

United States Court Of Appeals For The Federal Circuit

PERSONAL AUDIO, LLC,

Appellant,

v.

ELECTRONIC FRONTIER FOUNDATION,

Appellee.

*Appeal from the United States Patent and Trademark Office,
Patent Trial and Appeal Board, No. IPR2014-00070.*

OPENING BRIEF OF APPELLANT PERSONAL AUDIO, LLC

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December 28, 2015

CERTIFICATE OF INTEREST

Counsel for Appellant Personal Audio, LLC hereby certifies the following:

1. The full name of every party represented by me is:

Personal Audio, LLC

2. The names of the real parties in interest (if the party named in the caption is not the real party in interest) represented by me are:

None.

3. All parent corporations and any publicly held companies that own 10% or more of the stock of the party or amicus curiae represented by me are:

None.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by us in the trial court or agency or are expected to appear in this Court are:

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Respectfully submitted,

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STATEMENT OF RELATED CASES

Pursuant to F. Cir. R. 47.5, Appellant Personal Audio LLC (“Personal Audio” or “Patent Owner”) states that (a) no appeal in or from the same proceeding was previously before this or any other appellate court; and (b) a jury verdict was rendered prior to the Board’s final IPR decision in a related district court action finding the patent at issue in this matter valid and infringed, *Personal Audio, LLC v. CBS Corp.*, C.A. No. 2:13-cv-270, United States District Court for the Eastern District of Texas (filed on April 11, 2013). That case directly affects and will be directly affected by this Court’s decision in the pending appeal.

I. STATEMENT OF JURISDICTION

This appeal arises from an *inter partes* review (“IPR”) proceeding brought by Electronic Frontier Foundation (“EFF” or “Petitioner”), No. IPR2014-00070, before the United States Patent Trial and Appeal Board (the “Board”). The Board had jurisdiction over the IPR, pursuant to 35 U.S.C. § 314.

The Board issued its Final Written Decision on April 10, 2015. Personal Audio timely filed a Request for Rehearing under 37 C.F.R. § 42.71(d). The Board issued its Refusal of the Request for Rehearing on July 17, 2015. Personal Audio then timely filed its notice of appeal on September 16, 2015. This Court has jurisdiction under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. §§ 319 and 141.

II. STATEMENT OF THE ISSUES

The ‘504 Patent is directed to an apparatus that disseminates a series of episodes through a compilation file as episodes become available over time. This appeal presents several issues related to the Board’s incorrect determination of unpatentability of claims 31-35 of the ‘504 Patent, including:

1. Did the Board legally err by adopting an unreasonably broad construction of “episodes” and “series of episodes” to include the subdivided parts of a single program made available at the same time?
2. Did the Board legally err in adopting an unreasonably broad construction of “compilation file” and “updated compilation file” so as to encompass

a file containing a single program as subdivided parts at a first URL “updated” by creating a new file at a different URL containing a new and entirely different single program as subdivided parts when a new program becomes available?

3. Did the Board err in finding that the back-end configuration of “one or more processors coupled to said one or more data storage servers and to said one or more communications interfaces” is disclosed by Compton/CNN’s and Patrick/CBC’s disclosures of a web server?

4. Did the Board err in finding that the EFF had met its burden of proving that the ‘504 patent would have been obvious, in light of Compton/CNN?

5. Did the Board’s Decision violate the Seventh Amendment’s Reexamination Clause?

6. Did the Board legally err in finding that Personal Audio had waived its constitutional rights under the Seventh Amendment?

III. STATEMENT OF THE CASE

This is an appeal from the Board’s Final Written Decision (“Decision”) concluding that claims 31-35 of U.S. Patent No. 8,112,504 B2 (“the ‘504 patent”) are unpatentable as anticipated and/or obvious in light of two references: (1) Charles L. Compton, Internet CNN NEWSROOM: The Design of a Digital Video News Magazine, Massachusetts Institute of Technology (Aug. 10, 1995) (“Compton/CNN”) and (2) Andrew S. Patrick, *et al*, CBC Radio on the Internet: An

Experiment in Convergence, 21 CANADIAN J. OF COMM’N 1, 125-140 (1996) (“Patrick/CBC”). Additionally, Personal Audio appeals the Board’s Decision on grounds that the Final Written Decision ignores and contradicts the jury verdict and findings of fact in the related district court proceeding concerning the validity of the ‘504 Patent in light of Compton/CNN.

A. PROCEDURAL HISTORY

Beginning on January 7, 2013, Personal Audio filed suits for patent infringement against various parties in the Eastern District of Texas including the related proceeding, *Personal Audio, LLC v. CBS Corporation*. In response, the EFF filed a revised Petition for *inter partes* review of Claims 31-35 of the ‘504 patent on October 30, 2013. A509-574. EFF alleged that five references anticipated and/or rendered the challenged ‘504 Patent claims obvious. *Id.* at A531-532. The Board instituted review with respect to only two of the grounds presented: obviousness of Claims 31-35 in view of Compton/CNN and anticipation of Claims 31-35 in view of Patrick/CBC. A613-639.

On September 15, 2014 a jury verdict was rendered in the related proceeding finding the ‘504 Patent valid in light of CNN/Compton. Personal Audio submitted this jury verdict to the Board on December 10, 2015. A718-728. On December 17, 2014, an oral hearing was held. A729-794. The Board issued its Final Written Decision on April 10, 2015. A1-29. In the Decision, the Board found Claims 31-35

to be unpatentable as anticipated and obvious over Compton/CNN and anticipated over Patrick/CBC. Personal Audio filed a Request for Rehearing on May 8, 2015, on grounds that the Board's Decision ignores and contradicts the jury verdict. A795-810. Personal Audio's Request for Rehearing was denied. A30-36. Personal Audio now appeals the Board's Decision and its refusal of the Request for Rehearing.

B. STATEMENT OF FACTS

1. The '504 Patent

The '504 Patent concerns an apparatus for dynamically and interactively selecting and navigating programs delivered via the Internet from a digital program library.¹ '504 Patent, Abstract (A42); 1:21-24 (A51); 2:11-16 (A51). As articulated by the '504 Patent, a deficiency in the prior art was that existing technology made programs available for download on the World Wide Web using conventional web browsers that searched for and disseminated "*individual program selections one at a time.*" *Id.* at 1:64-67 (A51); 2:3-10 (A51) (emphasis added). An object of the '504 Patent is to remedy this deficiency by providing easier access to programs of media content over the Internet.

In the preferred embodiment, a playback unit at the subscriber location is described which reproduces programs received from the host and includes mechanisms for interactively selecting and navigating among a group of programs

¹ The '504 Patent claims priority to an application filed on October 2, 1996.

from a program library. ‘504 Patent, Abstract (A42). Figure 1, below, is a block diagram of the preferred embodiment that illustrates using the Internet to connect host server 101 to audio player 103. An FTP (file transfer protocol) server 125 and a web (HTML) server 129 are coupled together in the back-end host configuration. *Id.* at 4:39–42 (A52).

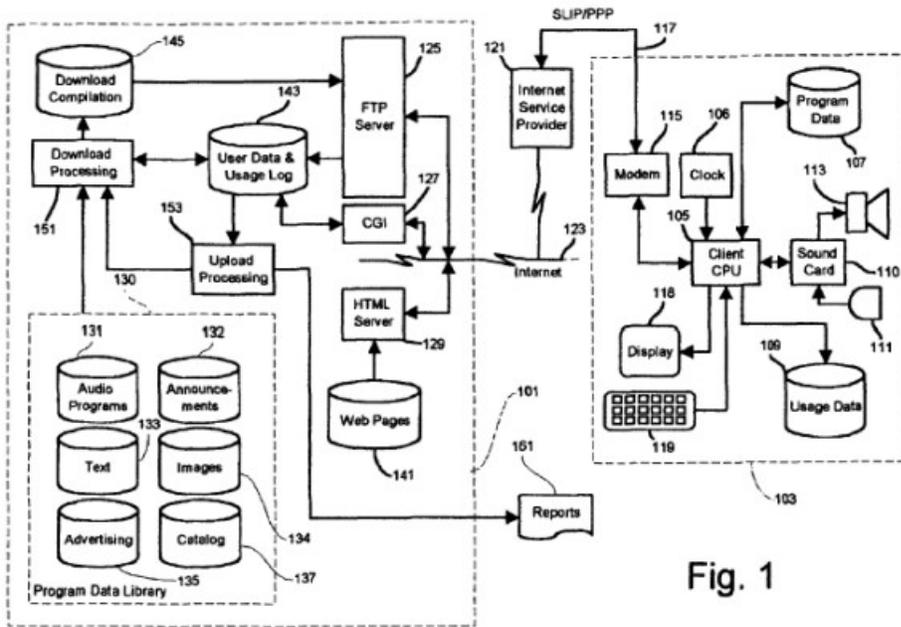


Fig. 1

Different types of data are associated with each program: “[t]he host server 101 stores and maintains a plurality of data files including a program data library indicated generally at 130 consisting of a collection of compressed audio program segments 131, announcement (‘glue’) segments 132, text program segments 133, image segments 134, advertising segments 135 and program catalog information 137.” *Id.* at 5:63-6:2 (A53). Here and throughout the specification, the term “segment” means a type of data in the program data library. For example, the audio

program segments described correspond to block 131 in Fig. 1 labelled “Audio Programs.” *Id.* at Fig. 1 (A44).

Programming and information personalized to the user is selected by the user or automatically by the system and distributed through a compilation file. *Id.* at 16:64-17:9 (A58-59); 29:13-22 (A65). Different techniques for program selection are disclosed. The apparatus covered by Claims 31-35 selects and distributes a serialized sequence of related programs wherein each program is an episode in a related series. Under “Serialized Programs,” a preferred embodiment describes the selection of a “serialized sequence” of programs, where not all of the programs in the series are available:

[P]rogramming may include serialized sequences of programs. A given program segment may represent an episode in a series which is selected as a group by the subscriber, or a subscriber may select an individual program in a serial sequence and the host may then further installments or related programs within the series to the catalog or session content thereafter sent to the subscriber. ...When a serialized sequence is requested, the host may download ... less than all of the episodes when all are not yet available...

Id. at 19:34-49 (A60). In the preferred embodiment, a Group ID is assigned to each program in the series. Using the Group ID, the series may be selected as a group, or, when an individual program in the series is selected further installments of related programs within the series may subsequently be distributed by the host. In this way, episodes that have not yet issued can be selected for later inclusion in the compilation file. *Id.* at 20:64–21:3 (A60-61).

Claim 31 is the only independent claim challenged and recites:

31. Apparatus for disseminating **a series of episodes** represented by media files via the Internet **as said episodes become available**, said apparatus comprising:

one or more data storage servers,

one or more communication interfaces connected to the Internet for receiving requests received from remotely located client devices, and for responding to each given one of said requests by downloading a data file identified by a URL specified by said given one of said requests to the requesting client device,

one or more processors coupled to said one or more data storage servers and to said one or more communications interfaces for:

storing one or more media files representing each episode as said one or more media files become available, each of said one or more media files being stored at a storage location specified by a unique episode URL; **from time to time, as new episodes represented in said series of episodes become available, storing an updated version of a compilation file** in one of said one or more data storage servers at a storage location **identified by a predetermined URL, said updated version of said compilation file containing attribute data describing currently available episodes in said series of episodes**, said attribute data for each given one of said currently available episodes including displayable text describing said given one of said currently available episodes and one or more episode URLs specifying the storage locations of one or more corresponding media files representing said given one of said episodes; and employing one of said one or more communication interfaces to:

- (a) receive a request from a requesting client device for the updated version of said compilation file located at said predetermined URL;
- (b) download said updated version of said compilation file to said requesting client device; and
- (c) thereafter receive and respond to a request from said requesting client device for one or more media files identified by one or more corresponding episode URLs included in the attribute data contained in said updated version of said compilation files.

‘504 Patent, col. 50:34-51:10 (A75-A76) (emphasis added to highlight claim phrases at issue). The highlighted language in the preamble makes clear that the challenged claims are directed to an apparatus that dynamically distributes a series of episodes over time, where the series of episodes further recited in the body of the claim includes a *newly* available episode.

2. Compton/CNN

Compton/CNN describes customized software that processes the satellite feed of a cable television news program for school children into an automatically-generated, daily, Internet-delivered digital video magazine featuring the current program. A882, A888. The automated system was developed by Compton for his MIT graduate thesis through the sponsorship of Advanced Research Projects Agency (ARPA), the National Science Foundation (NSF), IBM, and Turner Broadcasting. A876.

The Compton/CNN system uses MPEG encoding software to batch encode the news stories (also referred to as “news segments”) from the same program as separate video clips stored at the NMIS web server. A891 (Fig. 4); A891-893. Thus, news stories from the same daily program are encoded by the system and made available **at the same time** by the NMIS server. Clips for the current program and associated closed captioned text files are accessed via a daily Table of Contents web page that is automatically generated based on a companion Curriculum Guide for

each program. A new Table of Contents html file or web page is generated for each day's program. A884 (Fig. 1).

Rather than update the "compilation file" to include new episodes in the series with previous episodes in the same html file, the Compton reference teaches the creation of a separate, new web page each day at a new URL featuring only the current program. *See* A560 ("Thus Internet CNN Newsroom described all the elements of claim 31 except an updated compilation file. Instead the designers chose to create a new compilation file each day.").

Compton/CNN also discloses the prototype deployment of a searchable library of archived news clips. A885. Only particular clips could be searched, not episodes of the news program. A897. Archived news clips are accessed from the library using date and keyword searching of the closed-captioned text files.² A887. Compton therefore teaches the distribution of older content, the archived news clips, **separately** through a searchable library. Compton does not disclose making multiple programs available at a given URL or creating an updated version of an HTML file to include new programs as they become available together with past programs.

² Compton also explains that his disclosed technique of searching the closed-captioned text files would not scale for entire programs. A887.

3. Patrick/CBC

Patrick/CBC is an article reporting on a year-long experimental Internet Radio trial run by the Canadian Broadcasting Corporation (“CBC”). The trial made CBC radio programming available over the Internet beginning in December 1993. In the first phase of the trial, a sampling of different programs was made available with larger programs broken out into subdivided parts that were described in accompanying text and separately downloadable. A864-865. In the second phase, CBC also began to offer two current programs on the Internet, a current newscast and the current episode of its science show, Quirks & Quarks.

The Quirks & Quarks program was one hour long and manually broken out into short clips that are made available at the CBC server **at the same time**. *Id.* at A865. Users could then access just the clips from the current program. *Id.* at A867. While the server was updated regularly to make the current program available, past episodes were regularly removed from the CBC web server:

News and current affairs shows pride themselves on being current and up to date, and there was some concern about users transferring older material without realizing its age. **In practice, it was necessary to remove files from the server regularly due to their large size** so this was not a problem. There was also the opposite concern--some material should be archived and made available permanently, **but this requires a large investment in storage hardware and useful search and retrieval technology.**

Id. at A869 (emphasis added). As with Compton/CNN, Patrick/CBC also mentions that a searchable program library or archive could be developed to distribute past programs.

IV. SUMMARY OF THE ARGUMENT

The Board's Decision relies upon numerous errors to support its determination that the '504 Patent is invalid. First, the Board ignores clear claim language, and instead misapprehends isolated excerpts of the specification to rewrite the challenged claims to read on the cited art.

The Board construes "series of episodes" to encompass a single program broken into subparts made available at the same time. The ordinary meaning of episode is not a part of a program, but a program that is part of a group of related programs. Even if it were, a "series of episodes" as recited by the claims consist of episodes that come out over time. Similarly, the claimed compilation file collects episodes coming out over time together in a single file at a single URL. A plain reading of the claim language compels these constructions. The specification, properly read, also strongly supports Personal Audio's and not the Board's constructions, and cannot be used to rewrite facially plain claim language in an effort to broaden its scope to encompass the prior art. The Board's claims constructions are legally erroneous and should be reversed.

Moreover, the challenged claims are directed to an apparatus having a back-end configuration different from a standard web server. The claim language does not just require “components” of the claimed configuration, but specifically “one or more processors coupled to said one or more data storage servers and to said one or more communications interfaces.” Failing to require the Petitioner to demonstrate this configuration in the prior art, rather than just the presence of components, constitutes clear and legal error. Moreover, any finding by the Board that the claimed back-end configuration is disclosed by Compton/CNN and Patrick/CBC is technically incorrect and therefore unsupported by substantial evidence.

Finally, the Board’s findings that the ‘504 Patent would have been obvious to one of ordinary skill in the art in light of Compton/CNN should be reversed. Not only is the finding based on an improper determination of the scope of the claims, but the Board did not articulate any reason explaining why one of ordinary skill in the art would modify Compton/CNN. Compton/CNN discloses the distribution of just the current day’s episode broken into subparts at a new URL. Any past episodes were not compiled into a “series of episodes,” but rather were contained in a searchable archive.

The Board gave no reason why one of skill in the art would modify Compton/CNN to compile past episodes together with newly available episodes as a “series of episodes” in an updated compilation file over time, as required by the

claims of the patent. The Board had no basis for finding that any reason existed because the EFF failed to present such arguments, instead simply claiming in conclusory fashion that the updating of a compilation file distributing multiple episodes *could* have been done by a skilled artisan – and not *why* one would have been motivated to bridge this or the other gaps between Compton/CNN and the ‘504 Patent. Moreover, neither the Board nor the EFF even addressed the absence of the back-end configuration required by the claims in its obviousness analysis.

On each of these grounds, the Board’s determination of invalidity should be reversed. In addition, the Board’s Decision ignores and directly contradicts a jury’s factual findings in the related district court proceeding particularly as relates to Compton/CNN. Because Personal Audio had submitted identical factual issues relating to validity of the ‘504 Patent in light of Compton/CNN before a jury, which rendered a verdict in favor of validity, these factual findings are protected by the Reexamination Clause of the Seventh Amendment and cannot now be overturned by the Board. The Board’s determination of invalidity should also be reversed because it conflicts with the jury’s factual findings in the related district court proceeding.

V. ARGUMENT

A. STANDARD OF REVIEW

The Federal Circuit reviews the Board’s legal conclusions *de novo* and its factual findings for substantial evidence. *In re Gartside*, 203 F.3d 1305, 1316 (Fed.

Cir. 2000). “Substantial evidence is more than a mere scintilla. It means such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *Id.* at 1312 (quoting *Consolidated Edison Co. v. NLRB*, 305 U.S. 197, 229-30 (1938)).

The Board did not address or rely on any extrinsic evidence as a basis for its claim constructions at issue. Claim construction based solely on intrinsic evidence is a matter of law and is reviewed *de novo* without deference. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015); *Microsoft Corp. v. Proxyconn, Inc. v. Michelle Lee*, No. 2014-1542,1543, slip op. at 6 (Fed. Cir. June 16, 2015). Even under the broadest reasonable interpretation standard, claim constructions must “reasonably reflect the plain language and disclosure.” *In re Suitco Surface*, 603 F.3d 1255, 1260 (Fed. Cir. 2010).

The Board’s ultimate determination of obviousness is also reviewed *de novo*, and any underlying factual findings are reviewed for substantial evidence. *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000). Anticipation and prior art teachings present questions of fact and are reviewed for substantial evidence. *In re NTP, Inc.*, 654 F.3d 1279, 1297 (Fed. Cir. 2011).

B. THE BOARD ERRED IN CONSTRUING THE CLAIMS OF THE ‘504 PATENT

1. The Board’s Construction of Series of Episodes and Episodes is Incorrect and Caused Its Incorrect Determination of Unpatentability based on Compton/CNN and Patrick/CBC

Claim terms are given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of the record. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313-1317 (Fed. Cir. 2005) (*en banc*). The Board's Decision applies the broadest reasonable interpretation standard, construing "episode" to mean a segment (or portion) of a program which is part of a series of related segments. A8. The Board then purports to give "series," in "series of episodes," its ordinary and customary meaning, but at no point identifies what that ordinary meaning might be. *Id.* In reality, the Board construes "series of episodes" to encompass the subdivided parts of a single program that are made available at the same time, which directly contradicts its ordinary meaning as used in the claims which recite that the "series of episodes" comprises multiple programs issuing over time. A15-16.

The Board's construction directly contradicts repeated and explicit claim language. First, the preamble of Claim 31 recites an "[a]pparatus for disseminating a "series of episodes...via the Internet **as said episodes become available**" indicating that the claimed apparatus dynamically distributes a series of episodes, where episodes represent distinct, separately issued programs that become available over time, at different points in time. This temporal limitation that episodes in the series issue over time is repeated at least three times in the body of Claim 31 which

further requires that the recited series of episodes include a previously issued and newly available episode: (i) “storing one or more media files representing **each episode as said one or more media files become available;**” (ii) “**from time to time, as new episodes represented in said series of episodes become available,** storing an updated version of a compilation file;” and (iii) “said updated version of said compilation file containing attribute data describing **currently available episodes in said series of episodes.**” ‘504 Patent at 50:48-65 (A75) (emphasis added). The ordinary meaning of these claim phrases could not be more plain. This claim language goes so far as to include the phrase “from time to time” to avoid any doubt that the episodes in the series are distinct programs that become available over time and at different points in time. Because the claim recites that each episode in the series is stored by the apparatus **as made available**, the “currently available episodes in said series of episodes,” necessarily represent multiple episodes that come out over time at different times including at least one previously issued and a newly available episode that together provide the antecedent basis for “**said series of episodes.**” Claim 31 requires attribute data and episode URLs for multiple episodes **issued at different times**, where “said series of episodes” are to be included in the updated version of the compilation file. Thus, the ordinary meaning of “series of episodes” as used in the claims requires multiple programs that become available at different points in time.

If “said series of episodes” is construed as multiple subparts from a single program that come available at the same point in time, and not at different successive times, as determined by the Board, then the language “from time to time...as new episodes become available” makes no sense. The Board’s analysis does not even address this, and instead reads out this clear and repeated claim limitation, violating basic principles of claim construction. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) (“A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.”); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (“the context in which a term is used in the asserted claim can be highly instructive.”).

Even under the broadest reasonable interpretation, claim construction analysis must begin with the ordinary meaning of the claim language. *Microsoft Corp. v. Proxyconn, Inc. v. Michelle Lee*, No. 2014-1542,1543, slip op. at 6 (Fed. Cir. 2015) (citing *Phillips*, 415 F.3d at 1312 (Fed. Cir. 2005) (*en banc*)). The Board, however, does not even attempt to reconcile its constructions with the teachings of the claims, which cannot be read without understanding that episodes refer to distinct programs issuing at different times and that the claimed series of episodes refers to multiple, sequentially-ordered, and distinct programs issuing at different times. It is not a reasonable interpretation of the claim language considering its plain meaning, to say that the series of episodes limitation is satisfied by the subdivided parts of a single

program which would necessarily be made available at one time. In so finding, the Board's construction improperly reads this temporal limitation out of the claim language and therefore violates basic claim construction principles. The Board says nothing that either recognizes or disputes the plain meaning of the claim language on its face.

The specification further confirms the plain and ordinary meaning of the claim language. The '504 Patent explicitly distinguishes the invention from prior art websites such as Compton/CNN and Patrick/CBC which distribute a single episode from a series via a web page on the Internet. '504 Patent at 1:64-67 (A51); 2:3-10 (A51) (a deficiency in the prior art was that existing technology searched for and disseminated "**individual program selections one at a time.**") (emphasis added).

The only portion of the specification describing the distribution of *episodes* uses the heading "Serialized **Programs**" and describes a series of episodes as a serialized sequence of related programs. *Id.* at 19:34-48 (A60) ("programming may include **serialized sequences of programs**...a subscriber may select **an individual program in a serial sequence** and the host may then [make] further installments o[f] **related programs within the series** to the catalog or session content **thereafter** sent to the subscriber") (typographical errors corrected) (emphasis added). The phrase "serialized sequence" makes clear that the related programs making up the series issue over time and at different successive times corroborating the ordinary

meaning of the claim language which repeatedly requires that the episodes in the series issue over time, at different times. The specification further states that episodes that have not yet issued may be selected, confirming that the invention requires later issuing episodes that make up the recited series of episodes to be included in the compilation file as they become available. *Id.* at 20:64–21:3 (A60–61). Thus, this passage reinforces the ordinary meaning of the claim phrase “said series of episodes” as referring to multiple, related programs issuing in a serial sequence over time and at different times.

The Board purports to justify its construction of episode by directly turning to the specification rather than the claim language, quoting *out of context* the excerpt which reads: “A given program segment may represent an episode in a series which is selected as a group by the subscriber.” A7, A8, citing ‘504 Patent at 19:35–38 (A60). Based on the use of the term program segment in this excerpt, the Board improperly construes episode to mean a part of a program, and the claimed series of episodes as including the multiple subdivided parts of a single program. Yet, *nowhere* in the ‘504 Patent is program segment used to mean a subdivided part of a program. Instead, the specification explains how the term segment is used in its discussion of the program data library as a type of data: “[t]he host server 101 stores and maintains a plurality of data files including a program data library indicated generally at 130 consisting of a collection of compressed audio program segments

131, announcement ('glue') segments 132, text program segments 133, image segments 134, advertising segments 135 and program catalog information 137.” *Id.* at 5:63-6:2 (A53). Here, and throughout the specification, “segment” is used to refer to a type of data in the program data library such that a “program segment” refers to the data in the library corresponding to a program (*e.g.*, compare reference to “compressed audio program segments 131” to block 131 of Fig. 1, labelled “Audio Programs”). In the context of the ‘504 Patent, program segment means and is used interchangeably with program and does not mean a subpart of a program.

Indeed, the Board ignores the *many* references to programs in this passage, including in the heading, “Serialized Programs,” which makes clear that serial programs and not subdivided parts are being discussed. Program segment consistently means and is used interchangeably with program throughout the specification and *never* refers to a subpart of a program. The Board fails to examine how this term is actually used and simply assumes it means a subpart of a program based upon an incorrect understanding of the term segment not supported by the specification. In light of the entire specification, the cited excerpt directly supports Personal Audio’s construction of episode as a “program, represented by one or more media files, that is part of a series.” A654.

Even if episode were incorrectly construed to mean a subpart of a program, the episodes in a series as recited in the specification and claims must come out at

different times, not at the same time. The Board cites another portion of the specification to support its construction which states that users can subscribe to subjects such as “world news” to obtain a group of program segments. ‘504 Patent at 30:18-25 (A65); A8, A16. As an initial matter, this part of the specification does not directly address the distribution of serial episodic programming, but a different aspect of the embodiment which selects programming by subject matter.³ More importantly, a description of an embodiment cannot overcome the multiple aspects of the claim language that requires the distribution of a “series of episodes” through a compilation file at a predetermined URL distributing new episodes with old episodes as new episodes issue. *See StraightPath IP Group, Inc. v. Sipnet EU S.R.O.*, slip op. 15-1212 at 8 (Fed. Cir. Nov. 25, 2015) (“When claim language has as plain a meaning on an issue as the language does here, leaving no genuine uncertainties on interpretive questions relevant to the case, it is particularly difficult to conclude that the specification reasonably supports a different meaning. The specification plays a more limited role than in the common situation where claim terms are uncertain in meaning in relevant respects.”). Examples from the specification cannot be used to broaden the claims at issue which plainly require that

³ This technique not covered by Claims 31-35 but described extensively in the specification selects programs by subject matter using descriptive subject and topic data segments associated with a program in a subject-topic hierarchy. ‘504 Patent at 19:16-33 (A60); 20:34-41 (A60); 24:25-41 (A62); 29:28-64 (A65).

the compilation file is updated to include new episodes in the “series” that have not yet been made available. *Id.* at 9 (“the specification does not provide a basis for reasonably adopting a construction that contradicts the plain meaning of the claim language”).

While the Board must give claim terms their broadest reasonable construction, its constructions cannot be divorced from the claim language which in this case requires that episodes issue in a sequence over time at different times. *In re Suitco Surface*, 603 F.3d at 1259 (Fed. Cir. 2010). Because the Board’s construction contradicts the ordinary meaning of episodes and series of episodes as found in the claims and specification, its construction is legal error. Personal Audio’s construction, not the Board’s construction, is unequivocally supported by the claim language and specification.

The Board’s error in claim construction reshapes and enlarges the scope of the ‘504 Patent claims leading to its erroneous determination that these claims are anticipated by Compton/CNN and Patrick/CBC. Compton does not disclose the distribution of a “series of episodes” at a predetermined URL as required by the ‘504 Patent. The digital magazine distributes just the current program where each news story in that program is broken out into a separate clip at a given URL. According to the Board’s Decision, each news story corresponds to an episode where the series of episodes corresponds to the subdivided parts or segments of a single program.

A17. The Board rejected Personal Audio's arguments that episodes are programs and on that basis found that the episodes/series of episodes limitation had been met in Compton/CNN. A16. Yet, the Board's determination that each news story represents an episode cannot be reconciled with the claim language and specification because the news clips are not separate and distinct programs, and do not become available at discrete or discontinuous points in time, "from time to time" in a "serialized sequence" as required by the plain meaning of the claim language, but issue as part of the same program at the same time. Episodes and series of episodes, properly construed, are not disclosed by Compton/CNN.

The same flaws in the Board's analysis of Compton/CNN are also found in its analysis of Patrick/CBC. The Board finds that the distribution of the current episode of Quirks and Quarks, manually broken out into subdivided parts, meets the episodes/series of episodes limitation. A25. Again, Patrick/CBC does not disclose multiple episodes made available at a single web page that is updated to include a newly available episode with a previously issued episode. Instead, CBC discloses distribution of a single, current episode broken out into subdivided clips that are made available on the CBC server at the same time. These subdivided parts of the same program do not meet the "series of episodes" limitation. *See* A661, A667.

Neither Compton/CNN nor Patrick/CBC disclose what the '504 Patent teaches, namely that multiple programs could be distributed together including

previous episodes and a newly available episode at a single file located at a predetermined URL. Instead, Compton/CNN and Patrick/CBC disclose the distribution of only a single, current episode at a particular URL, while Patrick/CBC further discloses that past programs were regularly removed from the server due to storage considerations.

With respect to past programs, both Compton/CNN and Patrick/CBC disclose that useful search and retrieval technology was needed to *separately* retrieve past programs through a searchable program library over the Internet. A869. Neither reference contemplated distributing past programs together with the current program, much less disclose distribution of a series of episodes, recited as multiple related programs including newly available programs issuing over time, at different times in a series via a file at a predetermined URL.

2. The Board’s Construction of “Compilation File” Is Incorrect And Caused Its Incorrect Determination of Unpatentability Based On Compton/CNN and Patrick/CBC

The Board’s anticipation analysis should have ended with the Board’s finding that neither Compton/CNN nor Patrick/CBC disclose the “series of episodes” limitation. Instead, the Board reshapes another claim term, construing compilation file as a file that contains episode information. A10. Based on this construction, the Board interprets an updated version of a compilation file as encompassing a file containing episode information for just the newly available program broken out into

subdivided parts and not a series of episodes as required by the claim language. This is unreasonable. For the reasons argued above with respect to “series of episodes,” the claim language makes clear that the updated version of the compilation file dynamically collects and distributes a series of episodes, namely multiple, related programs issuing over time, at different times, including a newly available program as argued above. Accordingly, the claim language requires that the compilation file be updated by dynamically distributing previously available and newly available episodes together.

The Board’s Decision makes much of the fact that “updated” modifies “version” rather than “compilation file” to dispute Personal Audio’s argument that previously and newly issued programs or episodes must be distributed by the updated version of the compilation file. A10, A18. Regardless of what “updated” modifies, the claim language plainly specifies that the updated version of the compilation file must contain attribute data for “currently available episodes **in said series of episodes.**” As argued above, the “currently available episodes in said series of episodes”, properly construed, requires multiple episodes including a newly available episode, issuing over time at different times as recited by the claims, not just a single, newly available or current episode broken out into subdivided parts. Because the remaining claim language requires that the updated version of the compilation file contain attribute data and episode URLs for a “series of episodes”

which recited as multiple programs issuing at different times including a newly available program, the Board's construction fails to consider the dispositive claim language.

Indeed, critical to the Board's invalidity analysis is its finding that the remaining claim language does not specify how the compilation file is updated. A18. Contrary to this legally erroneous finding, however, the claim language explicitly specifies that the new episodes issuing "from time to time" triggers the updating of the compilation file and identifies what the updated compilation file contains, namely attribute data and episode URLs for the first recited, previously issued episode(s), *and the newly available episode*, as "**said** series of episodes." This claim language is further reinforced by the ordinary meaning of "compilation," as a collection of previously separate works. In light of the claim language, the ordinary meaning of compilation suggests that the compilation file is distinguishable from an ordinary file in that it collects together multiple, previously separate programs or, with respect to claims 31-35, dynamically collects episodes issuing over time at different times.

In sharp contrast, Compton/CNN and Patrick/CBC never teach updating a file at a predetermined URL with program information at all. Once the subparts of a single program are located at a URL, the subparts at that URL are never "updated" at all.

The Board's construction of compilation file and its finding that the "updated version of a compilation file" encompasses a file containing descriptions of a single program broken up into subdivided parts that is replaced with a new file containing new descriptions of a new program similarly broken up into subdivided parts ignores the ordinary meaning of compilation and renders superfluous much of the remaining claim language, including "said series of episodes." Indeed, breaking up a single work into separate subdivided parts and replacing this content with entirely new content also broken up into subdivided parts as disclosed by the prior art at issue is *exactly the opposite* of what the ordinary meaning of the term compilation conveys. Even under the broadest reasonable construction, a construction that gives meaning to every claim term is preferred. *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d at 1372 (Fed. Cir. 2005); *Phillips v. AWH Corp.*, 415 F.3d at 1314 (Fed. Cir. 2005).

Giving claims their broadest reasonable interpretation does not include giving claims a legally incorrect interpretation. *See In re Skvorecz*, 580 F.3d 1262 (Fed. Cir. 2009). An apparatus is not anticipated by a device that contains less than what is claimed. *Id.* Under the Board's construction, there is no need to use the term "compilation" at all since the entire file is being "updated" with entirely new content from a single new program at a different URL location. The Board's construction violates general claim construction principles by ignoring the ordinary meaning of "compilation" and the remaining claim language.

The Board purports to base its construction on the specification, which describes the compilation file as “one or more subscriber and session specific files which contain the identification of separately stored sharable files.” A9. However, the Board does not even address the most relevant part of the specification discussing the operation of the compilation file in the distribution of a series of episodes. The specification explains that new episodes are distributed through the compilation file as further installments: “a subscriber may select an individual program in a serial sequence and **the host may then [make] further installments o[f] related programs within the series to the catalog or session content thereafter sent to the subscriber.**” ‘504 Patent at 19:34-48 (A60) (emphasis added) (typographical errors corrected). The specification reinforces the plain import of the claim language, namely, that the compilation file is updated when new episodes in a series become available, as further **installments**—not substitutions. Later issuing episodes are added as installments to the compilation file when subsequently issued. *Id.* at 20:64–21:3 (A60-61). The specification, thus, supports Personal Audio’s interpretation of compilation file and updated version of a compilation file and does not support the Board’s view that the updated version of the compilation file can encompass just the current, newly available episode. In fact, the files the Board refers to are never “updated” at all once they issue.

The Board's erroneous constructions of episodes/series of episodes and compilation file, lead to its determination that Compton/CNN and Patrick/CBC anticipate the '504 Patent. Based on its construction that a compilation file is a file containing episode information, the Board finds that the Table of Contents web page of Compton/CNN comprised of the two news stories from the current program represents the compilation file, where each news story meets the episode limitation. A17. The Board further finds that the creation of a new Table of Contents page distributing a new and different program at a new URL meets the required claim elements of the updated version of a compilation file. A18.

Similarly, Patrick/CBC discloses nothing more than the distribution of a single, current episode of Quirks & Quarks, broken out into subdivided parts. A666-667; A865, A867, A869. This was considered sufficient to meet the compilation file limitation. A26. However, as noted previously, Patrick/CBC further discloses that past episodes were regularly removed from the server due to storage limitations and the lack of "useful search and retrieval technology." A869.

At no point does Compton/CNN or Patrick/CBC disclose a compilation file or an updated version of a compilation file properly construed as collecting previously issued and newly available episodes together as a series. Because the html files disclosed by these references distribute just the current episode neither Compton/CNN nor Patrick/CBC disclose a compilation file or updated version of a

compilation file dynamically collecting and distributing over time multiple programs including previously issued and newly available episodes as the recited series of episodes required by the claims and specification. A659-660, A667.

The creation of an entirely new file with an entirely new episode at a new URL cannot be a reasonable interpretation of “updated version of a compilation file” consistent with the ordinary meaning of compilation, the remaining claim language, or the specification reciting that previously issued and newly available episodes are dynamically collected together and distributed over time. An anticipating reference must disclose every claim limitation either expressly or inherently and inherent disclosure requires that the prior art reference necessarily include the unstated limitation.

C. THE BOARD ERRED IN FAILING TO IDENTIFY WHERE THE CLAIMED BACK-END CONFIGURATION IS DISCLOSED BY COMPTON/CNN AND PATRICK/CBC

The Board erred in finding that the back-end configuration claimed by the ‘504 Patent is disclosed by Compton/CNN or Patrick/CBC. The Board finds that the claimed back-end components are inherently disclosed by the prior art and not the actual claimed back-end configuration. A20-21. The claim, on the other hand, requires a specific configuration, in particular “one or more processors coupled to said one or more data storage servers and to said one or more communications

interfaces.” Because a data storage server contains its own processor, this claimed configuration requires *two processors* at the back-end. A661, A680.

By focusing on the components and not the claimed back-end configuration, the Board legally errs in applying an incorrect legal standard. The mere fact that an invention’s component parts are present in the prior art does not render the invention anticipated. *See Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). If this were the relevant standard, nearly every invention would be deemed anticipated or obvious under this theory. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.”).

In addition, the Board’s finding that the mere disclosure of a web server inherently discloses the claimed back-end configuration is technically incorrect and therefore is unsupported by substantial evidence. The ‘504 Patent claims a back-end configuration requiring *two* processors, namely the processor found in the data storage server as well as a second processor coupled to a communications interface. A661, A680.

In contrast, Compton/CNN and Patrick/CBC merely disclose a web server at the back-end without disclosing how that server was configured. As Petitioner's expert was forced to admit, neither Compton/CNN nor Patrick/CBC discloses the hardware configuration required by the claims. Schmandt Deposition at 50:21-51:16 (A1162-1163) (for Compton/CNN); 19:2-20:13 (A1131-1132) (for Patrick/CBC).

Addressing the underlying components rather than the claimed configuration, the EFF misleadingly *omits* from its analysis and obscures the fact that the claimed apparatus requires a *second* processor coupled to the communication interface and data storage server that would not have been found in any web server such as a conventional web server. In fact, the EFF had no choice but to argue for each prior art reference that a person of ordinary skill would have understood, at the time the invention was made, that any web server would necessarily include the underlying components because none of its prior art references actually disclosed the back-end configuration of the web server it used. *See e.g.*, A710 (“Similarly, there is no dispute that the CNN system includes the three physical components of the claims: “one or more data storage servers,” “one or more communication interfaces,” and “one or more processors.”).

Rather than conduct an element-by-element analysis of the back-end of each asserted reference, the EFF points to the same web server in the Compton/CNN reference, even though no details are disclosed concerning how that web server is

configured, or specifically, whether a second processor was present. A628-629; A562-563; A569-570 (identifying the NMIS web server also as the data storage server); Schmandt Decl. ¶¶ 76-80 (A850-856); A710. Similarly, Petitioner points to the web server disclosed by Patrick/CBC as disclosing the back-end claim configuration required by the claim. A550; Schmandt Decl. ¶¶ 63-64 (A843-845). With respect to the back-end the Board found: “CBC Radio programming was stored on a server and the resulting program files were made available using standard Internet server software.” A24 (citing A864-A865). However, Patrick/CBC never discloses the configuration of the CBC web server. A864-865, A868-869. As with Compton/CNN, the EFF’s argument that this disclosure of a host web server sufficiently discloses the claimed back-end configuration is technically incorrect because the configuration of that web server is never identified, including whether the web server contained at least a second processor.

Without any additional disclosure concerning the claimed configuration in either Compton/CNN or Patrick/CBC, one of ordinary skill in the art would only assume a single processor to be present in a web server. This is because disclosure of a web server to one of ordinary skill inherently discloses only a single processor, a data storage *facility* and a communications interface as necessarily present at the back-end. Nelson Deposition at 77:22-24 (A1005); *see also id.* at 77:19-21 (A1005); 77:25-78:3 (A1005-1006); 114:9-116:11 (A1042-1044). Since the claimed back-end

configuration requiring a second processor is not necessarily found in a web server, the claimed configuration would not have been inherently disclosed to one of ordinary skill in the art. *See Scripps Clinic & Res. Found. V. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991) (prior art references must be analyzed as a skilled artisan would), overruled on other grounds by *Abbott Labs. V. Sandoz, Inc.*, 566 F.3d 1282 (Fed. Cir. 2009) (to anticipate, “[t]here must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention”). A claim limitation is inherent if it is *necessarily* present in the prior art, not merely probably or possibly present. *Akamai Techs., Inc. v. Cable & Wireless*, 344 F.3d 1186, 1192 (Fed. Cir. 2003). The Board’s finding that a web server inherently discloses the claimed configuration is technically incorrect and therefore constitutes clear error.

The EFF’s technically incorrect inherency argument fails to provide sufficient evidence demonstrating that the claimed back-end configuration and specific functioning of the back-end, particularly the second processor was disclosed in Compton/CNN or Patrick/CBC. A661, A680; *see also* Nelson Decl. at ¶ 53 (A1196). The Board and the EFF fail to address where each and every limitation in the claimed back-end configuration is disclosed in either prior art reference, specifically the second processor required by the claims. The Board incorrectly adopts the EFF’s arguments concerning the back-end components of the asserted

claims. Its findings represent both legal and clear error not supported by substantial evidence. As a result of the EFF's strategic choice not to address the specific back-end configuration in its anticipation analysis, the EFF fails to even address this missing element in its obviousness analysis.

D. THE BOARD ERRED IN FINDING THE '504 PATENT CLAIMS UNPATENTABLE AS OBVIOUS, IN LIGHT OF COMPTON/CNN

The Board's determination that the '504 Patent claims are obvious in light of Compton/CNN is incorrect. Compton/CNN contains absolutely no disclosure of compiling old and newly available episodes at a file located at a predetermined URL. In fact, what is disclosed is breaking up a single episode into multiple parts in a file at a URL and never modifying the file content at all. Compton/CNN discloses a searchable library for older content found in the files where a user is required to date or keyword search past clips each time he or she wishes to access the past content, which would be entirely unnecessary if all the episodes in a series were already located at a predetermined URL. The only possible basis for modifying Compton/CNN to meet the claim limitations is using the patent itself as a roadmap, utilizing impermissible hindsight.

The Board identified no reason why one of ordinary skill in the art would modify Compton from disseminating just the current day's episode at a different URL, to dynamically compiling over time old episodes with newly available episodes in the series at a single html file, as required by the claims. This was clear

error. *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013) (internal citations omitted) (a finding of obviousness requires “explicit and clear reasoning providing some rational underpinning”); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does . . . because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.”). A patent may not be found invalid for obviousness on the basis of “mere conclusory statements.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

The Board did not even identify the “problem” such a modification would be designed to solve. The Board’s failure to state the problem being solved is indicative of the underlying flaw with the Board’s analysis—there is absolutely no evidence that one of ordinary skill in the art reading Compton/CNN (or Patrick/CBC for that matter) would have been aware of *any* problem with distributing past episodes separately through a searchable archive rather than together with the current program at a single html file. There is nothing in either reference that indicates that having a single current episode come out at a given URL is a problem at all. There is no reason stated by the Board that one of ordinary skill in the art would have compiled new episodes in a series with the old episodes in a given file at a predetermined URL.

See Mintz v. Dietz & Watson, Inc., 679 F.3d 1372, 1377 (Fed. Cir. 2012) (overly narrow statement of the problem to be solved is a form of prohibited hindsight). It is only after awareness of the ‘504 Patent’s claimed solution that the needed modifications to Compton/CNN become apparent.

Instead, the Board simply adopts the EFF’s arguments that only trivial modifications would have been required to modify Compton and update the compilation file. A19. At best, however, EFF argues that updating a compilation file *could* have been done by a skilled artisan—but does not explain why one would have been motivated to bridge this or the other gaps between Compton/CNN and the ‘504 patent. Schmandt Decl. ¶¶ 78 (A852-854), 79 (A854-855). Of course, it was not Personal Audio’s burden to prove that the ‘504 Patent was not obvious, it was the EFF’s burden to prove the claims were obvious, which it failed to do.

Instead, the EFF’s expert simply suggests that a person of ordinary skill could modify Compton/CNN to include past episodes together with the current episode rather than distribute the current episode at a single html, and past episodes separately through a searchable library, but gave no real reason why they would. Where, as here, the necessary reasoning is absent, the Board cannot simply assume that “an ordinary artisan would be awakened to modify prior art in such a way as to lead to an obviousness rejection.” *In re Nouvel*, 493 F. App’x 85, 92 (Fed. Cir. 2012); *see also KSR*, 550 U.S. at 418; *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)

(“Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”). The generic testimony of the EFF’s expert amounts to a “mere conclusory statement” that may not serve as a basis for finding the asserted claims obvious. *See In re Kahn*, 441 F.3d at 988.

Indeed, no reason to modify is provided by Compton/CNN. Compton’s graduate thesis is devoted to and discusses at great length the techniques available at the time for the distribution of media content over the Internet, and yet at no point discloses the distribution of *multiple episodes through a single html file or web page, including new episodes not yet available*. Instead, Compton’s digital magazine and clip archive adopts the apparently conventional wisdom made explicit in Patrick/CBC that for serial programming, past episodes should be distributed through a searchable archive, with the current program made separately available on a web page. A869. Neither Compton/CNN nor Patrick/CBC ever suggests modifying the content made available at the file for a given day’s program.

To the contrary, Compton explicitly teaches that archived clips from previous episodes are to be distributed *separately* through date and keyword searching of a clip library, and not through the Table of Contents file of the digital magazine. There was no reason to add previous clips to the Table of Contents page of the news

magazine in Compton/CNN, because Compton discloses a completely different mechanism for distributing older content, obviating any reason or motivation to add past episodes onto the current Table of Contents web page of the digital magazine. This evidence demonstrates that the teachings of Compton are completely different from the '504 Patent and provides no reason to modify the Table of Contents file to include past episodes.

In fact, Compton explicitly discloses that its technique of keyword searching the clip library could be used for past episodes of serial programming, such as sitcoms, but *never* discusses potentially modifying its Table of Contents file to distribute past episodes with the current program, much less at the same “predetermined URL.” A900. The inclusion of past clips on the Table of Contents web page for the daily digital magazine would have been redundant to the clip library offering date and keyword searching of past content. Because an alternative approach is explicitly disclosed for distributing past content, there was no reason to modify Compton/CNN so that past episodes would be distributed with newly available episodes together at a single web page. Nor is there any evidence offered by the EFF indicating that including previous episodes together with the current episode at a single html file would have been a known, obvious, conventional technique within the art or within the common knowledge of a skilled artisan.

The teachings of Compton/CNN and Patrick/CBC demonstrate that the mechanisms disclosed by the '504 Patent were not common knowledge. The teachings of Compton/CNN and Patrick/CBC indicate that one of ordinary skill in the art would *not* have thought to include previous episodes with a newly available episode at the Table of Contents file. Instead, Compton/CNN suggests, and Patrick/CBC expressly articulates the conventional wisdom and common knowledge of the time, specifically, that while there was value in distributing past content, past content should be made available *separately* through a searchable library or archive. *See e.g.*, A898-899; A869. This format was considered ideal for older programming because it allowed users to search for the content they wanted. *Id.*

Numerous additional reasons are disclosed in Compton/CNN and Patrick/CBC *for not including* previous episodes together with the current episode at a single html file. Placing a large amount of content on a single web page would have significantly increased the amount of time it took to load the page decreasing the usability of the site. And as Patrick explicitly teaches, there was a concern that providing older content created the risk that users would inadvertently select obsolete content. *Id.* Moreover, storage of old content can be expensive to maintain. *Id.* Compton further discloses: "The current state of html limits the layout of the Internet NEWSROOM Table of Contents to a format that tends to waste space on the screen." A900. This limitation of html would have been general knowledge to

one of ordinary skill in the art. Given these many additional considerations, one skilled in the art would not have had any reason or motivation to attempt to incorporate multiple episodes onto a single web page where each episode is further broken out into multiple, shorter clips each with its own separate description as well as an additional link to the close-captioned text file associated with the clip.

That Compton's graduate thesis did not even discuss the distribution of past and newly available programs together through its digital magazine on a single html file or web page strongly suggests that such a modification was not obvious, much less common wisdom or conventional knowledge known by one of ordinary skill in the art. For the Board to have found that the requisite reason to modify is found within the four corners of Compton is to engage in precisely the type of hindsight reasoning that KSR warns against. *KSR*, 550 U.S. at 421 ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.") (citing *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966)).

Finally, the Board did not even address the EFF's failure to present any evidence regarding the second processor at the back-end in its obviousness analysis. The EFF strategically chose to not address the specific backend configuration in its anticipation analysis and, due to that strategic error, therefore failed to present any evidence regarding the second processor at the back-end in its obviousness analysis.

All these factors further demonstrate that it would not have been obvious to one of ordinary skill to modify Compton/CNN so as to fill in all the missing elements including an apparatus designed to collect onto a single html page previously issued episodes together with a newly issued episode as a series. Having both previous episodes collected *with a newly available episode* on the same web page *together over time* and distributed through a compilation file designated by a predetermined URL, as claimed by the '504 Patent, was a nonobvious technological improvement in the area of multi-media episodic distribution. The EFF failed to make any arguments that one of ordinary skill in the art would bridge the gap and modify the prior art website to incorporate the claimed updated compilation file collecting and distributing a series of episodes in real time as new episodes are issued as well as the back-end configuration and operation.

As the EFF's technical expert states: "The author explains that the apparatus could easily be used to present other episodic content in a series such as sitcoms or soap operas" and that the "mechanisms described in Internet CNN Newsroom could also be straightforwardly used to automatically generate and update the table of contents HTML file at a unique URL (e.g. "soapopera.html") in order to distribute a serialized show, such as a soap opera, as the article expressly suggests." Schmandt Decl. at ¶ 79 (A854-855). However, according to the teachings of Compton/CNN, only a single episode of the soap opera (perhaps broken up into segments) would be

available at an HTML file at a particular URL. Every time a new episode of the soap opera became available, that episode would become available at a different URL. Compton/CNN then teaches that, separately, there would be a library to find particular past episodes of the soap opera using date and keyword searching of the closed captioned text files. The date and keyword searching function does not teach distributing the episodes in a “series,” and (in contrast to the teaching of the ‘504 patent) the search results would never be updated to contain new relevant episodes when they became available.

Nowhere does Compton disclose modifying his apparatus to automatically generate and update the table of contents HTML file at a unique URL, or that such a modification would be straightforward. Instead, as discussed above, Compton highlights the limitations of html at the time. A900. Moreover, as argued above, the EFF does not and cannot argue that modifying the digital magazine so that both previous episodes and the current episodes are included at the table of contents file is even remotely suggested by Compton.

The Board fails to identify why one of ordinary skill would have had *any reason to modify* Compton/CNN, even if it were found to have disclosed a searchable program library of archived content, so as to collect and distribute previously issued episodes with a newly available episode *together over time* at a single html file or

web page at a predetermined URL. The determination of obviousness by the Board should be reversed.

E. THE BOARD’S DECISION VIOLATES THE SEVENTH AMENDMENT

As this Court recently held in *MCM Portfolio LLC v. Hewlett-Packard Co.*, No. 15-1091 slip op. (Fed. Cir. Dec. 2, 2015), that the *inter partes* review procedure does not violate the right to a jury trial found in the Seventh Amendment, Personal Audio recognizes that the panel receiving this review will be bound by *MCM* “unless relieved of that obligation by an *en banc* order of the court or a decision of the Supreme Court.” *Deckers Corp. v. United States*, 752 F.3d 949, 959 (Fed. Cir. 2014). Thus, while Personal Audio wishes to preserve these arguments, it will not extensively brief the Seventh Amendment issues decided by the panel in *MCM*.

However, Personal Audio respectfully submits that the *MCM* decision is in error, because the analysis is predicated on a patent being a “public right” instead of a “private right,” and therefore is susceptible to agency review instead of judicial review. *MCM*, slip op. at 10-16. A threshold definition of public rights is that they arise “between the government and others.” *Ex parte Bakelite Corp.*, 279 U.S. 438,451 (1929). Private rights, in contrast, involve “the liability of one individual to another under the law as defined.” *Crowell v. Benson*, 285 U.S. 22, 51 (1932).

A patent right is a private right akin to personal property ownership, and not a public right. The clause of the Constitution granting Congress the right to grant patents makes this point: “The Congress shall have power ... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to *their* respective Writings and Discoveries.” U.S. Const. art. I, § 8 (emphasis added). The “Discoveries” are owned by the Inventor, not the federal government or Congress.

The patent statutes emphasize this point again and again. The right to apply for a patent in the first place belongs to the Inventor. 35 U.S.C. § 111(a)(1). A company may only apply for a patent if the Inventor has assigned that personal private right to the company. 35 U.S.C. § 118. Indeed, an inventor that only seeks patent protection in the United States can choose to keep the application a secret. 35 U.S.C. § 122. Thus, if the application does not result in a patent, the inventor is free to keep their Discovery as a trade secret. Significantly, Congress has specifically authorized and distinguished patent rights from public rights by providing that once patents are issued, they have the attributes of personal property. 35 U.S.C. § 261 (“...[P]atents shall have the attributes of personal property.”). For all these reasons, a patent once issued *becomes the property of the patentee*, and as such “is entitled to the same legal protection as other

property.” *McCormick Harvesting Machine Co. v. Aultman*, 169 U.S. 606, 609 (1898) (emphasis added).

Thus, because the right to a jury trial on patent invalidity has already been recognized (*see, e.g., In re Lockwood*, 50 F.3d 966, 970-71 (Fed. Cir. 1995)), this right to a jury trial cannot be regulated away by Congress to an administrative agency consistent with the 7th Amendment. *See Granfiancera, S.A. v. Nordberg*, 492 U.S. 33, 52 (1989) (Congress “lacks the power to strip parties contesting matters of private right of their constitutional right to a trial by jury. As we recognized in *Atlas Roofing*, to hold otherwise would be to permit Congress to eviscerate the Seventh Amendment's guarantee by assigning to administrative agencies or courts of equity all causes of action not grounded in state law, whether they originate in a newly fashioned regulatory scheme or possess a long line of common law forebears. The Constitution nowhere grants Congress such puissant authority . . . nor can Congress conjure away the Seventh Amendment by mandating that traditional legal claims be brought there or taken to an administrative tribunal.”) (internal citations omitted).

This case raises an entirely different Seventh Amendment issue not addressed by the *MCM* decision. In this case, Personal Audio had already set the matter of validity of its ‘504 Patent before a jury in the related district court proceeding pursuant to its Seventh Amendment right. *In re Lockwood*, 50 F.3d at

970-71 (recognizing a petitioner’s right to a jury trial on factual questions relating to patent validity as protected by the Seventh Amendment when those questions arise in a paradigmatic patent infringement suit); *Tegal Corporation v. Tokyo Electron America, Inc.*, 257 F.3d 1331, 1340 (Fed. Cir. 2001); *In re Technology Licensing Corporation*, 423 F.3d 1286, 1291 (Fed. Cir. 2005); *see also Beacon Theatres, Inc. v. Westover*, 359 U.S. 500, 510–11 (1959); *Dairy Queen, Inc. v. Wood*, 369 U.S. 469, 472–73 (1962). In addition to protecting the right to a jury trial, the Reexamination Clause of the Seventh Amendment “controls the allocation of authority to review verdicts.” *Gasperini v. Ctr. for Humanities, Inc.*, 518 U.S. 415, 432 (1996). Jury verdicts can only be reconsidered if the process for reconsideration is one that was available at common law when the Seventh Amendment was ratified. The only options at common law to reexamine facts decided by a jury are: (1) the granting of a new trial; or (2) review *de novo* for legal errors. *See Capital Transaction Co. v. Hof*, 174 U.S. 1, 13 (1899). Once the jury’s verdict has been rendered, the Reexamination Clause forbids review of the jury verdict by any court of the federal government.

The Board’s Decision was rendered on April 10, 2015, seven months after a jury had upheld the validity of the ‘504 Patent in a trial conducted by an Article III court. The jury verdict was submitted to the Board on December 10, 2014. *See* A718-728. The Board’s Decision directly overturns the jury verdict and its factual

findings concerning the Compton/CNN prior art and the validity of the ‘504 Patent, in violation of the Reexamination Clause under the Seventh Amendment. The federal patent laws specifically provide that “The Director shall prescribe regulations establishing and governing *inter partes* review under this chapter and the relationship of such review to other proceedings under this title.” 35 U.S.C. § 316(a)(4). Thus, the Director is charged with ensuring that IPRs are conducted in a manner consistent with the agency’s constitutional authority. Personal Audio submitted the factual findings to the Board in its Request for Rehearing where it raised the issue of the constitutional violation, notifying the Board that the findings of facts in its Decision concerning the Compton prior art and the validity of the ‘504 Patent, directly overturn the determinations of fact by a jury in a trial conducted by an Article III court under the procedural safeguards of the Federal Rules of Civil Procedure.⁴

⁴ This validity determination was made based on underlying factual determinations. With respect to obviousness, the Supreme Court identified “several basic factual inquiries”: “Under 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.” *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). It is to be presumed that factual findings in support of the general verdict are implied. *See Quaker City Gear Works, Inc. v. Skil Corp.*, 747 F.2d 1446, 1453 (Fed. Cir. 1984) (explaining that when a Rule 49(a) verdict form includes a legal question, “since the answer to the legal question necessarily resolves any disputed underlying factual issues, we have undertaken to review the factual findings on which the legal conclusion is based, applying the substantial evidence standard.”) (citation omitted)).

The Board's Decision exceeds its authority by violating the Reexamination Clause of the Seventh Amendment. Accordingly, this Court should reverse the Board's Decision to the extent it exceeds the Board's constitutional authority and overturns the jury verdict. *In re Garner*, 508 F.3d 1376, 1378-79 (Fed. Cir. 2007) (this Court does not defer to the Board's interpretation of Patent Office regulation, when it is plainly erroneous or inconsistent with the regulation).

Substantial evidence supported the jury's determinations. For example, there was live testimony of Patent Owner's and Defendant's expert and third party fact witnesses at trial where witnesses are subject to impeachment, on issues relating to the scope of '504 Patent claims, the prior art and factual issues related to anticipation and obviousness, including whether it would have been obvious to modify prior art such as Compton to put multiple episodes of a show on a single updated webpage at a predetermined URL.

For example, Richard Dean, who worked at NPR and partnered with RealAudio to distribute programming content over the internet, and who was a witness called by the defense, provided the following testimony on cross-examination as a third party defense witness testifying on the prior art:

Q. Do you know if NPR ever made a website that had multiple editions of Morning Edition on it at a single webpage?

A. I doubt it. It would have been a very long page.

Q. Well, it could have done, say, a week's worth, correct?

A. That's true. Yeah, but to the best of my knowledge, **that wouldn't have been a good user interface**, so, no.

9/9/14 PM Tr. at p. 84 – 85 (A1680-1681). Mr. Dean’s candid testimony strongly supports the Patent Owner’s position that one of ordinary skill in the art would not have considered the invention disclosed by the ‘504 Patent to be obvious. The veracity and credibility of his testimony was a factual determination to be made by a jury and is evidence in support of the jury’s determination that the patent was not obvious.

At the jury trial, Personal Audio was also able to impeach the credibility of the Defendant’s expert testimony concerning the hardware configuration requirements of the claimed apparatus. 9/11/14 AM Tr. 19:8-16 (A2057); 24:14-24 (A2062); 9/11/14 PM Tr. at 22:6-14 (A2171); 24:13-30:20 (A2173-2179); 35:11-19 (a2184); 43:16-46:5 (A2192-2195); 49:14-50:1 (A2198-2199); 52:10-53:15 (A2201-2202); 54:12-55:11 (A2203-2204); 61:18-62:23 (A2210-2211); 63:12-18 (A2212). Contrary to the technically incorrect and identical assertions in the Schmandt declaration, which were adopted by the Board, the hardware claim elements of the patented apparatus require a specific hardware configuration, namely, a “processor coupled with a data storage server coupled with a communications interface” in which the presence of a second processor could not be gleaned simply by accessing a website or mere disclosure of a web server. For this reason, the jury properly determined a factual matter—that the prior art apparatuses did not disclose all the claim limitations of the patented invention. *See*

also A645; A650; A661; A680; A1196. There is absolutely no constitutional authority for the Board's overturning of the underlying factual determinations made by the jury, in violation of the Patent Owner's Seventh Amendment rights.⁵

The Court's decision in *MCM* relies on its earlier decision in *Patlex Corp. v. Mossinghoff*, 758 F.2d 594 (Fed. Cir. 1985). The case at bar is distinguishable from *Patlex*, however, because here validity challenges on precisely the same prior art (Compton/CNN) were decided by the jury prior to the determination of the Board.

Even if Congress could have delegated all patent validity determinations to the PTO for adjudication, it has not. Federal courts and juries still have authority to determine issues of validity. There is no authority, however, to support the notion that an agency can overturn those determinations, because such actions violate the Reexamination Clause. Thus, the Board's decision in this particular case exceeds its constitutional authority and should be reversed.

⁵ Even if the IPR decision were found to have had only prospective effect, it would violate the Seventh Amendment. But where, as here, the decision can be used to upset a previous determination by a jury, the Seventh Amendment Reexamination Clause clearly prohibits contrary factual findings at least as to the defendant against whom the verdict was directed, as such a collateral attack on the jury's fact finding in that case would clearly be prohibited by the common law.

F. APPELLANT DID NOT WAIVE ITS CONSTITUTIONAL RIGHTS NOR WAIVE ITS RIGHT TO SEEK REDRESS FOR CONSTITUTIONAL VIOLATION

First, an administrative agency has no authority to consider constitutional challenges and decide constitutional issues such as the Reexamination Clause violations raised here.

Second, the issue was raised before the Board. Appellant put the Board on notice of the jury verdict in the case. *See* A718-728. Appellant raised the Board's constitutional violation of the Seventh Amendment's Reexamination Clause in its Request for Rehearing. In its Request, this issue was raised with sufficient specificity and clarity and in sufficient time for the Board's consideration. The Board nonetheless refused Personal Audio's Request for Rehearing finding that Appellant had waived its right to raise the constitutional violation because it "did not argue in its Response or at oral hearing that we were constrained to follow the jury verdict." A33.

Contrary to the Board's arguments, Appellant did not waive its right to seek redress for the Board's constitutional violations. The jury verdict and factual findings in the district court proceeding were timely submitted to the Board. The Board's constitutional violations occurred only after the Board issued its decision overturning the results of the jury verdict. Thus, Personal Audio timely raised its objection to the constitutional violation during its Request for Rehearing. By raising the constitutional violation together with the jury's factual findings in its

Request for Rehearing, Personal Audio sufficiently preserved the Board's error for judicial review.

Finally, the right to address the constitutional violation by the Board cannot be waived upon appeal to the Federal Circuit. As Circuit Judge Newman of this Court held, “[w]aiver is inapplicable to ‘significant questions of general impact or of great public concern.’ *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 256 F.3d 1323, 1345 (Fed. Cir. 2001) Constitutional principles are not required to be set aside merely because they were not raised in the administrative forum. *See Hormel v. Helvering*, 312 U.S. 552, 555-59 (1941) (courts of appeal have the discretion to consider issues not to consider issues not raised below “as justice may require”).” *In Re Construction Equipment*, 665 F.3d 1254, 1257-58 (Fed. Cir. 2011) (Newman, J., dissenting).

For these reasons, the Board legally erred in refusing to grant Personal Audio's Request for Rehearing and exceeded its constitutional authority by overturning the jury's factual determinations in violation of the Reexamination Clause of the Seventh Amendment.

VI. CONCLUSION

For the foregoing reasons, the Court should reverse the Board's final written decision cancelling claims 31-35 in favor of a finding of validity, or alternatively remanded so as to correct the errors of the Board.

Dated: December 28, 2015

Respectfully submitted,

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ADDENDUM

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Paper 41
Entered: April 10, 2014

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ELECTRONIC FRONTIER FOUNDATION
Petitioner,

v.

PERSONAL AUDIO, LLC
Patent Owner.

Case IPR2014-00070
Patent 8,112,504 B2

Before SHERIDAN K. SNEDDEN, TRENTON A. WARD, and
GREGG I. ANDERSON, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

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INTRODUCTION

On October 30, 2013, Electronic Frontier Foundation (“Petitioner”) filed a revised Petition requesting an *inter partes* review of claims 31–35 of U.S. Patent No. 8,112,504 B2 (Ex. 1001, “the ’504 patent”). Paper 6 (“Pet.”). On April 18, 2014, we granted the Petition and instituted trial for claims 31–35 of the ’504 patent on less than all of the grounds of unpatentability alleged in the Petition. Paper 21 (“Decision on Institution” or “Dec.”).

After institution of trial, Personal Audio, LLC (“Patent Owner”) filed a Patent Owner Response. Paper 30 (“PO Resp.”). Petitioner filed a Reply. Paper 34 (“Pet. Reply”).

An oral hearing was held on December 17, 2014. The transcript of the hearing has been entered into the record. Paper 40 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a).

A. Related Proceedings

Petitioner indicates the ’504 patent is involved in co-pending proceedings, including: (i) *Personal Audio, LLC v. CBS Corp.*, No. 2:13-cv-270 (E.D. Tex. Apr. 11, 2013); (ii) *Personal Audio, LLC v. NBC Universal Media, LLC*, No. 2:13-cv-271 (E.D. Tex. Apr. 11, 2013); (iii) *Personal Audio, LLC v. Ace Broadcasting Network, LLC*, No. 2:13-cv-14 (E.D. Tex. Jan. 7, 2013); (iv) *Personal Audio, LLC v. Howstuffworks.com*, No. 2:13-cv-15 (E.D. Tex. Apr. 10, 2013); (v) *Personal Audio, LLC v. Togi Entertainment, Inc.*, No. 2:13-cv-13 (E.D. Tex. Jan. 7, 2013); (vi) *Fox Networks Group, Inc. v. Personal Audio, LLC*, No. 1:13-cv-11794 (D. Mass.

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July 26, 2013); and (vii) *Personal Audio, LLC v. Fox Broadcasting Co.*, No. 2:13-cv-577 (E.D. Tex. Aug. 6, 2013). Pet. 1–2, Paper 28.

B. The '504 patent

The '504 patent broadly relates to a player for audio programming, which includes functions that allow the listener to control many aspects of the playback. Ex. 1001, 2:21–56. As relevant to the claims under consideration, the '504 patent relates to how audio program segments are distributed to client subscriber locations. Ex. 1001, Abstract.

Figure 1 of the '504 patent is reproduced below:

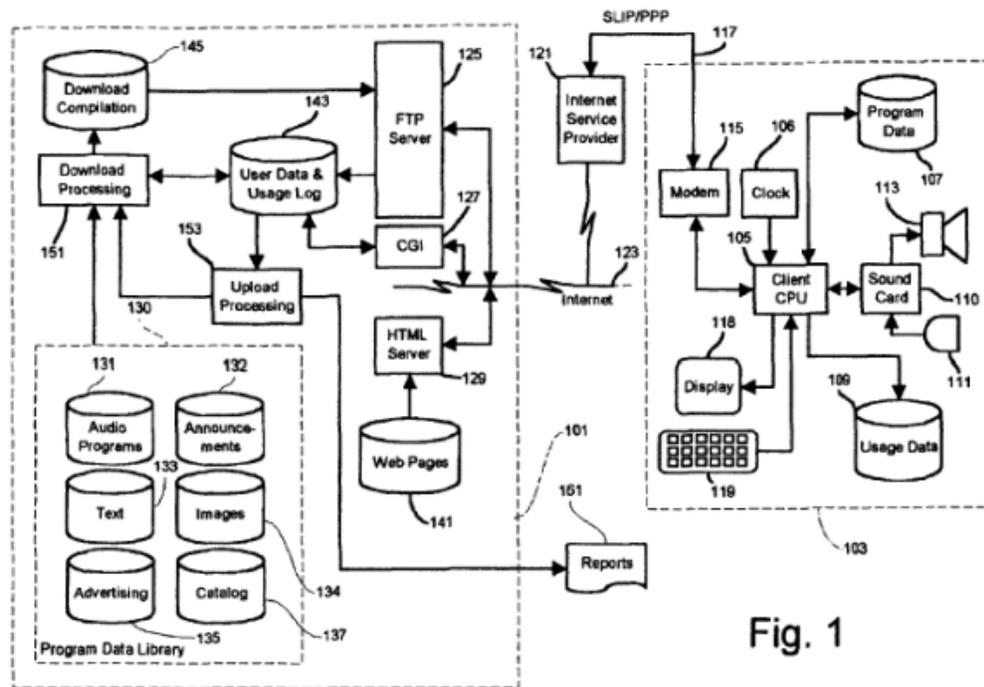


Fig. 1

Figure 1 is a block diagram of the invention that illustrates using the Internet to connect host computer 101 to audio player 103. Ex. 1001, 4:39–42. Host server 101 periodically transmits download compilation file 145 upon receiving a request from player 103. *Id.* at 6:60–62. The compilation file extracts data from library 130 based on the selections of the user as specified

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in the subscriber data and usage log database 143. *Id.* at 7:3–9. The file is placed in a predetermined FTP download file directory and assigned a filename known to the player. *Id.* at 6:62–64. Using clock 106, at a time determined by the player, a dial up connection is established via service provider 121 and the Internet to FTP server 125, and the download compilation is transferred to program data store 107 in the player. *Id.* at 6:64–7:1. Once downloaded, the user plays program data 107 using the functionality of the player. *Id.* at 4:44–60.

The invention includes the ability for the user to select a program segment, which may represent an episode in a series. Ex. 1001, 19:35–38. When a serialized sequence is requested, the host may download less than all of the episodes, when all are not yet available. *Id.* at 19:45–49. Episodes that have not issued yet may be selected. *Id.* at 20:64–21:3.

C. Illustrative Claim

Claim 31 is the only independent claim challenged and is reproduced below:

31. Apparatus for disseminating a series of episodes represented by media files via the Internet as said episodes become available, said apparatus comprising:

one or more data storage servers,

one or more communication interfaces connected to the Internet for receiving requests received from remotely located client devices, and for responding to each given one of said requests by downloading a data file identified by a URL specified by said given one of said requests to the requesting client device,

one or more processors coupled to said one or more data storage servers and to said one or more communications interfaces for:

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storing one or more media files representing each episode as said one or more media files become available, each of said one or more media files being stored at a storage location specified by a unique episode URL;

from time to time, as new episodes represented in said series of episodes become available, storing an updated version of a compilation file in one of said one or more data storage servers at a storage location identified by a predetermined URL, said updated version of said compilation file containing attribute data describing currently available episodes in said series of episodes, said attribute data for each given one of said currently available episodes including displayable text describing said given one of said currently available episodes and one or more episode URLs specifying the storage locations of one or more corresponding media files representing said given one of said episodes; and

employing one of said one or more communication interfaces to:

(a) receive a request from a requesting client device for the updated version of said compilation file located at said predetermined URL;

(b) download said updated version of said compilation file to said requesting client device; and

(c) thereafter receive and respond to a request from said requesting client device for one or more media files identified by one or more corresponding episode URLs included in the attribute data contained in said updated version of said compilation files.

D. Grounds Upon Which Trial Was Instituted

Inter partes review was instituted on two ground: (1) that claims 31–35 of the '504 patent were anticipated under 35 U.S.C.

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§ 102(a) by Patrick/CBC;¹ and (2) claims 31–35 would have been obvious under 35 U.S.C. § 103(a) over Compton/CNN.² Dec. 26.

ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 778 F.3d 1271, 1279–83 (Fed. Cir. 2015). If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). The terms also are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. “episode” (Claims 31–35)

Petitioner proposes “episode” be construed as “a program segment, represented by one or more media files, that is part of a series of related segments, e.g. a radio show or a newscast.” Pet. 11–12; Pet. Reply 8. Petitioner notes that the Specification describes an episode as a program segment that is part of a series (i.e., a sequence of related segments).

¹ Andrew S. Patrick, et al, *CBC Radio on the Internet: An Experiment in Convergence*, 21 CANADIAN J. OF COMM’N 1, 125-140 (1996)(“Patrick/CBC,” Ex. 1012).

² Charles L. Compton, *Internet CNN NEWSROOM: The Design of a Digital Video News Magazine*, Massachusetts Institute of Technology (Aug. 10, 1995)(“Compton/CNN,” Ex. 1022).

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Pet. 11, (citing Ex. 1001, 19:35–42). Petitioner also argues that “program segment[s]” may be combined with other “related program segments” to form a subsection of the overall compilation. Pet. Reply 6–8 (citing Ex. 1001, 29:28–34). Petitioner argues the related program segments disclosed in the ’504 patent include, among other things, world, national and local news. *Id.* (citing Ex. 1001, 30:18–25).

Patent Owner proposes that “episode” should be construed as “a program, represented by one or more media files, that is a part of a series.” PO Resp. 10 (emphasis omitted). Patent Owner notes that the ’504 patent references the episodes in a serialized sequence.” *Id.* at n. 3. Patent Owner also cites to the Specification as stating that:

. . . programming may include serialized sequences of programs. A given program segment may represent an episode in a series which is selected as a group by the subscriber.

Id. (citing Ex. 1001, 19:36–37; *see* Ex. 1001, 19:35–20:11; 20:57–21:3; 39:35–46; 43–45:67; 46:1–52:11). Notwithstanding the preceding, Patent Owner argues our final construction of “episode” is not determinative of the outcome here because “episode,” as well as “compilation file,” are “further qualified by the plain and ordinary meaning of other claim language,” which is dispositive. PO Resp. 11 (emphasis omitted).

To summarize the parties’ respective positions, Petitioner proposes that episodes are related program segments. Patent Owner argues that an episode is a program, not a segment thereof, that is part of a series. At the final hearing, Patent Owner argued the difference between episodes and segments is that episodes must be related to each other, while segments are not related. Tr. 22:14–21. However, Patent Owner acknowledges that the

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Specification states that a given “program segment may represent an episode in a series.” PO Resp. 10, n.3.

The Specification lists several forms of programming that a “subscriber may select.” *See* Ex. 1001, 19:38–42.³ In that portion of the Specification cited by both parties, the only mention of “episode” states that “[a] given *program segment* may represent an episode in a series which is selected as a group by the subscriber.” *Id.* at 19:36–38 (emphasis added).

In support of its construction, Patent Owner argued at the final hearing episodes are television programs. Tr. 25:14–18; 40:1–7. The Specification is not so limited and lists, among other things, news programming as part of the “overall program compilation.” Ex. 1001, 29:8–12; 30:18–25. We are not persuaded by Patent Owner’s argument that the Specification is limited to segments and the claims refer to episodes. *See* Tr. 26:16–20.

Neither party argued that the limitation “series of episodes,” as it appears in the preamble of challenged claim 31, has any different meaning from “episode” alone. We give “series,” and therefore, “series of episodes,” its ordinary and customary meaning in the context of our construction of “episode.”

Thus, we conclude that related program segments are included in the broadest reasonable interpretation of “episode.” We construe “episode” to mean “a program segment, represented by one or more media files, which is part of a series of related segments, e.g., a radio show or a newscast.”

³ Neither declarant proposes or argues claim construction for any claim term. *See* Declaration of Chris Schmandt (“Schmandt Declaration,” Ex. 1002 ¶¶ 11); Declaration of Peter C. Nelson (“Nelson Declaration,” Ex. 2004 ¶¶ 37–39).

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2. “*compilation file*” (Claims 31–35)

Petitioner proposes “compilation file” be construed as “any file that contains information about multiple episodes and satisfies the other claim requirements.” Pet. 12–13; Pet. Reply 8. Petitioner argues that the Specification describes the “compilation file” as simply an ordinary file that contains the information required by the claim. *Id.* (citing Ex. 1001, 6:60–64, 7:10–22).

Patent Owner contends that our construction of particular words or phrases is “not material” to Patent Owner’s arguments in its Response. PO Resp. 11. Rather, the words or phrases, particularly “compilation file,” are “further qualified by the plain and ordinary meaning of other claim language.” *Id.*(emphasis omitted). As a result of the preceding, Patent Owner has no proposed construction for “compilation file.”

In our Decision on Institution we preliminarily construed compilation file as “a file that contains episode information.” Dec. 8. This construction was supported by, among other things, the Specification, which describes the compilation file as “one or more subscriber and session specific files which contain the identification of separately stored sharable files.” *Id.* (citing Ex. 1001, 7:10–13). Episode information in the compilation file of claim 31, which states the “compilation file contain[s] . . . attribute data describing currently available episodes in said series of episodes.”

At the final hearing, Patent Owner objected to our preliminary construction because it included the term “episode,” but did not articulate any reason for the objection to the inclusion of episode. Tr. 32:10–14. Patent Owner argues additionally that the cited references do not include a compilation file at all. Tr. 32:15–22. However, Patent Owner does not

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make any specific argument regarding how we should construe “compilation file.” Instead, Patent Owner’s argument relies on arguments relating to its proposed construction of “episode.” Tr. 33:3–34:23.

As discussed above, we also have considered the claim language, which Patent Owner argues qualifies the construction of compilation file. PO Resp. 11. Claim 31 recites, in pertinent part, “storing an *updated version of a compilation file* in one of said one or more data storage servers at a storage location identified by a predetermined URL.”⁴ Claim 31 (emphasis added). Patent Owner contends that the “updated compilation file” includes information from previous compilation files. Tr. 46:17–21. As used in claim 31, however, “updated” does modify “compilation file,” but rather it modifies “version.” The meaning of “updated” does not require express construction.

Thus, we determine the broadest reasonable interpretation of “compilation file” is “a file that contains episode information.”

3. “*media file*” (*Claims 31–35*)

Petitioner proposes that “media file” be construed as “a file with content that can be reproduced as video, audio, and/or text.” Pet. 13; Pet. Reply 9. Petitioner points to claims 32 and 33 as reciting that the media file includes “digital compressed audio” and/or “text data.” *Id.* (citing Ex. 1001, claims 32–33). Patent Owner does not propose a meaning for the term and does not object to our preliminary construction in the Decision on Institution. *See* PO Resp. 9–11.

⁴ Claim 1, which is not challenged here, also references the “current version” of a compilation file.

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The Specification does not define or describe the term “media files” beyond the recitation of the term in the claims. The customary and ordinary meaning of “media” is consistent with Petitioner’s proposed construction of “media files.”

Thus, we determine the broadest reasonable interpretation of “media files” is “a file with content that can be reproduced as video, audio, and/or text.”

B. Obvious over Compton/CNN (Claims 31–35)

Petitioner contends that claims 31–35 of the ’504 patent are obvious under 35 U.S.C. § 103 over Compton/CNN (Ex. 1022). Pet. 16, 45–59. To support this position, Petitioner presents the Schmandt Declaration. Ex. 1002 ¶¶ 72–85.

1. Compton/CNN Overview

Compton/CNN describes the design of a digital video newsroom based on the video program CNN NEWSROOM.⁵ Ex. 1022, Abstract. Compton/CNN describes that the CNN NEWSROOM uses MPEG digital video and is distributed via the World Wide Web on the Internet. *Id.*

CNN NEWSROOM is disclosed as being distributed via cable television systems as well as directly to schools via satellite. Ex. 1022, 11.⁶ Compton/CNN describes that an important aspect of the Internet deployment of CNN NEWSROOM is the development of a searchable digital library of

⁵ Exhibit 1022 also uses “CNN Internet NEWSROOM,” “Internet CNN NEWSROOM,” and “Internet NEWSROOM.” We generally will refer to these disclosed video programs as “CNN NEWSROOM.”

⁶ Page references are to the actual page numbers of Exhibit 1022 and not to Petitioner’s Exhibit pages.

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CNN NEWSROOM programs and segments. *Id.* at 14. CNN NEWSROOM is disclosed as being archived for six months. *Id.* at 15.

Figure 1 of Compton/CNN is reproduced below.

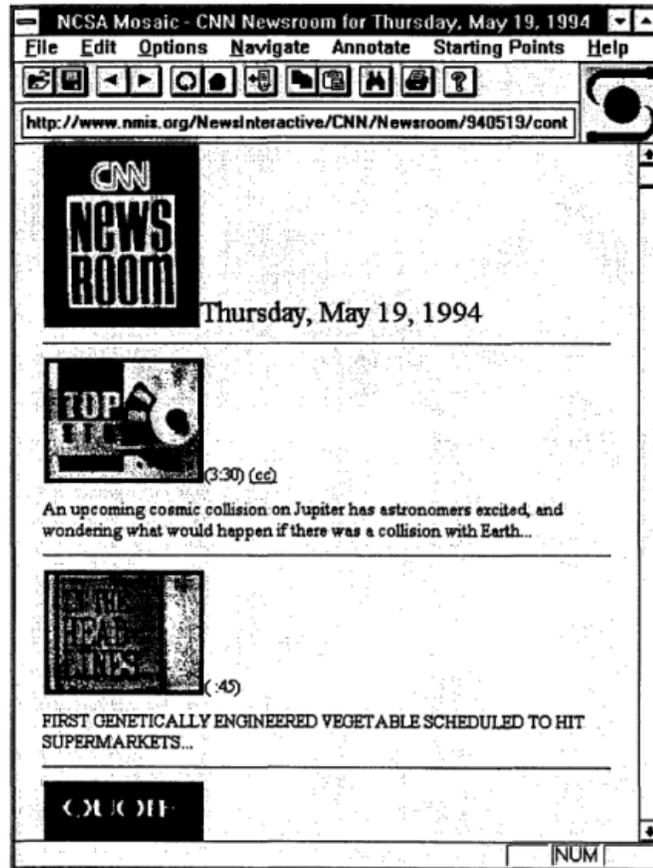


Figure 1: CNN NEWSROOM Video Magazine

Figure 1 shows the Table of Contents for a particular day's programming. Ex. 1022, 14. Figure 1 further shows the Table of Contents as an HTML document that consists of a short summary and an icon or title for each segment of the program, where a segment corresponds to a single news story. *Id.*

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Figure 6 of Compton/CNN is reproduced below.

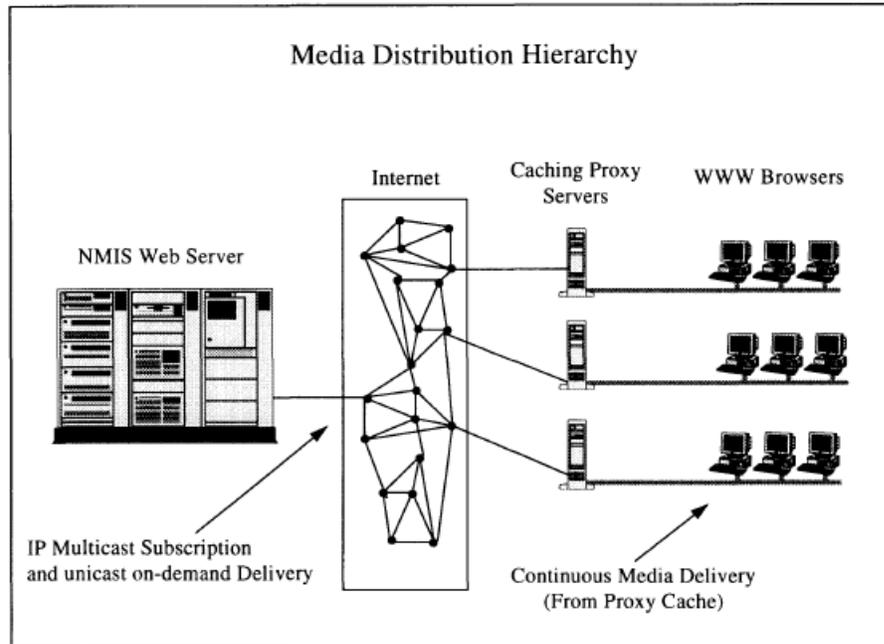


Figure 6: Media Distribution Hierarchy

Figure 6 illustrates a hardware hierarchy for network video distribution. Ex. 1022, 23–24. Caching proxy servers store video content. *Id.* Only one caching server is required for Internet connectivity. *Id.* at 23.

Ultimately, video is delivered over the Internet to the subscribing caching servers for display. Ex. 1022, 25. The programming includes past episodes of other news programs, sitcoms, and soap operas. *Id.* at 29.

2. *Claims 31–35 as Obvious over Compton/CNN*

We begin our obviousness analysis by determining the level of ordinary skill in the art. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007)(citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). At the final hearing Patent Owner relied on the Nelson Declaration to argue the level of ordinary skill is not a “high level.” Tr. 29:1–12. The Nelson Declaration says the level of ordinary skill is an “undergraduate degree in

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computer science or a few years' experience in working with web sites and programming.” Ex. 2004 ¶ 34. We find credible the Nelson Declaration's testimony that at the time the invention was conceived, 1994–1996, web developers did not necessarily have formal training. *Id.* Petitioner agrees with Patent Owner's position. Tr. 64:21–65:2. Thus, we adopt the level of ordinary skill proposed by Patent Owner.

Petitioner contends the disputed limitations of claim 31 are taught by Compton/CNN specifically including: (1) episodes; (2) an updated compilation file; and (3) a “predetermined URL” for the compilation file. *See* Pet. Reply 1. Patent Owner statement of the issues is very similar, i.e., that neither Compton/CNN or Patrick/CBC (discussed below) disclose claim limitations related to new episodes, updating the compilation file, and a predetermined URL for the compilation file. PO Resp. 46–47 (citing Ex. 2004 ¶¶ 18, 21, 56, 61, 63).

We first address the limitations both parties find to be in dispute. To the extent not addressed in our analysis, Patent Owner's arguments that other claim 31 limitations or dependent claim limitations are not shown will be addressed separately. *See* PO Resp. 35–37; Ex. 2004 ¶¶ 51–63.

a. Whether Compton/CNN teaches “episodes”

Petitioner argues CNN Newsroom describes a system for distributing a “video magazine” via the Internet. Pet. 53 (citing Ex. 1022, 13). Further, the video broadcast each day by CNN Newsroom is broken out into segments that each “corresponds to a single news story.” *Id.* (citing Ex. 1022 at 14). Compton/CNN teaches that the segments were encoded in MPEG-1 media files. *Id.* (citing Ex. 1022 at 7). Petitioner notes that Compton/CNN explains that the same system could be used for “any other

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program for which users might want to be able to see past episodes (i.e., other news programs, sitcoms, soap operas . . . []” *Id.* (citing Ex. 1022 at 29).

Petitioner argues that the “displayable text” in the Table of Contents describes the “episode,” i.e., segment. Pet. 56, Pet. Reply 6. Petitioner contends the Table of Contents includes URLs specifying media files representing the “episode” which can be downloaded. *Id.* (citing Ex. 1002 ¶¶ 24–33; *see also* Ex. 1022 at 25 (user clicking on a link an entire MPEG file is downloaded to user’s hard disk)).

Petitioner argues that testimony by Patent Owner’s declarant, Dr. Nelson, at his deposition (Ex. 1031), supports its position that Compton/CNN teaches “episodes.” Pet. Reply 6. Specifically, Dr. Nelson, at his deposition, acknowledges that, under our construction of “episode,” Compton/CNN Figure 1 discloses “episodes.” *Id.* (citing Ex. 1031, 88:14–24).

Patent Owner’s opposition to a determination that “episodes” are not disclosed in Figure 1 of Compton/CNN relies on our accepting its construction of “episode.” As discussed above, Patent Owner argues “episode” should be construed as “a program, represented by one or more media files, that is a part of a series.” PO Resp. 10 (emphasis omitted). Thus, based on its proposed construction that an episode is part of a “series,” Patent Owner contends the news stories of Figure 1 of Compton/CNN are “not different episodes but rather part of the single May 19, 1994 episode.” *Id.* at 38. Patent Owner also argues the news segments are neither a series nor are they a program. *Id.* at 38–39.

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Our construction of “episode,” however, leads us to reject Patent Owner’s argument that episodes must be either a program or in a given order. *See* Tr. 39:24–40:7. Nor are we persuaded that a theme between episodes is required. Tr. 38:6–11. As we noted in our construction analysis, the Specification specifically lists new programming as being part of a compilation file of “episodes.” Ex. 1001, 30:18–25.

Additionally, Patent Owner argues the May 19 news segments disclosed in Compton/CNN are not “updated,” as claim 31 requires. *Id.* at 39. This argument relates to the “updated version of a compilation file” limitation, which we discuss next.

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, Compton/CNN discloses “episodes” as claimed.

b. Whether Compton/CNN teaches an “updated version of a compilation file”

Claim 31 recites that a “compilation file” is updated from “time to time, as new episodes represented in said series of episodes become available.” As already discussed, the Table of Contents of Compton/CNN (*see* Figure 1 above) is relied on by Petitioner to show a “compilation file.” Pet. 55 (citing Ex. 1002 ¶ 78). Petitioner argues that the “displayable text” in the Table of Contents describes the “episode,” i.e., segment. *Id.* at 56. Petitioner contends it would have been obvious to update the compilation file as new segments are produced. *Id.* at 50 (citing Ex. 1002 ¶ 78; 1022, 13–14).

In the first instance, Patent Owner argues the Table of Contents of Compton/CNN is not a compilation file at all because it “described one

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episode only.” PO Resp. 40. Based on our construction of “episode” and “compilation file,” there are two news segments, i.e., “episodes,” identified in the Table of Contents of Compton/CNN. Accordingly, we disagree with Patent Owner’s premise, that the two news segments, i.e., “episodes,” identified in the Table of Contents are only a single episode. Furthermore, we are persuaded that the Table of Contents is a “compilation file” as we have construed the term, i.e., “a file that contains episode information.”

Additionally, Patent Owner argues the Table of Contents page is devoted to a single day, May 19, 1994, and, therefore, is “not **updated as new episodes become available.**” PO Resp. 39 (emphasis in original). Patent Owner contends each day a different Table of Contents page at a different URL is created. *Id.*

Petitioner responds that “the fact that a contents.html file is stored at a different URL for each day does not imply that the contents.html file is not ‘updated.’” Pet. Reply 3. Petitioner contends the program “contents.c” runs each day and a new version of the contents.html file “describes the news segments that became available *that day.*” *Id.* (citing Ex. 1022, Fig. 3,18–19, 13–14)(emphasis in original). . Petitioner again cites to Dr.Nelson’s deposition for testimony that Compton/CNN describes updating the “contents.html” file. *Id.* (citing Ex. 1031, 91:15–18; *see* 90:10–91:14).

As Petitioner argues, the updated “compilation file” limitation is met if the “compilation file” is overwritten. Pet. Reply 4. Patent Owner argued at the final hearing that updating required some information be retained from the previous compilation file. Tr. 46:17–21. Patent Owner’s basis for this position is that the Table of Contents contains a single “episode,” and not a series of episodes or “[a]ll of the episodes required for a compilation.”

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Tr.47:15–22, 48:18–23. We have determined already that the Table of Contents includes more than one segment, i.e., “episodes.” There is no claim language limiting how the updating of the compilation file occurs. Claim 31 states that as “new episodes” become available, an “updated version of the compilation file” is created including the new episodes. Ex.1001, 50:52–53.

We have reviewed the Nelson Declaration, which states that Compton/CNN discloses “HTML that was present at a single point” and does not include “disclosure that the HTML was updated.” Ex. 2004 ¶ 52. This is the same contention rejected above, that the Table of Contents, i.e., the “HTML . . . at a single point,” must be updated with new information on an ongoing basis. Other testimony from the Nelson Declaration relating to updated compilation files does not persuade us differently. *See, e.g.*, Ex. 2004 ¶ 61.

Because the claim language does not include a limitation that would prohibit creating a new file on a daily basis from being an update, we find that Compton/CNN teaches an updated compilation file. The episodes listed in one compilation file for one day which are updated for the next day are related segments concerning the news. *See* Ex. 1022, 10. The new episode is thus listed in the updated compilation file, as required by claim 31.

Even if we accept Patent Owner’s argument regarding updating, we agree with Petitioner that it would have been obvious to update the Table of contents by “amendment” as opposed to creating a new file on a daily basis. Pet. Reply 4. According to the Schmandt Declaration, the “URL is partially visible in Figure 1 – the table of contents was accessed at:

[http://www.nmis.org/NewsInteractive/CNN/Newsroom/940519/cont\[ents.ht](http://www.nmis.org/NewsInteractive/CNN/Newsroom/940519/cont[ents.ht)

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ml].” Ex. 1002 ¶ 78. “[I]t would require only a trivial modification to use the described system to create an updated table of contents HTML file at a single predetermined URL, such as ‘todaysnews.html.’” *Id.* ¶ 79. We are persuaded by a preponderance of the evidence that Petitioner’s rationale for obviousness is supported by rational underpinnings. *KSR* 550 U.S. at 418. For example, Compton/CNN already archives past programming on the server, making that programming separately accessible to users. *See* Ex. 1022, 15. We agree that making all the programming available at a single URL would have been a “trivial modification” obvious to a person of ordinary skill in the art. *See, e.g.,* Ex. 1002 ¶ 79.

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, Compton/CNN discloses an updated “compilation file” as claimed.

c. Whether Compton/CNN includes a “predetermined URL”

Compton/CNN discloses the automatic generation of a WWW user interface for daily content. Ex. 1022, 7. Further, Compton/CNN captures video using the FTP protocol and delivers the files to the server. *Id.* at 22. Compton/CNN discloses links to the listed content in its teaching that “[c]ustom software agents have been developed to automatically generate the WWW user interface for the service based on daily content.” *Id.* at 7. Compton/CNN goes on to state “[t]his means that results can be delivered to any host on the Internet supporting the ftp protocol.” *Id.* at 22. Petitioner relies upon these disclosures and the testimony in the Schmandt Declaration to argue links in the Table of Contents would be understood to be unique episode URLs. Pet. 55 (citing Ex. 1002 ¶ 77).

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Patent Owner again contends that the Table of Contents of Compton/CNN discloses a single episode only and not a series of episodes. PO Resp. 39. The Nelson Declaration is cited for support that Compton/CNN does not disclose “a single predetermined URL where a user can access multiple episodes of a series of episodes at a single place.” *Id.* at 47 (citing Ex. 2004 ¶¶ 58–59). This argument is not persuasive for reasons already discussed. Specifically, the Table of Contents includes information about at least two episodes.

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, Compton/CNN discloses a “predetermined URL” as claimed.

d. Additional Claim Limitations

Patent Owner argues other limitations of claim 31 and the dependent claims are not taught by Compton/CNN. PO Resp. 35–37; Ex. 2004 ¶¶ 51–63. Patent Owner provides a claim chart reproducing in bold claim limitations it contends are not disclosed or suggested by Compton/CNN. PO Resp. 35–37; Ex. 2004 ¶¶ 51–63. The claim chart is unpersuasive that any claim limitation is missing.

Patent Owner does not argue the computer components claimed, i.e., servers, communications interfaces, processors, or requesting client device, are not disclosed to a person of ordinary skill. *See* Tr. 29:13–30:2; 42:7–44:4. The Schmandt Declaration supports the conclusion that the presence of such components would be trivial to the person of ordinary skill in the art.

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Ex. 1002 ¶ 47 (disclosure of a “server . . . necessarily would have included processors and a communication interface”).⁷

Patent Owner additionally cites to the Nelson Declaration for its contention that Compton/CNN lacks disclosure of certain claim limitations. PO Resp. 45–47. Patent Owner’s Response states that the Nelson Declaration “[i]n essence” supports the Response. *Id.* at 46. As specifically pertinent to Compton/CNN, Patent Owner restates the argument we rejected above that “at most, Compton/CNN discloses HTML that was present at a single point.” *Id.* at 47 (citing Ex. 2004 ¶¶ 52, 58–59).

We have reviewed paragraphs 51 through 63 of the Nelson Declaration. *See* Ex. 2004 ¶¶ 51–63. These paragraphs discuss Compton/CNN, alleging limitations discussed previously here are not present and alleging the Schmandt Declaration is conclusory regarding obviousness. *Id.* The Nelson Declaration presents no new arguments for our consideration regarding claim 31.

e. Dependent Claims 32–35

We also have reviewed the Petitioner’s argument and evidence and claim charts in connection with dependent claims 32–35. Pet. 51–53, 57–59. The argument is supported by the Schmandt Declaration. Ex. 1002 ¶¶ 82–85.

Patent Owner goes through the limitations of claims 32–35 in the Examiner’s Reasons for Allowance section discussed immediately below. PO Resp. 45. Patent Owner makes no specific argument regarding the

⁷ Although this testimony relates specifically to the Geek of the Week references (Exs. 1008–1011, 1019–1020, and 1023–1028), on which we did not institute trial, we credit it for the discussion of basic Internet hardware components.

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dependent claims other than stating that the elements argued as not taught by Compton/CNN in connection with claim 31 are likewise missing from the dependent claims 32–35. *Id.* at 44. This argument is unpersuasive for reasons discussed above in connection with claim 31

f. Examiner's Reasons for Allowance

Patent Owner contends the grounds under review do not address the Examiner's Reasons for Allowance. PO Resp. 43–45. The Reasons for Allowance states, in part:

The prior art does not provide for nor suggest for updating/downloading current version of a compilation file containing attribute data describing episodes and including one or more episode URLs identifying one or more corresponding media files representing said given one of said episodes.

PO Resp. 44 (*see* Prosecution History of '504 patent, Ex. 2002, 2) (emphasis omitted).

We are not bound by an Examiner's determinations in the prosecution of a patent in an *inter partes* review proceeding. To the extent Patent Owner points out that the Examiner had reasons for allowing the claims, we acknowledge those reasons. The record here does not disclose that the Examiner was considering the Compton/CNN reference when drafting the Reasons for Allowance.

3. Conclusion Regarding Claims 31–35 as Obvious over Compton/CNN

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, that claims 31–35 would have been obvious under 35 U.S.C. § 103(a) over Compton/CNN.

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C. Claims 31–35 as Anticipated by Patrick/CBC

Petitioner alleges Patrick/CBC is prior art anticipating claims 31–35 of the '504 patent under 35 U.S.C. § 102(a).⁸ Pet. 16, 35–45. Petitioner relies on the Schmandt Declaration to support its position. Ex. 1002 ¶¶ 58–71. Petitioner's supporting argument for anticipation relies heavily on the Schmandt Declaration and what a person of ordinary skill would understand from what is disclosed in the four corners of the Patrick/CBC reference. *See, e.g.*, Ex. 1002 ¶¶ 66–67; *see* Tr. 17:17–20.

Patent Owner contends that Petitioner must rely on inherency to find that Patrick/CBC discloses certain claim limitations. PO Resp. 26. Patent Owner's statement is based on Petitioner's reliance on the Schmandt Declaration for what a person of ordinary skill would understand from Patrick/CBC, as well as our analysis in the Decision on Institution. *Id.*

In order for a prior art reference to serve as an anticipatory reference, it must disclose every limitation of the claimed invention, either explicitly or inherently. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). We must analyze prior art references as a skilled artisan would. *See Scripps Clinic & Res. Found. v. Genentech, Inc.*, 927 F.2d 1565, 1576 (Fed. Cir. 1991), *overruled on other grounds by Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282 (Fed. Cir. 2009) (to anticipate, “[t]here must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention”). As the Federal Circuit has held:

⁸ The '504 patent was filed prior to the effective date of § 102, as amended by the AIA—March 16, 2013—and is governed by the pre-AIA version of § 102(a). *See* AIA § 3(n)(1).

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This modest flexibility in the rule that “anticipation” requires that every element of the claims appear in a single reference accommodates situations where the common knowledge of technologists is not recorded in the reference; that is, where technological facts are known to those in the field of the invention, albeit not known to judges. It is not, however, a substitute for determination of patentability in terms of § 103.

Cont'l Can Co. USA v. Monsanto Co., 948 F.2d 1264, 1268–69 (Fed. Cir. 1991). A claim limitation is inherent if it is necessarily present in the prior art, not merely probably or possibly present. *Akami Techs., Inc. v. Cable & Wireless*, 344 F.3d 1186, 1192 (Fed. Cir. 2003).

As with Compton/CNN, with respect to Patrick/CBC, the parties focus on claim limitations related to episodes, updating the compilation file, and a predetermined URL for the compilation file. Pet. Reply 1: PO Resp. 46–47 (citing Ex. 2004 ¶¶ 18, 21, 56, 61, 63).

1. Patrick/CBC Overview

Patrick/CBC discloses an experimental trial to determine, among other things, if there was any demand for regular radio programming distributed as digital audio files over the Internet. Ex. 1012, Abstract. Patrick/CBC alleges that the trial is “the first time that audio programs produced for traditional radio broadcasts have been made available on the Internet on a regular basis.” *Id.* at 2.⁹ CBC Radio programming was stored on a server and the resulting program files were made available using standard Internet server software. *Id.* at 2–3.

⁹ Page references are to the actual page numbers of Exhibit 1012, and not Petitioner’s Exhibit pages.

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a. Whether Patrick/CBC discloses “episodes”

Patrick/CBC discloses radio programming on the Internet, including *Quirks & Quarks*, a science magazine show. Ex. 1012, 5. The show was updated regularly on the server. *Id.* Petitioner cites to the preceding disclosure to meet the “episode” limitation. Pet. 40 (citing Ex. 1002 ¶ 60). Patent Owner makes no specific challenge that Patrick/CBC discloses episodes, focusing instead on the “compilation file” and “predetermined URL” limitations. PO Resp. 15–16.

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, that Patrick/CBC discloses “episodes” as claimed.

b. Whether or not Patrick/CBC discloses an “updated version of a compilation file”

Petitioner cites generally to a server which automatically is updated with new programming. Pet. 41–42 (citing Ex. 1012, 3; *see* Ex. 1012, 5). For example, “the *Quirks & Quarks* science magazine show was recorded each week, broken down into its component parts, and made available on the server.” *Id.* at 42 (citing Ex. 1012, 7). Further, “users could select those portions of the show that interested them and download the appropriate audio file.” Pet. Reply 11–12 (citing Ex. 1012, 5). Petitioner cites this disclosure as showing the compilation file. Pet. 42, Pet. Reply 11–12. The Schmandt Declaration cites to Patrick/CBC’s disclosure that radio shows are stored on a server in an HTML file at <ftp://www.radio.cbc.ca> or <http://www.radio.cbc.ca/>. Ex. 1002 ¶ 64. Based on these disclosures from Patrick/CBC, the Schmandt Declaration concludes “[a]n ordinary artisan would understand this to mean an HTML file (i.e. a compilation file).” *Id.*

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Given our construction of “compilation file” as “a file that contains episode information,” we agree that a person of ordinary skill would conclude that Patrick/CBC necessarily discloses a “compilation file.” Pet. 42 (citing Ex. 1002 ¶¶ 63–66). Patent Owner’s declarant, in the Nelson Declaration, provides no analysis as to why Patrick/CBC does not disclose a “compilation file.” See Ex. 2004 ¶¶ 49–57. More importantly, none of the testimony questions whether a person of ordinary skill would understand the disclosure of Patrick/CBC to meet the recited limitation necessarily.

Claim 31 specifically recites that the updated “compilation file” includes “attribute data for each given one of said currently available episodes including *displayable text* describing said given one of said currently available episodes.” (Emphasis added). Patent Owner contends that Patrick/CBC does not show the “displayable text” limitation. PO Resp. 16. At the final hearing Petitioner argued, however, that a person of ordinary skill in the art would recognize that a compilation file is present, even though no “picture” of such a compilation file exists. Tr. 17:1–22.

We have reviewed the Schmandt Declaration and are persuaded that a person of ordinary skill would conclude that Patrick/CBC necessarily includes “displayable text” associated with the “compilation file.” We credit the testimony in the Schmandt Declaration that Patrick/CBC discloses that “[e]ach show has a menu attached to it to describe the contents of the various parts.” Ex. 1002 ¶ 64 (citing Ex. 1012, 7). Users would then “select” recordings that were of interest to them. *Id.* (citing Ex. 1012, 3). Although Patrick/CBC does not state expressly that the menu includes “displayable text,” the menu selection lists the programs the user may select and necessarily is “displayed” so the user may select the programming.

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Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, Patrick/CBC discloses updating the “compilation file” as claimed.

c. Whether Patrick/CBC discloses a “predetermined URL”

The Schmandt Declaration again cites to the disclosure that the server could be accessed at ftp://www.radio.cbc.ca or http://www.radio.cbc.ca/ as disclosing a “predetermined URL.” Ex. 1002 ¶ 64 (citing Ex. 1012, 7). The Schmandt Declaration concludes an “ordinary artisan would understand this to mean an HTML file (i.e. a compilation file) with links to the episodes was stored at a predetermined URL.” *Id.* As noted above, the Nelson Declaration does not contradict this testimony.

Patent Owner argues that Mr. Schmandt admitted in his deposition that he did not know the specific URL of the “compilation file,” but it must exist for users to select audio programming. PO Resp. 19–20 (citing Ex. 2002, 13:19–24). Patent Owner acknowledges one of ordinary skill could “perhaps” infer program segments include URLs. These arguments, however, tend to support the Schmandt Declaration that URLs are present in Patrick/CBC for the selected programming.

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, that Patrick/CBC discloses “predetermined URLs” for the selected programming.

d. Enablement

The Nelson Declaration asserts Patrick/CBC is not enabled because code is not disclosed to effect its functionality. Ex. 2004 ¶ 55. Dr. Nelson at his deposition acknowledged that creating and updating an HTML website was within the level of ordinary skill. *See* Pet. Reply 13 (citing Ex. 1031,

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77:19–82:10). Thus, we do not agree that code disclosure is required for enablement.

f. Dependent Claims 32–35

We also have reviewed the Petitioner’s argument and evidence and claim charts in connection with dependent claims 32–35. Pet. 44–45; 57–59. The argument is supported by the Schmandt Declaration. Ex. 1002 ¶¶ 68–71. Patent Owner makes no specific argument regarding the dependent claims other than stating the elements argued as not disclosed in Patrick/CBC. PO Resp. 17–19.

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, Patrick/CBC discloses the limitations of dependent claims 32–35.

3. Conclusion Regarding Claims 31–35 as Anticipated by Patrick/CBC

Petitioner has shown sufficient evidence to establish, by a preponderance of the evidence, that claims 31–35 are anticipated under 35 U.S.C. § 102(a) by Patrick/CBC.

CONCLUSION

Petitioner has shown by a preponderance of the evidence that claims 31–35 would have been obvious over Compton/CNN and anticipated by Patrick/CBC.

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ORDER

For the reasons given, it is

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 31–35 of U.S. Patent No. 8,112,504 B2 are unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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Paper 45
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ELECTRONIC FRONTIER FOUNDATION
Petitioner,

v.

PERSONAL AUDIO, LLC
Patent Owner.

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Before SHERIDAN K. SNEDDEN, TRENTON A. WARD, and
GREGG I. ANDERSON, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

DECISION
Request for Rehearing
37 CFR § 42.71(d)

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INTRODUCTION

On October 30, 2013, Electronic Frontier Foundation (“Petitioner”) filed a revised Petition requesting an *inter partes* review of claims 31–35 of U.S. Patent No. 8,112,504 B2 (Ex. 1001, “the ’504 patent”). Paper 6 (“Pet.”). On April 18, 2014, we granted the Petition and instituted trial for claims 31–35 of the ’504 patent on less than all of the grounds of unpatentability alleged in the Petition. Paper 21 (“Decision on Institution” or “Dec.”). After institution of trial, Personal Audio, LLC (“Patent Owner”) filed a Patent Owner Response. Paper 30 (“PO Resp.”). Petitioner filed a Reply. Paper 34 (“Pet. Reply”).

An oral hearing was held on December 17, 2014. The transcript of the hearing has been entered into the record. Paper 40 (“Tr.”). In our Final Written Decision entered April 10, 2015 (Paper 41, “Final Decision” or “Final Dec.”), we determined that Petitioner had shown by a preponderance of the evidence that claims 31–35 of the ’504 patent are unpatentable because: (1) they would have been obvious under 35 U.S.C. § 103 over Compton/CNN (Ex. 1022); and (2) they are anticipated under 35 U.S.C. § 102(a) by Patrick/CBC (Ex. 1012). Final Dec. 28.

Patent Owner requests rehearing of our Final Decision (Paper 43, “Request” or “Req. Reh’g”). Patent Owner’s grounds for rehearing are that the Final Decision: (1) violates its Seventh Amendment right to trial by jury (Req. Reh’g. 2–8); (2) violates the Due Process Clause (Req. Reh’g. 8–9); and (3) permitted impermissibly an argument allegedly first made by Petitioner at the oral hearing relating to an “updated version” of “compilation file” (Req. Reh’g. 10–12).

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For at least the reasons that follow, Patent Owner's Request for Rehearing is denied.

ANALYSIS

A. Standard Applied

The applicable standard for a request for rehearing is set forth in 37 C.F.R. § 42.71(d), which provides in relevant part:

A party dissatisfied with a decision may file a request for rehearing, without prior authorization from the Board. The burden of showing a decision should be modified lies with the party challenging the decision. The request must specifically identify all matters the party believes the Board misapprehended or overlooked, and the place where each matter was previously addressed in a motion, opposition, or a reply.

B. Patent Owner's Arguments

1. Right to Trial by Jury

Patent Owner contends our Final Decision violated its right to trial by jury as protected by the Seventh Amendment. Req. Reh'g. 2–8. This contention is based on a verdict by a jury in the Eastern District of Texas (“District Court”) which found that Compton/CNN did not render obvious or anticipate any of claims 31–35 of the '504 patent. *Id.* at 4. Patent Owner alleges it “submitted the jury’s factual findings to the PTAB” and our Final Decision overturned those factual findings. *Id.* In addition, Patent Owner argues our record “lacked substantial evidence that it would have been obvious to modify the prior art, such as Compton.” *Id.* at 6. Arguing the

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facts from the District Court, Patent Owner cites to a transcript of the testimony from the trial. *Id.* at 6–7 (citing Ex. 2005¹).

Patent Owner did not argue in its Response or at oral hearing that we were constrained to follow the jury verdict. Neither did Patent Owner argue that our *inter partes* review of the '504 patent violated Patent Owner's right to trial by jury.

In sum, the right to trial by jury argument was not made during the trial. Patent Owner's cited evidence in support of the Request was never made of record. A request for rehearing is not an opportunity to present new arguments or evidence that could have been presented in the Response. 37 C.F.R. § 42.71(d). For at least these reasons, Patent Owner has failed to show we misapprehended or overlooked any evidence or argument of record relating to its Seventh Amendment argument.

2. *Due Process*

Patent Owner next argues its rights under the Due Process Clause are violated by the *inter partes* review process. Req. Reh'g. 8–9. Patent Owner contends due process is not afforded it because, among other things, the IPR process generally lacks “procedural safeguards,” like those provided by the Federal Rules of Civil Procedure. *Id.* at 4.

Regardless, Patent Owner makes no argument specific to the current case. Rather, its argument is directed generally to the *inter partes* review process. Again, this argument was not presented during the trial of this case. The Request is devoid of any allegation that we misapprehended or overlooked any argument or evidence relating to the due process argument.

¹ District Court transcript, Case 2:13-cv-270, Rodney Gilstrap, United States District Judge.

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3. *Construction of “updated version of a compilation file”*

Patent Owner argues that our construction of “updated version” of a “compilation file” was wrong. Req. Reh’g. 10. First, it disputes our adoption in the Final Decision of our preliminary construction of “compilation file” from the Institution Decision (“Inst. Dec.,” Paper 21, 8). *Id.* Second, it argues we adopted an argument in the Final Decision presented by Petitioner that was asserted for the first time at the oral hearing. *Id.* (citing Tr., 7–9).

The Final Decision construed “compilation file” as “a file that contains episode information.” Final Dec. 10. The construction was the same as was determined in the Institution Decision. Inst. Dec. 8. At the oral hearing, Patent Owner did not propose a definition for “compilation file” objecting only to inclusion of the word “episode” in the construction. Final Dec. 9 (citing Tr., 32:10–14). The phrase in claim 1 “updated version of a compilation file” was also analyzed in the Final Decision. Final Dec. 25–27.

Patent Owner’s argues generally that our construction contradicts the ordinary meaning and “violates the procedural safeguards” set forth in the rules relating to *inter partes* review. Req. Reh’g. 10. That Patent Owner disagrees with our analysis is not a basis for a request for rehearing.

Patent Owner cites to the oral hearing transcript where an argument was made by Petitioner that the contents.html file of Compton/CNN is the claim limitation for “updated version of a compilation file.” Req. Reh’g. 11 (citing Tr., 7–9). However, Petitioner made the same argument in its Petitioner’s Reply, responding to Patent Owner’s Response at page 39. *See* Pet. Reply 3–5. The argument made was proper rebuttal and Patent Owner’s

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contention that the argument was not presented previously is incorrect and does not establish a basis for rehearing.

CONCLUSION

Patent Owner has not carried its burden of demonstrating that our Final Decision determining that claims 31–35 of the '504 patent are unpatentable under 35 U.S.C. §§ 102 or 103 misapprehended or overlooked any matters or that the Board abused its discretion. 37 C.F.R. § 42.71(d).

For the foregoing reasons, it is

ORDERED that Patent Owner's Request for Rehearing is *denied*.

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Documents

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1 2 3 4 5 Next

Name	Type	Exhibit/Paper Number	Filing Date	Filing Party	Availability
Power of Attorney	Power of Attorney	3	10/16/2013	Petitioner	Public
Inter Partes Review petition of US Pat. No. 8,112,504	Petition	4	10/16/2013	Petitioner	Public
Notice of Filing Date Accorded to Petition	Notice of Filing Date Accorded to Petition	5	10/24/2013	Board	Public
Revised Petition for Inter Partes Review	Notice	6	10/30/2013	Petitioner	Public
Power of Attorney	Power of Attorney	7	11/6/2013	Potential Patent Owner	Public
Related Matters	Notice	9	11/6/2013	Potential Patent Owner	Public
Notice of Accepting Corrected Petition	Notice	10	12/5/2013	Board	Public
Order - Conduct of the Proceeding - 37 CFR 42.5	Notice	11	12/30/2013	Board	Public
Patent Owner's Motion for Counsel to Withdraw and Permit Substitution of Counsel	Motion	13	1/2/2014	Patent Owner	Public
Substitute Power of Attorney for Patent Owner	Notice	15	1/2/2014	Patent Owner	Public
Power of Attorney	Power of Attorney	16	1/9/2014	Potential Patent Owner	Public
EXPUNGED	Notice	17	1/9/2014	Patent Owner	Public
Order - On Motion to Withdraw - 37 CFR 42.10(e)	Notice	18	1/9/2014	Board	Public
Order - Conduct of the Proceeding	Notice	19	1/14/2014	Board	Public
Preliminary Response	Preliminary Response	20	2/7/2014	Patent Owner	Public
Decision - Institution of Inter Partes Review - 37 CFR 42.108	Institution Decision	21	4/18/2014	Board	Public
Scheduling Order	Order	22	4/18/2014	Board	Public
Motion for PHV and Declaration	Motion	23	4/30/2014	Petitioner	Public
Petitioner's Request for Rehearing	Rehearing Request	24	5/2/2014	Petitioner	Public
Petitioner's Notice Re Initial Conference Call	Notice	25	5/9/2014	Petitioner	Public

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Name	Type	Exhibit/Paper Number	Filing Date	Filing Party	Availability
21 Initial Conference Summary	Notice	26	5/14/2014	Board	Public
22 Order - Petitioner's Motion for Pro Hac Vice Admission of Nicholas A. Brown	Order	27	5/19/2014	Board	Public
23 DECISION Petitioner's Reconsideration	Notice	28	5/29/2014	Board	Public
24 Petitioner's Updated Mandatory Notices	Notice	29	5/30/2014	Petitioner	Public
25 Patent Owner's Response to Petition	Reply	30	7/3/2014	Patent Owner	Public
26 Petitioner Notice of Deposition of Peter Nelson	Notice	31	7/11/2014	Petitioner	Public
27 Order - Conduct of the Proceeding 37 C.F.R. 42.5	Notice	32	7/29/2014	Board	Public
28 Petitioner Updated Notice of Deposition of Peter Nelson	Notice	33	8/18/2014	Petitioner	Public
29 Petitioner Electronic Frontier Foundation Reply to the Patent Owner Response	Reply	34	9/19/2014	Petitioner	Public
30 Petitioner Electronic Frontier Foundation's Request for Oral Argument	Notice	35	11/10/2014	Petitioner	Public
31 Corrected Certificate of Service, Request for Oral Argument	Notice	36	11/10/2014	Petitioner	Public
32 ORDER Request for Oral Hearing	Notice	37	11/28/2014	Board	Public
33 Related Matters	Notice	38	12/10/2014	Potential Patent Owner	Public
34 Petitioner's Objections to Patent Owner's Demonstratives	Notice	39	12/15/2014	Petitioner	Public
35 Record of Oral Hearing	Notice	40	2/5/2015	Board	Public
36 Final Written Decision	Final Decision	41	4/10/2015	Board	Public
37 Errata	Notice	42	4/16/2015	Board	Public
38 Personal Audio's Request for Rehearing Under 37 CFR 42.71d	Rehearing Request	43	5/8/2015	Patent Owner	Public
39 Expunged see Exhibit 2005	Notice	44	5/8/2015	Patent Owner	Public
40 Decision Request for Rehearing	Notice	45	7/17/2015	Board	Public

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	Name	Type	Exhibit/Paper Number	Filing Date	Filing Party	Availability
41	Notice of Appeal	Notice of Appeal	46	9/16/2015	Patent Owner	Public
42	1001	Exhibit	1001	10/16/2013	Petitioner	Public
43	1002	Exhibit	1002	10/16/2013	Petitioner	Public
44	1003	Exhibit	1003	10/16/2013	Petitioner	Public
45	1004	Exhibit	1004	10/16/2013	Petitioner	Public
46	1005	Exhibit	1005	10/16/2013	Petitioner	Public
47	1006	Exhibit	1006	10/16/2013	Petitioner	Public
48	1007	Exhibit	1007	10/16/2013	Petitioner	Public
49	1008	Exhibit	1008	10/16/2013	Petitioner	Public
50	1009	Exhibit	1009	10/16/2013	Petitioner	Public
51	1010	Exhibit	1010	10/16/2013	Petitioner	Public
52	1011	Exhibit	1011	10/16/2013	Petitioner	Public
53	1012	Exhibit	1012	10/16/2013	Petitioner	Public
54	1013	Exhibit	1013	10/16/2013	Petitioner	Public
55	1014	Exhibit	1014	10/16/2013	Petitioner	Public
56	1015	Exhibit	1015	10/16/2013	Petitioner	Public
57	1016	Exhibit	1016	10/16/2013	Petitioner	Public
58	1017	Exhibit	1017	10/16/2013	Petitioner	Public
59	1018	Exhibit	1018	10/16/2013	Petitioner	Public
60	1019	Exhibit	1019	10/16/2013	Petitioner	Public

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	Name	Type	Exhibit/Paper Number	Filing Date	Filing Party	Availability
61	1020	Exhibit	1020	10/16/2013	Petitioner	Public
62	1021	Exhibit	1021	10/16/2013	Petitioner	Public
63	1022	Exhibit	1022	10/16/2013	Petitioner	Public
64	1023	Exhibit	1023	10/16/2013	Petitioner	Public
65	1024	Exhibit	1024	10/16/2013	Petitioner	Public
66	1025	Exhibit	1025	10/16/2013	Petitioner	Public
67	1026	Exhibit	1026	10/16/2013	Petitioner	Public
68	1027	Exhibit	1027	10/16/2013	Petitioner	Public
69	1028	Exhibit	1028	10/16/2013	Petitioner	Public
70	1029	Exhibit	1029	10/16/2013	Petitioner	Public
71	1030	Exhibit	1030	10/16/2013	Petitioner	Public
72	1031	Exhibit	1031	10/6/2014	Petitioner	Public
73	Deposition of Peter C. Nelson, Ph.D.	Exhibit	1031	9/19/2014	Petitioner	Public
74	1032	Exhibit	1032	10/6/2014	Petitioner	Public
75	Personal Audio Continuation Claims	Exhibit	1032	9/19/2014	Petitioner	Public
76	1033	Exhibit	1033	10/6/2014	Petitioner	Public
77	Deposition of Christopher Schmandt	Exhibit	1033	9/19/2014	Petitioner	Public
78	1034	Exhibit	1034	10/6/2014	Petitioner	Public
79	2014-07-15 Femal Letter to Brown	Exhibit	1034	9/19/2014	Petitioner	Public
80	Exhibit	Exhibit	2001	7/3/2014	Patent Owner	Public

Documents

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Name	Type	Exhibit/Paper Number	Filing Date	Filing Party	Availability
81 Exhibit	Exhibit	2002	7/3/2014	Patent Owner	Public
82 Exhibit	Exhibit	2003	7/3/2014	Patent Owner	Public
83 Declaration of Peter C. Nelson	Exhibit	2004	7/3/2014	Patent Owner	Public
84 Transcript of Jury Trial Before the Honorable Rodney Gilstrap United States District Judge	Exhibit	2005	5/11/2015	Patent Owner	Public



US008112504B2

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

(10) **Patent No.:** **US 8,112,504 B2**
(45) **Date of Patent:** **Feb. 7, 2012**

(54) **SYSTEM FOR DISSEMINATING MEDIA CONTENT REPRESENTING EPISODES IN A SERIALIZED SEQUENCE**

(75) Inventors: **James D. Logan**, Candia, NH (US); **Daniel F. Goessling**, Arlington, MA (US); **Charles G. Call**, Chicago, IL (US)

(73) Assignee: **Personal Audio, LLC**, Beaumont, TX (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.

(21) Appl. No.: **12/380,955**

(22) Filed: **Mar. 4, 2009**

(65) **Prior Publication Data**

US 2009/0198358 A1 Aug. 6, 2009

Related U.S. Application Data

(62) Division of application No. 09/782,546, filed on Feb. 13, 2001, now Pat. No. 7,509,178, which is a division of application No. 08/724,813, filed on Oct. 2, 1996, now Pat. No. 6,199,076.

(51) **Int. Cl.**
G06F 15/16 (2006.01)
G06F 7/00 (2006.01)
G06F 17/30 (2006.01)

(52) **U.S. Cl.** **709/219; 709/231; 707/711; 707/723; 707/769**

(58) **Field of Classification Search** **709/231, 709/219; 707/E17.01, E17.09, 711, 723, 707/769**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,947,882	A	3/1976	Lightner
5,153,579	A	10/1992	Fisch et al.
5,168,481	A	12/1992	Culbertson et al.
5,406,626	A	4/1995	Ryan
5,428,732	A	6/1995	Hancock et al.
5,454,723	A	10/1995	Horii
5,467,288	A	11/1995	Fasciano et al.
5,475,835	A	12/1995	Hickey
5,481,509	A	1/1996	Knowles
5,486,645	A	1/1996	Suh et al.
5,499,316	A	3/1996	Sudoh et al.
5,510,573	A	4/1996	Cho et al.

(Continued)

OTHER PUBLICATIONS

Moorer, J.A.; Abbott, C.; Nye, P.; Borish, J. & Snell, J.; The Digital Audio Processing Station, Jun. 1996, J.Audio Eng. Soc. vol. 34, No. 6, Audio Eng. Soc. U.S.

(Continued)

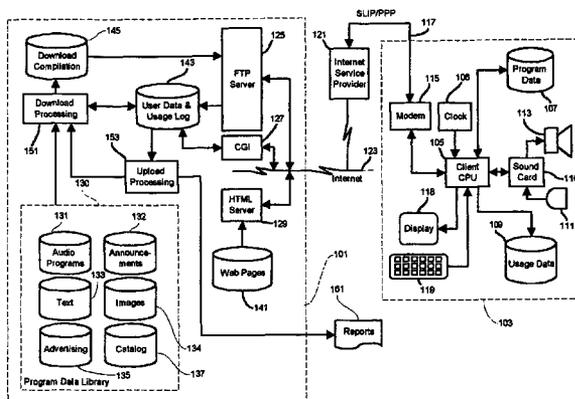
Primary Examiner — Carl Colin
Assistant Examiner — Peter Shaw

(74) *Attorney, Agent, or Firm* — Charles G. Call

(57) **ABSTRACT**

An audio program and message distribution system in which a host system organizes and transmits program segments to client subscriber locations. The host organizes the program segments by subject matter and creates scheduled programming in accordance with preferences associated with each subscriber. Program segments are associated with descriptive subject matter segments, and the subject matter segments may be used to generate both text and audio cataloging presentations to enable the user to more easily identify and select desirable programming. A playback unit at the subscriber location reproduces the program segments received from the host and includes mechanisms for interactively navigating among the program segments. A usage log is compiled to record the subscriber's use of the provided program materials, to return data to the host for billing, to adaptively modify the subscriber's preferences based on actual usage, and to send subscriber-generated comments and requests to the host for processing.

35 Claims, 7 Drawing Sheets



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U.S. PATENT DOCUMENTS

5,524,051 A 6/1996 Ryan
 5,541,638 A 7/1996 Story
 5,550,965 A * 8/1996 Gabbe et al. 715/209
 5,557,541 A 9/1996 Schulhof et al.
 5,572,442 A 11/1996 Schulhof et al.
 5,581,764 A * 12/1996 Fitzgerald et al. 709/223
 5,590,195 A 12/1996 Ryan
 5,594,601 A 1/1997 Mimick et al.
 5,610,774 A 3/1997 Hayashi et al.
 5,616,876 A 4/1997 Clutz
 5,619,425 A 4/1997 Funahashi et al.
 5,625,608 A 4/1997 Grewe et al.
 5,655,117 A * 8/1997 Goldberg et al. 1/1
 5,670,730 A 9/1997 Grewe et al.
 5,745,710 A * 4/1998 Clanton et al. 725/60
 5,751,806 A 5/1998 Ryan
 5,810,600 A 9/1998 Okada
 5,815,671 A 9/1998 Morrison

5,841,979 A 11/1998 Schulhof et al.
 6,341,291 B1 * 1/2002 Bentley et al. 1/1
 6,487,663 B1 * 11/2002 Jaisimha et al. 713/193
 2001/0042073 A1 * 11/2001 Saether et al. 707/203
 2002/0069282 A1 * 6/2002 Reisman 709/227

OTHER PUBLICATIONS

Enco America, DADpro Digital Audio Delivery System, Mar. 1996. 7 pages, product description, Enco America, Farmington Hills, MI.
 Enco Systems, Inc., The DAD486X Digital Audio Delivery System, Operation Manual Version 6.0A, Jun. 30, 1995, Enco Systems, Inc, Farmington Hills, MI.
 Nielsen, J.& Desurvire, H.; Comparative Design Review: An Excercise in Parallel Design, Apr. 24-29, 1993, INTERCHI 93, pp. 414-417, ACM, U.S.A.
 Yavelow, C.; MacWorld Music and Sound Bible, 1992, IDG Books, San Mateo, CA.

* cited by examiner

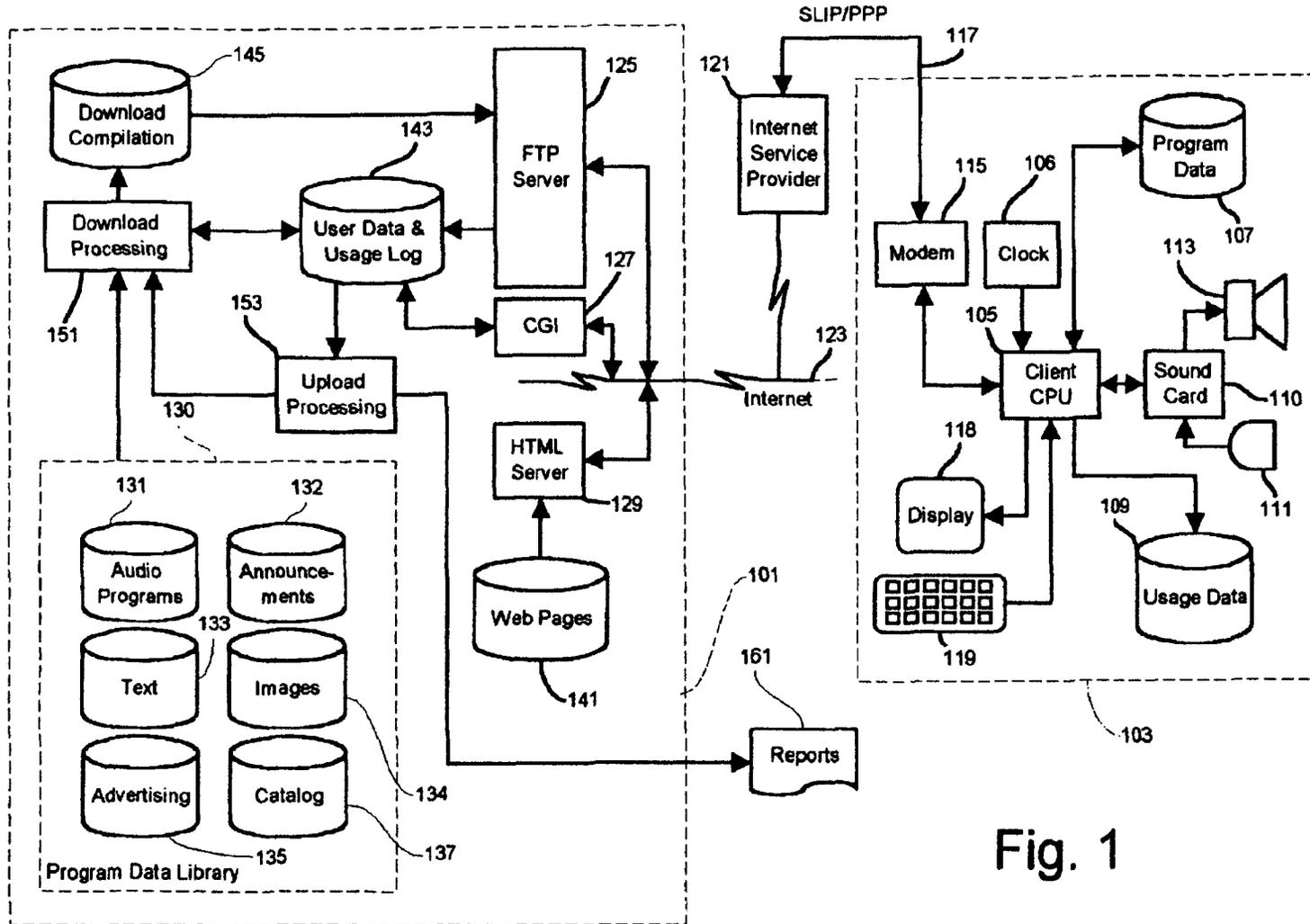


Fig. 1

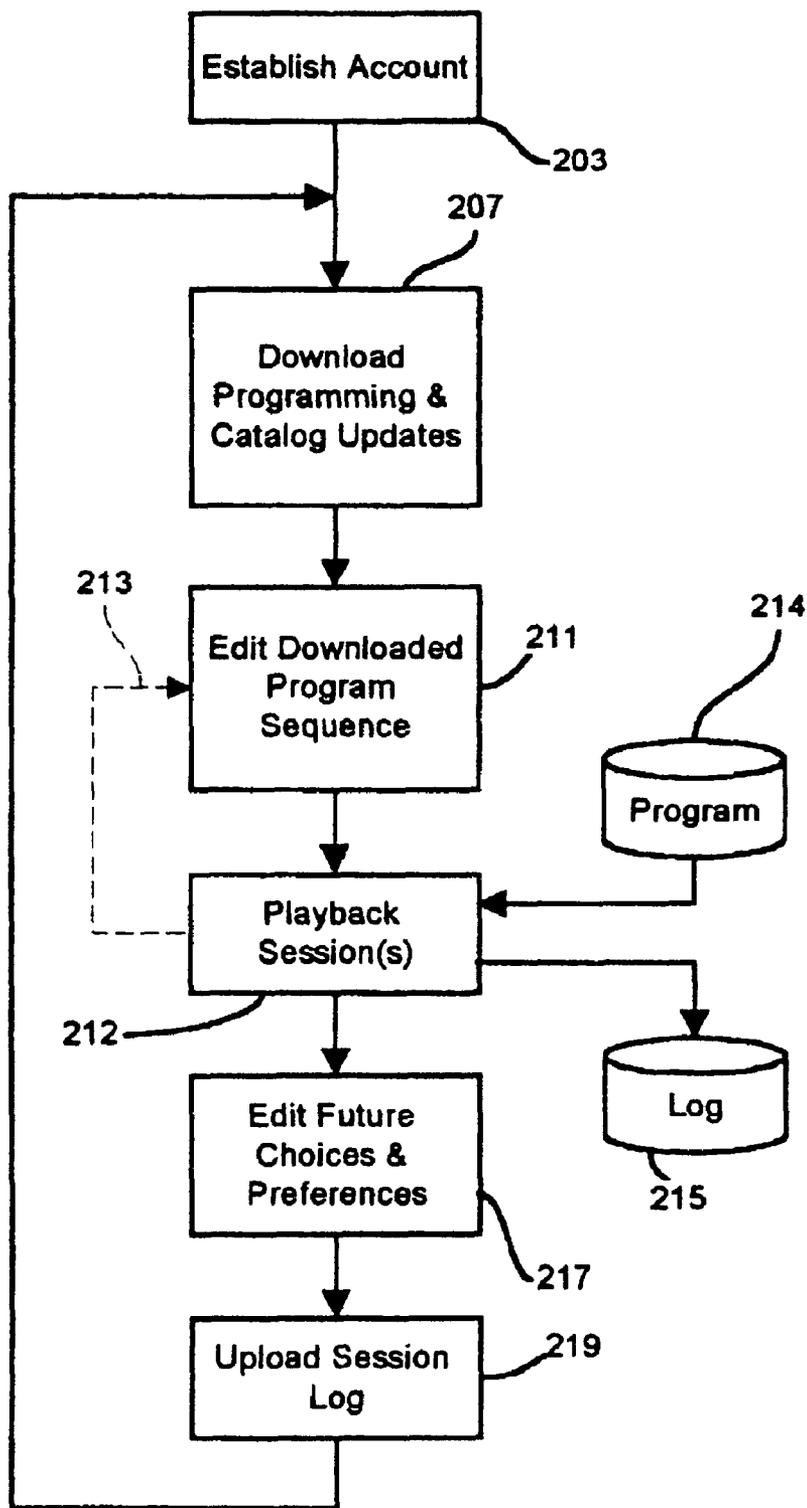
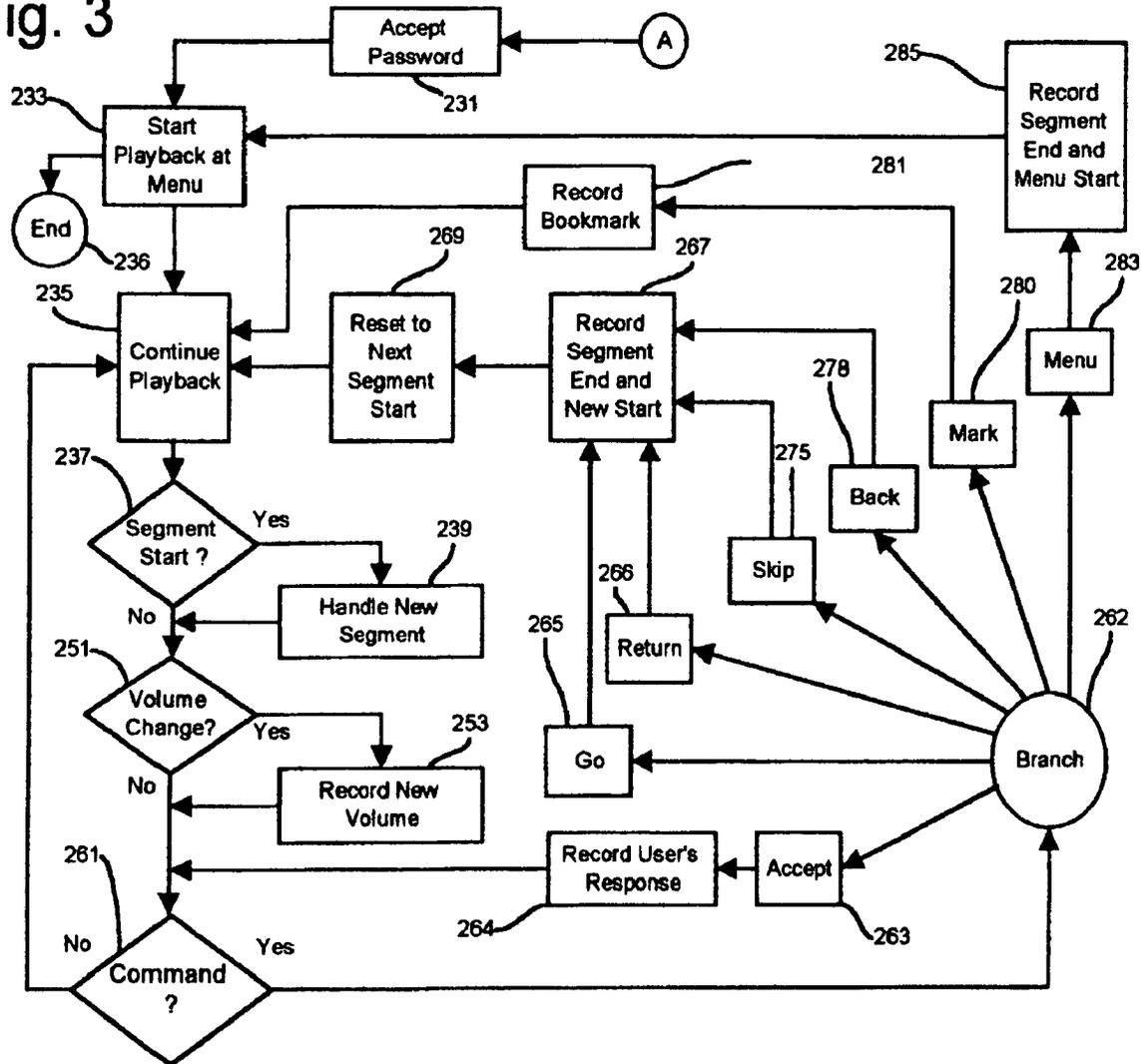
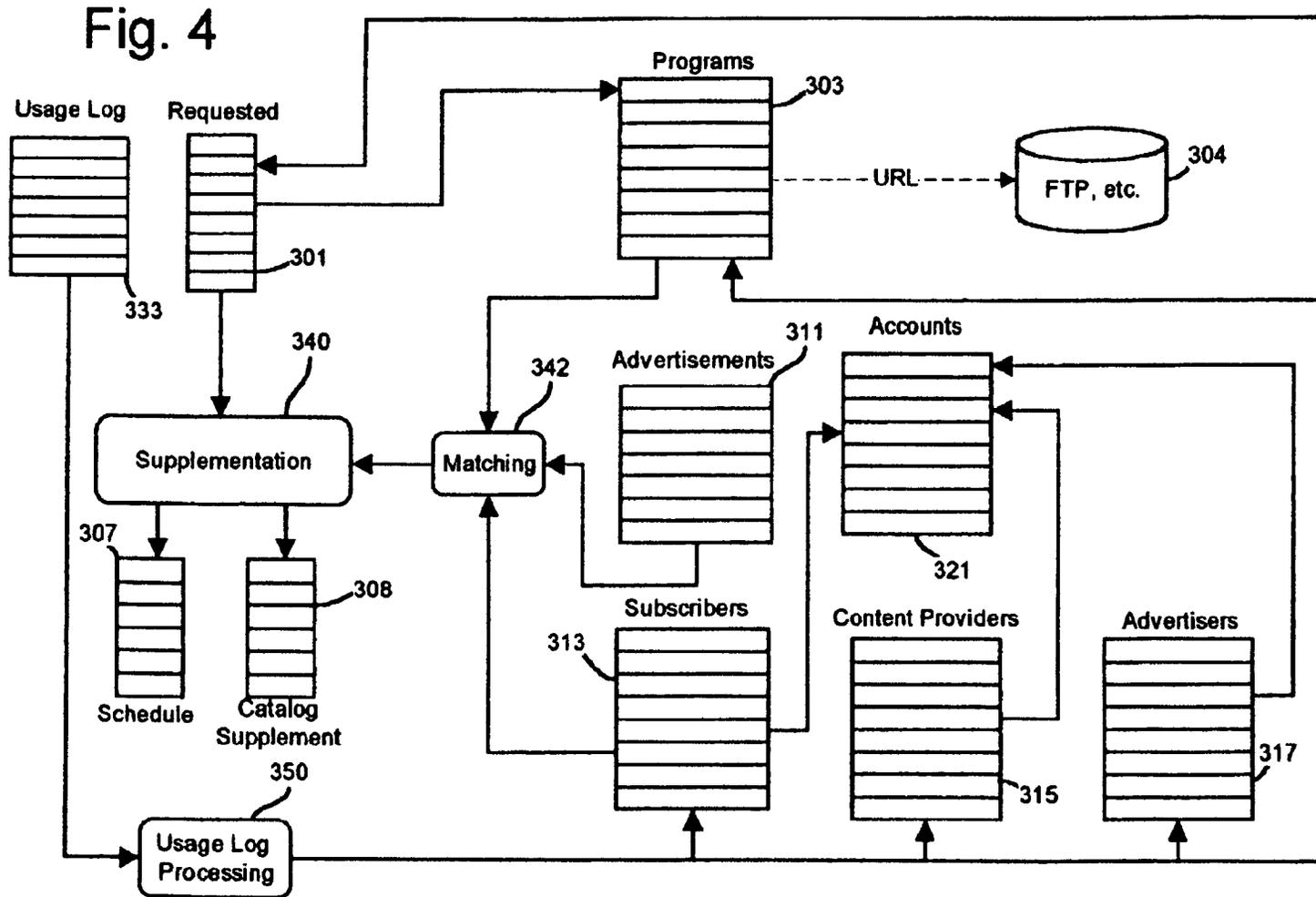


Fig. 2

Fig. 3





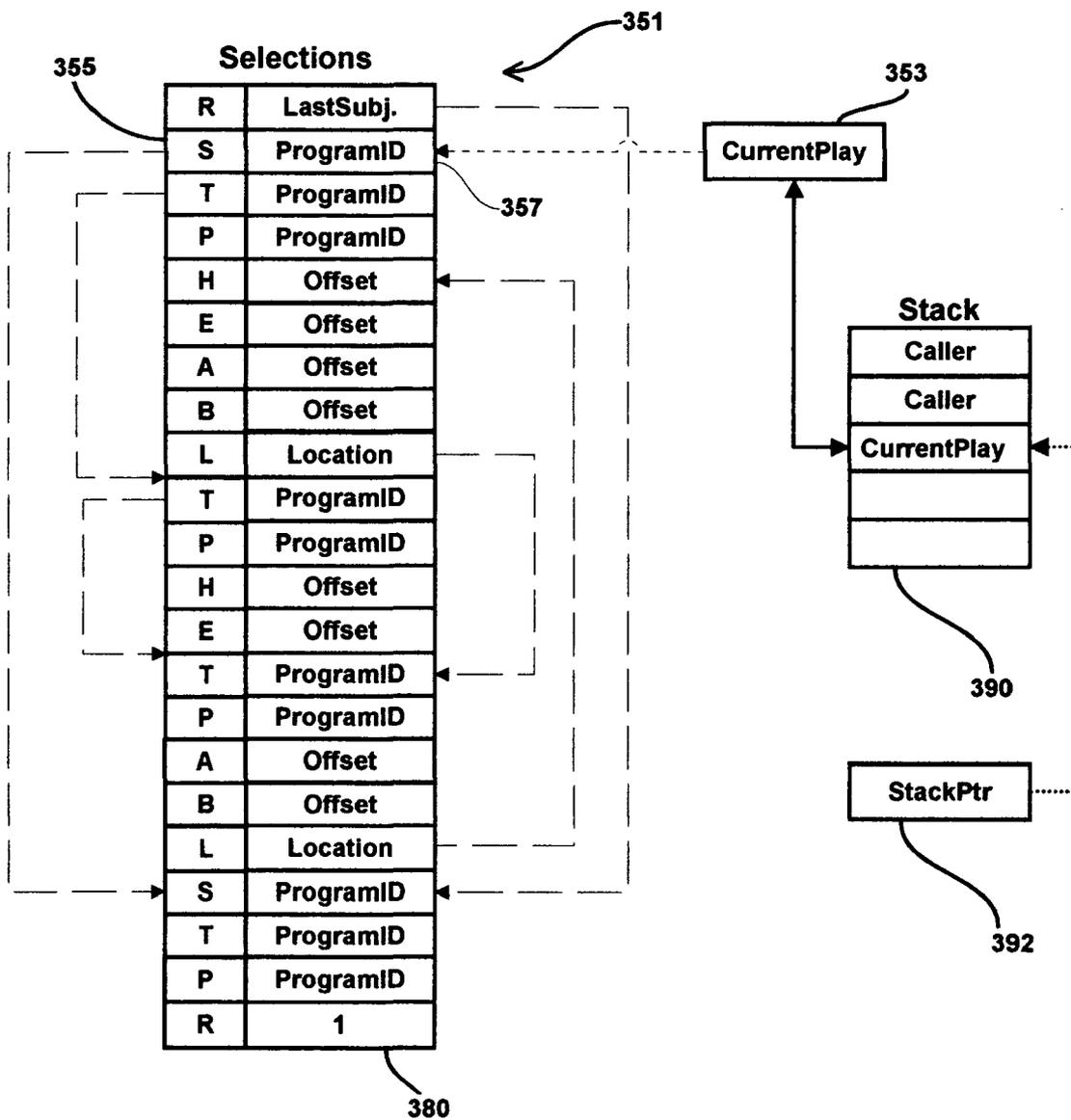


Fig. 5

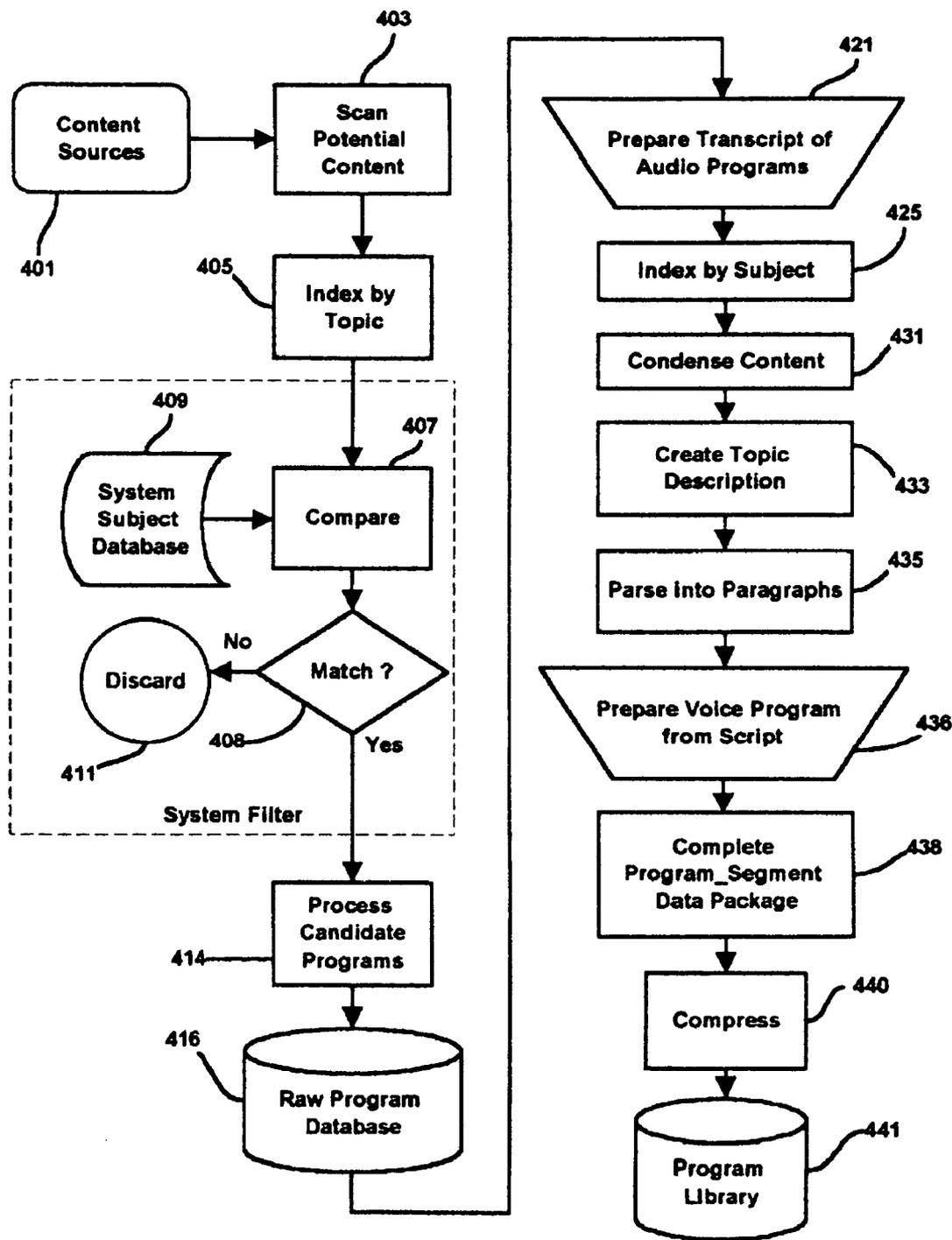


Fig. 6

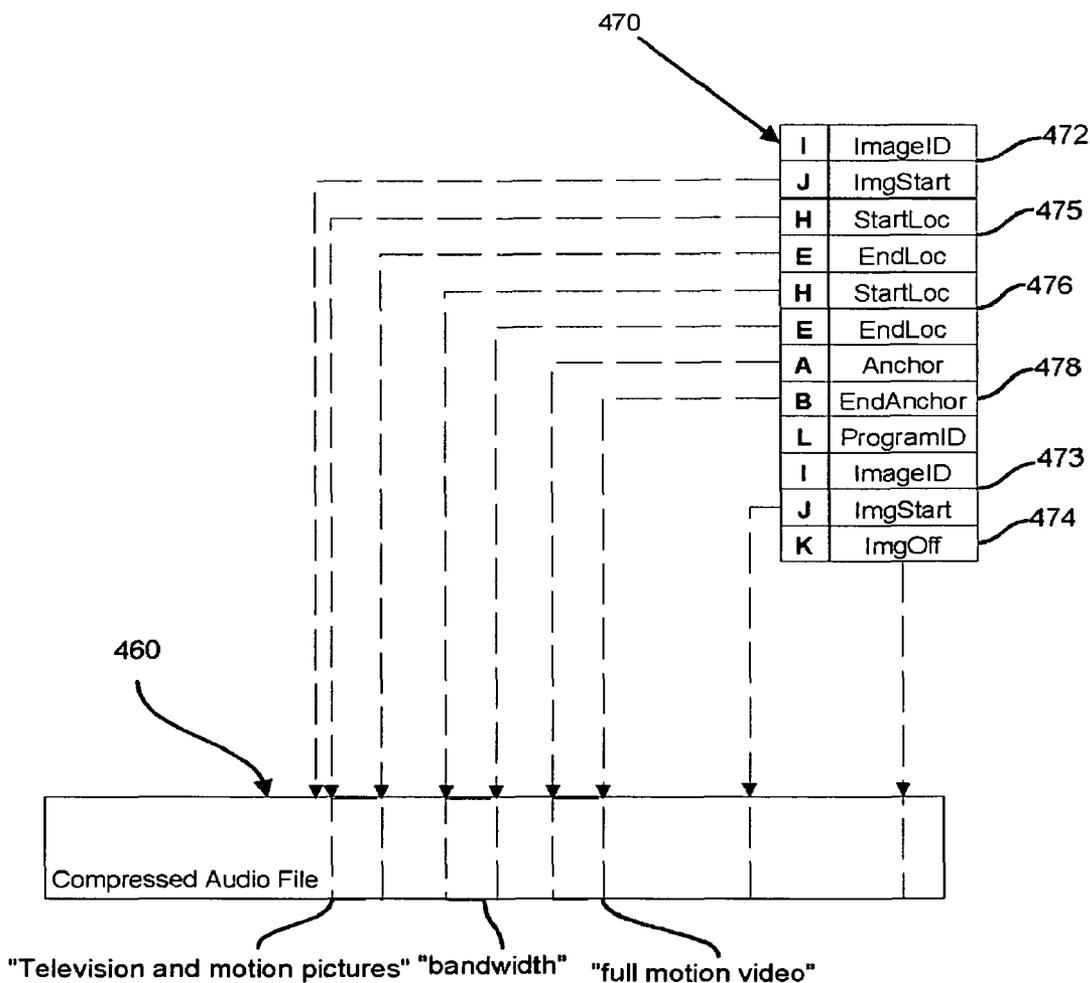


Fig. 7

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**SYSTEM FOR DISSEMINATING MEDIA
CONTENT REPRESENTING EPISODES IN A
SERIALIZED SEQUENCE**

CROSS REFERENCE TO RELATED
APPLICATIONS

This application is a Division of U.S. patent application Ser. No. 09/782,546 filed on Feb. 13, 2001 and published as U.S. Application Publication No. 2008/0155616. Application Ser. No. 09/782,546 is a Division of U.S. patent application Ser. No. 08/724,813 filed on Oct. 2, 1996 now U.S. Pat. No. 6,199,076. This application claims the benefit of the filing date of both of the above identified applications. The disclosures of U.S. patent application Ser. Nos. 08/724,813 and 09/782,546, and of U.S. Pat. No. 6,199,076, are incorporated herein by reference.

FIELD OF THE INVENTION

This invention relates to electronic information distribution systems and more particularly to a system for dynamically and interactively selecting and playing particular programs from a program library.

BACKGROUND OF THE INVENTION

The three dominant commercial systems for providing audio programming to a listeners are broadcast radio systems, cassette tape playback systems and compact disk playback systems.

Broadcast radio uses both the AM and FM frequency bands making a large number of simultaneously broadcast programs available on an essentially random access basis. Unfortunately, since most broadcast stations attempting to appeal to the same general listening audience, much of the programming is duplicative and special interest programs are broadcast on a limited basis. In addition, because there is no convenient way for listeners to be aware of the wide variety of materials scheduled for broadcast, most people listen to only a limited number of stations which dependably broadcast the programming considered to be most acceptable. Even when desired programming is found, it must typically be listened to when it is broadcast; that is, at times chosen by the broadcaster and not the listener.

Tape and compact disk audio players offer the listener the opportunity to purchase specific music selections or albums performed by favorite artists and to replay selections from these purchased recording whenever desired. Pushbutton track selection, as well as improved fidelity, has made the CD player the preferred choice of many, despite the cost and inconvenience of purchasing a library of desired disks. Unfortunately, specialized information programming, unlike music, is largely unavailable on tape or disk, and that media is not capable of adequately conveying rapidly evolving information such as local and world news, weather reports, and rapidly changing trade and business information. Although broadcast radio provides adequate, up to the minute coverage of general news topics, specialized information continues to be largely unavailable on any of these three audio delivery systems, not withstanding the fact that radio, tape and CD players continue to be widely used, particularly in automobiles, for general news and music programming.

More recently, "Internet radio" sources has been introduced which make files of audio program material available for downloading on the World Wide Web using conventional web browsers to locate and request specific files which are

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then played in real time by special programs, including the popular "Real Audio" program offered by Progressive Networks. Although Internet radio systems make it possible to deliver a richly diverse selection of audio programs to interested listeners on request, including specialized information not offered by conventional broadcast media, the use of a visual web browser to search for and then play individual program selections one at a time makes conventional Internet radio players impractical for routine desktop use, and wholly unsuitable for use by an automobile drive.

It is accordingly an object of the present invention to provide easy access to rich selection of audio programming and to allow the listener to dynamically and interactively locate and select desired programming from the available collection in an easy and intuitive way without the need for a visual display screen and using only simple selection controls.

SUMMARY OF THE INVENTION

The present invention takes the form of an audio program player which automatically plays a predetermined schedule of audio program segments and which further includes simple controls that allow the listener to perform one or more of the following functions:

- to skip the remainder of any segment being played in order to listen to the next program segment;
- to skip backward to the beginning of the current segment, and then backward again to the beginning of the prior segment on the schedule, thereby replaying any desired segment or search for a previously played segment in the sequence;
- to listen if desired to an audio speech announcement describing each segment before it is played, and to skip the forward or backward to the next or prior announcement, thereby immediately obtaining the information needed to determine whether a given segment is or is not of interest;
- to listen if desired to an audio speech announcement describing a subject matter categories within which several program segments are grouped, and to skip from category announcement to category announcement in either the forward or reverse direction, skipping all program segments in categories of insufficient interest;
- to listen to only predetermined highlight passages in any program segment, thereby more rapidly reviewing the highlights only of a program segment with the ability to commence normal playing at any point where the highlight passage reveals information which the listener desires to hear in more detail;
- to execute a hyperlink jump to a different, cross-referenced position in the program sequence, or to a program segment not specified in the program sequence, and to provide audible cues to the listener to identify passages which identify the presence of a cross-referencing hyperlink.

According to a further feature of the invention, the audio program player plays program segments in an order determined by a session schedule which identifies an ordered sequence of program segments. The session schedule is preferably created in the first instance by a server subsystem which develops and periodically transmits to the session schedule to the player. According to still another feature of the invention, the player subsystem incorporates means for modifying the session schedule received from the server subsystem by adding or deleting specific programs and by altering the order in which the programs are presented.

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As contemplated by the invention, the player subsystem includes a control mechanism responsive to commands received from a listener to dynamically alter the sequence and content of the programming material actually presented. More specifically, the player may advantageously incorporate means for skipping the remaining content of any program being played at any time, or returning to the beginning of a particular subject to replay its content. Each given program segment is preferably preceded by a topic description segment, and the program skipping mechanism is the player is preferably adapted to automatically skip to the next topic description, bypassing the intervening program content, whenever a skip command is received when a topic description is being played. Similarly, related topics (program segments) are sequentially grouped together by subject category, and a subject description program segment advantageously precedes each subject collection. When the user issues a skip command at the time a subject description is playing, the player automatically skips all of the program segments (topics) within the described subject and continues by playing the next subject description. In this way, the listener can rapidly skim through subject categories, one at a time, until a desired subject is reached, and then allow the player to play topic descriptions one at a time until a desired topic (program segment) is reached.

In accordance with still another feature of the invention, means are employed for identifying one or more discrete passages within any program segment as being a "highlight," and the player incorporates means operative when the player is placed in a "play highlights" mode for skipping those portions of the content which are not highlights, thus enabling the listener to review only the key points of a presentation, or to more rapidly locate particular passages of interest within the body of a particular program segment.

According to yet another feature found in the preferred embodiment of the invention, a designated portion of a program segment may be designated as a hyperlink anchor from which, at the request of the user, the player jumps to another portion of the session sequence and begin playing a different sequence of program segments. Means are advantageously employed for generating an audible cue signal to inform the listener that a hyperlink anchor is being played, enabling the listener to request that the link be executed. The hyperlink capability may be used to advantage to implement cross references to related information, or to provide an audible menu of alternative programming which the user may select merely by executing the link when the anchor passage identifies other information of interest to the listener. In the preferred embodiment, a stack mechanism is used to allow hyperlinks to be called in nested fashion, so that a hyperlink may be executed from a linked program segment, with each "return" command from the user causing play to be resumed at the program segment from which the last link was performed.

As contemplated by still another aspect of the invention, the player subsystem includes means for identifying a program segment, or a particular passage within a program segment, as a bookmarked item for ease of reference later. In addition, the player system incorporates means for accepting a dictated annotation from the user which associated with any bookmarked passage. This annotation mechanism may be used to particular advantage when the program segments provided to the subscriber include email or voice mail messages, since the bookmarking may be used to identify specific messages, or portions thereof, which require later attention, and the annotation mechanism provides a convenient mechanism for dictating replies and/or specifying actions to be taken in response to particular messages or portions thereof.

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These and other objects, features and advantages of the present invention may be more completely understood by considering the following detailed description of a preferred embodiment of the invention. In the course of this description, reference will frequently be made to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block schematic diagram of an electronic program and advertising distribution system which embodies the invention;

FIG. 2 is a flow chart illustrating the principle steps followed in the course of the performing the information distribution functions contemplated by the invention;

FIG. 3 is a flow chart illustrating the principle steps performed during a playback session in the illustrative embodiment;

FIG. 4 is an information structure and data flow diagram illustrating the manner in which programming is selected and accounting functions are performed in the illustrative embodiment of the invention;

FIG. 5 is an information structure diagram illustrating the manner in which the program segments are dynamically selected and played in response to the user's preferences and control decisions;

FIG. 6 is a flow chart which describes a preferred procedure for preparing the program content which is distributed to subscribers in accordance with the invention; and

FIG. 7 is an information structure diagram illustrating the manner in which a narrative text file expressed in hypertext markup language (HTML) may be translated in to the combination of an audio speech file, a text file transcript, and a sequencing file used by the player to create a multimedia presentation.

DETAILED DESCRIPTION

The illustrative embodiment of the invention shown in FIG. 1 utilizes the Internet to provide communications between a host computer indicated generally at 101 and an audio player device illustrated at 103.

Subscriber Audio Player

The player 103 may be advantageously implemented by a conventional laptop or desktop personal computer including a processor (the client CPU 105), a time of day clock 106, and a data storage system consisting of both high speed RAM storage and a persistent mass storage device, such as a magnetic disk memory, the data storage system being used for storing audio, text and image data at 107 and for storing usage data at 109 which records the nature of the programming reproduced by the player 103. The player 103 further includes a sound card 110 which receives audio input from a microphone input device 111 for accepting voice dictation and commands from a user and which delivers audio output to a speaker 113 in order to supply audio information to the user. The program data stored at 107 may advantageously include compressed audio recordings and/or text (files of characters) which may be converted into audio form by conventional speech synthesis programs executed by the client CPU 105.

The sound card 110 is conventional and preferably complies with the recommendations detailed in the Hardware Design Guide for Microsoft Windows 95, by Doug Klopfenstein, Microsoft Press (1994), ISBN 1-55615-642-1. The sound card 110 advantageously supports a 44 kHz, 16-bit, stereo codec providing analog to digital conversion of audio input signals from the microphone 111 as well as digital to

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analog conversion for programming directed to the speaker **111**. The sound card provides external connections and hardware support for Microphone-In, Line-In, Line-Out, and Headphones-Out, with volume controlled by the player software (including volume level logging as discussed later in connection with FIG. 3 of the drawings).

To support multimedia capabilities, the CPU **105** should meet or exceed the capabilities of an Intel 486 DX2-66 computer to provide consistently good playback results and the sound card **110** should include a 16-bit digital-to-analog converter for playback and a 16-bit analog-to-digital converter for recording. The sound card **110** should further support 8, 11, 22, and 44 kHz waveforms. A frequency of 44 kHz is used for CD-quality sound and fractions of 44, such as 11 and 22, are often used for compressed waveforms meant to save CPU processing. Support for an 8 kHz frequency should be in order to properly support Windows 95 TrueSpeech™ compression, which is optimized for compression and playback of human speech. Using TrueSpeech compression, programs containing largely voice narrative data can be substantially condensed, and users can record annotations and voice mail responses as discussed later.

In addition, the sound card **110** should be capable of reproducing downloaded MIDI (Musical Instrument Device Interface) commands, enabling the system take a MIDI data stream and produce sound according to the compressed files consisting of digital sheet music instructions. Preferably, the sound card should support at least 16-voice polyphony (the ability to play several sounds at the same time), and polymessage MIDI, an capability included in Windows 95 that allows a sound card to receive and batch-process multiple MIDI messages (such as Note On and Note Off). The sound card **110** should also have a microphone port for microphone **111**, a speaker-out port (for one or two (stereo) unpowered speakers **113**, and a headphone-out port.

The personal computer CPU **105** is also preferably connected to a conventional personal computer video display **118** and a standard keyboard **119**, as well as a pointing device (such as a mouse, trackball or touchpad, not shown). The facilities provided by the operating system, such as Windows 95, typically includes multimedia support, as noted above, as well as a standard WINSOCK TCP/IP stack and modem dial up driver software to support a SLIPP/PPP Internet connection, as next discussed.

The player **103** further includes a conventional high speed data modem **115** for receiving (downloading) the program information **107** from the remote server **101** and for transmitting (uploading) program selections and preferences as well as usage data in the file **109** to the server **101**. To effect these file transfers, the modem **115** is connected via conventional dial up telephone SLIP or PPP TCP/IP series data communication link **117** to an Internet service provider **121** which provides access to the Internet. The service provider **121** is in turn connected to the host server **101** via a high speed Internet link seen at **123**.

Host File Server

The host server **101** provides a FTP server interface **125** which provides file transfer protocol services to the player **103**, a CGI interface **127** which performs Common Gateway Interface script program execution in response to requests from the player **103**, and an HTML interface **129** which provides hypertext transport protocol (HTTP) World Wide Web server functions to the connected player **103**. The host server **101** stores and maintains a plurality of data files including a program data library indicated generally at **130** consisting of a collection of compressed audio program segments **131**, announcement ("glue") segments **132**, text program seg-

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ments **133**, image segments **134**, advertising segments **135** and program catalog information **137**.

The compressed audio segments program segments comprise audio voice and music files which may be compressed using conventional compression mechanisms suited to the data being compressed, such as TrueSpeech compression for voice signals and MIDI files for compressed synthetic music reproducible by the sound card **110** as noted earlier.

Compressed voice programming in the database **131** may advantageously be accompanied by text transcripts (files of characters) stored in the text database **133**. Similarly, images stored in the image database **134** may be used to provide a multimedia presentation which combines images reproduced on the display **118** of player **103** with concurrently presented audio at the speaker **113** and/or displayed text. Program segments which present advertising, illustratively shown as being resident in a separate database **135** in FIG. 1, may likewise consist of audio, text and/or image segments, as may the program segments which provide announcements between program segments as well as audible and visible menu options which the user may select as described later.

As hereinafter described in connection with FIG. 5, each voice or text program segment preferably includes a sequencing file which contains the identification of highlighted passages and hypertext anchors within the program content. This sequencing file may further contain references to image files and the start and ending offset locations in the audio presentation when each image display should begin and end. In this way, the image presentation may be synchronized with the audio programming to provide coherent multimedia programming.

As contemplated by the invention, information which is available in text form from news sources, libraries, etc. may be converted to compressed audio form either by human readers or by conventional speech synthesis. If speech synthesis is used, the conversion of text to speech is preferably performed at the client station **103** by the player. In this way, text information alone may be rapidly downloaded from the server **101** since it requires much less data than equivalent compressed audio files, and the downloaded text further provides the user with ready access to a transcript of voice presentations. In other cases, where it is important to capture the quality and authenticity of the original analog speech signals, a text transcript file which collaterally accompanies a compressed voice audio file may be stored in the database **133** from which a transcript may be made available to the user upon request.

The host server **101** further stores web page data **141** which is made available to the player **103** by means of the HTML interface **128**. The host server **101** additionally stores and maintains a user data and usage log database indicated at **143** which stores uploaded usage data received from the store **109** in the player **103** via the Internet pathway **123** and the FTP server interface **125**. The user data **143** further contains additional data describing the preferences, demographic characteristics and program selections unique to each subscriber which is developed largely from user-supplied data obtained when users submit HTML form data via the Internet pathway **123** for processing by the CGI mechanism **127**.

The host server **101** periodically transmits a download compilation file **145** upon receiving a request from the player **103**. The file **145** is placed in a predetermined FTP download file directory and assigned a filename known to the player **103**. At a time determined by player **103** monitoring the time of day clock **106**, a dial up connection is established via the service provider **121** and the Internet to the FTP server **125** and the download compilation **145** is transferred to the pro-

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gram data store **107** in the player **103**. The compilation **145** is previously written to the download directory by a download processing mechanism seen at **151** in the server **101**. Download processing, as described in more detail later, extracts from the library **130** data defining compressed program, advertising, and glue segments, and/or associated text program data, based on selections and preferences made by (or inferred for) the user as specified in the subscriber data and usage log database **143**.

The download compilation file **145**, though represented as a single file in FIG. **1**, preferably takes the form of one or more subscriber and session specific files which contain the identification of separately stored sharable files. By way of example, the recommended order and the identification of the program files making up an individual playback session are stored in a session schedule file (to be described in detail in connection with FIG. **5**) which contains program identifiers of the program segments to be played during an upcoming session. The player **103** downloads the session schedule file and then issues download requests for those identified program segment files which are not already available in the player's local storage unit **107**.

Usage data in the store **109** maintained by the player **103** is preferably uploaded as a file bearing a predetermined file name indicative of the particular subscriber and upload time and stored in a predetermined FTP upload directory. This upload advantageously occurs at the same time the player **103** establishes a download connection to the FTP server **125** as noted earlier, and occurs prior to the download of the compilation **145**. Because the upload data from the store **109** in the player **103** identifies program segments desired by the subscriber, program segments newly requested by the user are appended to the compilation **145**. Note that, in typical cases, programming in addition to the specifically requested programming will be included in the download compilation, and the transfer of that programming can begin immediately while the newly uploaded user selections and other information are being processed as indicated at **153** to identify additional information to be included in the download compilation.

As indicated at **161** in FIG. **1**, the host server upload processing mechanism **153** also provides a number of reports, as described in more detail later, based upon the record of actual player use by individual subscribers and the community of subscribers as a whole. This report processing is advantageously performed on a periodic basis in connection with financial and accounting functions including subscriber and advertiser billing, content provider royalty payment accounting, and marketing analysis processing.

It should be understood that numerous other information storage, processing and communications schemes may be substituted for the preferred Internet server and PC client player architecture shown in FIG. **1**. A dedicated host computer which communicates directly with client stations via dial up telephone facilities may be used, and cellular radio, cable modem and satellite links may be used to provide data communications in lieu of the conventional SLIP/PPP telephone and Internet links shown in FIG. **1**. To facilitate use of the system in an automobile, a "player" computer may be linked to the Internet via a local communications server computer via a radio or infrared link when the car is parked at the subscriber's home or office. The Infrared Data Association's (IrDA) wireless infrared (IR) standard provides a highly effective, low-cost communications pathway rapidly becoming a standard feature in all notebook computers and PDAs. The IrDA international standard provides interoperability among widely diverse systems, involves no governmental

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regulation, are provided at low cost, provide high speed file transfers (e.g., 4 Mbs data rates), are small and can be easily incorporated into portable computers of the type which may be used in a car or on public transportation. Alternatively, the files downloaded from the host may be stored on a replaceable media, such as an optical disk cartridge, which may then be inserted into a portable computer or simplified player for mobile use. A direct link between a mobile client player (such as a laptop PC) may be implemented using the Cellular Digital Packet Data (CDPD) service presently available in major metropolitan areas to provide low-cost access to the Internet using the TCP/IP protocol, and provides the advantage that needed program segments can be downloaded while a session is in progress, eliminating the need for a complete download before the mobile unit is disconnected from its data source.

Upload and Download Sequence—Overview

FIG. **2** illustrates the sequence of major events which are executed the program dissemination system contemplated by the invention.

As indicated at **203**, an interested subscriber invokes programming services by first supplying personal information and initial programming preferences during an account initialization procedure. Preferably, as explained in more detail later, account initialization is accomplished by presenting the subscriber with HTML forms to complete and submit to CGC script programs which execute on the server to post subscriber supplied information into an initial user dataset. Based on the information supplied by the user, the server then compiles one or more files for downloading to the subscriber at step **207** which include programming and advertising segments as well as additional data and utility programs needed by the player **103** to begin operation. The download operation preferably occurs at a time established by the player which establishes a dial up connection via the SLIP/PPP serial connection **117** to the local Internet service provider **121** which provides an Internet connection to the host FTP server **125**. The download file or files containing programming and advertising segments as well as subscriber specific data are designate by filenames provided by the requesting client/player **103** and moved from storage unit **145** utilizing the FTP server **125** and the Internet connection into local storage at **107** in the client/player **103**. The filenames used to specify the files in the server **125** may conveniently be formed from the program_id value used internally by both the host and the player to identify and differentiate the different program segments used.

The data downloaded includes a recommended program sequence file which provisionally identifies the order in which downloaded program segments are to be played, with the initial selection and sequence being established based on user preference data by the download compilation processing mechanism seen at **151** at the server.

Before a playback session begins, as indicated at **211**, the subscriber has the opportunity to review and alter the provisional program selections and sequence established as a default by the downloaded information from the server. Utilizing the programming data and a utility program previously supplied by the server, the subscriber may alter the selection and sequence of program materials to be played, including altering the extent to which advertising will be played along with the selected programming.

At the request of the user, the sequence of programming defined by the program sequence file (the selections file illustrated at **351** in FIG. **5**) is then reproduced for the listener. As contemplated by the invention, the player **103** includes controls which enable the user to easily move from program segment to program segment, skipping segments in a forward

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or reverse direction, or to jump to a particular segment, and thus alter the preprogrammed sequence. Nevertheless, when any given program segment concludes, the next segment which is specified as following the given segment will begin playing unless the listener intervenes. Thus, although the segments are stored in randomly addressable locations in the local mass storage unit, they are nonetheless played at step 212 in the sequence established initially by the server and (optionally) modified by the subscriber, with the player providing the ability to dynamically switch to any position in this sequence under the listeners control. As indicated at 213 in FIG. 2, the listener may at any time return to the sequence editing step 211 to manually reorder the playing sequence if desired. As indicated at 215, a session usage log is recorded during the playback session to identify every segment actually played, the volume and speed at which that segment was played, and the start and end times.

At step 211, in addition to deleting and reordering items on the program schedule, the user may alter his or her selections and general subject matter preferences to control the manner in which the host assembles program schedules for future sessions. When programs are included in a current schedule which are of particular interest, the subscriber may assign a priority value to the scheduled program and, in that way, inform the host that the user has an interest in receiving more programming in the same subject matter categories in which the identified program is classified. When a program in a serialized sequence is assigned a new or different priority value at step 211, the host system 101 assigns a corresponding Importance value to the program_segment record for each of the remaining unplayed programs in that serialized sequence. Note that, by expressly approving advertising segments or categories of acceptable advertising in this fashion, the subscriber may be granted a rate reduction since advertisers are generally willing to pay more for advertising directed to customers having a known interest in a given subject.

At the conclusion of a session, subscriber is given the opportunity at 217 to select programming which should be included in the next programming download. To facilitate this selection process, additional programming which fits the subscriber's indicated subject matter preferences, along with additional programming which the server includes as being of particular interest, is identified in a catalog (as periodically supplemented by a download file seen at 308 in FIG. 4) and presented to the user in the form of a proposed program schedule together with a catalog of additional selections which may be substituted or inserted into the proposed schedule. At step 219, the selections made by the user at 217 as well as the contents of the usage log recorded at 215 are uploaded to the server as a requested file (seen at 301 in FIG. 4). This upload step may occur at the same time the SLIP/PPP dial-up connection is established by the player 103 to accomplish the download, with the upload occurring first by an FTP file transfer from the usage data store 107 to the FTP server 125 followed by the downloading of files requested by the client 103 from the FTP server.

In a addition to the downloaded catalog of available items which may be viewed by the subscriber from the available downloaded information, the user may re-establish an Internet connection to the HTML web server 129 which presents HTML program selection and search request forms, enabling the subscriber to locate remotely stored programming which may be of particular interest to the subscriber. When such programs are selected in the HTML session, the user's additional preferences and selections may be posted into the user

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data file 143 and the identification of the needed files may be passed to the client/player 103 for inclusion in the next download request.

Account Initialization

As contemplated by the invention, a subscriber account may be established by any user having a personal computer equipped to provide the capabilities needed to implement the player 103 as described above, together with Internet access via a service provider 121. Although a conventional modem dial up connections will perform satisfactorily, the time required for uploading and downloading the necessary files may be substantially reduced using higher speed access, such as an ISDN or cable modem link, when those services are available.

To establish a new account, a prospective subscriber may use a conventional web browser program, such as Mosaic, Netscape Navigator or Microsoft's Internet Explorer, which executes in the client CPU 105 to establish a conventional HTTP request/response dialog with server 101. The account initialization begins with the transmission of an HTML form from the web page store 141 which is completed by the user at the keyboard (not shown) of the client CPU 105. The account information is then transmitted to using a HTTP post method directed at a form processing CGI script executed by the server at 127 to place descriptive information about the user in an assigned user data file as seen at 143. After the account has been established, utility programs and data may be downloaded from the FTP server 125 to the client/player 103. These utility programs advantageously include programs which perform functions including (a) program decompression, playback and navigation; (b) recording of a usage log file identifying the program and advertising segments played and the start time, ending time, volume level and playing speed for each such segment; and (c) the selection and updating of programming preferences and selections for future downloading.

The data fields supplied by a new subscriber at the initialization step 203 may advantageously include the user's full name and billing address, credit card information or the like for use in subscriber billing; and descriptive data about the subscriber (and others who may share the downloaded material), such as: age, profession, sex, and marital status; the identification of subject matter categories of interest to the subscriber, preferably with assigned weighting factors indicating the level of interest in each category. The subscriber may also indicate general preferences with respect to the including advertising, including an indication of the amount of advertising which is acceptable to defray subscription costs, ranging from fully advertised programming for minimum subscription charges to the complete exclusion of advertising.

In addition, the subscriber may request and be presented with an HTML form which lists available programs in a particular selected subject matter area, with a priority weighting factor pre-assigned to each in accordance with the subscriber's previous specification for that category. The form presented thus reflects the previously entered level of interest weighting factor for each program based on its subject matter category, but permits the subscriber to override the suggested default value on a program by program basis. Similarly, the subscriber is given the opportunity to override the default amount of advertising desired.

Advertising may be associated with particular subject matter categories as well as with particular programs. For example, an airline may wish to advertise generally in connection with programming in the "travel" category whereas a particular resort hotel may wish to advertise only in connec-

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tion with a particular travelogue program for the region where it is located. Subscribers may wish to hear advertising in connection with the programming in the travel category, but to eliminate commercials from a daily program presenting "today's weather report." The result is clearly advantageous for the advertiser, since advertising is focused more clearly on those having an interest in the subject matter and an expressed willingness to listen to commercial messages, while the subscriber is able to receive advertising which may be regarded as useful while eliminating unwanted advertising.

Because personal data describing each subscriber's subject matter interests is available, along with personal data (age, marital status, zip code, etc.), particular advertising segments may be directed to only those subscribers having a likely interest in the goods or services advertised. This targeted advertising need not be presented at any time during the playback for the designated subscriber and need not be timed for presentation with particular programs. For example, a subscriber indicating an interest in travel programming may be supplied with advertising from an airline at any time, and not necessarily concurrent with selected travel programming.

Because a subscriber may have a particular interest in or enjoy some advertising, and may have a particular dislike for other specific advertising, the user may advantageously be presented with a listing of advertising organized by advertiser and subject, providing the subscriber with the opportunity to select additional desired advertising on the list while suppressing others. Since the voluntary acceptance of advertising preferably reduces the programming charge to the subscriber, the utility program which executes on the client CPU **105** to enable program and advertising selection, sequencing and editing preferably provides an advisory indication to the subscriber of the charges or credits to be accrued if the currently programmed sequence is played. This feature enables subscribers to better control the costs of the service by accepting sufficient advertising content to reduce the subscription cost to an acceptable level. Subscribers may also set a player system variable to a value indicating the subscription costs per unit time that the subscriber is willing to accept, and the player **103** can then automatically insert advertising segments between program segments in sufficient quantity to achieve a net charge at the desired level.

Player Operation

The playback operation indicted generally at **212** in FIG. **2** is illustrated in more detail in FIG. **3**.

In order to limit access to the downloaded programming materials to the subscriber or persons authorized by the subscriber, the playback utility program executing on the client CPU **105** (FIG. **1**) advantageously begins the session by requesting the entry of a password as indicated at **231**. The entry of this or a different password may also be required for access to the utility programs used to modify the subscriber's personal data, future program selections, and current program selections and sequencing. Similarly, information which might be revealed concerning an individual subscriber by the host server **101** is advantageously password protected.

As with all Internet transactions, the actual data transmissions of information other than publicly available programming may also be encrypted. To this end, the client and server ends of the pathway may exchange public keys to enable encrypted transmission using conventional RSA encryption. By placing the decryption capability within the capability of the playback unit which is capable of directing decrypted content only to the system's speakers and display screen, but not to a file, the system insures that the internal usage accounting mechanism cannot be bypassed by reproducing downloaded program segments using other means. In addition, and

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as a part of this secure accounting arrangement, the host system can be programmed to require the receipt of an uploaded usage log (from which subscriber and advertising charges and content provider payments can be determined) before releasing additional programming materials for downloading from the FTP server **125**.

As described in more detail later in connection with FIGS. **4** and **5**, the sequence of program segments to be presented to the user is formed into a schedule file (seen at **307** in FIG. **4**) consisting of a sequence of program segment identification numbers which are used to compile a sequencing file, called the selections file, illustrated at **351** in FIG. **5**, which contains more detailed information about the sequence of events which occur during playback. The player obtains information from the selections file which identifies the individual program segments to be fetched from mass storage and played for the user, as well as the segment identification information which is recorded in a usage logging file in the manner illustrated in FIG. **3**.

As indicated at **233**, the playback session begins with the presentation of an audio (and/or displayed) menu which allows the user to jump to any program segment within that sequence to start (or resume) playback at **235**, or terminate the session at **236**.

The playback operation itself continues from the designated playback point in the selections file (seen at **351** in FIG. **5**) which follows a program sequence initially created by the host server and downloaded with the program segments themselves, and then (optionally) modified by the addition, deletion and re-sequencing of segment identifiers as discussed earlier in connection with step **211** in FIG. **2**. Note however that, if the user elects to have advertising segments automatically inserted between program segments to achieve a predetermined cost level, that insertion occurs under the control of the playback mechanism at **235** such that advertising segments not identified in the selections file may be added or advertising segments specified in the selections file may be automatically skipped.

As playing progresses, the current playback position may be advantageously indicated by a variety of means. In the most simple form, the current playback position within the session file of selections (discussed in more detail in connection with FIG. **5**) may be indicated by a simple numerical readout indicating the position on a scale of 1-100. In this way, a user listening to the programming in scheduled order is provided with an indication of the duration of programming remaining to be played. In a player implemented by a personal computer provided with a screen display, the current playback position may be advantageously indicated by displaying the program segment topic descriptions in a scrolling listing, with the description of the program currently being displayed being highlighted. The scheduled duration of each program segment may be displayed, along with the elapsed time remaining to be played in the currently playing segment, to enable the user to more easily determine when to skip the remainder of the currently playing segment. When such a concurrent visual display is available, means may also be included to respond to the users selection of a given program on the scrollable listing by means of a mouse or the like, and then automatically continue the play at the beginning of the program segment thus selected.

Each time the playback begins a new programming, advertising or announcement segment, the segment start time is recorded in the usage log file stored at **109** (FIG. **1**). Each usage log record contains a program segment identification number (ProgramID) obtained from the selections file as well as a start time and date stamp encoded into a 32 bit date-time

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value, a volume level setting indicating the volume at which the player was set at that time, and a playing speed value indicating the playing speed or playing being used.

As indicated at 237 in FIG. 3, each time a new program segment is started, a new segment handling procedure is executed at 239. If the user desires to have advertising inserted to defray the costs of the subscription, the current actual cost per unit time is calculated and compared with the desired cost per unit time. If the cost is determined to exceed the desired level, an additional advertising segment is started; otherwise, the next program segment in the program sequence 214 is played. In either case, the segment id of the newly starting segment is recorded in the log file along with the start time for that segment. Note that it is unnecessary to record the end time for the prior segment since it is the same value as the start time for the next segment. When play is concluded, a terminating record indicating the time of turnoff is recorded to enable the duration of the last segment to be calculated.

Recording Volume and Playing Speed Changes

As indicated at 251, if the user changes the volume level or playback speed by a significant amount, a new record is posted to the usage log at 253, indicating the continuation of the last program at a new volume level (thus producing two records in sequence having the same program segment ID numbers but having differing start times and volume levels). The user adjusts the volume by means of a software control displayed when the player is active. The user adjusts the control using the mouse or keyboard to adjust the volume. When the volume control experiences a change in level greater than a predetermined deviation, it sends a message to the player routine at 251 to cause the new volume level to be recorded at 253. New volume settings do not affect the program sequence and the recording of the volume level change takes place transparently to the user. Likewise, when the user changes the playing speed, or switches to highlight mode, the new playing speed setting is recorded (using the Playing-Speed variable in a Usage Record, to be discussed)

The cost accounting program which calculates subscriber charges and fees to advertisers may thereby treat volume levels below a predetermined threshold level, or playing speeds in excess of a certain level, as being equivalent to skipped programming. In addition, if a subscriber reduces the volume on selected programs or programs in particular subject matter categories, frequently increases the volume for other programs or subject matter categories, or sets the playing speed to play highlights only of other programs, that data can be used to infer preferences and dislikes which can be used to better select desired programming to be included in future download compilations.

User Playback Controls

The player mechanism seen at 103 includes both a keyboard and a microphone for accepting keyed or voice commands respectively which control the playback mechanism. As indicated at 261, the receipt of a command, which may interrupt the playback of the current selection, and the character of the command is evaluated at 262 to select one of six different types of functions.

The player 103 responds to the first command, "Accept" indicated at 263, by temporarily suspending the playback in order to accept a spoken "comment" from the user which is recorded as indicated at 264. After the conclusion of the comment, control is returned to 261 to test for additional commands before playback is resumed at 235. As described in more detail later, comments dictated by the user are saved and later uploaded to the host system where they exist as program_segments. By allowing the user to dictate and

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record comments, the system provides a number of useful capabilities, including posting comments and messages to the host (requests for help or additional information), posting comments and messages either privately or publicly to the originator of a program segment being played, thereby enabling private interchanges to occur between users, to enable the interchanges to take place in publicly available threads analogous to the UseNet and Listserv newsgroups employed on the Internet to facilitate public discussions related to predetermined topics. In addition, the ability to accept and upload user-generated comments and information provides a valuable mechanism by which the user can evaluate and comment on the program material being provided by the host. As described later in connection with FIGS. 5 and 7, the mechanism seen at 263 and 264 for introducing a pause in the session playback while a voice response or comment from the user is recorded can also be employed to produce program generated prompts which request information followed by automatic response recordings, thereby enabling the system to be used to collect data, program evaluations, and other information from the user.

A first command, "Go" indicated at 265, causes the player to make an immediate shift to a different program segment. For example, the spoken voice command "FIVE" can indicate a request to go to a predetermined numbered program segment while the spoken command "NEWS" could switch to the subject announcement segment for news programs. Alternatively, a mouse click on a screen-displayed menu of items, or a push-button on a hand controller connected by an infrared link to the player computer, could similarly be processed as a command to go to a predetermined program segment associated with that command signal. In such cases, the system records the start of the new segment on the log file (seen at 215 in FIG. 2) at 267 and switches the current playback position in the program sequence file 214 to the new setting at 269, and the playback continues at 235.

In the preferred arrangement, described in more detail in conjunction with FIG. 5 of the drawings, the program being played may contain passages which relate to other program segments in the compilation. These passages may be indicated by direct announcement, such as: "Say 'Go' when any of the following automotive companies are named to obtain additional information: . . . Ford . . . General Motors . . . Chrysler . . . Honda . . ." Alternatively, an audible cue signal, such a distinctive tone or chime, might immediately precede a passage which anchors a link to another program segment. Players equipped with stereo audio output capabilities can make cues distinctive by playing cued announcements in one stereo channel, with or without a supplemental cue signal in the other channel. When a cue signal indicates a hyperlink passage, a simple "Go" voice command causes the player to reset to a new location from which playing continues until a "Return" command, seen at 266, causes the player to return to the original sequence.

As discussed later in connection with FIG. 5, hyperlinks of this type may be used to identify program segments which are not available in the player 103 because they were not downloaded for inclusion in a scheduled session. In that event, the "Go" handling routine seen at 265 posts a record to the usage log containing the ProgramID of the requested but unavailable segment so that the requested segment can be included in the Requested file 301 seen at 301 in FIG. 4.

When a communications pathway such as an Internet or cellular phone link is available to connect the player 103 to the server, an immediate request may be sent to the server to download a needed but locally unavailable segment. In that case, the downloading and playing may proceed concurrently

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by placing the downloaded information into a memory buffer to which the downloaded program segment is written as it is concurrently read for reproduction as described U.S. Pat. No. 5,371,551 issued to James Logan and Daniel F. Goessling. To eliminate breaks in the program sequence, the player 103 may advantageously perform a look-ahead operation, sending a file request to the file server via the communication link by pre-scanning the program sequence file 214 to identify program segments to be played which are not in local storage and requesting those segments before they are needed.

Because announcement or “glue” segments are frequently repeated in different program segments, these segments are preferably retained in local storage by the player to avoid the need to be downloaded. The player advantageously processes the usage file at the end of each session and tags each program segment which has been played as being eligible for replacement to make room when necessary for incoming segments. Announcement segments, however, are preferentially retained even though they have been played because of the higher probability they may again be included in upcoming session schedules.

The third command, the SKIP command indicated at 275 in FIG. 3, causes the player to advance to the beginning of the next program segment in the program sequence, recording the start of the next sequence at 267 and resetting the playback position at 269. If the program segment has been subdivided (e.g. into paragraphs), the SKIP command causes the player to skip forward to beginning of the next subdivision within that segment. If desired, SKIP commands may be subdivided into two types, a SKIP TOPIC command and a SKIP SUBJECT command. When programming material such as news reports are grouped into topics within subject categories, as described later in connection with FIG. 5, a SKIP SUBJECT command allows the user to skip over all program segments within that subject and resume playback at the leading description of the next subject. In contrast, the SKIP TOPIC command always advances to the next topic (program segment or program segment subdivision) in the sequence. If desired, the SKIP TOPIC command can produce a jump to the next program segment or subdivision which does not contain advertising, making it unnecessary for the listener to listen to advertising while scanning the program sequence for the next desired program segment.

The BACK command indicated at 278 operates like the SKIP command but in the reverse (“rewind”) direction. Similarly, the BACK command may be subdivided into two commands, a BACK SEGMENT and a BACK SUBJECT command, which respectively reset the playback point to the beginning of the prior segment or the beginning of the prior subject description. Note that, after any given segment has played for a predetermined amount of time, the BACK command should reset the playback to be beginning of the current segment or topic respectively, allowing the user to start the current segment or topic from the beginning unless the playback point is already near the beginning, in which case the transition is made to the prior segment. The system responds to BACK commands by resetting the playback point to the desired point in the sequence and recording the start time, volume setting and new program segment ID in the log file as indicated at 267.

In the preferred form of the invention described in more detail in connection with FIG. 5, the context sensitive SKIP and BACK commands are used instead of the SKIP TOPIC, SKIP SUBJECT, BACK TOPIC and BACK SUBJECT commands discussed above. In the preferred arrangement, the program materials include subject and topic announcement program segments in addition to the program segments (both

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programming and advertising). When the user issues a SKIP or BACK command while the player is playing a subject or topic announcement, the player skips the entire subject or topic being announced and moves to the next subject or topic announcement respectively, automatically bypassing the intervening program segments which comprise the skipped subject or topic.

The fifth command, a “MARK” command at 280, is used to place a “bookmark” into the usage log which identifies a program segment, or a portion of a program segment, which the listener wishes to designate for future use. In its simplest form, the bookmark recording function indicated at 281 may simply record a bookmark and the Program_ID of the current program segment into log file. By bookmarking a program segment, that segment may be recalled by the subscriber and all or part of it saved for later use in local storage, from which it may be reproduced, forwarded as an attachment to an email message, and the like.

More elaborate bookmark functions which may be readily incorporated into the system if desired include the following:

Dictating or keyboarding an annotation at a predetermined position in the bookmarked program segment, the annotation being saved in local storage so that, when the bookmarked program segment is reproduced, it will include the annotation. The bookmarked program segment and the annotation may then be saved as a unit for future reference or forwarded to another person.

Bookmarking program segments, or annotations to bookmarked program segments, may be used in conjunction as an auxiliary audio voice mail and email handling system in which a subscriber’s email and voice mail items are organized as topics in the playback session, enabling the subscriber to bookmark particular incoming messages (program segments) for further attention, or to dictate voice mail responses, or responses that can be converted to text form by a human typist or by a voice recognition system. This aspect of the present invention allows the subscriber to review and respond to incoming email and voice mail messages while commuting or traveling to more productively utilize travel time. Voice annotations may be stored in separate files which are uploaded to the host with the usage file and keyed to the program segment passages which they annotate by records in the usage log file.

The sixth command type, the “MENU” command indicated at 283 in FIG. 3 switches the player to a predetermined menu program segment, records the start of a menu mode state in the log file at 285 and places the player in the menu mode at 233. Using a hands free voice command system, the player may reproduce a menu program segment in which a sequence of options are enunciated on the system’s audio output speaker with short pauses between the recited options. By providing the voice command “Go” during or shortly after a desired option, the user may cause the system to branch to that selection. Menu options of this type may be conveniently implemented using the hyperlink capability described later in connection with FIG. 5. Alternatively, as noted earlier, the menu of options may be displayed on the screen with the desired playback point being selected using the keyboard or a pointing device. In all cases, each transition to a new program segment is recorded into the usage log for later uploading to the server and subsequent processing.

Program Compilation & Billing

FIG. 4 illustrates the principle data processing steps and information structures employed by the preferred embodiment of the invention to compile programming information personalized to the preferences of individual subscribers, to

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perform accounting functions which produce billing charges to subscribers and advertisers, and to determine royalty payments due to content providers.

The program, advertising and announcement segments to be made available to an individual subscriber include those program selections which the subscriber chooses from the supplied catalog of recommended programs, or additional selections chosen during a dial-up dialog with the host, as described above in connection with step 217 seen in FIG. 2. The selections made by and uploaded from the subscriber take the form of a file (sequence) of 32 bit integers, each integer (ProgramID) designating a particular program segment. This file of integers is placed in a relational database Requested Table seen at 301 in FIG. 4, with each row (record) in the Requested Table being an identification number which specifies a corresponding record (row) in a database table 303 called the Programs Table. The Requested Table 301 includes not only express requests from the user based on catalog selections but also requests which result from failed hyperlink requests which occur when the listener requested hyperlinked information during the session which was unavailable in local storage at the player. The program segments (which include programs, advertising and announcements) have a plurality of attributes which are described in the data fields of each record (row) in the Program Table 303. The following Pascal type declarations define the content of each record in the Programs Table 303:

```

Type
  Classtype = (advertisement, program, announcement);
  Program_Segment = record
    ProgramID: integer; { unique key }
    ProviderID: integer;
    Class: Classtype;
    URL: pchar;
    Created: datetime;
    SubjectDesc: integer;
    TopicDesc: integer;
    GroupID, Episode: integer;
    CommentOn: integer;
    Subjects: array[0..15] of integer;
    Importance: array[0..15] of integer;
    Youngest, Oldest, male, female: byte;
    HouseLow, HouseHigh: byte;
    Duration: integer;
    Plays: integer;
    TotalTime: double;
    PlaysRate, TimeRate: integer;
    Timeliness: integer;
  end;
    
```

Each Program_Segment record in the Programs Table 303 is identified by a unique key integer value, ProgramID, which is the primary key value upon which the Programs Table 303 is indexed and accessed. The Program_Segment records in the Programs Table 303 are relationally linked using the ProgramID key to other tables including:

- the Requested Table 301 discussed above,
- a Schedule Table 307 which contains the recommended sequence of program segments for the next playback session,
- a NewCatalog Table 308 which contains the identities of new available program selections to be added to the subscriber's catalog of available programming, and
- an Advertisements Table 311 containing entries which describe advertising program segments to be brought to the attention of the subscriber.

The relational database system employed by the preferred embodiment of the invention further includes a Subscribers

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Table 313 which contains information describing each subscriber, a Content_Providers Table 315 containing information about each person or firm which supplies royalty-bearing information for dissemination to subscribers, and an Advertiser Table 317 which contains information about each advertiser that provides advertising program segments to subscribers. Mailing addresses and other information for subscribers, content providers and advertisers is contained in a single Account Table 321 to simplify the data structures needed.

A Usage_Log Table seen at 333 is uploaded from the subscriber, typically at the same time the express program requests in the Requested Table 301 are transferred, and processed at 350 to update the Subscribers Table 313, the Content Providers Table 315, the Advertisements Table 311, the Programs Table 303, and the Requested Table 301 as described below.

Program Schedule Generation

In accordance with the invention, the host server receives and supplements the user's initial selection of a sequence of desired programs, first by adding the program selections specified in failed hypertext requests as indicated by the Usage_Log Table 333 during usage log processing at 350, and then by adding advertisements, announcements and additional program segments tailored to the subscriber's known preferences as indicated at 340 in FIG. 4, thereby producing the recommended Schedule Table 307 which is transferred to the subscriber, along with program segments, during the download transfer. Indeed, if the subscriber provides no selections at all, the host will prepare a Schedule Table 307 containing program segment selected entirely by the host on the subscriber's behalf. The programs, advertising and announcement segments which are added to the Request Table 301 to form the Schedule Table 307 are determined by a matching procedure 342 which may be better understood by first considering the content of the data structures which provide data utilized to make those selections.

The Programs Table 303, as noted above, contains Program_Segment records which describe the nature of each programming, advertising and announcement segment in the library which is potentially reproducible by the player 103. As illustrated by the type declaration above, each Program_Segment record specifies the account number (ProviderID) of the advertiser or content provider if any who may be charged or compensated for the actual playing of the program segment by subscribers. The record further contains a Classtype variable Class which indicates whether this segment is an advertisement, a program, a comment or an announcement.

The Class variable may also used to further subclass each program segment; for example, program segments which hold user-recorded comments may be designated as being "public" comments made generally available to all subscribers, "private" comments to be directed solely to the provider of the program_segment commented upon, and "host" comments to be directed to the host system.

The Program_Segment record's URL field specifies the location of the file containing the program segment in the file storage facility indicated at 304 in FIG. 4 (i.e., normally on the FTP server 125 seen in FIG. 1, but potentially including storage areas on the web server 141 or at any other accessible location on the Internet). In addition, the subscriber may wish to designate for future play a program segment already loaded into the player 103 by virtue of a prior download. The subscriber may elect to include an already loaded file because it was not reached in a prior playback session or because the subscriber wishes replay the selection. In that event, the ProgramID of such a selection is nonetheless included in the uploaded selection list (Requested Table 301), recognizing

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that at the time of actual download, the player 103 will only request the transfer of those program segments not already present in local storage. The uploaded Requested list 301 should accordingly be understood to be indicative of the requested content of a future planned playback session and not necessarily a listing of programs to be downloaded. The selection of files to download is preferably made by the player which issues FTP download requests from the server by specifying the URLs of the needed files.

The Created field contains a timestamp value specifying the data and time of day the program segment was created. In Created field allows user or host to select program segments by date and permits the listing of segments in chronological order in program catalog listings.

The Program_Segment record further contains a SubjectDesc field and a TopicDesc field, both of which take the form of ProgramID integers which identify other program segment records which contain detailed information on audio announcement and displayable text descriptions of subjects and topics. The descriptive text files for subjects and topics are displayable by the player 103 as part of descriptive catalog entries which enable the user to choose desired segments. Together, the subject and topic program segments provide a hierarchical catalog listing which provides the descriptive information about the associated content segments which enables the subscriber to make informed selections. The text specified by the SubjectDesc and TopicDesc fields may be searched using conventional keyword searching techniques to permit the subscriber to locate and identify particular programming of interest from the locally stored catalog or, in a dial up CGI interaction with the host, to list and select programs from the larger library available on the server.

Serialized Programs

As contemplated by the invention, programming may include serialized sequences of programs. A given program segment may represent an episode in a series which is selected as a group by the subscriber, or a subscriber may select an individual program in a serial sequence and the host may then further installments or related programs within the series to the catalog or session content thereafter sent to the subscriber. The Program_Segment record contains a GroupID field which specifies the series as a whole, and an Episode integer field specifies the position of the given program segment within the serialized sequence. When a serialized sequence is requested, the host may download the entire series in one download for playback at requested intervals, or less than all of the episodes when all are not yet available or when it is desirable to limit the total download content. When a subscriber selects and plays a given program segment, as indicated in the usage log, without having expressly selecting the entire series, the host may then add the next installment to the catalog or the next proposed session. If desired, a hyperlink (to be described) may be placed at the conclusion of each installment which specifies the next installment as the linked program segment. In this way, the listener may request that the next installment be played immediately (if it is available) or included in the next installment (if it is unavailable and the hyperlink fails).

The usage log may be employed to insure that the subscriber has an opportunity to hear episodes that may have been skipped. By monitoring the usage log, if an episode included in any given proposed session was not in fact played, the host may include it in the next proposed session as well. Note further that the serialization mechanism which has been described can be used to provide serialized advertisements to a subscriber, insuring that a subscriber does not hear a par-

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ticular ad twice and further insuring that the advertising is presented to the subscriber in the intended sequence.

In addition, the serialization mechanism may be used to provide sequential presentation relationships between related programs. For example, if a subscriber indicates an interest by selecting and actually playing a program on an evolving topic; for example, a news story about the America's Cup yacht races, further new stories on that topic may be assigned the same Group ID number so that they are automatically routed into the subscriber's catalog or program session if space is available.

Fields Supporting "Comments"

Serialized programs are related to, but should be distinguished from, the parent-child relationships that exist between program segments and the annotations and comments made on those program segments by users. As noted earlier with respect to the Accept command seen at 263-264 of FIG. 3, the player 103 of FIG. 1 permits the user to create an "annotation" or "comment" (typically in the form of a recorded audio message or a keyboarded text message) which is uploaded to the host 101 and stored as a program segment. The CommentOn field of the Program_Segment record contains the Program_ID of the program segment commented on, the Provider_ID field identifies the subscriber generating the comment, the Created field specifies the date and time when the comment was recorded, and the default values of the subject matter fields (discussed next) are copied from the subject matter fields of the program segment being commented on. These field entries provide a mechanism for supporting the comment handling features which are described in more detail below under the heading "Comment Handling." Program Selection

The Program_Segment record further includes a Subjects field which is an array of 16 integers, each of which may be a non-zero code value indicating a predetermined subject matter categories, allowing each programming segment to be matched against like codes specified as being subjects of interest by the subscriber, as well as codes indicating subjects to which advertised goods and services may relate.

The Program_Segment record also contains an Importance field which is also an array of 16 integers which (at least initially) holds an integer containing the reviewer/editor's assessment of the "importance" of the program segment relative to the subject matter code specified in the corresponding cell in the Subjects array. Thus, if Subjects [7]=12345 and Importance[7]=231, this program segment has been assigned a importance level of 231 with respect to the subject specified by code 12345. Another segment may also be relevant to the same subject, but with a different level of importance to that subject. These fields may be used by the host as a weighting factor used to route programs of greater probable interest to the subscriber. Note also The "importance" value associated with any given program may also be adaptively altered based on the actual use as reflected by the usage logs and by subscribers' catalog selections. By way of example, program segments which are started but frequently skipped while in progress may have their importance value decreased while program which are frequently selected from the catalog and listened to may have their importance values increased. In this way, the system adaptively learns, for each category or programs, which programs subscribers have found to be of interest and which ones were seldom used. Serialized programs (identified by a common Group ID) may be assigned importance values based on the actual usage of earlier episodes in the same series. Thus, when a series proves to be popular

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based on repeat selections of its episodes, all episodes (including those not yet issued) may be assigned a higher importance value.

The Youngest and Oldest fields (each storing a byte value 0-255) contains an indication of the age range to which a particular program segment should appeal. Similarly, the byte values Female and Male allow the entry of an estimate of the relative interest of a given program to the different sexes: thus, a program devoted to sports news could be assigned the values Female=60, Male=170 where the value 127 would indicate gender-neutral content. The MaritalStatus field is a single character ("S"=single, "M"=married, "W"=widowed, "D"=divorced).

The fields HouseLow and HouseHigh represents a range of household sizes range that may have a special interest in the program segment. Thus, programming directed to family interests may be directed to subscribers who are married with a household size equal to 3 or more.

The Duration field of the Program_Segment record specifies the duration of the program segment expressed in seconds. The Plays field is an accumulator field which is incremented by incoming Usage_Log records to reflect the total number of times a given program segment has been actually played by all subscribers. Similarly, the TotalTime value represents the total time a given program segment has been actually played by users. Together, these records can be used to determine the advertising fee due from the advertiser, or royalty amount payable to the content provider (the advertiser or content provider being specified the ProviderID field) for the use of this segment.

The Program_Segment record contains two signed integer values, PlaysRate and TimeRate, permitting an advertising charge or royalty payment (Amount) to be calculated as a value calculated by the executable formula:

$$\text{Amount} = (\text{Plays} * \text{PlaysRate}) + (\text{TotalTime} * \text{TimeRate})$$

If PlaysRate=0, the amount of the royalty or advertising fee for actual use of the segment can calculated based solely on the actual time duration of the played segment (so that little credit or charge is assigned if the segment is begun but then skipped). Alternatively, if TimesRate=0, the charge can be based solely on the number of times playing the segment was commenced, which may be deemed appropriate when it may be considered the responsibility of the advertiser or the content provider to hold the user's attention once a segment begins. Note that, as usage records are posted to increment the Plays and TotalTime fields in the Program_Segment records, as described later, any program segment which was played for less than a predetermined minimum amount of time may be disregarded, enabling the subscriber to "surf" through selections while listening to minimal information per segment without incurring subscription charges or generating advertising fees or royalty payments.

Program segments are selected for inclusion in the output Schedule Table 307 and/or the NewCatalog Table 308 by comparing the content of the Programs Table 303, the Subscribers Table 313, and the Advertisements Table 311. The fields contained in the Subscribers and Advertisements Tables are set forth in the following Pascal record type declarations:

```
Account = record
    AccountNo: integer; { Unique key }
    Name, Title, CompanyName: pchar;
```

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-continued

```
    Addr1, Addr2, City: pchar;
    State: string[2];
    Zip code, AreaCode, Phone, Fax, Email: pchar;
end;
Subscriber = record
    AccountNo: integer;
    Birthdate: Date;
    Sex, MaritalStatus: Char;
    HouseholdSize: byte;
    Interests: array[0..15] of integer;
    TopChoices, ChoiceCounts: array[0..15] of integer;
    ChargeLevel: byte;
    DataRate: Integer;
    Capacity: Integer;
    WeekDays: array[0..6] of Compilation;
end;
Advertisement = record
    ProgramID: integer;
    AccountNo: integer;
    DemographicMatch: function_id;
    DemographicWeight: byte;
    Earliest, Latest: datetime;
    Subscribers: integer;
    Repeats: byte;
end;
```

The Accounts Table seen at 321 in FIG. 4 is indexed by a key value AccountNo which is unique to each of its Account records. The fields of those records contain name, mailing address, telephone, fax and email information for all subscribers, advertisers and content providers in a single shared file. A person or firm specified by a record in the Accounts Table could simultaneously be a subscriber, advertiser and a content provider, in which case the same AccountNo key value would appear in each of the three tables: Subscribers 313, Content Providers 315 and Advertisers 317. Prospective or inactive subscribers, content providers and advertisers may also be described by entries in the Accounts Table which are not referred to in any other tables.

Additional information about each active subscriber is contained in the Subscriber record indexed by AccountNo (a key shared with the Accounts Table). The Subscriber record specifies personal information about the subscriber, including birth date (from which age may be determined), sex, marital status, and household size, all of which may be of use in better selecting program material of possible interest which should be brought to the attention of the subscriber.

Each Subscriber record further includes two arrays of integers which indicated the subscriber's subject matter preferences. The Interests array contains 0 to 16 integers each indicating a subject matter category of interest to the subscriber, the integers having the same meaning and being taken from the same category listing as the integers placed in the Program_Segment record's Subject array. These integers are placed in the Interests array in response to the subscriber's indication of subject matter preferences when the account is established as indicated at 203 in FIG. 2 or at any time thereafter when the subscriber elects to modify the stated preferences at step 217 in FIG. 2.

A second array of 16 integers called TopChoices is an ordered list of the same subject matter integers; however, in this array the subject matter integers are listed in order of actual playing frequency as indicated by the parallel array of ChoiceCounts integers. For example, the subject matter integer 321 in TopChoices[3] and the count 18 in ChoiceCounts [3] indicates that 18 selections had been played in the category 321 which was the fourth most-frequently played category. The ChoiceCounts array is modified whenever the usage log indicates that a selection in a particular category has

been played by that subscriber. As a consequence, the TopChoices and ChoiceCounts arrays provide an indication of the subscriber's interests as indicated by his or her actual use of the player.

The ChargeLevel field in the Subscriber record indicates the subscriber's willingness to accept the insertion of commercial messages into the programming in order to defray subscription costs. A ChargeLevel value of zero indicates that the subscriber desires to pay the minimum charge and correspondingly is willing to accept sufficient advertising content to achieve that goal. At the other extreme, a ChargeLevel value of 255 indicates that the subscriber wishes to eliminate all commercial messages except those specifically requested.

The DataRate field indicates the rate at which information can be downloaded to the subscriber over the available communications link (typically dependent on the capacity of the modem used by the subscriber). The DataRate field is initially established from information supplied by the subscriber when the account is established (at step 203 in FIG. 2) but is thereafter altered to reflect actual averaged transmission rates experienced during download operations. Similarly, the Capacity field indicates the available mass storage file space available for program data in the player store (seen at 109 in FIG. 1). This value is initially supplied by the subscriber during account initialization, automatically reduced whenever the utility programs executing on the processor 105 detect less space available, and increased whenever the subscriber consents to the allocation of more available space when the utility programs detect that space is available and that additional space could be beneficially utilized given the download time available and the subscriber's desired session lengths.

Desired session lengths are contained in seven records each of type Compilation as defined in the following record definition:

```
Compilation = record
  Earliest, Latest: datetime;
  PlayMinutes, Longterm: Integer;
end;
```

Each Compilation record describes the download requirements for a specific day of the week and contains fields specifying the earliest and latest times of day when download can be begun, with the latest download time being at least a predetermined time in advance of the session start. In this regard, it should be noted that playback and download can occur concurrently, with the Schedule Table being downloaded first, the NewCatalog Table being downloaded second, program segments specified in the Schedule Table which have not previously been downloaded being transferred third (in the order of the expected presentation as stated in the Sequence Table), with program segments selected by the subscriber for future sessions being downloaded last as download time permits. In accordance with the invention, it is desirable to download the equivalent of a full session's programming in addition to the currently scheduled session programs so that, in the event of a temporary communication link or host failure, programming will be nonetheless be available. In installations which utilize download information to a removable media cartridge or a transportable player which is then played back in an automobile or elsewhere, and hence disconnected from the data link to the host, it will of course be necessary to complete the download prior to the disconnection, meaning that the Latest field in the compilation record

should be a time which is in advance of the earliest expected session start time by a duration equal to the maximum expected download time. Because the subscriber may wish to use different download timing on different days of the week, a separate compilation record exists for each day.

The compilation record further specifies the expected duration of the playback session for that day using the variable PlayMinutes. The variable Longterm indicates the maximum duration in which extended play may be required. For example, a commuter who sometimes experiences long traffic delays on Mondays and Fridays may specify that an extra hour of extended programming should be provided for those days. Such extended programming is preferably consists of non-time critical programming which can be stored for future use as needed by the player.

Note that the compilation records noted above are used by the server to optimize the content of the recommended program schedule and not to initiate actual downloads to the player. As contemplated by the invention, the player initiates the actual downloads by sending download requests to the server. Nonetheless, the server can transmit to the client player an indication of optimum times when downloading should be requested. In this way, the load imposed on the server can be spread over time to avoid delays.

Program segments which are of interest to the user and which should be included in either the Schedule Table 307 or the Catalog Table 308 may be automatically identified by the following mechanisms:

The subject matter codes (Interests, TopChoices and ChoiceCounts) for a given subscriber for whom the Schedule Table 307 and Catalog Table 308 are being prepared may be compared with the subject matter contained in the Program_Segment record's Subject for each subject category description and each individual program description. Note that the Program_Segment record for a subject category description may identify related categories. In this way, an indication that a subscriber is interested in a particular category may be used to identify that category, any related category, and any program which specifies that category in its Program_Segment record. A weighting value may be calculated to indicate the extent to which the subscriber's stated interests match a given program or category of programs. Programs to which high weighting values are assigned are placed in the Schedule Table if the usage log data does not indicate the subscriber has already played that program, whereas the remaining programs having a weighting value greater than a predetermined threshold are placed in the Catalog Table 308. The duration of the programs specified in the Schedule file 307 is governed by the scheduled session lengths, communications throughput, and client storage capacity values contained in the DataRate, Capacity and WeekDays fields of the Subscriber record.

The attributes of the subscriber (birthdate, sex, marital status, and household size) specified in the Subscriber record may be matched against the corresponding descriptions contained in the subject and program Program_Segment records (youngest, oldest, male, female, houselow, househigh) to identify programs and categories of programs likely to be of interest to a subscriber having those attributes. An advertiser-supplied function defining this relationship is specified by the DemographicMatch function_id field of the Advertiser record, as discussed below.

The host server may advantageously use an optimization technique such as linear programming to complete the

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segment selection process. The optimizer will take into account the Subscriber's time constraints, cost constraints, and subject preferences. The time constraints used in the optimization are: the playing time available for the current day at the player, the download time available, the percentage of segments usually skipped by the Subscriber. The cost constraints are Subscriber ChargeLevel and the accumulated value of individual advertising segments. The subject preferences are based on the user's expressly stated interests and others interests inferred from the user's playing selections, as noted earlier. Each segment resident in the database at the time of download is evaluated against the constraints and the optimizer thus chooses a set of segments which is best for the subscriber at that time.

The weighting value computed for a segment in the database may also be advantageously varied in accordance with the age of the segment; that is, segments will decline in value as they age with the rate of decline being depend on the Timeliness attribute stored in the Program_Segment record. If the subscriber misses a download for a given day, the timeliness factor will allow the host server to compensate for the lost listening opportunity by adding articles from prior days which are still of interest to the Subscriber.

Targeted Advertising

In order to identify and insert advertising program segments into the Schedule Table 307, the preferred embodiment of the invention utilizes additional information which describes each advertisement to be placed before subscribers. This information is placed in an Advertisement record having the structure defined earlier and held in the Advertisements Table 311. The ProgramID field of the Advertisement record identifies a Program_Segment record (described earlier) which describes the content of the advertisement itself. The remainder of the Advertisement record contains additional information used to control the manner in which the identified advertising program segment is selected for insertion into the programming supplied to subscribers.

The AccountNo field of the Advertisement record identifies the entity requesting the advertisement which is typically the same as, but not necessarily the same as, the entity specified in the ProviderID field of the Program_Segment record for advertising segment. The Subjects and Importance arrays in the program segment for the advertising (specified by the ProgramID field) may be matched the subject matter categories used by or created for subscribers to indicate their interest and may be used to produce a numerical value InterestMatch indicative of the extent to which a given advertisement is likely to be suited to the interests of a particular subscriber. The following algorithm, expressed as a function in Pascal, returns an integer value, which may be employed to derive the InterestMatch value indicating the degree to which any program segment matches the interests of a given subscriber:

```
function InterestMatch(SR: subscriber; PSR: program_segment):
integer;
var I: integer;
    InterestCount: integer;
    ChoiceCount: integer;
begin
    InterestCount:=0;
    ChoiceCount:=0;
    for I:=0 to 15 do
        if PSR.subjects[I] > 0 then
            for j:=0 to 15 do
```

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-continued

```
begin
    if SR.Interests[j] = PSR.Subjects[I] then
        inc(InterestCount, PSR.Importance[I]);
        if SR.TopChoices[j] = PSR.Subjects[I] then
            inc(ChoiceCounts,(20-j)*PSR.Importance[I]);
    end
    else break;
    return(InterestCount + (ChoiceCounts div 10));
end; { InterestMatch function }
```

The foregoing function identifies all of the Subjects codes specified by the program_segment record for a program segment (including a segment specified the ProgramID value of the Advertisement record for that advertisement) which also match a subject matter code in which the subscriber described by the Subscriber record SR has expressly stated an interest, or has shown an interest base on programs actually played. In each case where a match was found, the Interest_Match value is increased by an amount related to both the weight given to the category in advertising program's Importance array and the level of interest indicated for the subscriber. Note the InterestMatch function described above can be used to generate a numerical indication of the degree to which a given subscriber may have an interest in any program segment, whether that segment contains advertising, entertainment, news, or other content. In the case of advertising program segment however, the Subject and Importance values are assigned by the advertiser in order to define the interests held by target subscriber to whom the advertiser wished to direct the advertisement.

In addition to the InterestMatch value determined above, weight may be given to the subscriber's personal characteristics using a similar weighting function specified the function_id DemographicMatch which, like interest match, returns a value based on an advertiser specified relationship based on the subscriber's personal characteristics (age, sex, marital status, size of household, etc.) as previously noted. The value DemographicWeight may be used to specify the relative importance of demographic values derived by the DemographicMatch function and the value returned by InterestMatch.

All advertisements scheduled for a given subscriber may then be prioritized based on the resulting calculated weight assigned to each advertisement by matching algorithms which compare the characteristics of the subscriber with the makeup of the target audience defined by the fields of the Advertisement record. These advertisements are then preferably inserted into the programming Sequence with the advertisement having the highest weight being scheduled to occur first in the sequence, thereby insuring that the best fitting advertisements are included in the programming and most likely to be played by the subscriber.

Controlling the Quantity of Advertising Delivered

The rate at which advertising is actually inserted by the player is controlled by the ChargeLevel value in the Subscriber record for each subscriber. The ChargeLevel value (a number from 0-255) indicates the rate at which a subscriber is willing to accept advertisements. An advertisement duration count variable (not shown) maintained by the player 103 accumulates the total duration of actually played advertising while a program duration count variable accumulates the total duration of actually played programming. An integer division of these to duration count values indicates the proportion of time being devoted to advertising. If this proportion falls below a threshold value determined by the value of ChargeLevel, additional advertising is inserted between pro-

gram segments until the desired proportion is again reached. In this way, advertising skipped by a subscriber will be replaced later by different advertising to yield the proper proportion of programming to advertising, thereby achieving the subscription charge rate requested by the user.

The Schedule 307 downloaded to the player, and the associated programming, announcement and advertising segments sufficient to provide a complete program sequence with adequate advertising to meet the preference of the subscriber, creates total program content longer than the expected playing time indicated by the PlayMinutes variable of the days Compilation record. As a consequence, the player builds a collection of program and advertising segments which can be played in the future and need not be downloaded. Downloading of actual program segments therefore preferably occurs at the request of the player which scans the Schedule for program and advertising segments not already available and issues a request for the needed segments using the URLs contained in the players catalog of Program_Segment records. In addition, as noted earlier, the subscriber has the opportunity to review the local catalog for particular program segments of interest which can be placed in the next day's schedule (and downloaded then at the request of the player if not already resident). The catalog of available items is supplemented by the NewCatalog Table items downloaded from the server as library items are identified whose makeup matches that of the subscriber and should be included, either immediately in the days Schedule Table, or made available by inclusion in the downloaded NewCatalog Table alone.

Accounting Functions

The preferred embodiment of the invention processes the usage log data created during the playback session as described in connection with FIG. 3 to produce a variety of accounting and analysis reports and billing functions.

Each advertising, announcement and program segment played on the player creates a UsageRecord stored as a record in the Usage Log Table having the following content:

```

UsageRecord = record
    Subscriber: integer;
    ProgramID: integer;
    Start: datetime;
    Volume: Integer;
    Playingspeed: Integer;
end;
    
```

The Subscriber field contains the AccountNo of the subscriber which used the program segment, and the program segment itself is identified by the ProgramID field. If the value of ProgramID is negative, the record indicates a failed hyperlink attempt and the ProgramID is posted to the Requested Table 301 so that the formerly missing program segment will become a candidate for downloading to the player. In the UsageRecord, the Start field contains the starting time of day (to the nearest second), the Volume field contains a value indicating the level at which the volume was played, and the PlayingSpeed field contains a value indicating the playing speed. A negative playing speed value may be used to indicate that the player was placed in the "play highlights" mode so that only highlight passages were being played.

As noted earlier, each UsageRecord is processed to modify the Subscriber record field TopChoices by first building an ordered list of subject matter categories and the corresponding counts of the number of times each category was played in the session described by the Usage Log Table. These counts

are then used to increase the existing Choice Counts for the subject matter codes indicated in the TopChoices array, and the TopChoices and ChoiceCounts arrays are then jointly resorted into order by descending number of plays. To insure that subject matter categories recently used are allowed entry into the list, the lowest five old entries are discarded each time if necessary to make room for the five most frequently played categories in the current usage log which were not already on the list. The TopChoices array accordingly contains an adaptively learned set of subscriber subject matter preferences which is continuously modified automatically without requiring attention from the subscriber.

Subscriber billing is based on the accumulated amount of programming actually played by the subscriber with credit being given for advertising actually presented to the subscriber. To accomplish this, a detailed billing history can be constructed from the usage log which indicates the programs heard, the duration of each, and the cost (or credit) attributable to that program segment. The TimeRate value specified in the Program_Segment record for each item specified in the UsageRecord's ProgramID is multiplied times the segment duration (determined by subtracting the start time of the segment from the start time of the next segment specified in the next UsageRecord). The TimeRate is a signed integer, with negative values being indicative of credits (for advertising) and positive values being indicative of charges for programming. Note that each program segment and advertising segment can have a different rate, allowing the system to accommodate charging rates that reflect different programming costs.

Such costs frequently are affected by the royalty rates charged by content providers as well as the extent to which costs are defrayed by advertisers. In accordance with the invention, each UsageRecord may also be posted into the Content_Providers Table 315 which maintains royalty payment records for amounts due to content providers. As in the case of subscriber billing, the processing of UsageRecords allows the embodiment shown in FIG. 4 to provide detailed information to content providers, identifying the extent each provided program segment was actually performed. Content providers can also be provided with demographic statistics identifying the characteristics of the subscribers who chose to play the content provided, as well as an identification of the extent to which program segments were skipped while in progress, tending to identify programs which were had continuing appeal during the session and those that did not.

Similarly, advertisers can obtain detailed billing records indicating the precise extent to which advertising was actually presented, and paying only for advertising known to have been effectively delivered. In addition, demographic data can be provided to advertisers indicating the makeup of persons who played the advertising, as well as the demographic characteristics of those who did not, in order to better target future advertising.

Finally, the UsageRecords are processed to post use data into the Programs Table, modifying the Plays and TotalTime fields of the Program_Segment records to reflect the extent to which programming materials are actually presented. This information, as well as the demographic statistical information indicating which classes of customers are listening to which classes of programming, is of substantial value in collecting a library of offered programming which best fits the needs of the community of subscribers.

Program Format and Organization

The programs which reside in the program database 303 seen in FIG. 4 are preferably formatted in accordance with a standard structure to facilitate "skimming" the sequence of

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program segments defined by the selections file 351, and to make it possible to perform jumps to different predetermined locations in the program sequence.

As previously noted, the program database 303 may include, for a given program segment, both a recorded audio narration and a text transcript or, in the alternative, a text transcript alone which can be converted into a spoken narrative by speech synthesis. While these narratives must be listened to in a linear sequence, it is nonetheless possible to selectively access individual program segments by organizing the overall program compilation into a hierarchical structure in which:

As noted earlier, the program segments which are available in a master library are described in a catalog and associated with descriptors of various kinds, allowing the content of the compilation to be tailored to the preferences of the subscriber, both through express selections made by the subscriber and by selections (or suggestions) made automatically by matching the subscribers known preferences and interests against descriptors which characterize the programs segments, as previously described.

The resulting program compilation is then divided into components each having a beginning, or entry point, to which jumps can be made by the listener by a dynamic selection mechanism which is operative during the listening session.

A given program segment (i.e., an entity described in the program catalog and selected automatically or expressly by the user as being of interest as previously described) is advantageously combined with other related program segments to form a sequence of associated segments here called a "subject," forming a subsection of the overall compilation. A "subject" collection of program segments may (but need not) directly correspond to the named subject matter categories utilized to specify subscriber's preferences as noted earlier. A "subject" collection begins with or is preceded in the scheduled program sequence by a spoken announcement of the subject, giving the user the opportunity to skip immediately to the next subject, thereby skipping all of the program segments comprising that subject.

As a consequence, by the simple expedient of skipping from subject announcement to subject announcement, a user can locate a particular subject of interest. For example, if a given program compilation as defined by the Selections file (having the format illustrated at 351 in FIG. 5) contains one hour of programming divided into 8 different subjects collections, the user can quickly locate a subject of interest by skipping from subject announcement to subject announcement until a subject of interest is announced, at which time the player is allowed to proceed to the next level in the hierarchy, a "topic" announcement for the first program segment in that subject collection.

Each program segment begins with a "topic" announcement which consists of a brief, summary description of the content of the program segment to follow. Again, at this level, if the user upon hearing the topic announcement elects to skip that program segment, the player automatically advances to the entry point preceding the next topic announcement. In this way, within a given subject, the user can skip from topic to topic to select only the program segments of interest.

Following the topic announcement, if the program segment consists of narrative text, such as a news program, the narrative is presented in a sequence of paragraphs, with

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the first paragraph providing an overview summary of the content of the program segment (topic) and the succeeding paragraphs providing increasing levels of detail. The narrative is thus presented in a fashion not unlike that followed in news stories written by journalists for print publication, but with more dependable rigor, recognizing that the listener presented with a one-dimensional audio presentation must necessarily depend on the consistent adherence to the subject, topic, summary paragraph, and increasing detail sequence to substitute for the random access provided by two-dimensional presentation of headlined newsprint articles.

Finally, within paragraphs, the sentences should be carefully organized with leading topic sentences, again giving the listener a preview of what is coming next in the sequence to enable that material to be skipped if it is not of interest.

By way of example, a program compilation for a given subscriber might illustratively consist of seven subjects: world news, national news, local news, computer trade news, email and voice mail messages, country music, classical music, and the listener may skip from subject announcement to subject announcement to readily locate the beginning of any one of the six subjects. The four "news" subjects each consist of a collection of structured program segments, each of which begins with a subject announcement, again allowing the user to skip from subject to subject, listening to only those which are found to be of interest.

Similarly, the music selections ("topics") within each of the two music subjects, "country music" and "classical music," are preceded with a brief announcement identifying the musical selection which follows, allowing the user to quickly skip from announcement to announcement until a desired selection is found. Because many listeners prefer music without announcements, the subscriber may request that the announcements be suppressed during continuous play and/or that the beginning of each musical segment be played instead of identifying announcements when the musical collection is being "skimmed" to locate the next selection to be played. To simplify the player controls, the subscriber is preferably selects the extent to which narrative music identification announcements are to be played at step 211 seen in FIG. 2, at the same time the user is given the opportunity to edit the downloaded program sequence.

Play Highlights Mode

To further facilitate rapid skimming, the player may be adapted to support playback in what is here termed the "play highlights" mode. Just as a student often uses a marker to highlight important names and phrases in printed text, key points in the audio narrative may be tagged as highlights such that, when the user places the player in a "play highlights" mode, the player automatically skips from highlighted passage to highlighted passage, greatly increasing the speed of presentation, but allowing the user to revert to normally play mode whenever a highlighted passage attracts the users interest for more detail.

Highlighted passages may be advantageously identified by means of a sequence of relative byte locations (integer offsets from the beginning of the program segment) which form part of the selections file 351 and which specify the start and end of each highlighted passage. The player, when placed in the "play highlights" mode, then plays only those passages identified as highlighted portions of the program segment file.

Hyperlink Jumps

In addition, the structured program files may advantageously contain, where appropriate, "hyperlink" passages, which may take the form of announced cross references to

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other materials, or sentences or phrases which describe related information contained elsewhere in the download compilation but which do not follow immediately in the sequence. In order to alert the listener to the fact that a sentence or passage is a hyperlink to other information which is out of the normal playback sequence, an audible cue may advantageously proceed, accompany, or immediately follow the passage in the normal playback which identifies the character of the hyperlinked material. Using the terminology typically employed to described hypertext, the normal programming sequence includes "anchor" passages which are identified by an audible cue signal of some type and are further associated with a reference to hyperlinked material to which the playback may jump upon the listener's request. Hyperlinked material, like all other programming, is advantageously preceded with a topic description and, if the hyperlinked material is a narrative, it should begin with a summary paragraph, followed by increasing detail.

A hyperlink may be directed to a program segment which is not present in the current selections list. In that case, the Link variable contains a negative number to distinguish it from references to a particular Selection_Record, and is interpreted as the negative of a ProgramID number. If the referenced ProgramID is available in the player's mass storage system, it may be fetched and played and, upon its conclusion, an automatic return is made to the original sequence. If the referenced ProgramID does not refer to a locally stored record, the listener is informed that it is currently unavailable, but will be included in the next download for the next session.

In addition to having means for accepting a user command to execute a jump to the hypertext material, the player also advantageously includes a mechanism (special key or voice command response) which, when activated, causes a "return" to be made to the playing sequence at the point of the original anchor from which the hyperlink was performed. In this way, a listener may listen to as much or as little of the linked information as desired, retaining the ability to return to the original. Just as computer subroutines may be nested by saving the return addresses of a calling instruction in a stack mechanism, a hyperlink may be executed from within a hyperlinked narrative, and so on, with the listener retaining the ability to execute a like sequence of returns to resume the playing sequence at the point of the first hyperlink call.

To control subject and topic skipping, as well as hyperlink jumps, the selections file seen generally at 301 in FIG. 4 preferably takes the form of a sequence of records, each having the structure defined by the following Pascal record definition:

```

type Selection_Record = record
    LocType: Char;
    Location: Integer;
end;
    
```

where LocType is a single byte character having the values and meanings shown in the following table:

LocType	Meaning
"S", "s"	Subject Announcement
"T", "t"	Topic Announcement
"P", "p"	Programming content segment
"Q", "q"	Advertising segment
"G", "g"	Glue(announcement) segment

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-continued

LocType	Meaning
"H"	Highlight start offset
"E"	Highlight end offset
"A"	Anchor start offset
"M"	Bookmarked anchor start
"B"	Anchor end offset
"L"	Linked segment
"R"	Rewind to identified location
"I"	Image identification
"J"	Image display start offset
"K"	Image display end offset
"C"	Accept comment
"V"	Accept value designation
"X"	Accept list termination
"Y"	Accept "Yes"/"No"

As seen in the table, highlight passages are specified by two Selection_Records, an "H" marking the beginning and an "E" record marking the end of the highlight passage. The Location field in each record contains the byte offset from the beginning of the current program segment whose identity is specified by the last preceding "P" Selection_Record which contains the ProgramID of the program segment in which the highlight passage occurs. "Q" advertising segments and "G" announcements segments behave like regular programming content segments, but are uniquely identified to enable the player to skip over, or skip to, advertising and glue segments when appropriate. In the "play highlights" mode, the player scans the selections file and plays the program segments for each subject and topic announcements but plays only those portions of an identified program segment which are specified as highlight passages or as anchor passages for hyperlinks.

It is desirable to further provide a mechanism for subdividing narrative programming segments into subparts (e.g. paragraphs). Lowercase LocType values "s", "t", "p", "q" and "g" are used to subdivide subjects, topics, programming, advertising and glue segments respectively. The lowercase LocType records provide the markers needed to implement subdivision skipping, as previously discussed, to enable forward and backward navigation within longer program segments, and further provides passage identifiers which may be used to better synchronize the audio and visual transcript presentation of longer passages.

An "I" Selection_Record contains an integer identification of an image file which is downloaded and stored using a filename found in an image filename table indexed by the image identification number. This indirect access to the image files eliminates the necessity of storing the filenames themselves in the selections file 351. The "I" image file identification records immediately precede a "J" record which specifies the offset location from the start of the compressed audio file where the image display begins. In normal "slide show" presentations, the current image display continues until the position indicated by a subsequent "I"/"J" record at which point the display shifts to the second image. The "K" record type is provided to indicate the position at which the current image display is turned off for those instances when it is desired to suppress the image display entirely.

Each anchor passage for a hyperlink is specified by three selection records: an "A" record indicating the start of the anchor passage, an "B" record indicating the end of the anchor passage, and a "L" record containing the offset location within the selection file to which a jump is made if the user requests a jump to the hyperlinked material.

As discussed in more detail later in connection with FIG. 7 of the drawings, the position and identification of highlighted

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passages, hypertext links and synchronized images may be conveniently expressed using conventional hypertext markup language to tag the text of the narrative to being presented in the interactive multimedia format contemplated by this aspect of the invention.

The start of bookmarked passages are identified with a special anchor designation, "M," followed by a "B" record to identify the end of the bookmarked passage. If a voice annotation is added, the player places it in its own program segment which is identified with a negative ProgramID in the following "L" record. The presence of the annotation may then be made known to the listener during subsequent playback of the marked passage by means of a distinctive audible cue, and the annotation may then be listened to in the same fashion as any other out of sequence linked material. Note that bookmarked passages and annotations are noted both in the usage log file, as discussed earlier in connection with FIG. 3 at 280 and 281, but also their presence is also recorded in the Selections file 351 by inserting "M", "B", and (if annotations exist) "L" records, making it possible to immediately replay annotations or return to replay bookmarked passages.

Annotations differ from "comments." Like an annotation, a comment is also stored in its own program segment, but a comment operates as a public or private message generated by the user and communicated publicly or privately to (1) a designated special interest group, (2) the originator of a program segment, which may be the author of earlier comment, (3) the system host, or (4) the person producing the comment to form a note for future reference. While both comments and annotations may be created at the request of the user at any point during a playing program segment using the "Accept" command (see 263-264 in FIG. 3), the user may be prompted by a pre-recorded request for a comment, or other user input, with the prompting request being placed at any point in a playing program segment, typically after an audio prompt which explains the nature of the information being requested.

Requests for information from the user preferably take one of three forms which are implemented by the records in the schedule file identified by the LocType codes "C", "V", "X" and "Y".

A "C" record causes the player to temporarily pause the playback and record a voice response from the user which may be arbitrarily long and which is uploaded to the server 101 to form a new program segment in the manner to be described under the heading "Comment Handling."

A "Y" record pauses the playback and awaits a "Yes" or "No" response from the user which is then recorded in the usage log. The yes/no response request allows a program provider to obtain response data from subscribers.

When simple "yes"/"no" answers are inadequate, a series of "V" records may be used to identify a set of prompt values from which the user may select, with the end of the list being indicated by a "X" record. The narrative of a program segment might, for example, proceed as follows: "We would like to know which of the following four ice cream flavors is your favorite. Say the word "YES" promptly when your favorite is mentioned. V chocolate V vanilla V pistachio V peach E". In the example, the V characters indicate the position of the start of each prompted choice and the E character indicates the end. If no affirmative voice response has been accepted by the time in the playback the position indicated by the E selection record, the player returns to the positions indicated by first of the series of V records to repeat the choices. When a valid response is received, a response value is written into the usage log indicating the ordinal position of the selected response.

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Given the prompts above, for example, if the user says "YES" after the "chocolate" prompt, the response value 1 is written to the usage log, if the user selects 'vanilla' a 2 is written, and so on.

5 The Selections File

FIG. 5 shows an illustrative sequence of Selection_Records making up a selection file indicated generally at 351 which illustrates the manner in which the user may navigate the playback session between playback positions designated by the selection file. At any given moment, the next item of programming to be played is specified by an integer register CurrentPlay seen at 353 which holds the record number of the particular Selection_Record in the selections file 351 to be played next. As shown, CurrentPlay points to a subject Selection_Record identified by the LocType "S" 355 and a Location field 357 which contains the ProgramID of an announcement program segment which describes the subject. If the user issues a skip command during or shortly after the time when subject announcement is played, the player executes a skip to the next subject, which is accomplished by scanning the selection file 351 until the next subject Selection_Record seen at 360 is located, and then performing a jump by inserting the location of Selection_Record 360 into the CurrentPlay register 353, causing the intervening material to be skipped as indicated by the dashed line 362.

If, instead, no subject skip is requested, the CurrentPlay register is incremented by one when the subject announcement concludes, causing the "T" Selection_Record 364 to be used to fetch and play the topic announcement specified by the ProgramID in the Location field of record 364. If a skip is requested during or shortly after the time when topic announcement specified by record 364 is played, the player scans the selection file 355 until the next "S" or "T" Selection_Record is found at 366, causing the intervening program material to be skipped and the topic announcement specified by record 366 to be played next. If, as illustrated by the Selection_Record 366, there are no more topics within a particular subject when a topic skip is requested, the player skips the remainder of the last program subject within the current subject collection and plays the next "S" subject announcement. Thus, topic skips take the user quickly to a subject announcement, from which subject skips may be executed until a desired subject is reached. In this way, a desired program segment, no matter where it is located with respect to the current selection, can be readily found.

If the user issues a skip command during the body of a program selection; that is, when neither a subject or a topic announcement is being played, the player advances to the next "S" subject or "T" topic record, skipping the remainder of the program selection. Thus, the user can quickly resume skimming on the subject and topic level at any time.

The user may also issue a "Back" command at any time. Back commands work like Skip commands at the subdivision, subject and topic level. If a Back command is issued when a subject is being played, the player scans backward to the previous subject announcement, which is then played. If the user issues a back command when a topic announcement is being played, the player scans backward to find the previous subject or topic announcement, which is then played. If the player issues a Back command during the playing of a programming segment, the player returns to the beginning of the prior subdivision (if any) or the prior topic announcement for the current program segment, thus enabling the user to easily "replay" a current segment from the beginning if desired. As in the case of forward skip commands (SKIP TOPIC and a SKIP SUBJECT), BACK TOPIC and BACK SUBJECT commands can be made available to the user such

that backward navigation from subdivision to subdivision occurs using BACK TOPIC whereas the issuance of a BACK SUBJECT command always returns the playback point to the beginning of the prior subject matter description.

The manner in which a "Back" command is handled as described above is subject on additional variation: The position at which each skip forward command is issued may be advantageously saved so that, upon the issuance of a subsequent Back command, the user may return to the position at which the skip forward position was issued. This allows the user, for example, to skip forward to listen to the next program announcement, and then use the Back command to return to the point from which the skip forward command was issued. These position indications may be saved as markers in a bi-directional list, allowing the user to skip forward or backward to any position from which a prior jump was made.

When the player is first activated, CurrentPlay is set to 1 to begin play with the first topic announcement specified by the ProgramID 357. The end of the selections file 351 is marked with an "R" Selection_Record 380 which contains the location value 1. When the player encounters this record, it resets the CurrentPlay register to 1, and the playing sequence begins again. This arrangement creates, in effect, an endless loop, allowing the user to skip forward in circular fashion through the entire program selection to locate desired programming, regardless of where the CurrentPlay register is set. When the player is given a further back command after the beginning of the file is reached, the backward scanning process finds the record 382, another "R" rewind record which contains the location of the last "S" subject Selection_Record. In this way, the selection file 351 behaves as a bi-directional endless loop.

Hyperlinks are implemented by means of anchor passage identifiers, the "A" and "B" Selection records which respectively identify the anchor passage, and a "L" link identifier which holds the location of a subject, topic or highlight Selection_Record. The "A" and "B" selection records enable the player to add an audio cue (such as a tone, low-level chime, or the like) to the beginning, end, or during any passage in any program selection. Whenever the user issues a "Go" command (seen at 265 in FIG. 3), the player will execute a hyperlink jump to the location indicated by the last "L" record in the selection file. When the jump is made, the location in the "L" record is inserted into the CurrentPlay register 353 after the previous contents of the CurrentPlay register are saved in (pushed into) a zero-based stack 390 at the stack cell location specified by the contents of a StackPtr register 392, which is then incremented. Whenever the listener issues a "Return" command, the previously pushed selection file record location is popped from the stack 390 and returned to the CurrentPlay register 353, and the StackPtr register 392 is decremented. A "Return" command issued when StackPtr=zero (indicating an empty stack) produces no effect.

The hyperlink capability described above may be used to implement a program menu of the type described earlier in connection with FIG. 3. A menu program segment may be included in the program compilation which includes a series of spoken descriptions of subjects or topics, each description being the anchor portion of a hyperlink to the corresponding subject or topic.

Although hyperlinks to subjects and topics are typical, it should be noted that the arrangement shown in FIG. 5 can be used to link any passage to the beginning or end of any highlighted passage or to the beginning or end of any anchor passage simply by placing the selection file location of that target in the "L" link Selection_Record forming that link.

In its preferred form, the individual program segments are stored in a random access mass storage system permitting

program segments to be physically stored in an order unrelated to the actual dynamic sequence in which those segments are played. Forward and backward skimming, highlight playing, and hypertext jumps can accordingly be implemented without any noticeable delay being apparent to the user, unlike the delays which are experienced in forward and rewind operations on a physical tape player, or even the briefer delays experienced upon selecting a different track of a compact disk music album.

As contemplated by the invention, the integration of structured audio announcements and content, as well as cross-referencing and indexing information in the audio program compilation, allows the player to be much more interactive than a simple tape recorder. The user has the ability to browse and skip through the audio program in a very active way, without any requirement to look at a visible display of the program content. The ability to navigate the program using only audio prompts and/or small number of buttons for a user interface make the playback system which utilizes these features of the invention particularly attractive for use by automobile drivers, who can select their program content much more effectively and with less drive distraction than currently possible with a conventional automobile radio, tape or CD player.

Program Production

FIG. 6 shows the method followed to produce program content which is structured in accordance with the invention to facilitate interactive program selection. The first step in program production is to build a structured database of 'articles' which are candidates for inclusion in individual subscriber compilations.

The authoring system seen in FIG. 6 scans a wide range of data sources 401 for potential content as indicated at 403. Examples of data sources might be news service wire feeds or newsgroups on the Internet. The authoring system subdivides the accessed program data into program segments (topics) and indexes each segment by subject area at 405. In the case of text data, this indexing may be done automatically by parsing the text into words and building a conventional inverted file word index to the program segments. In the case of audio programming, a text transcript may be prepared using conventional speech recognition mechanisms to for a transcript, and the transcript may then be indexed by the terms used. Alternatively, human indexers may produce descriptive words and phrases to characterize the content of a program segment, and these descriptors may be used to index those segments.

After the indexing has been performed at 405, the authoring system then compares the each program segment's index data at 407 with system wide selection criteria in a system database 409 to provide a "System Filter." The system filtering function identifies those programs which of potential relevance to one or more of the established subject matter categories offered to subscribers. Accordingly, the system filter database 409 may take the form of a set of words (descriptors) of known relevance associated with each of the subject matter categories in the catalog. The comparison function at 407 scans the words in each candidate program segments to form a weighting value indicating the frequency (density) of the occurrence of descriptors for each category. Program segments whose content produces a high weighting value with respect to any category are automatically associated with that category and retained for further processing as indicated at 408, while program segments producing no weighting values greater than a predetermined minimum may be completely discarded at this stage, as indicated at 411, since their content does not indicate a sufficient likelihood of

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being of interest to a sufficient number of subscribers. Marginal program segments may be returned to the source library **401** for possible later use in the event that user preferences change.

Each article which passes the system filter at **408** is processed as shown at **414** in FIG. 6. As noted earlier, and as indicated at **421**, the authoring system next prepares either a transcript for those segments which consist, in their original form, of voice narration. This step may be automated using speech recognition or manually by keyboarding to create the needed transcripts.

As indicated at **425**, when the original material consisted of information in text form, a human reviewer verifies that the program content is in fact relevant to the subject matter categories identified by the automated system filter processing as noted earlier, and adds additional subject matter categories that may have been overlooked by the automated process. As a result of this automated and human-verified classification process, each program segment is associated with one or more subject matter categories which are encoded into a standard form in the Subjects array of the Program_Segment record described earlier in connection with FIG. 4. These subject codes are further assigned an importance value in the Importance array (which is parallel to the Subjects array) by the human author. Note that the order in which subjects codes are placed in the Subjects array may be used to indicate the relative relevance of the subjects to the program segment; that is, the most relevant subject is identified in Subjects[0], the next most relevant subject is identified in Subjects[1], and so on. Each program is typically placed in the output sequence in accordance with the code at Subject[0], the subject to which the program segment is most relevant.

In addition, the human review may compose a narrative cross referencing description of some or all of the program segments which were secondarily relevant to a given category; that is, program segments which were most relevant to another category but also relevant to the given category. This cross-referencing description may advantageously utilize the hyperlink capability discussed earlier such that, when the user is listening to the description of any related program segment, that related segment may be listened to simply by issuing a Go command to jump to the linked article, and later issuing a Return command to resume the playback at the original point.

The body of the program segment is then organized by the human reviewer at steps **431**, **433**, and **435** seen in FIG. 6 to create an output program segment having the desired structure consisting of:

- a topic statement which is packaged in a separate program segment,
- a leading summary paragraph,
- further content organized into paragraphs of increasing levels of detail, in which all unnecessary detail is excluded (that is, longer topics are digested into shorter, overview topics, with the full version being made available in an alternative, unabridged form which is also made available to the listener),
- adding highlight identification to key terms and phrases, and
- adding cross-referencing hyperlinks, with added explanatory anchor text if necessary.

When the original program segment is a news article or the like which was made available in text form, the foregoing operations may be most conveniently performed on the text, with the conversion to audio being performed by a human announcer or by speech synthesis after the edited, formatted and tagged text is produced. Thus, as shown at **436**, the human reviewer may compose a new article which has condensed

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content at **431**, add a topic (title) and summary paragraph previously created at **433**, and then, at **435**, add highlighting and hyperlink tags (which take the form of imbedded flags of the type used in Hypertext Markup Language "HTML" as described later in connection with FIG. 7) In order to assist the listener in deciding whether to listen to, or skip, a given subject, it is desirable that the topic and subject announcements include a statement of the playing time, particularly for longer program segments. In addition, the playing time is recorded in the Program_Segment record for that segment in the field named "Duration" as noted earlier. A human announcer then reads the structured text, or it is alternatively converted into an audio program segment by speech synthesis, as indicated at **435**.

If desired, the user may request the player to periodically issue a time of day announcement. The user may set a playback preference value indicating a desired time duration between time of day announcements. Each time such an announcement is issued, the last announcement time is recorded. Each time a logical break occurs between program segments, the last announcement time is subtracted from the current time and, if the result exceeds the desired announcement spacing, a new time of day announcement is issued.

In addition, at the user's option, the player may also periodically announce the duration of the unplayed portion of the session, enabling the listener to skip certain programs in order to play others when the actual listening time available is less than the time available to play the entire remaining program.

The player may be programmed to issue timed messages to the listener. For example, a program session may interrupted to remind the listener to perform some function at a particular time, such as listening to a scheduled radio broadcast. Alternatively, the player may be programmed to play identified segments at a particular time of day, or at a particular time relative to beginning of the session (for example, fifteen minutes after the session begins regardless of what has been played before or where the player is in the sequence). These programmed interruptions are preferably performed as automatic hyperlink, enabling the user to return to the regularly scheduled but interrupted programming simply by issuing a "return" command.

It should be noted that program segments may omit the "original" audio file entirely. Instead, the audio may be generated on the user's player using speech synthesis, with tag to speech conversion of the tagged highlighted materials including an audible cue. The text-to-speech technology might be especially useful for specialized subject areas, such as weather reports, sports scores, or stock market quotes, or other primarily informational articles where the content is significantly more important than the form of speech.

The availability of a collateral text file makes it possible to perform scanning operations to "find" particular words and phrases in the presentation, and perform a jump to that position in the file. Thus, the user may request the player to locate and play the next program selection in the sequence to contain the word "patent" and the player, in response to that request, performs a serial search through the transcript text associated with each program segment until the requested word is found, an a jump then executed to resume play at that location.

Using conventional text indexing techniques, the transcript files of the programs specified on the current program schedule, as well as the transcript files of other locally stored programming, may accessed by means of an inverted file in which each significant word in the playable library is associated with the an indexing record for each occurrence of that word, the record containing program segment identifier for the program segment including the word and the offset(s)

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within that segment where the word occurs. The availability of that inverted file allows the player to immediately inform the user of the number of time the term occurs to avoid fruitless searches as well as searches which find too much, without actually scanning the transcripts. The availability of the program identifier permits the player to play for the user an announcement of categories and topics along with a recitation of the number of word occurrences within that topic; for example, "The term 'cellular' occurs 7 times in [program segment announcement], 3 times in . . .".

Alternatively, when a program segment contains a condensation of an original, longer text article, the full transcript may be additionally made available by downloading it to the player where it can be listened to, by placing a hyperlink to the full version in condensed version, or printed for further review by the listener. If desired, this capability may alternatively be realized by placing the full version in a separate program segment, thus allowing the subscriber to select either the condensed or full version from the catalog, or to activate a hyperlink call to the full version if additional detail is desired after listening to the full version.

To encourage consistency, the reviewer/editor may adhere to the format set forth in article templates which describe the form different classes of programs should adhere to. For example, a template might say that a given audio article consist of a time announcement, an summary introduction including the article headline, and the body of the article. Templates may be expressed in a formal grammar which describe the desired program content in a consistent way. In addition, the templates may take the form of pre-written HTML forms where the program topic description is placed in the title and the program segment comment placed in the body portion of the HTML document, which may include tags to identify highlighted passages and hyperlinks as explained below in connection with FIG. 7.

The invention further supports the construction of serialized groups of program segments in which the sequential episode segments may be downloaded at one time or separately when necessary to conserve space or to handle sequential presentations which evolve in real time. Using hyperlinks, the listener may be given the option to continue listening at the next episode of the serial sequence, or to instead allow the player to continue with the next regularly scheduled program segment identified in the selections file, with the next episode being deferred until a later session.

In a similar fashion, complex subjects, such as "books on tape" and instructional materials formed by a sequence of lessons may be readily handled by the invention. The subject/topic hierarchy allows such materials to be presented in the catalog in outline form so that the subscriber can choose all or part of the presentation. The organization of such longer presentations into the structured form contemplated by the invention makes it easy for the listener to locate and replay segments of interest, and the highlight play mode facilitates the rapid review of longer presentations by focusing only the central points presented while allowing more detail to be readily accessed if desired.

When a given program segment contains recorded original audio, such the newly recorded narration of a human reader or an audio recording of a broadcast radio program, the file of selection records to be associated with that audio recording file is created by a human editor who utilizes suitable audio monitoring and editing equipment to listen to the playback of the audio playback file and identify the byte location within that audio file where highlight and anchor passages as well as response prompts which seek user input begin and end. In addition, for hyperlink selection records, the human editor

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supplies the identification of the cross-referenced material by specifying the symbolic name of another selection record associated with the same or a different program segment to which control is to be passed if the hyperlink is executed by the user. A crucial step in the production of each segment is the association of byte locations in the audio stream with the records in the selection file. This association may be done by a human technician or by automatic methods.

A technician would use a computer with suitable audio playback capabilities and software to play the audio stream and to simultaneously display the transcript if it is available. The software which plays the audio generates a new record in the segment file which contains the current byte location within an audio file whenever the human editor pressed a key. The significance of a byte location may be indicated by pressing a selected one of a plurality of keys. For example, the technician could generate Subject and Topic records with the correct byte offset simply by pressing the "S" or "T" keys at the right moment while listening to the audio program. The software could automatically generate the synchronizing segment record and prompt the technician to associate byte location thus identified with a corresponding location in the displayed transcript using a mouse or other positional identification means. When no transcript is available, the operator may be prompted to enter a topic or subject description via the keyboard.

The process of associating of audio location with segment records process could be automated by adding additional software to the technicians editing computer. For example, as indicated at 437, speech recognition technology may be employed to automatically identify when the live speaker changed in an audio stream. The monitoring program thus automatically generates a new record and prompt the technician to associate the record with data in the transcript. Besides speaker changes, the software may advantageously detect laughter, musical interludes, or laughter and use these to automatically generate segment records.

The completed program segment is assembled at 438, compressed at 440, and placed in the program library as indicated at 442 where it is available for downloading to subscribers. The program segment (topic) thus preferably consists of (a) a compressed audio program segment file, (b) a text transcript file of characters, which is preferably in HTML format or in a word processing format such as the Rich Text Format "RTF" readable by most word processing software, (c) possibly one or more image files for visual presentation with the audio content, (d) a file of Selection_Records for the program segment which identify the subject program segment announcement, the topic program segment announcement, and the program content program segment ("S", "T", "P", "Q," and "G" Selection_Records), as well as the highlighting and hypertext passages and collateral synchronized image files tagged within the body of the programs segment, and finally (e) a Program_Segment record for the segment which identifies all of its component parts and which is placed in the relational Programs Table 303 seen in FIG. 4. As explained below, the use of HTML to express narrative text facilitates the compilation of these constituent parts of a program segment.

It should be noted that the file of Selection_Records which forms part of the program segment data assembled at 438 may contain cross-referencing links and these links in turn contain location references to cross-referenced program segments or particular passages within other program segments. While a referenced program segment can be identified by the its Program_ID integer, the byte location of a particular passage within that referenced segment is not established until the

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editing noted above is completed. Consequently, symbolic names are preferably used to initially identify all highlight or anchor text passages, making it possible to use these symbolic names as relocatable addresses, just as symbolic names are used to identify addresses in computer source language which is first compiled and then linked to translate symbolic names into real addresses at run time. In this way, symbolic names used to identify cross-referenced passages may be translated into numerical selection file offset values loaded into the Location field in "L" Selection_Records. As discussed previously, these offset values are either positive values specifying the location within the Selections file of the Selection_Records which identifies the link target, or negative Program_ID values which identify program segments not specified by the current Selections file as being part of the current program session content.

Comment Handling

As previously discussed in connection with FIGS. 3 and 5, the apparatus contemplated by the invention advantageously includes means for accepting comments, yes/no responses, and value selections from a user during a playback session. As discussed in more detail below under the heading "Defining Audio Programming with HTML," these prompted user input responses are analogous to and can be composed using the <INPUT> tag form elements defined for use in standard hypertext markup language, where the "C" records in the selection file are analogous to <INPUT TYPE="text"> HTML tags, the "Y" selection file records are analogous to <INPUT TYPE="checkbox"> tags, the "V" records are analogous to <INPUT TYPE="radio"> radio button tags. Together these prompt mechanism provide a robust mechanism for prompting the user for and collecting responses of various kinds.

This mechanism for obtaining prompted responses may be advantageously employed to request information from subscribers. For example, prompted requests may be used to obtain program ratings from at least those subscribers who are willing to participate in the program rating process. Using "V" and "E" records, for example, a user may be asked to grade programs by various criteria and the resulting data may then be used alone or in conjunction with other values to produce a figure of merit for programming, whereby programs receiving higher ratings can be assigned a higher priority. In a similar fashion, willing subscribers may be offered the opportunity to volunteer to participate in surveys of various kinds, with the added advantage that personal and preference data already available for each of the participants may be combined with the survey responses in useful ways. For example, the tendency to give a negative responses on a particular topic may be correlated with the age, sex, geographic location, etc. of the respondents. Subscribers who are participate in the surveys may be rewarded by providing reduced subscription rates, free programs, or cash payments.

As discussed previously in connection with FIGS. 3 and 263-264, the embodiment which described also includes the capability of accepting comments from a subscriber at any time during the course of program playback. When such a comment is recorded, it is saved as separate file (or other identifiable data) together with the Program_ID of the program commented upon, the byte location within the playing program file where the comment or annotation is being made, a Class variable indicating the nature of the record, the Class variable being used as the Class variable in the Program_Segment record for the comment or annotation or comment, and the date and time of day when the comment is being created.

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When the comment is created, the user is then requested to specify, either by voice response or by a keyboard selection, whether the information to be recorded is to be treated as:

5 An annotation to be appended to the playing program record; or

A comment which is treated as an independent message/program segment.

The user further indicates the extent to which such an annotation or comment is to be made available to others. If designated as being public, annotations become available to any other subscriber who subsequently plays the program, at least to the extent that a given subscriber indicates that the playback of annotations is desired. Private annotations are simply stored in the user's local disk storage are (at 107 in FIG. 1) for future reference whereas public annotations are uploaded to the server where they are saved as separate files keyed to the original by means of the downloaded selections file for those subscribers who desire to hear annotations.

Comments are designated as being public or private messages. Public comments become independently available to all subscribers who have indicated an interest in the subject matter category(s) to which the comment relates. By default, a comment is assumed to relate to the same categories assigned to the program segment which was playing when the comment was produced, but these category codes may be changed by the user during the editing session (seen at 217 in FIG. 2). In addition to altering the subject matter codes for comments already dictated, the editing capabilities made available to the user at step 217 may advantageously include the ability to delete dictated comments so that they are not uploaded at all, direct comments to specific subscribers or email addresses, and enter new comments on any designated program segment in the current catalog by dictation or key-boarding.

35 In order to provide an appropriate program description for longer topics, whenever a user records a comment have a duration which exceeds a predetermined elapsed time, the player 103 performing the recording (at 264 in FIG. 3) produces an audio announcement requesting that the user dictate a brief summary of the comment which is used to form the topic description for the longer program segment. In the catalog listing provided to subscribers who desire access to comments as well as programs in a particular subject matter area, comments are listed in outline form as items which are subordinate to the parent program or comment to which they relate. The Commenton field found in the Program_Segment record for each comment provides the information needed to display the hierarchical tree. The public comment mechanism contemplated by this aspect of the invention provides a useful facility which enables subscribers to exchange information with each other in special interest groups which function much like the UseNet groups on the Internet, but with a conversational ease and informality that audio recording makes possible.

55 A subscriber can elect the degree to which public comments or annotations are to played back along with programs or topics of specified interest. Comments or annotations can be excluded entirely, a link may be imbedded which may be executed at user request to play the comment or annotation at the point in the file where the comment or annotation was played, or all comments and annotations may be played immediately without first requesting user approval.

65 Private comments are not posted to the subject matter categories and are made available only to (1) the author of [specified by the Provider_ID of] the program segment being commented upon; (2) the host system, or a host system editor responsible for the subject matter area about which the com-

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ment is concerned; or (3) some other destination specified by the user. By sending comments to the author, the user can make a direct but private response to anything contained in a message or program created by that author. Particular advertisers or other content providers may encourage such comments and offer subscriber credits or other incentives to those who are willing to make comments.

The ability to send comments to the responsible host editor provides a direct mechanism by which a subscriber may express satisfaction or dissatisfaction about the programming content provided, suggest other programming which would be of interest, and the like. Moreover, the to-host comment provides a mechanism to assist the editors to identify subscribers who may be inappropriately injecting offensive material to the annoyance of other subscribers. In addition, questions about the operation of the system may be directed to the host, thereby providing help and customer support to subscribers who may need assistance. Finally, the host may provide additional services (fact finding, transaction processing, and the like) which are made available on a fee basis to interested subscribers.

Finally, the ability to direct comments to specific people allows the system to provide voice-mail like functions among subscribers. Using speech recognition, dictated comments may be translated into text messages that could be sent to anyone having an E-mail address or facsimile receiver. Alternatively, the comment could be transmitted as an audio file attachment to an E-mail message (e.g. as a RealAudio file). In addition, like private annotations, the comment may simply be placed on the user's local disk for future reference.

Comments and annotations are preferably stored on the player's local mass storage unit with header information designating a CommentON field (the Program_ID of the program segment commented on), the byte location in the playing program file where the comment was dictated, the Class field specifying the nature of the comment, and the Created date and time stamp. The files containing public and private annotations and comments (other than those designated for the sole use of the subscriber which remain on the local storage unit) are uploaded to the host at the same time the usage log is transferred (see 219, FIG. 2).

Defining Audio Programming with HTML

Narrative text to be presented in the interactive, multimedia format made possible by the present invention may be advantageously expressed in the first instance using essentially conventional hypertext markup language, "HTML". FIG. 7 shows an audio file seen at 460 and a selections file indicated at 470 that is created from the following content of a portion of illustrative HTML text file:

```

... <IMG SRC="IMGFILE1.JPG"><EM> Television and
motion pictures </EM> offer the viewer a rich combi-
nation of sights and sounds which effectively convey a
large amount of information to the viewer, and hence
require an information delivery system having substan-
tial <EM>bandwidth</EM>. Radio programming
requires only a fraction of the bandwidth of a <A
HREF="target">full-motion video</A> presentation,
and is especially suitable for conveying information
expressed in text narrative form. Using suitable audio
compression techniques, speech can be transmitted over
communications pathways of much more limited band-
width, <IMG SRC="IMGFILE2.JPG">including tele-
phone dial up connections to the Internet, permitting that
facility to be used to provide real-time telephone con-
nections between two computers connected via the
Internet,<IMGOFF> and play pre-recorded audio files

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as they are transferred from an Internet server to a suitably programmed client computer. . ."

The HTML file above uses conventional tags to identify image files, conventional emphasizing tag pairs and to designate highlighted passages, and conventional <A> and HTML tag pairs to designate the anchor text and link target of a hypertext link. Utilizing conventional HTML to describe the narrative content to be presented in audio form provides several significant advantages, not the least of which are:

conventional HTML composition software may be used to add the image and emphasis tags by means of visual tools which eliminate the need for hand-coding on a character level;

a narrative text version of the audio programming may be viewed and printed, including both the emphasized text and the imbedded images, using most popular web browsers;

existing HTML files may be readily converted into audio multimedia presentations with little or no HTML editing being required;

HTML file may be made available from a server in a form which can be viewed in the normal way by any web browser yet and alternatively presented accordance with the invention in the form of an interactively browsable audio program with synchronized images;

the HTML file may be supplied along with the audio file as a transcript for the audio presentation, and to permit the audio presentation to be indexed and searched; and the HTML may be automatically converted into the combination of an audio file using conventional speech synthesis techniques to process the narrative text with the HTML tags being used to compile a selections file which enables the player to interactively browse the audio file using highlighted and linked passages, and to synchronize the image presentation with the audio file.

The HTML text passage begins with an image tag, , which to specify that the display of JPEG image in the file named "IMGFILE1.JPG" should begin at that point. The image tag is translated into a pair of "I" and "J" selection records seen at 472 which respectively contain the ImageID specifying IMGFILE1.JPG and the IMGSTART byte location in the audio file 460 where the display of that image is to begin. This display continues until the next tag is encountered specifying the IMGFILE2.JPG image which creates the "I" and "J" selection record pair at 473. The <IMGOFF> is not standard HTML and hence would be ignored by conventional web browsers, but is inserted for recognition by the selections file compiler which responds by inserting the "K" record at 474 which specifies the point at which the current image display should end.

Immediately thereafter, the phrase "Television and motion pictures" is identified as a highlighted passage by the tag pair and in the HTML listing above. These tags are translated into the "H" and "E" record pairs at 475 in the selections file 470 which identify the beginning and ending of the phrase in the audio file. As discussed earlier in conjunction with FIG. 5, the highlight markers in the selections file enable the player to play only the highlighted passages when in the highlight mode. A second "H" and "E" record pair seen at 476 is produced by the HTML text "bandwidth".

A conventional HTML hypertext anchor " full motion video" is processed to produce the three records "A", "B" and "L" at 478 in the selections file which respectively designate the beginning and

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ending of the anchor text passage and the location of a linked information. The "HREF="target"" portion of the HTML specifies the target location in conventional HTML and that symbolic address is then translated by the selections file compiler into the location within the selections file of the selections file record which refers to that target or, for targets in program segments which are not part of the currently scheduled programming defined by the selections file, by a negative number representing the negative of the ProgramID number of the target program segment.

The HTML forms mechanism may also be used to incorporate requests for user input at predetermined times during the playback of program segments. As described earlier in connection with FIG. 5, user inputs may take the form of recorded comments and annotations which are analogous to the <INPUT TYPE="text"> and the <TEXTAREA> tagged requests in an HTML form which similarly request the recipient to supply text data. In addition, the embodiment of the invention which has been described incorporates a mechanism for accepting "YES"/"NO" selections from a user which is analogous the HTML form <INPUT TYPE="checkbox"> tag. Similarly, the value choice mechanism using "V" selection records provides a radio-button-style mechanism for indicating a user's choice from among several options.

Standard HTML input tags include a Name attribute which can be used as an identifier for the data entered. As HTML is translated into an equivalent audio file, the tags in the written HTML are translated into records in the selections file which contain byte location values specifying when the player should pause the playback and accept the user response. The resulting uploaded usage log file (containing responses to radio and checkbox input tags) contains the response value together with the original byte location value from the selections file which serves the tag identifier. In order to facilitate processing of the responses, the HTML to audio conversion process may advantageously save a table correlating the Name values in the HTML source with the byte location values. In this way, the input tag Name parameter may be used as a symbolic identifier to identify and process response data.

The HTML input tag Value parameter is conventionally used to supply a default response value to be supplied when the user does not supply a different response. Value parameters may accordingly be saved for later use and inserted as output data when the user does not respond to the request for input (as indicated by the absence in the uploaded files of any response data containing the byte location value for the tag not responded to). In the same way, hidden HTML tags may be imbedded in the original HTML and saved during the HTML to audio conversion to indicate the correspondence between particular byte locations in the audio file and symbolic location names identified by the symbolic Name parameter specified in the hidden tag. Such hidden tags may be used, for example, to identify the beginning and end of particular passages and may be compared with the usage logs to determine the extent to which users exercised their option to skip the remainder of a program during the designated passage.

CONCLUSION

It is to be understood that the embodiment of the invention which has been described is merely illustrative of one application of the principles of the invention. Numerous modifications may be made to the specific structures and functions used in that embodiment without departing from the true spirit and scope of the invention.

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What is claimed is:

1. A media player for acquiring and reproducing media program files which represent episodes in a series of episodes as said episodes become available, said media player comprising:
 - a digital memory,
 - a communications port coupled to the Internet for transmitting data requests for data identified by specified URLs, for receiving downloaded data identified by said URLs in response to said requests, and for storing said downloaded data in said digital memory,
 - a processor coupled to said digital memory and to said communications port for performing a sequence of timed update operations, each of said update operations comprising:
 - downloading via the Internet the current version of a compilation file identified by a predetermined URL and storing said current version of said compilation file in said digital memory, said current version of said compilation file containing attribute data describing one or more episodes of a series of episodes, said attribute data for each given one of said episodes including one or more episode URLs identifying one or more corresponding media files representing said given one of said episodes,
 - processing the content of said current version of said compilation file to identify attribute data describing one or more newly available episodes in said series of episodes which were not described by attribute data found in a prior version of said compilation file previously identified by said predetermined URL and previously downloaded by an earlier one of said sequence of timed update operations, and
 - downloading one or more new media files identified by one or more URLs in the attribute data describing said one or more newly available episodes and storing said one or more new media files in said digital memory, and
 - an output unit for reproducing one or more of the media files representing episodes in said series at the request of the operator of said media player.
2. A media player as set forth in claim 1 wherein said digital memory includes a mass storage device for persistently storing attribute data and media files downloaded via said communications port.
3. A media player as set forth in claim 2 further including a time of day clock wherein said processor performs each of said timed update operations when said time of day clock specifies a predetermined time or a time within a predetermined time range.
4. A media player as set forth in claim 1 wherein at least one of said media files is an audio recording file that is reproduced by said output unit as an audio signal supplied to a speaker or headset to create sound that is perceptible to said operator.
5. A media player as set forth in claim 1 wherein at least one of said media files stores a visible image and wherein said output unit includes a display screen for rendering said visible image in a form perceptible to said operator.
6. A media player as set forth in claim 1 wherein at least one of said media files stores a text data and wherein said output unit reproduces said text data in a visible or audible form perceptible to said operator.
7. A media player as set forth in claim 1 wherein said one or more episode URLs include a first URL from which an audio recording file may be downloaded via the Internet and a second URL from which an image file may be downloaded

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via the Internet, and wherein said output unit reproduces said audio recording file and displays said image file concurrently.

8. A media player as set forth in claim 1 wherein said attribute data further includes a text description of said one or more episodes, wherein said media player includes a display screen for displaying a menu list of text descriptions stored in said digital memory, and wherein said player includes one or more manual controls for identifying a selected text description on said menu list and initiating the reproduction of the media file described by said selected text description.

9. A media player as set forth in claim 1 wherein said processor, in response to a request from said operator, further downloads one or more catalog listings of available media content via said communications port, including one or more available media files representing episodes in one or more series of episodes, wherein said media player includes a display screen for displaying said one or more catalog listings, and wherein said media player further includes one or more manual controls for accepting a selection by said operator of a desired series of episodes which is thereafter described by attribute data downloaded by said update operations.

10. A media player as set forth in claim 9 wherein said attribute data includes a text description of each of said episodes and further includes a text description of the series to which said episodes belong, and wherein said attribute data is displayed to said operator as a hierarchical catalog listing providing the descriptive information about both each series of episodes and individual available episodes in that series to enable the operator to select a series of interest or an individual episode of interest from the displayed catalog listings.

11. A media player as set forth in claim 10 wherein said attribute data further includes a specification of the date of each of said episodes and wherein said text descriptions of said episodes are listed in said hierarchical catalog listing in chronological order.

12. A media player as set forth in claim 1 wherein said processor, in response to a search request from the operator, transmits a search request via said communications port to a remote server and downloads a catalog listing of available media content satisfying the search request in response thereto, said available media content including media files representing one or more episodes in one or more series of episodes, wherein said media player includes a display screen for displaying said catalog listing, and wherein said media player further includes one or more manual controls for accepting a selection by said operator of a desired series of episodes identified by said catalog listing which are thereafter described by attribute data contained in compilation files downloaded by said timed update operations as said episodes become available.

13. Apparatus for acquiring and reproducing media files representing episodes in a series of episodes as said episodes become available, said apparatus comprising:

- a digital memory,
- a communications port coupled to the Internet for transmitting data requests for data identified by specified URLs, for receiving downloaded data identified by said URLs in response to said requests, and for storing said downloaded data in said digital memory, and
- a processor coupled to said digital memory and to said communications port for executing one or more utility programs for:
 - performing, from time to time, one of a sequence of update operations, each of said update operations comprising:

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downloading via the Internet the current version of a compilation file identified by a predetermined known URL, and

storing attribute data contained in said current version of said compilation file in said digital memory, said attribute data describing one or more episodes in a series of episodes, said attribute data for each given one of said episodes including one or more episode URLs identifying one or more corresponding media files representing said given one of said episodes,

accepting a selection of a particular episode described by attribute data stored in said digital memory by the operator of said apparatus,

downloading and storing the particular media file identified by an episode URL included in the attribute data for said particular episode if said particular media file is not already stored in said digital memory, and reproducing said particular media file in a form perceptible to said operator.

14. The apparatus set forth in claim 13 wherein said apparatus includes a time of day clock and wherein said processor automatically performs at least one of said update operations when said time of day clock specifies a predetermined time or a time within a predetermined time range.

15. The apparatus set forth in claim 13 wherein said particular media file representing said particular episode is an audio recording file that is reproduced as an audio signal supplied to a speaker or headset to create sound that is perceptible to said operator.

16. The apparatus set forth in claim 15 further including a display screen wherein said attribute data for said particular episode further includes an episode URL that identifies an image data file and wherein said processor displays said image data file on said display screen as a visible image concurrently with the reproduction of said audio file.

17. The apparatus set forth in claim 13 wherein at least one of said media files representing said particular episode stores text data and wherein said processor reproduces said text data in a visible or an audible form perceptible to said operator.

18. The apparatus set forth in claim 13 further including a display screen wherein said attribute data stored in said digital memory further includes a text description of each episode described by said attribute data and wherein said display screen displays the text description of said particular episode when said media file representing said particular episode is being reproduced.

19. The apparatus set forth in claim 13 further including a display screen wherein said display screen displays a listing of the text descriptions of a plurality of said episodes including said particular episode and wherein said processor accepts the selection of said particular episode by said operator from said listing.

20. The apparatus set forth in claim 19 wherein said attribute data for each given one of said episodes further includes a date and wherein said plurality of said episodes is presented on said listing in chronological order.

21. The apparatus set forth in claim 13 wherein said processor, in response to a request from said operator, downloads a catalog listing of available series of episodes via said communications port, wherein said apparatus includes a display screen for displaying said catalog listing, wherein said processor accepts a selection by said operator of a desired series of episodes, and wherein episodes in said desired series of episodes are thereafter described by attribute data included in compilation files thereafter downloaded during subsequent update operations.

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22. The apparatus set forth in claim 13 wherein said processor transmits a search request via said communications port to a remote server and downloads a catalog listing of available episodes satisfying said search request, said catalog listing being received from said remote server in response to said search request, wherein said apparatus includes a display screen for displaying said catalog listing, and wherein said processor accepts a selection by said operator of one or more desired episodes from said catalog listing which are thereafter described by attribute data contained in one or more compilation files downloaded during one or more subsequent update operations.

23. An audio program player for acquiring and reproducing audio recording files which represent episodes in a group of episodes, said audio player comprising:

- a digital memory,
- a display screen,
- one or more manual controls for accepting control commands from the user of said audio program player,
- an audio output unit coupled to said processor and to a speaker or headset for reproducing selected audio files in audible form for said user,
- a communications port coupled to the Internet for downloading data files each of which is identified by a URL, and
- a processor coupled to said digital memory and to said communications port for:

A. from time to time, performing an update operation in a series of update operations, each of said update operations comprising:

- (1) downloading via the Internet the current version of a compilation file identified by a predetermined known URL, and
- (2) storing said current version of said compilation file in said digital memory, said current version of said compilation file containing attribute data describing one or more episodes in a series of episodes, said attribute data for each given one of said episodes including:
 - (a) displayable text describing said given one of said episodes, and
 - (b) an episode URL which identifies an audio recording file representing said given one of said episodes,

B. displaying a menu listing on said display screen, said menu listing comprising displayable text describing each episode in a collection of episodes,

C. selecting a particular episode described on said menu listing in response to a selection command accepted from said user,

D. if the particular audio recording file representing said particular episode is not already stored in said digital memory, downloading said particular audio recording file identified by the episode URL in the attribute data for said particular episode contained in said current version of said compilation file, and storing said particular audio recording file in said digital memory, and

E. employing said audio output unit to reproduce said particular audio recording file.

24. The audio program player set forth in claim 23 further including a time of day clock wherein said processor performs at least one of said update operations at a time determined by said processor monitoring said time of day clock.

25. The audio program player set forth in claim 23 wherein said attribute data for said particular episode contained in said compilation file further specifies at least one image URL which identifies an image data file containing a visual image,

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wherein said processor downloads and stores said image data file in said digital memory if said image data file is not already stored in said digital memory, and wherein said processor displays said visual image on said display screen during the reproduction of said particular audio recording file.

26. The audio program player set forth in claim 23 wherein said display screen displays the displayable text describing said particular audio recording file when said particular audio recording file is being reproduced.

27. The audio program player set forth in claim 23 wherein said processor responds to said selection command accepted from said user by discontinuing the reproduction of the currently playing audio recording file and instead continuing the reproduction at the beginning of said particular audio program file.

28. The audio program player set forth in claim 23 wherein said attribute data for each given one of said episodes further includes data describing the group of episodes that includes said given one of said episodes.

29. The audio program player set forth in claim 28 wherein said data describing the group of episodes that includes said given one of said episodes comprises displayable text describing said group of episodes.

30. The audio program player set forth in claim 23 wherein said processor downloads one or more utility programs via said communications port, stores said utility programs in said digital memory, and thereafter executes said one or more utility programs to perform said series of update operations, to display said menu listing, to select said particular episode, to download said particular audio recording file if not already stored in said digital memory, and to employ said audio output unit to reproduce said audio recording file.

31. Apparatus for disseminating a series of episodes represented by media files via the Internet as said episodes become available, said apparatus comprising:

- one or more data storage servers,
- one or more communication interfaces connected to the Internet for receiving requests received from remotely located client devices, and for responding to each given one of said requests by downloading a data file identified by a URL specified by said given one of said requests to the requesting client device,

one or more processors coupled to said one or more data storage servers and to said one or more communication interfaces for:

- storing one or more media files representing each episode as said one or more media files become available, each of said one or more media files being stored at a storage location specified by a unique episode URL;
- from time to time, as new episodes represented in said series of episodes become available, storing an updated version of a compilation file in one of said one or more data storage servers at a storage location identified by a predetermined URL, said updated version of said compilation file containing attribute data describing currently available episodes in said series of episodes, said attribute data for each given one of said currently available episodes including displayable text describing said given one of said currently available episodes and one or more episode URLs specifying the storage locations of one or more corresponding media files representing said given one of said episodes; and
- employing one of said one or more communication interfaces to:

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- (a) receive a request from a requesting client device for the updated version of said compilation file located at said predetermined URL;
- (b) download said updated version of said compilation file to said requesting client device; and
- (c) thereafter receive and respond to a request from said requesting client device for one or more media files identified by one or more corresponding episode URLs included in the attribute data contained in said updated version of said compilation files.

32. The apparatus as set forth in claim 31 wherein at least some of said media files contain digital compressed audio recordings that may be reproduced in audible form by a requesting client device.

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33. The apparatus as set forth in claim 31 wherein at least some of said media files contain text data which may be displayed or reproduced in spoken audible form by a requesting client device.

5 34. The apparatus set forth in claim 33 wherein said attribute data for each given one of said episodes further includes displayable text data describing said given one of said episodes.

10 35. The audio program player set forth in claim 34 wherein said updated version of said compilation file further includes displayable text describing said series of episodes.

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PROOF OF SERVICE

Appellant Personal Audio, LLC certifies that Appellee Electronic Frontier Foundation have been served this 28th day of December, 2015 electronically through the Court's ECF system.

/s/ Jeremy S. Pitcock

Jeremy S. Pitcock

CERTIFICATE OF COMPLIANCE

Pursuant to Fed. R. App. P. 32(a)(7)(C)(i), Appellant Personal Audio, LLC certifies that this document contains 12,873 words in the brief.

/s/ Jeremy S. Pitcock

Jeremy S. Pitcock