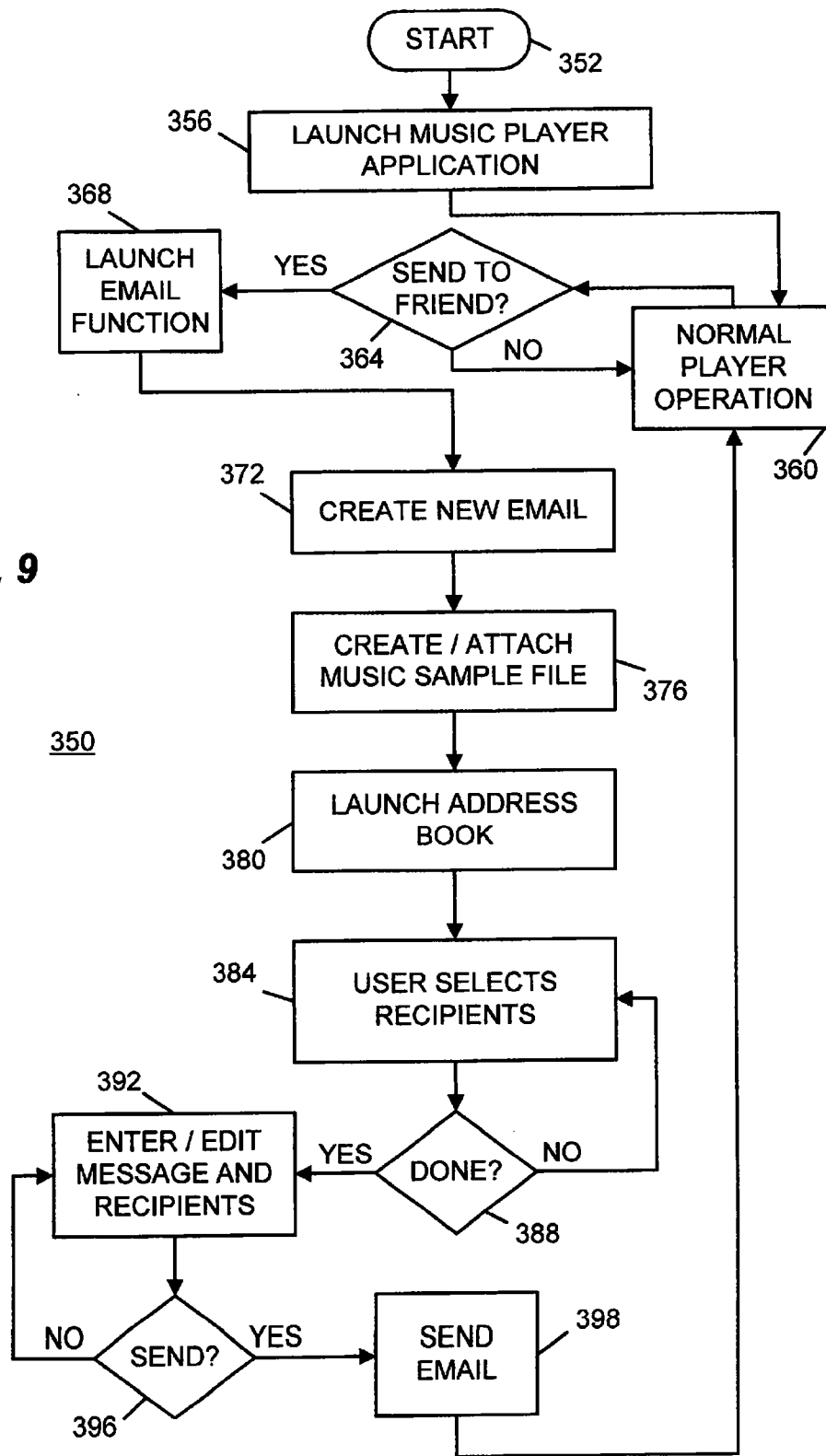


FIG. 9



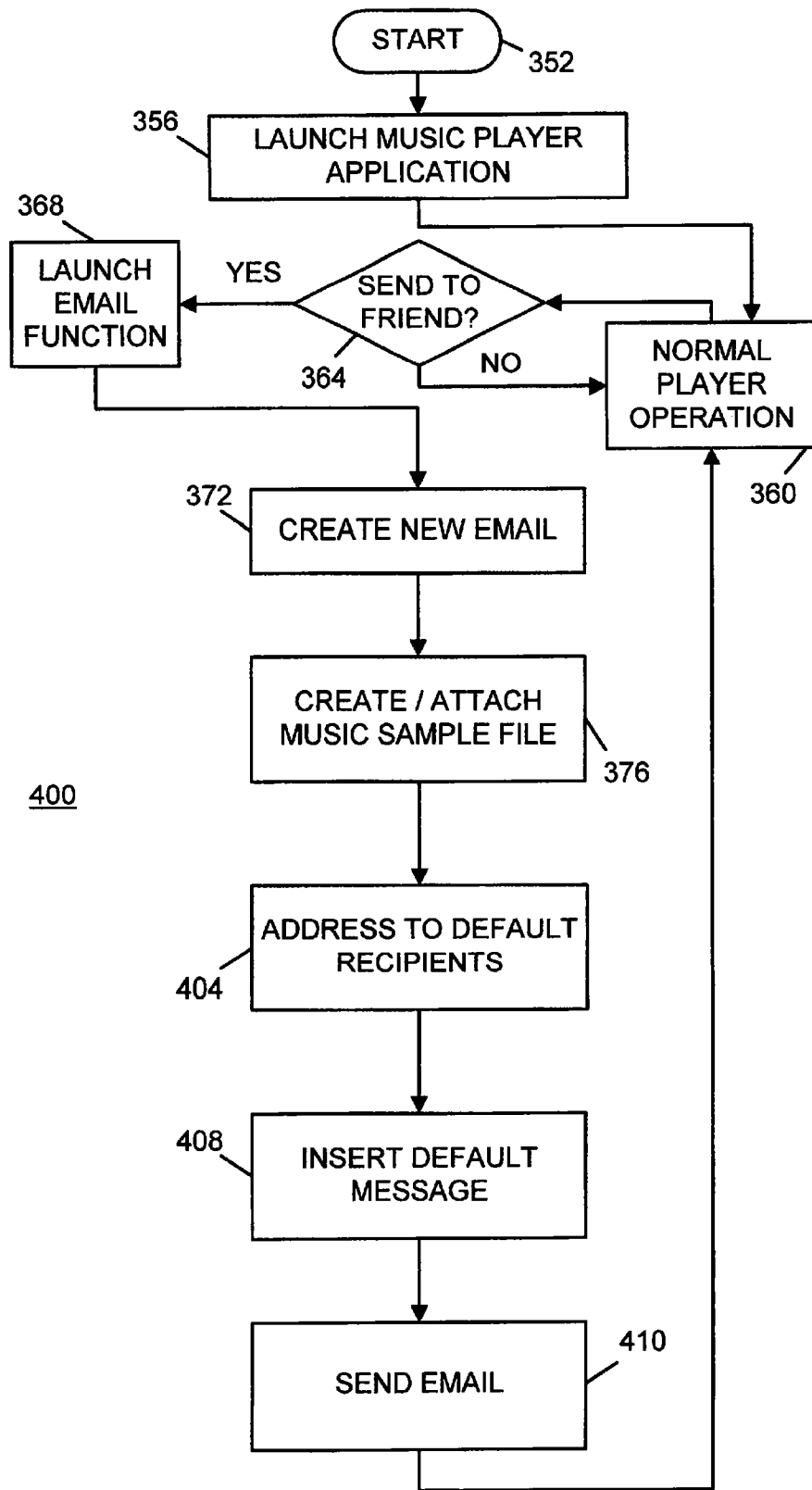


FIG. 10

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## AUTOMATIC MUSIC CLIPPING FOR SUPER DISTRIBUTION

### FIELD OF THE INVENTION

This invention relates generally to the field of creating samples of music. More particularly, this invention relates to automatically creating samples of music for use in so called super distribution.

### BACKGROUND OF THE INVENTION

In recent years, providing samples of a musical selection has become a popular marketing tool for record companies as well as other organizations marketing music. By creating electronic samples of a computer readable music file, the samples can be distributed as a marketing tool according to various schemes often referred to as super distribution. In other embodiments, music samples are used as promotional tools at record stores, kiosks and the like.

Traditionally, the creation of such music samples has been a manual process. In creating such samples, an engineer or other entity listens to the music selection and identifies the selection's so-called "hook." The "hook" is the familiar or repetitive part of a song, perhaps including a chorus, that is believed to be representative of the song and is believed to be most suitable to pique the prospective buyer's interest. The engineer then generally extracts a small segment of music from the overall music selection, generally starting somewhat before the hook and extending slightly past it.

While this technique may provide a nearly optimized mechanism for selecting a portion of the music to sample that is believed by marketers or music experts to be most attractive to potential buyers, the labor intensiveness of such a process is undesirable. The labor intensiveness may limit the availability and thus the distribution of such samples. Moreover, the casual listener may be discouraged from creation of samples by the need for specialized editing software.

### SUMMARY OF THE INVENTION

The present invention relates generally to creation of music samples. Objects, advantages and features of the invention will become apparent to those skilled in the art upon consideration of the following detailed description of the invention.

In one embodiment of the present invention method of creating a sample of a computer readable audio file includes identifying a starting point for the sample in the audio file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the audio file; identifying an ending point for the sample in the audio file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the audio file; and storing audio data representing the audio between  $T_{start}$  and  $T_{stop}$  as an audio sample file.

A method of creating a sample of a computer readable file containing entertainment content consistent with embodiments of the present invention includes identifying a starting point for the sample in the file, the starting point being identified by information embedded within the file; identifying an ending point for the sample in the file, the ending point being identified by information embedded within the file; and storing data representing the content between the starting point and the ending point as a sample file.

An electronic storage medium consistent with certain embodiments of the invention stores instructions which,

when executed on a programmed processor, carry out a process of creating a sample of content stored as a computer readable file by identifying a starting point for the sample in the file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the file; identifying an ending point for the sample in the file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the file; and storing data representing the content between  $T_{start}$  and  $T_{stop}$  as a sample file.

An electronic storage medium consistent with certain other embodiments of the invention stores instructions which, when executed on a programmed processor, carry out a process of creating a sample of content stored as a computer readable file, by identifying a starting point for the sample in the file, the starting point being identified by information embedded within the file; identifying an ending point for the sample in the file, the ending point being identified information embedded within the file; and storing music data representing the content between the starting point and the ending point as a sample file.

A method, consistent with certain embodiments of the invention, of creating a sample of content stored in a computer readable file includes identifying a starting point for the sample in the file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the file; identifying an ending point for the sample in the file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the file; and storing data representing the content between  $T_{start}$  and  $T_{stop}$  as a sample file.

An apparatus consistent with an embodiment of the invention that creates a sample of a computer readable audio file includes a programmed processor. A program operates on the programmed processor to identify a starting point for the sample in the audio file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the audio file, and identify an ending point for the sample in the audio file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the audio file. The audio data representing the audio between  $T_{start}$  and  $T_{stop}$  as an audio sample file.

An electronic storage medium consistent with embodiments of the invention includes a digital file containing electronic entertainment content and instructions, embedded within the digital file, that define a starting point and an ending point of a predefined sample of the electronic entertainment content when read by a programmed processor.

A method and apparatus of sampling a music selection to produce a music clipping suitable for super distribution, according to embodiments of the invention, sample a computer readable music file or other content file by defining a starting point for the sample at a fixed time from the beginning of the music selection. The stopping point is similarly selected as a fixed time from the starting point for the sample. The actual fixed times can be varied based upon the genre of the music when another embodiment flags or headers can be used to define the starting and ending time of the sample. Once the sample has been defined, data from the sample is extracted and compressed to reduce the file size to a size suitable for super distribution.

The above summaries are intended to illustrate exemplary embodiments of the invention, which will be best understood in conjunction with the detailed description to follow, and are not intended to limit the scope of the appended claims.

### BRIEF DESCRIPTION OF THE DRAWINGS

The features of the invention believed to be novel are set forth with particularity in the appended claims. The inven-

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tion itself however, both as to organization and method of operation, together with objects and advantages thereof, may be best understood by reference to the following detailed description of the invention, which describes certain exemplary embodiments of the invention, taken in conjunction with the accompanying drawings in which:

FIG. 1 illustrates a music or other audio sample within a digital music file.

FIG. 2 is a high level flow chart of a music clipping process consistent with embodiments of the present invention.

FIG. 3 illustrates a music sample within a digital audio file using start and stop flags.

FIG. 4 illustrates a music sample within a digital audio file using a header to define a sample.

FIG. 5 is a flow chart of an embodiment of a sampling technique consistent with certain embodiments of the invention.

FIG. 6 is a flow chart of another embodiment of a sampling technique consistent with certain embodiments of the invention.

FIG. 7 is a flow chart of a third embodiment of a sampling technique consistent with certain embodiments of the invention.

FIG. 8 illustrates an exemplary embodiment of a user interface of a media player that can employ a music clipping process according to embodiments of the present invention.

FIG. 9 is a flow chart illustrating a music clipping and distribution process consistent with certain embodiments of the present invention.

FIG. 10 is a flow chart illustrating another music clipping and distribution process consistent with certain embodiments of the present invention.

#### DETAILED DESCRIPTION OF THE INVENTION

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail specific embodiments, with the understanding that the present disclosure is to be considered as an example of the principles of the invention and not intended to limit the invention to the specific embodiments shown and described. In the description below, like reference numerals are used to describe the same, similar or corresponding parts in the several views of the drawings.

Referring now to FIG. 1, a music file, or other audio file, is generally represented as **100**. The music file can be viewed as a linear file of data extending from left to right as time increases in FIG. 1. When streamed from a server or disc drive or the like, the music file **100** will play for a time duration shown as  $T_{SONG}$ . The desired music sample including the so-called "hook" (i.e., a memorable passage of the music that is likely to attract a potential buyer's attention), can be represented as a segment of the file shown as "music sample" **104** starting at times  $T_{START}$  and ending at time  $T_{STOP}$ . Depending on the individual music selection and also dependent in general upon the particular genre of music, the start of the hook is generally located somewhere around 45 to 60 seconds into a typical 3 minute popular music selection. With other genres of music, such as jazz or classical music, the hook might appear significantly later or earlier. Additionally, for example, 1950s rock and roll hooks typically occur somewhat sooner. Thus, the start time for the sample may range from about 30 to about 60 seconds.

Generally speaking, current mass marketed music that may benefit most from the music sampling described herein

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falls within the category of popular music. In this case, the hook typically starts, as previously noted, between 45 and 60 seconds into the selection. Thus, a music sample of approximately 30 seconds can be generated by simply taking a clipping from the original music file starting at approximately 45 to 60 seconds (or slightly earlier, e.g., 5 to 15 seconds earlier) and lasting for a duration of approximately 30 seconds. For jazz or classical selections, it is beneficial to take a longer music selection of perhaps 45 to 60 seconds since a 30 second clip may not present a representative sample of the music selection.

Referring now to FIG. 2, an overall process for creating a music clipping suitable for super distribution is illustrated as process **120** that starts at **124**. Generally the music sample is extracted as a segment of the music selection file **100** at **128**. At **132** the selected sample segment is compressed using any suitable compression technique to reduce the file size. Any suitable compression technique can be utilized for this purpose including lossy compression techniques and reduction of the data rate (the streaming data rate) associated with the music selection. In general, although such compression degrades the fidelity of the resulting sample segment, it is more desirable to degrade the sample quality somewhat then to have a resulting sample file that is large and thus more difficult to readily distribute (for example, over the Internet). At **140** the process terminates to return a music clipping for use. This process can be carried out by the end user, retail establishment, record company, publicist, marketing concern, artist or other private or commercial entity interested in promoting the audio selection.

In accordance with the embodiment illustrated in FIG. 1, a fixed starting time is defined (e.g., 45 seconds from the start of the music selection) for extracting the music sample and the sample duration  $T_{SAMPLE}$  is also predefined (e.g., 30 seconds) to create a generally applicable music clipping. However, other techniques can also be utilized to perform the initial extraction of the sample segment (i.e. **128** of FIG. 2). FIG. 3 illustrates a second technique for creating a music sample (or other audio or video sample) consistent with the embodiment of the present invention. In this embodiment, the sample is defined in the production and manufacturing process. In this technique, a preferred music sample **104** is preceded by a start flag shown as **154** and may also be followed by a stop flag shown as **158**. Alternatively, only a start flag **154** may be used in conjunction with a predefined sample time defining the stopping point. In this embodiment, the sample can be automatically extracted from the file **150** by simply scanning the file for the location of start flag **154** and possible stop flag **158**. Such flags can be readily embedded in a music file and can be ignored by the music file playing or, if interpreted by the player as music data, these flags are of such short duration as to be unlikely to be noticed by the human ear. The recorded audio along with start and stop flags can be recorded on any suitable electronic storage medium such as a compact disc.

A third technique for extracting a sample segment as in **128** of FIG. 2 is illustrated in connection with the use of file **170** of FIG. 4. In this example, the music file **170** (or other audio or video file) includes a header **174** containing data relating to the music file **170**. A portion of this data in header **174** can be defined to be either a starting packet number or starting time associated with the music sample as well as possibly an ending packet number or ending time associated with the music sample. Alternatively, a sample duration could be specified. The recorded audio along with start and stop flags can be recorded on any suitable electronic storage medium such as a compact disc. Many variations of these

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techniques will occur to those skilled in the art and can be adapted for use with video as well as audio.

Referring now to FIG. 5, a process for deriving a music sample as illustrated in FIG. 1 is shown as process 200. The process starts at 204. At 208, a starting point  $T_{START}$  is identified as a fixed time from the beginning of the music file. At 212, a stopping point  $T_{STOP}$  is identified as a fixed time into the audio file or equivalently a fixed time at  $T_{START}$ . At 218, the data between the starting point  $T_{START}$  and the stopping point  $T_{STOP}$  is extracted to define the segment of music to be used in creation of the sample. The process then returns at 224. Of course, those skilled in the art will appreciate that the extraction of the data may begin as soon as the starting point is identified. The extraction can then proceed until the sample time has expired or until the stopping point  $T_{STOP}$  is encountered.

Referring now to FIG. 6, a process 240 starting at 244 describes the processes for extracting a sample segment from file 150 of FIG. 3 in file 170 of FIG. 4. At 248 the header 174 is scanned for a sample start flag for starting time or starting packet identifier. At 252 the music file or header is scanned for the sample stop flag (or time or packet ID.) At 256 the data between the sample start and sample stop indicators (flag, time or packet ID) to define the sample segment to be used for ultimate creation of music clippings. The process returns at 260. Of course, those skilled in the art will appreciate that the extraction of the data may begin as soon as the starting point is identified. The extraction can then proceed until the sample time has expired or until the stopping point  $T_{STOP}$  is encountered.

Referring now to FIG. 7, a variation of process 200 of FIG. 5 is illustrated starting at 282. At 208, the starting point is identified as a fixed time from the beginning of the music selection. Control then passes to 288 where the music genre is identified. This can be accomplished by data supplied in a header such as header 174, by user selection or any other suitable mechanism. In the case of genre A, control passes to 290 where a stopping point is identified as the starting point plus a fixed time  $T_1$  into the music file. Control then passes to 292 where the data is extracted between the starting point and stopping point to provide the sample segment from the current music selection and the process returns at 294. However, if the music genre is determined to be B at 288, control passes to 298 where the stopping point is identified as the starting point plus a different time  $T_2$  into the music file. Control then passes to 292 as previously. In accordance with this embodiment, multiple types of music can be sampled to generate a more suitable sample based upon the type of music being sampled. Thus, genre A may be considered popular music while genre B may be classical music with  $T_1$  equaling 30 seconds and  $T_2$  equaling 60 seconds. While the process 280 is illustrated as having only two selections A and B, those skilled in the art will appreciate that any number of such selections are possible and can be defined to most closely match an appropriate time period for the selection of the sample based upon the particular type of music, audio video or other program material.

Samples created in accordance with any of the processes described above can be carried out by the end user, retail establishment, record company, publicist, marketing concern, artist or other private or commercial entity interested in promoting the audio selection.

The process just described can be implemented as a computer program or script operating as a portion of, for example, a computer media player. However, many other implementations are possible without departing from the

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present invention. In one alternative embodiment, an email enabled personal audio player can embody the functionality of the present invention, with email facilities provided via wireless or wired communication. The compressed music sample previously described can be generated as part of a media player in one embodiment of the invention so that a user can advantageously produce a music sample of a currently playing music selection and with a single click of a computer screen icon, push of a button or other interface, initiate a process for sending that music sample to a friend (or potential customer).

FIG. 8 shows a simplified user interface for a media player 310. Media players similar to those provided by Microsoft, Real Networks as well as ATI and other corporations can be modified to provide this function. In the illustrative interface 310 shown in FIG. 8, a display window 314 displays the artist and the name of the selection being played. Window 316 displays the elapsed time in this selection. Various play control buttons are provided such as search forward button 320, scan forward button 322, search backwards button 324, scan backwards button 326, pause button 328 and start/stop button 330 in a familiar arrangement. In addition, the interface includes a button labeled as "send to friend" button 336. In other embodiments an icon such as an email envelope icon or the like can be also utilized. In this embodiment, the media player can send a sample of the currently playing selection to a friend, acquaintance or potential purchaser by use of the button 336. Those skilled in the art will appreciate that other user interfaces could also be used without departing from the invention.

FIG. 9 illustrates a process 350 starting at 352 for utilizing the media player 310 to send an email music sample to a friend or other recipient. At 356 the music player application associated with interface 310 of FIG. 8 is launched and proceeds to normal player operation at 360. The media player at 360 operates in a normal fashion under control of the user to play compact discs, MP3 files, AAC files, WMA files or other recorded media in a conventional manner until such time as the user operates the "send to friend" control 336 as detected at 364. When this occurs, an email application is launched at 368, which automatically creates a new email message at 372. Control then passes to 376 where a music sample file is attached (if it currently exists) or is created according to one of the processes previously described (or any other suitable process) and then attached to the new email. Control then passes to 380 where an address book function is launched so that the user can select recipients at 384. The user continues to select recipients for the email at 384 until completed at 388 at which point the user is passed to a conventional email edit screen wherein a new message can be created or edited at 392. The email functions just described can be carried out using an adaptation of software programs such as Microsoft Outlook™, Microsoft Outlook Express™ or Lotus Notes™ as well as other email programs commercially available.

When the user has completed entering and editing the email message and recipients at 392, then the user elects to send the email by clicking a send button at 396 to cause the email to be sent at 398. Control then returns to 360 for normal media player operation. While FIG. 10 illustrates a sequential process wherein the normal media player operation is illustrated as a functional block that is separate and distinct from the process of sending the email, in preferred embodiments of the invention, the media player continues to play the music selection in the background while the creation of the email is carried out. This can be accomplished

using various known techniques including buffering of the music and running the media player application as a background task. Other techniques can also be employed to permit the user to continue listening to music throughout the process described by 364 through 410 without departing from the invention. In other embodiments, the email can be created and buffered for later transmission when an email application is opened. Other variations will occur to those skilled in the art.

FIG. 10 illustrates a process 400 for carrying out a simplified process similar to that of process 350 of FIG. 9. However, in process 400, a single click of the "send to friend" icon 336 initiates the creation and/or attachment of the music sample file at 376. Control then passes to 404 where the email is addressed to one or more default recipients. A default message (e.g., "Here is a song sample I think you might like.") is inserted at 408 and the email is sent at 410 without any user intervention after clicking "send to friend". Of course, this presupposes that there has been an initial creation of default messages, default recipients, etc. In accordance with the embodiment of process 400, a pre-defined list of recipients automatically receives the music sample whenever the user clicks on the "send to friend" icon 336 with no further action required by the user. Those skilled in the art will recognize that numerous variations of this process are possible wherein, for example, a default message and recipient list is provided but the user is given the opportunity to edit them prior to actually sending the email. (For example, a window can be displayed giving the user, e.g., 5 seconds to click a button to change from defaults. Otherwise, the default message is sent to the default recipient along with the sample.) Moreover, process 350 and process 400 can be varied as to the order of the specific operations carried out without departing from the invention.

Those skilled in the art will recognize that the present invention has been described in terms of exemplary embodiments based upon use of a programmed processor such as that residing in a personal computer or personal music player. However, the invention should not be so limited, since the present invention could be implemented using hardware component equivalents such as special purpose hardware and/or dedicated processors which are equivalents to the invention as described and claimed. Similarly, general purpose computers, microprocessor based computers, micro-controllers, optical computers, analog computers, dedicated processors and/or dedicated hard wired logic may be used to construct alternative equivalent embodiments of the present invention.

Those skilled in the art will appreciate that the program steps used to implement the embodiments described above can be implemented using disc storage as well as other forms of storage including Read Only Memory (ROM) devices, Random Access Memory (RAM) devices; optical storage elements, magnetic storage elements, magneto-optical storage elements, flash memory, core memory and/or other equivalent storage technologies without departing from the present invention. Such alternative storage devices should be considered equivalents.

The present invention is preferably implemented using a programmed processor executing programming instructions that are broadly described above in flow chart form and which can be stored in any suitable electronic storage medium. However, those skilled in the art will appreciate that the processes described above can be implemented in any number of variations and in many suitable programming languages without departing from the present invention. For example, the order of certain operations carried out can often

be varied, and additional operations can be added without departing from the invention. Error trapping can be added and/or enhanced and variations can be made in user interface and information presentation without departing from the present invention. Such variations are contemplated and considered equivalent.

While the invention has been described in conjunction with specific embodiments, it is evident that many alternatives, modifications, permutations and variations will become apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended that the present invention embrace all such alternatives, modifications and variations as fall within the scope of the appended claims.

What is claimed is:

1. An automated method of extracting a representative sample from a computer readable audio file, comprising:
  - identifying a starting point for the representative sample in the audio file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the audio file;
  - identifying an ending point for the representative sample in the audio file, the ending point being at a fixed time  $T_{start} + T_{sample} = T_{stop}$  from the beginning of the audio file; and
  - storing audio data representing the audio between  $T_{start}$  and  $T_{stop}$  as the representative sample of the audio file.
2. The method according to claim 1, further comprising compressing audio data representing the audio between  $T_{start}$  and  $T_{stop}$  to produce a reduced fidelity sample that is stored as the audio sample file.
3. The method according to claim 2, wherein the compressing comprises reducing a data rate of the audio data.
4. The method according to claim 1, wherein  $T_{start}$  is between 30 and 60 seconds.
5. The method according to claim 1, wherein  $T_{sample}$  is between approximately 30 and 60 seconds.
6. The method according to claim 1, wherein  $T_{sample}$  is selected based upon a music genre.
7. The method according to claim 6, wherein the music genre is jazz and wherein  $T_{sample}$  is selected to be 45 to 60 seconds.
8. The method according to claim 6, wherein the music genre is pop and wherein  $T_{sample}$  is selected to be approximately 30 seconds.
9. The method according to claim 6, wherein the music genre is classical and wherein  $T_{sample}$  is selected to be approximately 60 seconds.
10. The method according to claim 6, wherein the music genre is encoded within the audio file.
11. An automated method of extracting a representative sample from a computer readable file containing entertainment content, comprising:
  - identifying a starting point for the representative sample in the file, the starting point being identified by information embedded within the file;
  - identifying an ending point for the representative sample in the file, the ending point being identified by information embedded within the file; and
  - storing data representing the content between the starting point and the ending point as the representative sample of the entertainment content contained in the computer readable file.
12. The method according to claim 11, wherein data representing the content between the starting point and the ending point is compressed to produce a reduced fidelity sample that is stored as the sample file.

13. The method according to claim 11, wherein the content comprises audio content and the starting point is between 30 and 60 seconds from the beginning of the file.

14. The method according to claim 11, wherein time between the starting point and the ending point is between approximately 30 and 60 seconds.

15. The method according to claim 11, wherein the file includes a header and wherein the starting point and ending point are defined in the header.

16. The method according to claim 11, wherein the starting point is defined by a flag embedded within the content.

17. The method according to claim 11, wherein the ending point is defined by a flag embedded within the content.

18. An electronic storage medium storing instructions which, when executed on a programmed processor, carry out an automated process of extracting a representative sample from content stored as a computer readable file, comprising:

identifying a starting point for the representative sample in the file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the file;

identifying an ending point for the representative sample in the file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the file; and storing data representing the content between  $T_{start}$  and  $T_{stop}$  as the representative sample of the content of the computer readable file.

19. The electronic storage medium according to claim 18, further comprising compressing data representing the content between  $T_{start}$  and  $T_{stop}$  to produce a reduced fidelity sample that is stored as the sample file.

20. The electronic storage medium according to claim 18, wherein the content comprises audio content and wherein the compressing comprises reducing a data rate of the audio data.

21. The electronic storage medium according to claim 18, wherein  $T_{start}$  is between 30 and 60 seconds.

22. The electronic storage medium according to claim 18, wherein  $T_{sample}$  is between approximately 30 and 60 seconds.

23. The electronic storage medium according to claim 18, wherein the content comprises music and wherein  $T_{sample}$  is selected based upon a music genre.

24. The electronic storage medium according to claim 23, wherein the music genre is jazz and wherein  $T_{sample}$  is selected to be 45 to 60 seconds.

25. The electronic storage medium according to claim 23, wherein the music genre is pop and wherein  $T_{sample}$  is selected to be approximately 30 seconds.

26. The electronic storage medium according to claim 23, wherein the music genre is classical and wherein  $T_{sample}$  is selected to be approximately 60 seconds.

27. An electronic storage medium storing instructions which, when executed on a programmed processor, carry out an automated process of extracting a representative sample from content stored as a computer readable file, comprising:

identifying a starting point for the representative sample in the file, the starting point being identified by information embedded within the file;

identifying an ending point for the representative sample in the file, the ending point being identified information embedded within the file; and

storing music data representing the content between the starting point and the ending point as the representative sample of the content of the computer readable file.

28. The electronic storage medium according to claim 27, wherein content data representing the content between the

starting point and the ending point is compressed to produce a reduced fidelity sample that is stored as the sample file.

29. The electronic storage medium according to claim 27, wherein the starting point is between 30 and 45 seconds from the beginning of the file.

30. The electronic storage medium according to claim 27, wherein time between the starting point and the ending point is between approximately 30 and 60 seconds.

31. The electronic storage medium according to claim 27, wherein the file includes a header and wherein the starting point and ending point are defined in the header.

32. The electronic storage medium according to claim 27, wherein the starting point is defined by a flag embedded within the content.

33. The electronic storage medium according to claim 27, wherein the ending point is defined by a flag embedded within the content.

34. An automated method of extracting a representative sample from content stored in a computer readable file, comprising:

identifying a starting point for the representative sample in the file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the file;

identifying an ending point for the representative sample in the file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the file; and storing data representing the content between  $T_{start}$  and  $T_{stop}$  as the representative sample of the content of the computer readable file.

35. The method according to claim 34, further comprising compressing the data representing the content between  $T_{start}$  and  $T_{stop}$  to produce a reduced fidelity sample that is stored as the sample file.

36. An apparatus that automatically extracts a representative sample from a computer readable audio file, comprising:

a programmed processor;

a program operating on the programmed processor that identifies a starting point for the representative sample in the audio file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the audio file, and identifies an ending point for the representative sample in the audio file, the ending point being at a fixed time  $T_{start}+T_{sample}=T_{stop}$  from the beginning of the audio file; and

means for storing audio data representing the audio between  $T_{start}$  and  $T_{stop}$  as the representative sample of the audio file.

37. The apparatus according to claim 36, further comprising a compressor that compresses audio data representing the audio between  $T_{start}$  and  $T_{stop}$  to produce a reduced fidelity sample that is stored as the audio sample file.

38. The apparatus according to claim 37, wherein the compressor reduces a data rate of the audio data.

39. The apparatus according to claim 36, wherein  $T_{start}$  is between 30 and 60 seconds.

40. The apparatus according to claim 36, wherein  $T_{sample}$  is between approximately 30 and 60 seconds.

41. The apparatus according to claim 36, wherein a music genre is encoded within the audio file, and wherein  $T_{start}$  and  $T_{stop}$  are selected according to the music genre.

42. The apparatus according to claim 36, embodied within one of a personal computer and a personal media player.

43. An electronic storage medium, comprising:  
a digital file containing electronic entertainment content; and

instructions, embedded within the digital file, that define a starting point and an ending point of a predefined representative sample of the electronic entertainment content when read by a programmed processor.

44. The electronic storage medium according to claim 43, wherein the digital file has a header portion and a data portion, and wherein the instructions are embedded within the header portion.

45. The electronic storage medium according to claim 43, wherein the instructions comprise a start flag embedded within the entertainment content defining the starting point of the sample.

46. The electronic storage medium according to claim 43, wherein the instructions comprise a stop flag embedded within the entertainment content defining the ending point of the sample.

47. The electronic storage medium according to claim 43, embodied as a compact disc.

48. An automated method of extracting a representative sample from a computer readable music file containing a selection of music, comprising:

identifying a starting point for the representative sample in the music file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the music file;

identifying an ending point for the representative sample in the music file, the ending point being at a fixed time  $T_{start} + T_{sample} = T_{stop}$  from the beginning of the music file; and

storing audio data representing the audio between  $T_{start}$  and  $T_{stop}$  as the representative sample of the music file.

49. The method according to claim 48, further comprising compressing the audio data representing the audio between  $T_{start}$  and  $T_{stop}$  to produce a reduced fidelity sample that is stored as the music sample file.

50. The method according to claim 49, wherein the compressing comprises reducing a data rate of the audio data.

51. The method according to claim 48, wherein  $T_{start}$  is between 30 and 60 seconds.

52. The method according to claim 48, wherein  $T_{sample}$  is between approximately 30 and 60 seconds.

53. The method according to claim 48, wherein  $T_{sample}$  is selected based upon a music genre.

54. The method according to claim 53, wherein the music genre comprises jazz and wherein  $T_{sample}$  is selected to be 45 to 60 seconds.

55. The method according to claim 53, wherein the music genre comprises pop and wherein  $T_{sample}$  is selected to be approximately 30 seconds.

56. The method according to claim 53, wherein the music genre comprises classical and wherein  $T_{sample}$  is selected to be approximately 60 seconds.

57. The method according to claim 53, wherein the music genre is encoded within the audio file.

58. An automated method of extracting a representative sample from a computer readable music file containing a selection of music, comprising:

identifying a starting point for the representative sample in the music file, the starting point being at a fixed time  $T_{start}$  measured from the beginning of the music file, where  $T_{start}$  is between 30 and 60 seconds

identifying an ending point for the representative sample in the music file, the ending point being at a fixed time  $T_{start} + T_{sample} = T_{stop}$  from the beginning of the music file, where  $T_{sample}$  is between approximately 30 and 60 seconds and is selected based upon a music genre;

storing audio data representing the audio between  $T_{start}$  and  $T_{stop}$  as the representative sample of the music file; and

compressing the audio data representing the audio between  $T_{start}$  and  $T_{stop}$  by reducing a data rate of the audio data to produce a reduced fidelity sample.

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