

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

SAFECAST LIMITED LLC,
Patent Owner.

**DECLARATION OF HENRY HOUH, PH.D.,
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 9,392,302**

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I. INTRODUCTION

1. I have been retained by Google LLC (“Google” or “Petitioner”), as an independent expert in this proceeding before the Patent Trial and Appeal Board (“PTAB” or “Board”). I understand that Google is requesting that the Board institute an *inter partes* review (“IPR”) proceeding of U.S. Patent No. 9,392,302 (“the ’302 Patent”) (Ex-1001), currently assigned to SafeCast Limited, LLC (“Patent Owner” or “PO”).

2. I am not and have never been an employee of Google. I am being compensated at my usual and customary rate of \$680 per hour. No part of my compensation depends on the outcome of this proceeding, and I have no other interest in this proceeding.

3. I have been asked to provide my independent analysis of the ’302 Patent in light of the prior art publications cited below. I have also been asked to consider the state of the art and prior art available as of December 1, 2010. Based on the prior art discussed in this declaration, it is my opinion that Claims 1-4, 6-9, and 12-15 of the ’302 Patent are unpatentable for the reasons provided below.

A. Qualifications

4. I have been asked to provide my independent analysis of the ’302 Patent in light of the prior art publications cited below. I have also been asked to consider the state of the art and prior art available as of December 1, 2010. Based on the prior

art discussed in this declaration, it is my opinion that Claims 1-4, 6-9, and 12-15 of the '302 Patent are unpatentable for the reasons provided below.

5. I am currently employed by Houh Consulting Inc. as an independent technical consultant. Until 2022, I also worked as the co-founder and President of Einstein's Workshop, a company that provides supplemental science, technology, engineering, and mathematics ("STEM") education to children of all ages. I also co-founded and serve on the board of BlocksCAD, Inc., which provides educational computer-aided design software used around the world.

6. My professional career has spanned more than 25 years. As set forth in my curriculum vitae, a copy of which is submitted as Ex-1004, during these years I have gained extensive experience in web sites, communications systems, networking, distributed systems, protocols and streaming audio/video communications.

7. I have multiple undergraduate and graduate degrees from the Massachusetts Institute of Technology (MIT). I have a Bachelor of Science Degree in Electrical Engineering and Computer Science from MIT which I received in June 1989. I also have a Bachelor of Science Degree in Physics from MIT which I received in February 1990. I have a Master of Science Degree in Electrical Engineering and Computer Science from MIT which I received in February 1991. I have a PhD in Electrical Engineering and Computer Science from MIT which I

received in February 1998. My thesis was directed to “Designing Networks for Tomorrow's Traffic,” and was supervised by Professor David Tennenhouse and Professor John Guttag.

8. I first worked in the area of communications in 1987 when I worked at AT&T Bell Laboratories as part of a five-year dual degree program at MIT. At Bell Labs, I first worked in a group supporting core telephony switching functions, then later I joined the Optical Computing group. In graduate school, I joined the Advanced Network Architecture (ANA) group at the Laboratory for Computer Science (LCS) at MIT, then headed by Prof. Tennenhouse and senior research scientist David Clark. Dr. Clark is generally considered to be one of the fathers of the Internet Protocol, having acted as chief protocol architect for the development of the Internet. My research and work experience in distributed systems, networking, and network architecture dates back to around 1991 when I joined ANA.

9. Later, when Prof. Tennenhouse formed his own research group, the Telemedia Network Systems (TNS) group, I joined TNS. The TNS group built a high-speed gigabit network and applications which ran over the network, such as remote video capture, processing, and display on computer terminals. I designed the core networking hardware and software, including the high-speed data links and the device drivers for the network interface cards.

10. TNS's research activities focused on high speed networking and the types of applications that require increased network bandwidth and computing power. One of the applications I investigated was live streaming video, and real-time processing of such video. My work was focused around the transport, switching, and routing of data (including video and audio streams), and the integration of TNS's network into the computing environment, including the protocols, IP/ATM integration, operating system software and device drivers. TNS created a computing environment where it was possible to stream audio/video live, and also created software processing modules to further process video to perform advanced functions such as green screening, scene change detection, motion detection, compression, video blending and video overlay, among the many features – all in real-time while displaying the processed video live. While the Internet at the time did not have the capability for such applications to be widely deployed, my group at TNS researched what would be possible when the required network and computing power became available. As discussed above, my Ph.D. thesis work focused on studying the routing resources required to route streams of video and other data through the network, proposing several alternative labeling strategies to speed up network routing, especially for popular applications such as web traffic.

11. During the early part of my graduate studies, a time when there were perhaps a hundred or so web servers in existence, I set up a web server on one of our

lab computers, and created content rich web pages for my research group and my research activities. Eventually, I, together with others I was working with, added live video demonstrations to TNS's web site. TNS's web site was one of the first several hundred web servers to exist, and the first to offer live video demonstrations initiated from the web site to a user's remote computer. I helped to build the web pages that initiated these video sessions via a web interface. I started and maintained the "Commercial Sites Index," the first listing of all the companies on the web. I later sold this list to OpenMarket, then a leader in web servers and eCommerce servers.

12. I also started a company that provided advertising opportunities on web sites we created that targeted college students seeking jobs. We also provided consulting services to companies for setting up their web sites. Our customers included Data Communications Magazine and Wellfeet Communications (which became SynOptics Communications and was later acquired by Nortel). I investigated web site load balancing solutions as well as content delivery networks, partially to support our customers but also because I was interested in keeping up with developments in web systems as part of my research.

13. Vice-President Al Gore visited our group in 1996 and received a demonstration of – and remotely drove – a radio controlled toy car with a wireless video camera mounted on it; the video was encoded by TNS-designed hardware,

streamed over the TNS-designed network and displayed using TNS-designed software.

14. I authored or co-authored at least twelve papers and conference presentations on my group's research at TNS. I also co-edited TNS's final report on its gigabit networking research effort. Some of my papers about web site development were presented at the first World-Wide Web conference held in 1994 at CERN in Geneva, Switzerland. CERN is the birthplace of the Web, and the conference was chaired by Tim Berners-Lee, the inventor of the World-Wide Web. When Tim Berners-Lee formed the World Wide Web Consortium at the MIT LCS in order to manage the progression of web protocols and standards, I assisted him in obtaining the consortium's domain names and setting up the consortium's web server.

15. I have extensive experience in creating web pages and commercially setting up websites during the 1993-1997 time frame, and have continued this development since then. As part of this experience, I regularly programmed using HTML and Perl programming languages. I also have experience with CGI scripts and Perl scripts as used for dynamic web pages.

16. From 1997 to 1999, I was a Senior Scientist and Engineer at NBX Corporation, a start-up that made business telephone systems for streaming packetized audio over data networks instead of using traditional telephone lines.

NBX was later acquired by 3Com Corporation, and the phone system I worked on at NBX was widely used by numerous businesses. As part of my work at NBX, I designed the core audio reconstruction algorithms for the telephones, as well as the packet transmission algorithms. I also designed and validated the core packet transport protocol used by the phone system.

17. The NBX system also supported TAPI, the Telephony Application Programming Interface, thus allowing other computer programs to integrate with our system telephony features. The NBX system was among the first to support a web-browser interface to control features of the telephone by using a remote application that issued remote controls to the central controller. The web server in the NBX system accessed a back-end database which stored all the data related to the configuration and operation of the NBX system. Accessing the system controller's web server produced a representation of the telephone and allowed users to set speed dials and other features of the user's physical telephone such as a call forwarding number. The user could also access and initiate various telephone functions through the interface, such as initiating a conference call or initiating call forwarding.

18. Two of the company founders and I obtained U.S. Patent No. 6,967,963, entitled "Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data," as a result of part of the work I did at NBX.

19. From 2003-2004, I also was the architect for a next-generation web testing platform developed by Empirix, known as e-Test Suite. e-Test Suite is now owned by Oracle Corporation. e-Test provided functional and load testing for web sites. e-Test emulated a user's interaction with a web site and provided web developers with a method of creating various scripts and providing both functional testing (i.e., did the web site provide the correct response) and load testing (i.e., could the web site handle 5000 users simultaneously). As part of this project, I co-wrote a javascript interpreter for e-Test so that it could understand the javascript code present on modern web sites.

20. I worked at BBN Technologies from 2004 to 2009. BBN Technologies, formerly known as Bolt, Beranek and Newman, was a pioneer of the Internet and a long-established leader in speech recognition and natural language processing. BBN received the first contract to build components of a packet switched network as part of the ARPANET, a U.S. Department of Defense effort funded through the Advanced Projects Research Agency (ARPA). While this effort preceded my time at BBN by many years, BBN continued to maintain a strong presence in network research and development, including in wireless networking, network security, device discovery, and protocols for a "body area network."

21. In 2006, as part of my role at BBN Technologies, I helped found PodZinger Inc., later known as RAMP Inc. PodZinger utilized BBN's speech

recognition algorithms to search through the spoken words inside audio and video. After managing the creation of the initial prototype system, PodZinger built out a full web-based streaming audio and video search solution when I was the Vice President of Operations and Technology there. The web site had a full load-balanced back end that provided search and indexing solutions for our hosted multimedia (audio and video) content.

22. I also worked on commercializing a service offered by BBN to monitor call centers and provide analytical data on each call. The business became known as AVOKE Analytics and provided call center analytics for large organizations such as Dell and the Centers for Medicare and Medicaid Services (CMMS). For a time, during the rollout of the Affordable Care Act (though I was no longer working at BBN), AVOKE Analytics gathered data and provided call-by-call analytics for every call made to the CMMS main call center.

23. I have web advertising experience as well, including starting a company in 1994 that was funded, in part, through web advertisements. Later in 2008-2009, as the CTO of a venture-funded social network start-up company, I also evaluated different ad network tools.

24. I am familiar with patents and have numerous provisional and non-provisional patent applications on which I am an inventor, including four provisional patent applications, and 20 non-provisional applications. These patent applications

deal with various areas of technology including, but not limited to: utilizing network processors, network and packet delivery systems, tagging media content, dynamic presentation of advertising and other content using enhanced metadata, methods for web site testing, and organizing and managing files that are transmitted over a network.

25. In formulating my opinions, I have relied upon my training, knowledge, and experience in the relevant art. A copy of my current curriculum vitae is provided as Ex-1004, and it provides a comprehensive description of my academic, employment, research, and professional history.

26. With my extensive experience in the field of web based systems, streaming multimedia systems, distributed systems, and network architectures, I am qualified to provide an opinion as to what a person of ordinary skill in the art would have understood, known, or concluded as of December 2010. I have been asked to opine on the state of the art as of the December 2010, which I understand is before the earliest claimed priority date of the '302 patent.

B. Materials Considered

27. In forming my opinions, I have reviewed the following documents:

Exhibit	Description
Ex-1001	U.S. Patent No. 9,392,302
Ex-1002	Declaration of Dr. Henry Houh

Ex-1003	Curriculum Vitae of Dr. Henry Houh
Ex-1004	Prosecution History of U.S. Patent No. 9,392,302
Ex-1005	U.S. Patent Application Publication No. US 2002/0144262 (Plotnick)
Ex-1006	U.S. Patent App. No. 09/742,852 (“852 Application”), published as U.S. Patent Application Publication No. US 2002/0083439
Ex-1007	U.S. Patent No. 8,413,189 (Parekh)
Ex-1008	[omitted]
Ex-1009	[omitted]
Ex-1010	[omitted]
Ex-1011	[omitted]
Ex-1012	[omitted]
Ex-1013	[omitted]
Ex-1014	[omitted]
Ex-1015	[omitted]
Ex-1016	[omitted]
Ex-1017	[omitted]
Ex-1018	[omitted]
Ex-1019	[omitted]
Ex-1020	Claim Mapping Table
Ex-1021	[omitted]
Ex-1022	Plaintiff’s Preliminary Infringement Contentions, (W.D. Tex. 6:22-cv-00678), as served on September 20, 2022
Ex-1023	Plaintiff SafeCast Limited’s Response to Google LLC’s Motion to Dismiss For Failure to State A Claim, No. 6:22-cv-00678-ADA (W.D. Tex., Oct. 13, 2022). ECF No. 26

Ex-1024	U.S. Patent Application Publication No. US 2009/0070414 (Singal)
Ex-1025	U.S. Patent Application Publication No. US 2009/0031390 (Rajakarunanayake)
Ex-1026	U.S. Patent Application Publication No. US 2008/0181301 (Kim)
Ex-1027	U.S. Patent Application Publication No. US 2008/0281592 (McKoen)
Ex-1028	Appeals Court Upholds Indecency Safe Harbor Rules, Television Digest (July 12, 1995)
Ex-1029	Cable TV Rule Targets Adults-Only Flash; FCC Wants Tighter Control of Programming Signals, Chicago Tribune (Apr. 25, 1997)
Ex-1030	Brooks Boliek, FCC Narrows ‘Safe Harbor’; Court Says U.S. Can Restrict Adult Broadcast Fare to 10p.m.-6a.m., The Hollywood Reporter (July 5, 1995)
Ex-1031	Jonathan D. Salant, FCC Head Wants Bigger Fines for Profanity, Associated Press (Jan. 15, 2004)
Ex-1032	Bill Holland, Stations Get Lump of Coal From FCC, Billboard (Jan. 16, 1993)
Ex-1033	Obscene, Profane and Indecent Broadcasts : Notices of Apparent Liability – OBINN, Federal Communications Commission Enforcement Bureau, https://www.fcc.gov/enforcement/orders/1833 (last accessed on Feb. 27, 2023)
Ex-1034	Commission Proposes Statutory Maximum Forfeiture Of \$55,000 Against AMFM Radio Licenses For Apparent Violations Of Indecency Rules, Federal Communications Commission, News (October 2, 2003)
Ex-1035	U.S. Patent Application Publication No. US 2002/0015093 (Dureau)
Ex-1036	U.S. Patent Application Publication No. US 2003/0208560 (Inoue)
Ex-1037	U.S. Patent Application Publication No. US 2008/0098423 (Malik)
Ex-1038	U.S. Patent Application Publication No. US 2009/0070414 (Singal)

Ex-1039	U.S. Patent No. 8,752,087 (Begeja)
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II. LEGAL STANDARDS

28. In forming my opinions and considering the subject matter of the '302 Patent and its claim in light of the prior art, I am relying on certain legal principles that counsel in this case explained to me. My understanding of these concepts is summarized below.

29. I understand that earlier publications and patents may act to render a patent unpatentable for one of two reasons: (1) anticipation, and (2) obviousness.

A. Anticipation

30. It is my understanding that the claims of a patent are anticipated by a prior art reference if each and every element of the claim is found either explicitly or inherently in the reference. I understand that inherency requires a showing that the missing descriptive matter in the claim is necessarily present in the allegedly anticipating reference, and that it would have been so recognized by a person of ordinary skill in the art ("POSITA").

31. I understand that when a challenged claim covers several structures, either generically or as alternatives, the claim is deemed anticipated if any of the structures within the scope of the claim is found in the prior art reference.

32. Although anticipation typically involves the analysis of a single prior art reference, I understand that additional references may be used to show that the

prior art reference has enabling disclosure (i.e., allows a POSITA to make the invention without undue experimentation), to explain the meaning of a term used in the prior art reference, and/or to show that a characteristic is inherent in the prior art reference.

B. Obviousness

33. I understand that a claim is invalid as obvious if it would have been obvious to a person of ordinary skill in the art at the time the alleged invention was made. This means that even if all of the elements of the claim cannot be found in a single prior art reference that would anticipate the claim, a person of ordinary skill in the art who was aware of the prior art would have been able to come up with the claimed invention. This may be the case, for example, where the missing element represents only an insubstantial difference over the prior art or a reconfiguration of a known system. I understand that in an obviousness determination, the person of ordinary skill in the art is presumed to have knowledge of all material prior art.

34. I understand that an obviousness analysis requires an understanding of the scope and content of the prior art, any differences between the alleged invention and the prior art, and the level of ordinary skill in evaluating the pertinent art.

35. I understand that when a product is available, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill in the art can implement a predictable variation,

obviousness likely bars its patentability. For the same reason, if a technique has been used to improve one device and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique would have been obvious.

36. I understand that whether a prior art reference renders a patent claim unpatentable as obvious is determined from the perspective of a person of ordinary skill in the art at the time of the alleged invention. I have been told that there is not requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, but a suggestion to combine known elements to achieve the claimed invention may come from the prior art, as filtered through the knowledge of one skilled in the art. In addition, I have been told that the inferences and creative steps a person of ordinary skill in the art would employ are relevant to the determination of obviousness.

37. I understand that one may consider, e.g., whether (1) the change was merely the predictable result of using prior art elements according to their known functions, or whether it was the result of true inventiveness; (2) there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; (3) the claimed innovation applies a known technique that had been used to improve a similar device or method in a similar way; (4) the claimed invention would have been obvious to try, meaning that the claimed

innovation was one of a relatively small number of possible approaches to the problem with a reasonable expectation of success by those skilled in the art; (5) the invention merely substituted one known element for another known element in order to obtain predictable results; (6) the invention merely applies a known technique to a known device, method, or product to yield predictable results; or (7) known work in one field of endeavor may have prompted variations of it for use in either the same field or a different one based on design incentives or other market forces that would have been predictable to a person of ordinary skill in the art.

38. I further understand that certain factors may support or rebut the obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the patented invention, skepticism of those having ordinary skill in the art at the time of the invention, unexpected results of the invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I understand that there must be a nexus—that is, a connection—between any such secondary considerations and the alleged invention. I also understand that contemporaneous and independent invention by others is a secondary consideration tending to show obviousness.

39. I am not aware of any allegations by the named inventor of the '302 Patent or any assignee of the '302 Patent that any secondary considerations tend to rebut the obviousness of the '302 Patent.

40. Additionally, I understand that in considering obviousness, it is important not to use the benefit of hindsight derived from the patent under consideration.

C. Level of Ordinary Skill in the Art

41. When interpreting a patent, I understand that it is important to identify the relevant art pertaining to that patent, as well as the level of ordinary skill in that art at the time of the claimed invention. The “art” is the field of technology to which the patent is related.

42. I am informed and understand that the POSITA is a hypothetical person who is presumed to know the relevant prior art. I understand that the actual inventor's skill is not determinative of the level of ordinary skill. I further understand that factors that may be considered in determining level of skill include: (i) the types of problems encountered in the art; (ii) prior art solutions to those problems; (iii) the rapidity with which innovations are made; (iv) the sophistication of the technology; and (v) the educational level of active workers in the field. I understand that not all such factors may be present in every case, and one or more of them may predominate.

43. I understand that a POSITA is one who is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity.

44. A POSITA would have had a bachelor's degree in computer science, electrical or computer engineering, or equivalent education or work experience, and at least two years of work or research experience in multimedia systems.

45. Based on my education and experience, I would have, at least, met the criteria for a POSITA on December 1, 2010, and I still exceed it today.

D. Claim Construction

46. I understand that the United States Patent and Trademark Office interprets claim terms in an *inter partes* review proceeding under the same claim construction standard that is used in a United States federal court. I understand that under this standard, the meaning of claim terms is considered from the viewpoint of a POSITA at the time of the alleged invention.

47. I understand that in addition to the claims, specification, and prosecution history, other evidence may be considered to ascertain the meaning of claim terms, including textbooks, encyclopedias, articles, and dictionaries. I have been informed that this other evidence is often less significant and less reliable than the claims, specification, and prosecution history.

48. I have been informed that claim terms are generally given their ordinary and customary meaning as understood by one of ordinary skill in the art in light of the specification and the prosecution history pertaining to the patent. I understand, however, that claims terms are generally not limited by the embodiments described in the specification.

49. I also understand that 35 U.S.C. §112 ¶ 6 created an exception to the general rule of claim construction called a “means plus function” limitation. I understand that these types of terms and limitations should be interpreted to cover only the corresponding structure described in the specification, and equivalents thereof. I also understand that a limitation is presumed to be a means plus function limitation if the claim limitation recites the term “means,” modifies the “means” with functional language, and does not recite sufficient structure for achieving the specified function.

III. SUMMARY OF GROUNDS

50. I understand that Petitioner challenges the validity of Claims 1-4, 6-9, and 12-15 of the '302 Patent. In particular, I understand that Petitioner asserts the following grounds for challenging the claims of the '302 Patent:

Ground	Summary
1	Claims 1–4, 6–9, and 12–15 are rendered obvious by U.S. Patent Application Publication No. US 2002/0144262 (“Plotnick,” Ex-1005) in view of U.S. Patent No. 8,413,189 (“Parekh,” Ex-1007).
2	Claims 1–4, 6–9, and 12–15 are rendered obvious by Plotnick (Ex-1005).

IV. The ’302 Patent

A. Overview of the ’302 Patent

51. The ’302 Patent is titled “System for providing improved facilities in time-shifted broadcasts” and describes a system for controlling which advertisements are played in a recorded program during later playback. Ex-1001, Abstract. It describes that Set Top Boxes (“STBs”) with recording capabilities are Personal Video Recorders (“PVRs”) and says that ability to record a program meant that the recorded advertisements may be unsuitable for the time of day that the recording is viewed. *Id.*, 1:48–58, 1:30–40, 2:50–52. It describes the claimed invention as being directed to automatically excluding advertisements that should not be shown at the time of playback. *Id.*, 2:59–62.

52. The patent describes and depicts a PVR 60 with connections to a TV aerial 20, a modem 22, the Internet 24, and a viewer’s TV set 68. *Id.*, 4:43–55; *see* FIG. 4 (below with labels added based on lines 4:43–55).

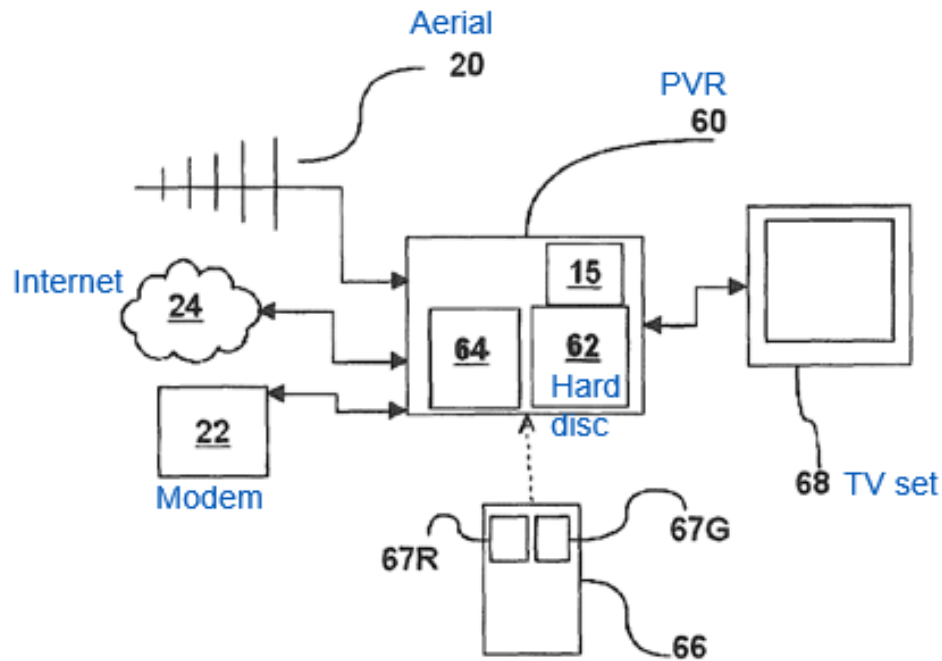


Fig 4

53. As the patent describes, PVR 60 has an advertisement database 70, a “programme database 80,” and a rules database 90 for, respectively, storing advertisements, broadcast program¹ segments, and rules that apply to the broadcast advertisements. *Id.*, 4:57–62; *see also* FIG. 5 (below with labels added based on lines 4:57–62).

¹ I will use the American English spelling of “program” to refer to the British English “programme” used in the patent.

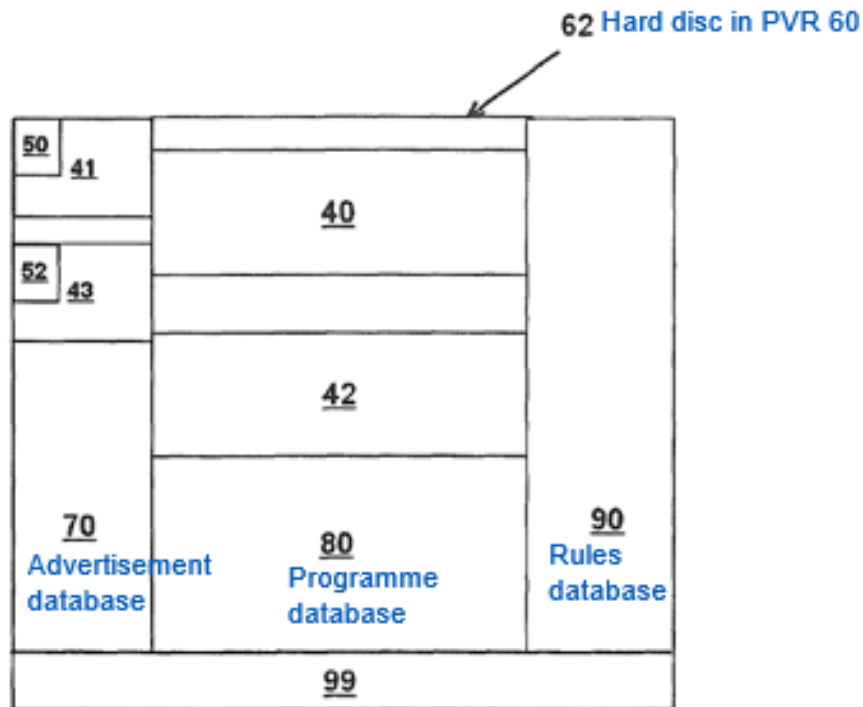


Fig 5

Each advertisement has a header that can include metadata regarding various characteristics of, data about, and other information relevant to the advertisement. *Id.*, 3:63–4:41. Table 1 of the patent shows “Fields in advertisement headers.” *Id.*, 4:1–23.

54. The patent describes a flowchart in Figure 8, which shows “steps taken in a PVR to ensure provision of legally acceptable adverts during a time-shifted viewing of a previously broadcast program, while also providing an advantageous mixture of advertisement types.” *Id.*, 6:33–37. In Step 102, PVR 60 checks the Real

Time of day signal, the rules database 90, and selects an advertisement. *Id.*, 6:40–53. In Step 104, PVR 60 reads the header information associated with the advertisement and checks for restrictions against playing the advertisement at the current time. *Id.*, 6:54–62. If there are time restrictions, PVR 60 selects the next advertisement in the database and checks the headers until a suitable advertisement is found. *Id.* Once it finds a suitable advertisement, PVR 60 checks other information in the advertisement header. *Id.* 6:63–7:16. PVR 60 then shows the queued advertisements to the viewer and records button depressions from the viewer. *Id.*, 7:17–22. It then informs the broadcaster which advertisements were shown and whether the viewer pressed keys in response to interactive advertisements. *Id.*, 7:22–27. Figure 8 below depicts this process:

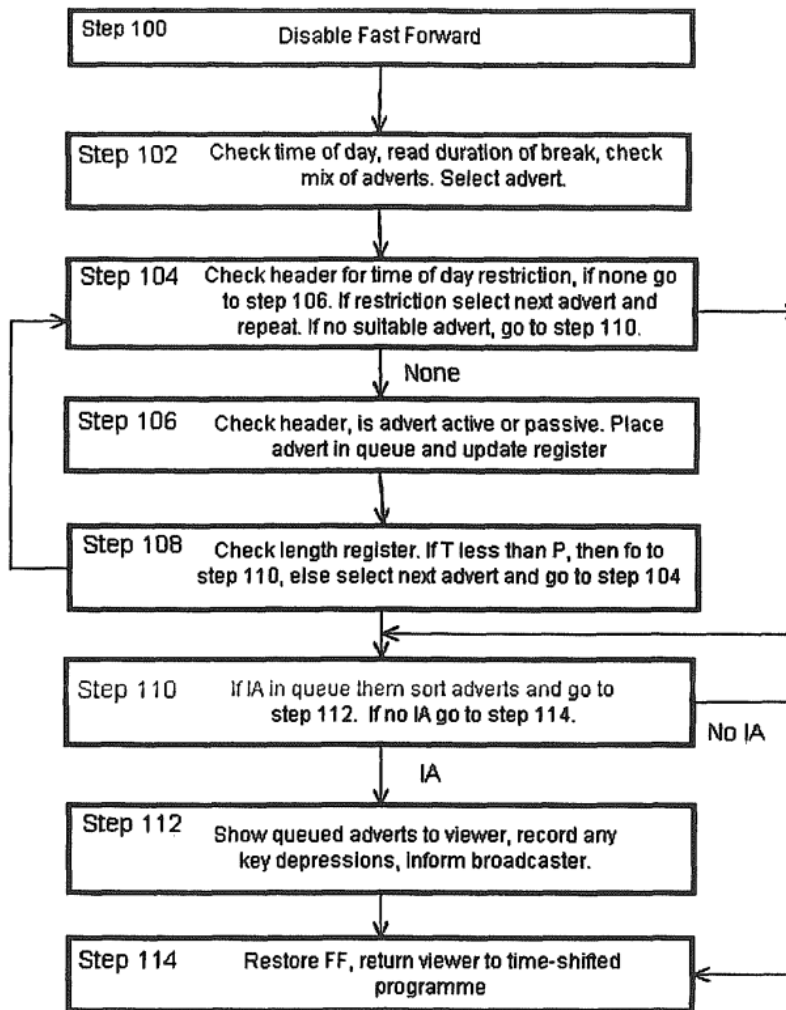


Fig 8

B. Prosecution History of the '302 Patent

55. The '302 Patent issued from U.S. Patent Application No. 13/990,372 filed on May 29, 2013, which was based on International Application No. PCT/GB2011/052259 filed on November 18, 2011. Ex-1001, Cover. The '302 Patent claims priority to foreign application GB1020361.0 filed on December 1, 2010. *Id.*, Cover.

56. On April 28, 2014, the Examiner issued a Non-Final Rejection, rejecting the claims under §§ 102, 103 based on prior art references GB 2464630 (“Poel”), U.S. Patent App. No. 2004/0205829 (“Hane”), and U.S. Patent App. No. 2002/0015093 (“Dureau”). Ex-1004, 182–191. The Examiner found that Poel disclosed selecting stored advertisements to insert into advertising slots according to time and date indicators. *Id.*, 184. In response, the Applicant amended the claims to specify that the broadcasting regulation is a “local broadcasting time regulation” “which restricts the time of day at which said advertisement may be shown.” *Id.*, 203. The Applicant argued that Poel’s headers are not related to broadcasting regulations, but rather are time and date limitations set by advertisers. *Id.*, 205–206.

57. On August 18, 2014, the Examiner issued a Final Rejection finding that Poel discloses “local broadcasting regulations” under the broadest reasonable interpretation of the claims, which the Examiner proposed was “general rules/criteria utilized/implemented upon local broadcasting content.” Ex-1004, 215. In response, on October 6, 2014, the Applicant amended the claims to add that the “local broadcasting [time] regulation” is “laid down by a broadcasting authority.” *Id.*, 238. The Applicant agreed that FCC regulation 47 C.F.R. § 73.3999 regarding times of day when indecent material may not be broadcast as “exactly the kind of regulation that the Applicant wishes to refer to.” *Id.*, 240. On November 18, 2014, the Applicant amended the claims to add that the header comprises “a second field related to the

number of times said advertisement has previously been shown during time-shifted viewing” in an attempt to further distinguish Poel. *Id.*, 260, 264.

58. In response to further rejections, the Applicant amended the claims to add that the “control means is further arranged to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing” and new dependent claims regarding additional control means functions. Ex-1004, 380–383. A Notice of Allowance issued on March 31, 2016. *Id.*, 466.

V. TECHNOLOGY BACKGROUND

59. Set top boxes and personal video recorders were well-known before December 2010. For example, TiVo, DirecTV, and DISH all had commercial DVR systems that were sold to the public before December 2010.

60. The idea of targeting advertisements to users, including based on time of day or day of week, was also well known before December 2010. For instance, advertisers would show advertisements for toys and cereal during children’s programming at times of day when children were more likely to watch television. Conversely, advertisers would target ads for products intended for adults (like cars, cleaning products, alcohol) by showing them during programs and at times of day that the target audience would most likely be watching television. Among other things, advertisers would also pay attention to and attempt to control the number of

times their advertisements were played in total and/or to a particular household or viewer. For instance, advertisers may have paid for their advertisement to be played a certain number of times or they may be paying on a per-view basis. For example, U.S. Patent App. Pub. No. 2002/0144262 (“Plotnick”) and U.S. 8,413,189 (“Parekh”) discussed in further detail with respect to Grounds 1 and 2 below, also describe such tracking, billing, and payment systems for advertisements. See Ex-1005 (Plotnick) at ¶¶147, 148, 153, 169, 170; Ex-1007 (Parekh) at 9:20–22, 17:36–46, 20:21–24. Advertisers also desired to track the number of times their advertisement was played to ensure that their advertisement is not played to a user too many times and/or too close in time because doing so would risk annoying the viewer and, in turn, dissuading them from purchasing the advertised product or service. For instance, Plotnick and Parekh teach that a variety of parties, including advertisers, may be interested in limiting the broadcast period and frequency or timing of content. See Ex-1005 at ¶169; Ex-1007 at 5:55–60. For instance, U.S. Patent App. Pub. No. 2010/0251289 to Agarwal (“Agarwal”) taught the concept of limiting repeated playbacks to viewers in order to avoid “ad fatigue.”

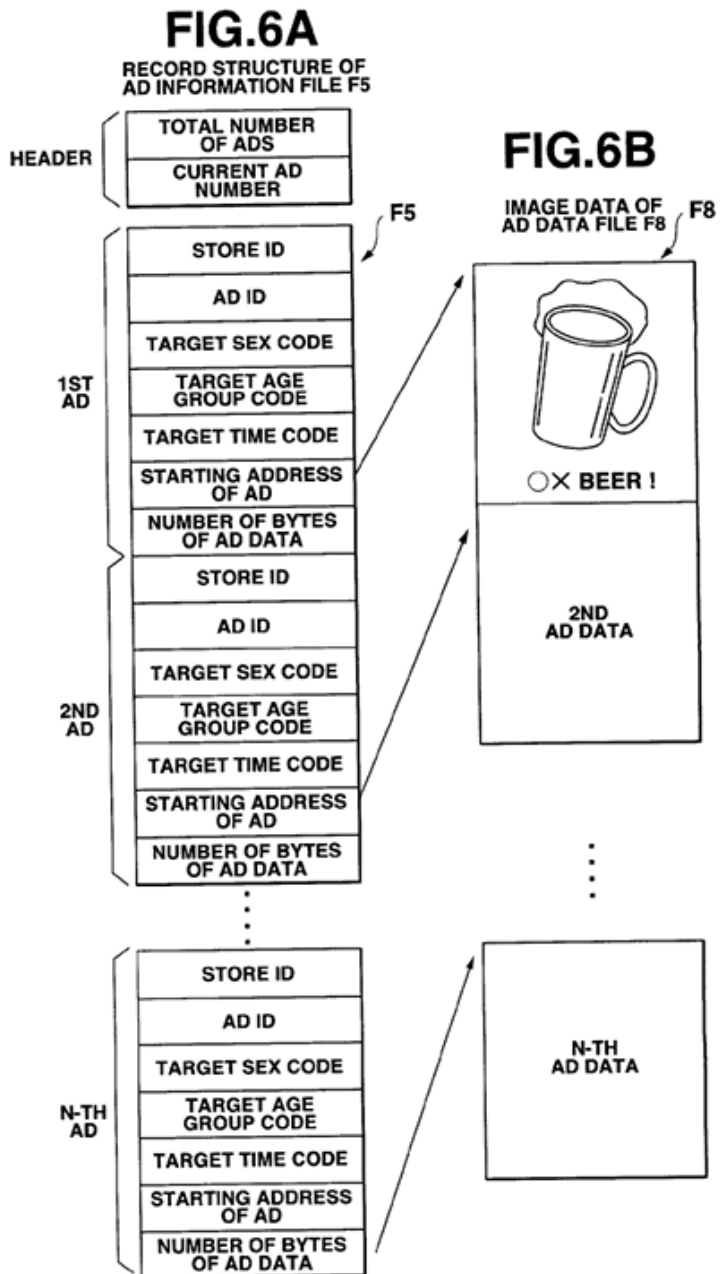
61. It was well-recognized that the ability to record media and play it back at different times could cause a mismatch in preferred timing for content and advertisements. For instance, Agarwal describes inserting advertisements at a set top box based on considerations of time of playback as well as number of times the

advertisement was played, to avoid “ad fatigue.” *See* U.S. Patent App. Pub. No. 2010/0251289 at ¶¶4, 54, 64, 68, 70, Cl. 8. For instance, U.S. Patent App. Pub. No. 2006/0277569 to Smith described DVR-based targeted advertising systems that considered, among other things, targeting viewers based on time of day when the content is played back so that programs played in the daytime could have advertisements that target kids while programs played in the evening could have advertisements that target adults. *See, e.g.*, U.S. Patent App. Pub. No. 2006/0277569 at ¶33. U.S. Patent App. Pub. No. 2008/0098423 to Malik described an advertisement insertion system for broadcast content wherein advertisements are selected for insertion into advertising slots based on a number of criteria indicated in “advertisement tags.” *See, e.g.*, U.S. Patent App. Pub. No. 2008/0098423 at ¶33. The advertisements are selected and inserted based on “advertisement insertion rules” that consider whether the advertisement should be played in a time period or other rules to “regulate the time of placement of an advertisement in a slot (e.g., daytime, evening, weekend, etc.).” *Id.* at ¶26; *see also id.* at ¶ 33 (criteria include “time of day content is broadcast to viewers, what type of viewers are most likely to be watching (e.g., children, family, older people, etc.)”); claim 6 (“broadcast criteria includes time of day” and targeting criteria). U.S. Patent No. 8,571,934 to Rosenberg describes a “client-side video replay system” that considers “time and day of week” when selecting advertisements. *See* U.S. Patent No. 8,571,934 at 1:56, 8:46-51.

62. FCC broadcasting regulations, particularly around issues of profanity and indecency, were also widely known in the media technology industry and by the public before December 2010. Before 2010, there were a variety of news events where the FCC fined or censored certain words and certain types of content from broadcasts. A few examples of news articles and webpages regarding these events include, e.g.: *Appeals Court Upholds Indecency Safe Harbor Rules*, Television Digest (July 12, 1995) (Ex-1028); *Cable TV Rule Targets Adults-Only Flash*; *FCC Wants Tighter Control of Programming Signals*, Chicago Tribune (Apr. 25, 1997) (Ex-1029); Brooks Boliek, *FCC Narrows 'Safe Harbor'; Court Says U.S. Can Restrict Adult Broadcast Fare to 10p.m.-6a.m.*, The Hollywood Reporter (July 5, 1995) (Ex-1030); Jonathan D. Salant, *FCC Head Wants Bigger Fines for Profanity*, Associated Press (Jan. 15, 2004) (Ex-1031); Bill Holland, *Stations Get Lump of Coal From FCC*, Billboard (Jan. 16, 1993) (Ex-1032). Indeed, a POSITA would inherently know and/or be motivated to account for such regulatory restrictions to, for example, avoid fines and penalties or to prevent injunctions and possible legal action. *See also Obscene, Profane and Indecent Broadcasts : Notices of Apparent Liability – OBINN*, Federal Communications Commission Enforcement Bureau, <https://www.fcc.gov/enforcement/orders/1833> (last accessed on Feb. 8, 2023) (listing “all broadcast indecency-related Notices of Apparent Liability [] issued by the FCC and/or the Enforcement Bureau since November 8, 1999”) (Ex-1033);

Commission Proposes Statutory Maximum Forfeiture Of \$55,000 Against AMFM Radio Licenses For Apparent Violations Of Indecency Rules, Federal Communications Commission, News (October 2, 2003) (Ex-1034). A POSITA working on technology related to broadcasting would have known about such restrictions and been aware which restrictions were applicable to their broadcasts and would have known to include such criteria in their advertising campaign guidelines, rules, or restrictions. For instance, U.S. 8,752,087 to Begeja describes that advertisers, when setting criteria for their advertising campaigns, should establish guidelines based on legally required obligations such as regulations regarding targeting certain content toward children. *See* U.S. 8,752,087 at 7:34–47.

63. Furthermore, the use of metadata in headers to select and manage files, including advertisements, was well-known. As one example, U.S. Patent App. Pub. No. 2008/0098423 to Malik described selecting advertisements for slots based on a number of criteria indicated in metadata in “advertisement tags.” *See, e.g.*, U.S. Patent App. Pub. No. 2008/0098423 at ¶33. For instance, patents and publications disclosed such headers with fields long before December 2010 and did not claim them as new inventions. For example, U.S. Patent Application No. 2003/0208560 to Inoue (Ex-1036) taught “information file[s]” that contain headers storing such metadata, as illustrated in Fig. 6A below, and did not claim that such header was a new invention. *See* Ex-1036 at FIG.6A, ¶¶100-101, Claims.



64. Similarly, U.S. Patent Publication No. 2009/0070414 to Singal (Ex-1038) teaches a file format for a transfer file that includes “[h]eader 134” that “defines such information as the format(s) of the media content 138, such as MPEG, PGM, RMTP, and the like, the size, duration and bit rate of the media content 138,

the size of the asset metadata 136 and user metadata 140, and other information.”
E.g., Ex-1038, ¶¶19-21, Table 1. Another similar system, disclosed in U.S. Patent Application No. 2009/0031390A1 to Rajakarunanayake (Ex-1025), teaches media files with “HTTP header[s]” containing metadata as shown below:

AV-Record.schemas.broadcom.com,” is shown below in Table 1.

TABLE 1

HTTP Header for Record Request:

POST /record-url HTTP/1.1

Content-Type: text/html

Network-AV-Record.schemas.broadcom.com:

File-Name: Jurassic-Park.mpg . . .

Ex-1025, ¶30; *see also id.* at ¶¶29-37. *See also* U.S. Patent Application Pub. No. 2008/0281592 to McKoen at ¶42 (Ex-1027) (disclosing an “annotation metadata engine” that “inserts the metadata and an associated time-stamp as user data bits into [] headers associated with the video stream”; U.S. Patent Application Publication No. 2008/0181301 to Kim (Ex-1026) at [0021], [0069], [0070] (disclosing analyzing video sequences by extracting “header information.”).

VI. THE PRIOR ART IN THE APPLIED INVALIDITY GROUNDS

A. Plotnick

65. U.S. Patent App. Pub. No. 2002/0144262 (“Plotnick”), titled “Alternative Advertising in Prerecorded Media,” was published on October 3, 2002, from an application filed on November 14, 2001. Ex-1005, Cover. Plotnick is prior art under at least pre-AIA 35 U.S.C. § 102(b).

66. I understand Plotnick is prior art under at least pre-AIA 35 U.S.C. § 102(b).

67. Plotnick's system includes a "client side STB ad targeting system 600," which is a "software application that may be integrated into a PVR-enabled set-top box (STB PVR)." *Id.*, ¶134. Through the ad targeting system, "ads may be inserted into the program material at indicated points of 'avails' (through cue messages)." *Id.*, ¶150. The "STB differentiates individual viewing habits, characterizes the current viewer based on current and historical viewing information, and selects advertising appropriate for the current view based on the characterization." *Id.*, ¶154. To provide appropriate advertisements to viewers, the STB PVR receives "control data 1006," which is metadata that "includes descriptions of the ad content, target audience, encoding attributes, delivery instructions, and contract limitations." *Id.*, ¶154.

68. Plotnick then processes "[t]he control data 1006 ... to generate ad queue structures," which is "a list of the next ads [] that should be inserted." *Id.*, ¶¶154, 194. The ad queue and schedule may be based on advertiser-specified campaign data, including "flight information, which indicates the networks and times for displaying the advertisement." *Id.*, ¶169. The ad queue "may vary based on ... time of day [], [] day of the week," and "other criteria." *Id.*, ¶194. Processing rules 1440

may be used to further control or replace ads in the ad queue based on the circumstances at the time of playback. *Id.*, ¶201.

69. After an ad is played, “the processing component [1010] updates the ad metadata 1006 based on ad delivery and user interaction.” *Id.*, ¶156. The STB may generate “ad play reports 1160” for a traffic and billing system to bill the advertiser based on requirements satisfied during the campaign. *Id.*, ¶169.

70. Plotnick has many diagrams depicting its system from different system and process perspectives. Figure 6A (below) shows an “exemplary context diagram” of the client side set-top box (STB) ad targeting system. Ex-1005, ¶74.

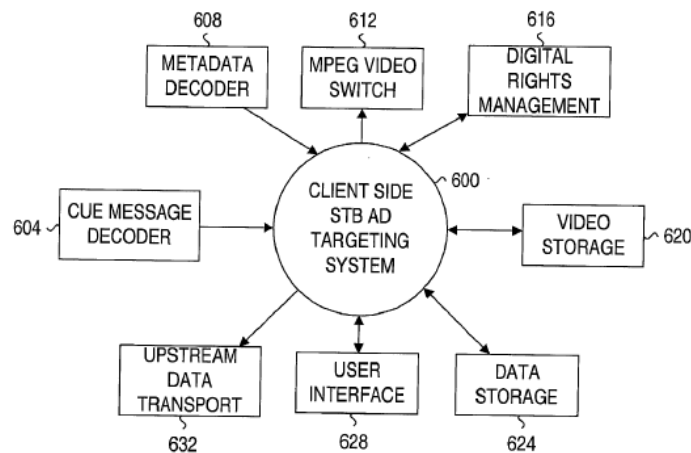


FIG. 6A

71. Figure 8 shows a diagram of the client-side STB ad targeting system. Ex-1005, ¶78.

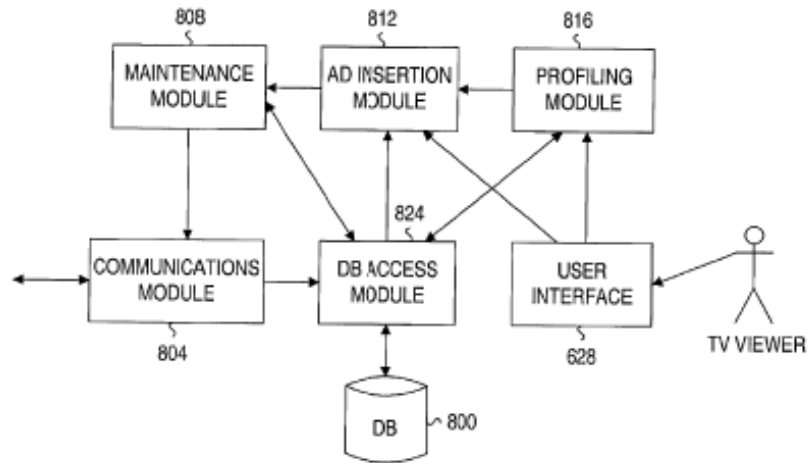


FIG. 8

72. Figure 10 shows an “exemplary data flow” of the PVR-enabled set-top box for delivering targeted advertising. Ex-1005, ¶¶80, 154.

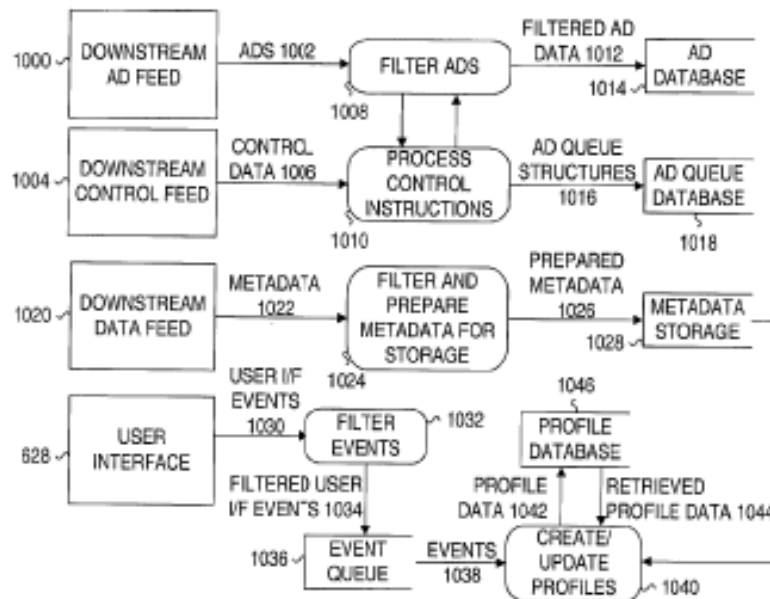


FIG. 10

73. Figure 13C shows an “exemplary system[] in which processing rules are received in order to generate alternative advertisements.” Ex-1005, ¶¶83, 182.

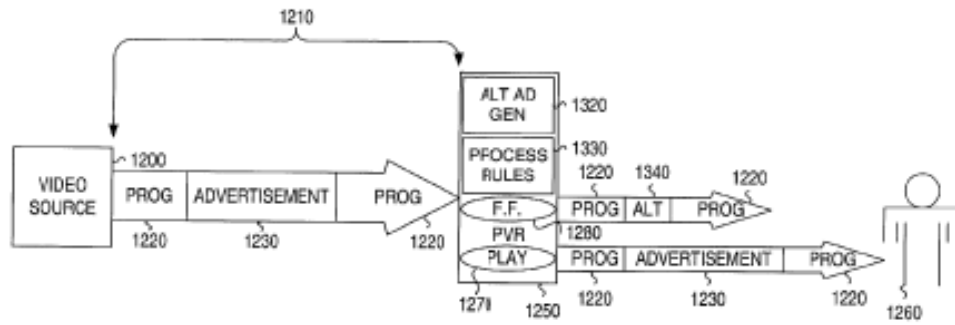


FIG. 13C

74. Figure 14B shows an “exemplary system[] in which advertisements and an ad queue are utilized along with alternative advertisements and/or processing rules.” Ex-1005, ¶¶84, 201.

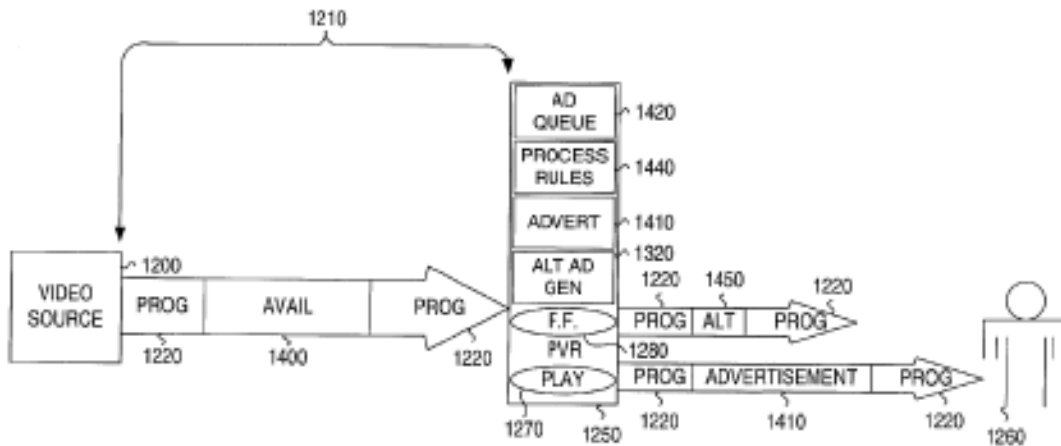


FIG. 14B

75. And Figure 6C shows different ad queues targeted to different viewers. Ex-1005, ¶¶75, 142.

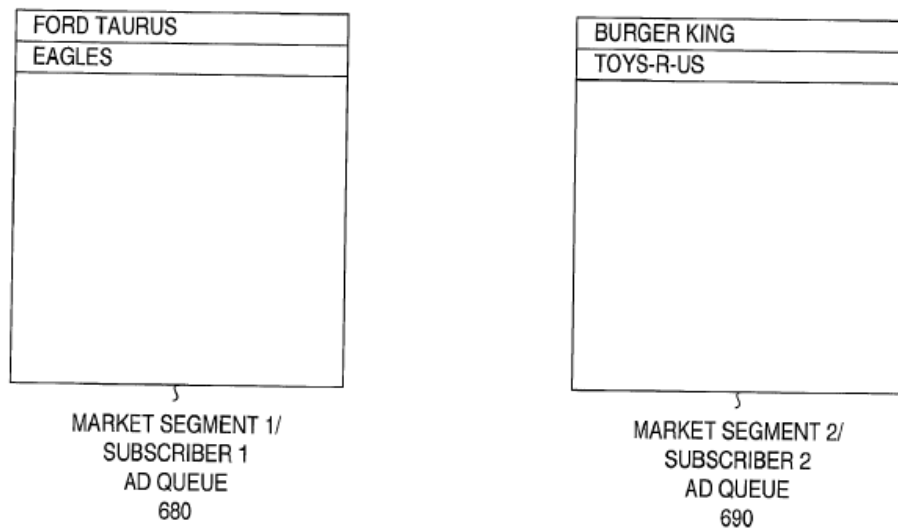


FIG. 6C

B. Parekh

76. U.S. Patent No. 8,413,189 (“Parekh”), titled “Dynamic Selection of Advertising Content in a Social Broadcast Environment,” issued on April 2, 2013, from an application filed on December 22, 2008. Ex-1007, Cover.

77. I understand Parekh is prior art under at least pre-AIA 35 U.S.C. § 102(e).

78. Parekh discloses a “method of determining advertising content to be included in a broadcast.” Ex-1007, Abstract. Parekh’s advertising content includes “inclusion criterion used to determine both whether and how that item of advertising is to be included in a broadcast.” *Id.*, 2:37-40.

79. Parekh discloses a “rules engine 308” to control “what tracks are played on-air and in what order ... with a combination of guidelines and rules, such as station

policies and regulations from regulators 110.” Ex-1007, 11:15-20; *see also* FIG. 1 (below). These rules “may be static which apply at all times or dynamic which apply only under certain conditions, such as time of day or size of online audience.” *Id.*, 11:26-28.

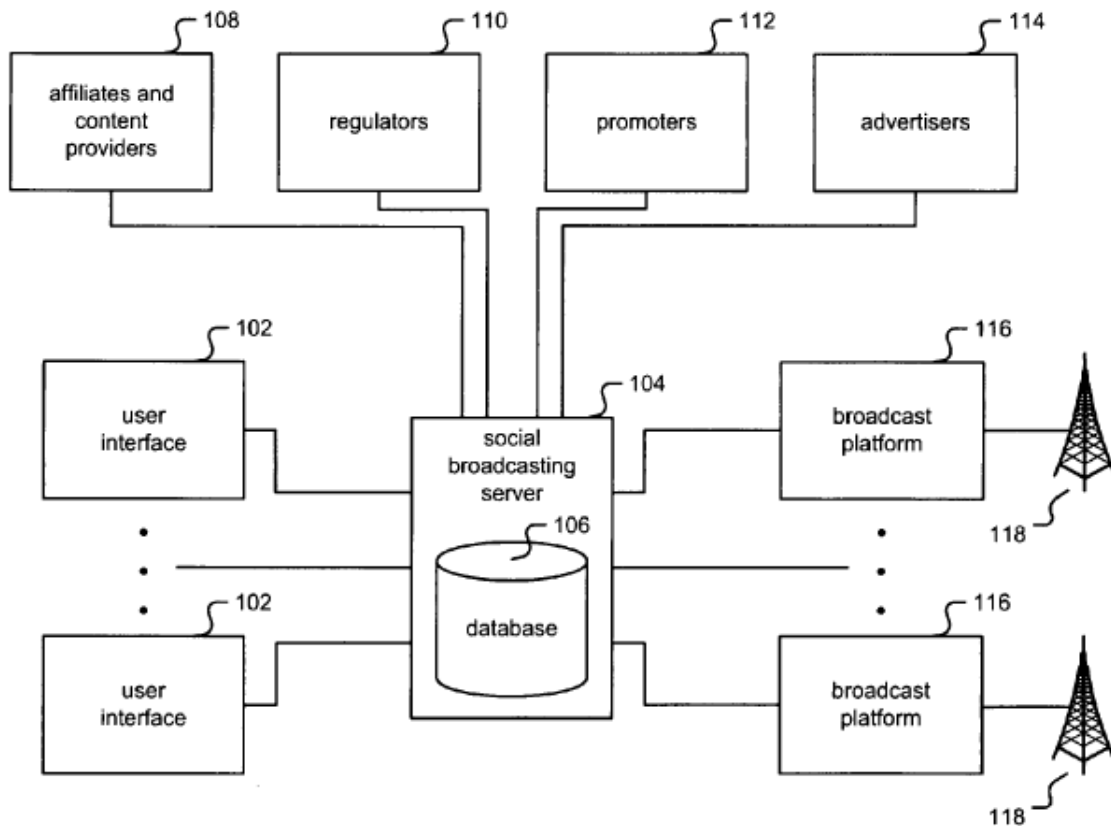


FIG. 1

80. Parekh discloses that examples of such rules are “business rules,” which include “FCC regulations for content, including: that indecent and/or profane material may not be broadcast outside the FCC Safe Harbor; [and] three songs from the same recording, or four songs from the same artist or anthology, may not be played within a three-hour period.” Ex-1007, 11:29-37.

VII. CLAIM CONSTRUCTION

81. It is my opinion that a POSITA would have understood these terms listed below as follows:

82. **Programme Supply Means (Cl. 1).** Claim 1 recites a “programme supply means to supply broadcast digital video/audio programmes having therein periodic breaks for the insertion of advertisements.” I understand this to refer to a “programme supply means” to perform the function of “to supply broadcast digital video/audio programmes.” I do not see any disclosed structure in Claim 1 for performing that function. The specification states that “FIG. 5 shows in detail the *hard disc 62 in the PVR 60*. It has three parts, an advertisement database 70 which stores advertisements from the broadcast programme; *a programme database 80*, which stores the broadcast programme segments; and a rules database 90 which stores the rules which apply to broadcast advertisements.” *Id.*, 4:57–62. Based on that description, I understand the “programme supply means” has the structure “hard disc 62 in PVR 60, containing programme database 80.”

83. **Advertisement Supply Means (Cl. 1).** Claim 1 recites an “advertisement supply means to supply advertisements within the periodic breaks.” I understand this to refer to an “advertisement supply means” that performs the function “to supply advertisements within the periodic breaks.” I do not see any disclosed structure in Claim 1 for performing that function. The specification states

that “FIG. 5 shows in detail the *hard disc 62 in the PVR 60*. It has three parts, *an advertisement database 70* which stores advertisements from the broadcast programme; a programme database 80, which stores the broadcast programme segments; and a rules database 90 which stores the rules which apply to broadcast advertisements.” *Id.*, 4:57–62. Based on that description, I understand the “advertisement supply means” to have the structure “hard disc 62 in PVR 60, containing advertisement database 70.”

84. **Rules Database Means (Cl. 1).** Claim 1 recites a “rules database means containing rules relating to said local broadcasting time regulation.” I understand this to recite a “rules database means” that performs the function of “containing rules relating to said local broadcasting time regulation.” I do not see corresponding structure for performing that function in Claim 1. The specification states that “FIG. 5 shows in detail the *hard disc 62 in the PVR 60*. It has three parts, an advertisement database 70 which stores advertisements from the broadcast programme; a programme database 80, which stores the broadcast programme segments; and a *rules database 90* which stores the rules which apply to broadcast advertisements.” *Id.*, 4:57–62. Based on that description, I understand the structure of the “rules database means” is “hard disc 62 in PVR 60, containing rules database 90.”

85. **Data Storage Means (Cl. 12).** Claim 1 recites a “data storage means storing a programme episode database, an advertisement database, and a rules

database.” I understand this refers to a “data storage means” that performs the function of “storing a programme episode database, an advertisement database, and a rules database.” I do not see any corresponding structure for that function disclosed in Claim 12. The specification states that “FIG. 5 shows in detail the *hard disc 62 in the PVR 60. It has three parts*, an advertisement database 70 which stores advertisements from the broadcast programme; a programme database 80, which stores the broadcast programme segments; and a rules database 90 which stores the rules which apply to broadcast advertisements.” *Id.*, 4:57–62. I thus understand the “data storage means” has the structure “hard disc 62 in PVR 60.”

86. **Clock Means (Cl. 1):** Claim 1 recites “clock means to supply a real-time clock signal.” I understand this refers to a “clock means” to perform the function “to supply a real-time clock signal.” I do not see any corresponding structure for that function disclosed in Claim 1. The specification states that the PVR of the invention comprises “input connection means for connection to a source of video/audio signals and *a real-time clock signal.*” *Id.*, 3:16–19. Figure 4 shows that “A Real Time of day signal is received [by the PVR 60] via *the backchannel in either the Internet connection 24 or the connection via the modem 22.*” *Id.*, 4:45–48. Based on that figure and description, I understand that the claimed “clock means” has the structure “backchannel in Internet connection 24 or modem 22 of PVR 60.”

87. **Input Connection Means (Cl. 12).** Claim 12 recites “input connection means for connection to a source of video/audio signals and a real-time clock signal.” I understand this refers to an “input connection means” to perform the function “for connection to a source of video/audio signals and a real time clock signal.” I do not see corresponding structure for performing that function in Claim 12. The specification states that the PVR of the invention comprises “input connection means for connection to a source of video/audio signals and a real-time clock signal.” *Id.*, 3:16–19. Figure 4 shows, “*in a PVR 60 for use in a system according to the invention, the connections to an aerial 20, a modem 22 and the Internet 24 are as in the prior art.*” *Id.*, 4:43–45. Based on the description, I understand the “input connection means” has the structure “a connection between PVR 60 and aerial 20, a modem 22 or the Internet 24 as in the prior art.”

88. **Output Means (Cl. 12).** Claim 12 recites an “output means for connection to a consumer’s viewing/listening unit.” FIG. 4 of the patent shows a two-way arrow connecting the PVR 60 to the viewer’s TV set 68. *Id.*, FIG. 4. I do not see corresponding structure for performing that function in Claim 12. The specification states that in Figure 4, “[t]he viewer’s TV set 68” is also shown. *Id.*, 4:51. Based on that depiction and description, I understand that the “output means” has the structure “connection between PVR 60 and TV set 68, as depicted in Figure 4.”

89. **Control Means (Cls. 1, 12).** Claims 1 and 12 recite “control means arranged to read said first field and said clock signal and said rules database and to apply said local broadcasting time regulation to each advertisement before said advertisement is shown [during one of the periodic breaks]; wherein the control means is further arranged to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing.” I understand this to refer to a “control means” that performs the following three functions”: (1) “to read said first field and said clock signal and said rules database”; (2) “to apply said local broadcasting time regulation to each advertisement before said advertisement is shown”; and (3) “to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing.” I do not see corresponding structure for performing these functions in Claims 1 or 12. The specification states that “[i]n Step 102 the PVR 60 checks the Real Time of day signal RT and ensures by means of use of the offset register 156 that the PVR 60 is in perfect synchronisation with signals coming from the broadcaster. The PVR then checks the rules database 90 and determines the appropriate duration of the entire advertising break. The PVR then checks in the rules database 90 the prescribed mix of interactive and passive advertisements for an advertising break of this duration, and stores the duration of the advertising break in a length register 150 in the hard disc (see FIG. 6) and stores the total allowable

time of interactive adverts in the prescribed break in an interactive register 152. The PVR then selects an advertisement from the store of live and matched advertisements held in its advertisement database 70. In Step 104 the PVR reads the header information associated with the selected advertisement and checks any time or day of showing restrictions. If there no such restriction then move to Step 106. If there is such a restriction the PVR 60 selects the next advertisement from the advertisement data base 70, and continues checking the headers until an advertisement is found of a type which can be shown at the current time of day and move to Step 106. If no suitable advertisements are found go to Step 110.” *Id.*, 6:40–62. It further describes that “In Step 112 the PVR 60 shows the stored queued advertisements from the buffer memory 158 to the viewer. During the showing, the PVR records any depressions of the red or green buttons 67R, 67G on the viewer’s remote control 66 made during the advertising break and updates the viewer loyalty points register 156. Via the backchannel, the PVR 60 informs the broadcaster which advertisements were shown to the viewer during the advertising break and whether the viewer made any key depressions during the break in response to the interactive advertisements contained in the break.” *Id.*, 7:17–27. I did not find any other disclosures in the patent that appeared to describe structure for the “control means.” Thus, based on the description that is in the specification, I understand the “control means” to have the structure “hardware and/or software arranged to perform steps

102, 104, and 112 of FIG. 8,” as described at 6:40–62 and 7:17–27 of the specification.

90. **Control Means (Cl. 2).** Claim 2 recites an additional function for the “control means” of Claim 1, adding the function “check [a keyword in each header] against the rules database during application of said local broadcasting time regulation to said advertisement.” I do not see corresponding structure for performing that function in Claim 1 or 2. The specification discloses that in Step 104 the “PVR reads the header information [] and checks any time or day of showing restrictions.” Ex-1001, 6:40-43. The specification further describes that a “Warnings” field in the header includes keywords that are “matched against local viewing regulations” and that “[e]ven a selected word can be used as a control” and lists “alcoholic drinks” or “politician” as examples. *Id.*, 4:23, 4:35-37, 6:10-12. I did not find any other disclosures in the patent that appeared to describe structure that performs the functions of the “control means” of Claim 2. Thus, based on the description that is in the specification, I understand the “control means” recited in Claim 2 has the structure “hardware and/or software arranged to perform steps 102, 104, and 112 of FIG. 8,” as described at 6:40–62 and 7:17–27 of the specification.

91. **Control Means (Cl. 8):** Claim 8 recites an additional function for the “control means” of Claim 1, adding the function “when the application of said local broadcasting time regulation to a particular advertisement indicates that showing the

particular advertisement would violate the local broadcasting time regulation, search the advertisements stored in the advertisement supply means until either an advertisement is found that does not violate the local broadcasting time regulation or it is determined that no advertisement stored in the advertisement supply means is suitable for showing under the local broadcasting time regulation.” My understanding is that in addition to the claimed function in Claim 1, the “control means” in Claim 8 iteratively checks advertisements until a suitable advertisement is found or until it is determined that no advertisement is suitable. I do not see corresponding structure for performing that function in Claim 1 or 8. The specification discloses that Step 104 also includes this iteration process, disclosing that “In Step 104 the PVR reads the header information associated with the selected advertisement and checks any time or day of showing restrictions. If there no such restriction then move to Step 106. *If there is such a restriction the PVR 60 selects the next advertisement from the advertisement data base 70, and continues checking the headers until an advertisement is found of a type which can be shown at the current time of day and move to Step 106. If no suitable advertisements are found go to Step 110.*” *Id.*, 6:54–62. I did not find any other disclosures in the patent that appeared to describe structure that performs the functions of the “control means” of Claim 8. Thus, based on the description that is in the specification, I understand the “control means” in Claim 8 has the structure “hardware and/or software arranged

to perform steps 102, 104, and 112 of FIG. 8,” as described at 6:40–62 and 7:17–27 of the specification.

92. **Control Means (Cl. 9).** Claim 9 recites an additional function for the “control means” of Claim 8, adding the function “to show during time-shifted viewing of the programme a mix of advertisements that were received during the live broadcast of the programme and advertisements that were received other than in the live broadcast of the programme being shown during time-shifted viewing.” I do not see corresponding structure for performing that function in Claim 1, 8, or 9. I understand that this means that in addition to the claimed function in Claim 1, the “control means” in Claim 9 shows a mix of live broadcast and other advertisements. The specification discloses that Step 102 selects from such a mix of advertisements, disclosing that “[t]he PVR then selects an advertisement from the store of *live and matched advertisements* held in its advertisement database 70.” *Id.*, 6:51–52. Thus, based on the description that is in the specification, I understand the “control means” of Claim 9 to have the structure “hardware and/or software arranged to perform steps 102, 104, and 112 of Fig. 8,” as described at 6:40–62 and 7:12–27 of the specification.

93. I reserve the right to offer opinions on any claim constructions proposed in this proceeding or to offer opinions on additional constructions in the district court.

VIII. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS

A. Ground 1: Plotnick In Combination With Parekh Renders Claims 1–4, 6–9, 12–15 Obvious

1. A POSITA Would Have Been Motivated To Combine Plotnick’s And Parekh’s Teachings

94. In addition to the reasons explained below with respect to specific claim elements, it is my opinion that a POSITA would have been motivated to combine the teachings of Plotnick and Parekh and would have had a reasonable expectation of success in doing so. I elaborate on my opinion below.

95. First, I note that Plotnick and Parekh are in the same field of invention. Both are directed to selecting advertisements to be delivered in broadcast programming. Plotnick teaches selecting advertisements to be played in video or audio programming that is broadcast and/or recorded by a PVR. Ex-1005, ¶¶90-93, 134. Parekh also discloses a method of “determining advertising content to be included in a broadcast” and, like Plotnick, it also applies to broadcast audio and video content. Ex-1007, Abstract, 11:20-23; *see also* 2:26-28.

96. Plotnick and Parekh teach similar considerations for selecting advertisements. For instance, both teach that it is important to consider the time of day when selecting advertisements to be played. Plotnick teaches a system that selects advertisements based on a variety of criteria, including based on target audience, what programs are played, the time of day, and user interaction. Ex-1005,

¶¶169, 194. In Parekh, advertisements are also selected based on various factors including target audience, what program is on, time of day, and user interaction. Ex-1007, 16:26-30, 16:42-47, 16:53-65, 17:8-16, 17:24-30.

97. It is also my opinion that Plotnick and Parekh both teach similar techniques for selecting advertisements—specifically, both teach using metadata that is associated with each advertisement to filter, select, and/or match advertisements to a time slot for advertisement placement. Plotnick calls this metadata “control data 1006,” and describes it as “includ[ing] descriptions of the ad content, target audience, encoding attributes, delivery instructions, and contract limitations” to select appropriate advertisements. Ex-1005, ¶154. A POSITA would have understood that “control data” in Plotnick is metadata because it is data relevant to the advertisement, but is not the image or audio data of the advertisement content itself. In Plotnick, advertisers can specify many different criteria for playing their ads, including flight information, indicating networks and times for displaying the advertisement. Ex-1005, ¶169. A POSITA would have understood that such criteria would be uniquely associated with each advertisement so that the system of Plotnick could specifically control each advertisement based on that criteria. Placing such metadata in a header that is specifically associated with each advertisement file would have been an obvious way to ensure that the metadata for each advertisement is associated with each advertisement even when the advertisement is transmitted to

and stored in STB PVRs in viewer's houses. Including the metadata with transmission of the advertisement, e.g., in a header, would have been important because Plotnick discloses that the STB PVR applies processing rules that would rely on such metadata. For instance, Plotnick discloses that at the time of playback, the STB PVR can apply processing rules to vary which ads are played. Plotnick discloses the example that such processing rules could be based on "what subscriber [] is interacting with the TV, what time of day it is, what time of week, what programs are on, and other criteria." Ex-1005, ¶194, 187, 201. Of course, in order to apply such rules, the STB PVR would need to know relevant information about each advertisement, i.e., header metadata, to identify which advertisement met such criteria. Furthermore, Plotnick discloses storing the metadata received in an ad queue database. It would have been obvious to a POSITA to store both the ad queue database in the same database system as the ad database, as doing so allows relating the metadata of the ad to the ad using foreign key relationships known to a POSITA, Doing so allows for associating the metadata with the advertisement using the mechanisms of the database itself, and allows the metadata header to be easily retrieved. It would have been routine for a POSITA to do so, as storing and retrieving data in association with another object is routine for a POSITA.

98. Parekh teaches similar techniques of using metadata to implement rules and apply criteria to determine what advertisements and content pieces are played in

a broadcast. Specifically, Parekh says that each advertisement has “inclusion criteria used to determine both whether and how that item of advertising content is to be included in a broadcast.” Ex-1007, 2:37-40. The Parekh system, like the Plotnick system, uses metadata associated with each ad to determine which advertisements to play. *Id.*, 10:47-51, 11:15-35. Parekh provides examples of such metadata and criteria such as information about user engagement, and “business rules,” including rules about when content can be played. *Id.* Parekh specified that such “business rules” would include consideration of applicable broadcasting regulations, like FCC regulations, and Parekh specifically mentions FCC regulations regarding the “FCC Safe Harbor” timing for broadcasting indecent and/or profane material. *Id.*, 11:29-31. Thus, to the extent a POSITA was not already aware that it was necessary to consider FCC regulation time restrictions in the “flight information” for timing of ads in Plotnick, Parekh taught and rendered obvious such consideration. Parekh also taught storing media and related metadata, e.g., headers, in a “media database 340.” Ex-1007, 10:32–37, 10:57-58, 11:11–13. The media and metadata are invested by “media ingestion and metadata server 332” which adds, modifies, or deletes metadata about each content piece and provides database management for media database 340. Ex-1007, 9:66–10:4.

99. Plotnick and Parekh also both teach systems that record each time that an advertisement was presented. For instance, in Plotnick, the processing component

1010 “updates the ad metadata 1006 based on ad delivery and user interaction.” Ex-1005, ¶156. After an advertisement is presented, “the system updates the ad metadata and transmits an insertion report to the head-end.” *Id.*, ¶163. The Plotnick system also creates an “ad play report” when “ads are displayed to the subscriber.” *Id.*, ¶169. As described above, a POSITA would have found it obvious to store the metadata associated with each advertisement in Plotnick in a header. Plotnick explicitly discloses that this information based on ad delivery and user interaction is included and updated in the “ad metadata 1006.” Ex-1005, ¶156. Parekh similarly teaches tracking and reporting advertisement plays and interactions. In Parekh, “ad integration server” enables “real-time ad measurement and analysis.” Ex-1007, 9:27-32; *see also id.*, 9:56-61. Like Plotnick, in Parekh, such data is included in a report. Specifically, Plotnick says that “[r]eporting may include an analysis of the broadcast associated with the broadcasted ad” and “may indicate that at 7:34pm on Wednesday, Dec. 17, 2008 ... an ad for a female fitness center was bombed by 24,343 females and 12,522 males.” *Id.*, 17:39-46.

100. It is my opinion that in addition to the similar and compatible teachings that I describe above, a POSITA would have been motivated to combine the teachings of Plotnick and Parekh because Plotnick teaches managing and replacing advertisements that are shown in a PVR-recorded program, including based on time of day at playback, while Parekh teaches what to specifically consider when setting

those rules and criteria for timing of playing advertisements. As a described in Section V above, a POSITA would have known the problems related to playing PVR-recorded programs at a later time, including the fact that advertisements may be inappropriate for the time of a day at playback. In addition, as also described in Section V above, a POSITA would have known that such timing considerations included FCC regulations relating to what types of content can and cannot be shown based on time of day. To the extent a POSITA did not already consider applicable FCC broadcasting time restrictions when setting timing rules for its advertisements in the Plotnick system, Parekh explicitly teaches that time of day considerations should include FCC broadcasting time regulations, for instance, restrictions on broadcasting indecent and/or profane material outside of the FCC Safe Harbor time period. Ex-1005, ¶194; Ex-1007, 4:7-15, 11:29-42. These teachings would have been used to implement a real-world system that supplies appropriate, targeted advertisements to users that also complies with applicable laws. A POSITA would have been highly motivated to build a system that complies with applicable laws because failing to comply with laws could lead to legal and financial consequences. Additionally, a system that is known to not comply with laws is unlikely to be adopted by others.

101. A POSITA would have had a reasonable expectation of success in combining the teachings of Plotnick and Parekh. Plotnick teaches that its system is

adjustable and may vary “based on what subscriber 1260 is interacting with the TV, what time of day it is, what day of the week, what programs are on, *and other criteria that would be well within the scope of the current invention.*” Ex-1005, ¶¶194, 60, 64-65. Parekh teaches one such criteria that is highly relevant to Plotnick’s considerations of time of day—FCC time regulations. Ex-1007, 4:7-16, 9:23-26, 11:29-42. Further, each uses the well-known technique and computing functionalities of metadata, databases, storage, and rules to select appropriate advertisements. EX-1007 (Plotnick), ¶¶107, 109-110, 134, 139, 154-158; EX-1007 (Parekh), 4:4-17, 8:41-62, 9:66-10:15, 11:15-53. Such systems, metadata, and databases are highly programmable to suit the needs of any particular application. A POSITA would have found that the teachings of Plotnick and Parekh are similar enough to be combined in conventional and expected ways to select and replace advertisements played in a PVR recording in accordance with FCC time regulations. As just one example, a POSITA would have found it simple to include FCC time restrictions as one or more rules and to use metadata to ensure that the appropriate advertisements are filtered out, blocked, or not selected based on such metadata and rules. For instance, the Plotnick system could include metadata in each advertisement about the type of content it contains—e.g., a content rating, whether it contains profanity, or the type of product or service the advertisement relates to. The Plotnick STB PVR could, for instance, check the time at playback to determine

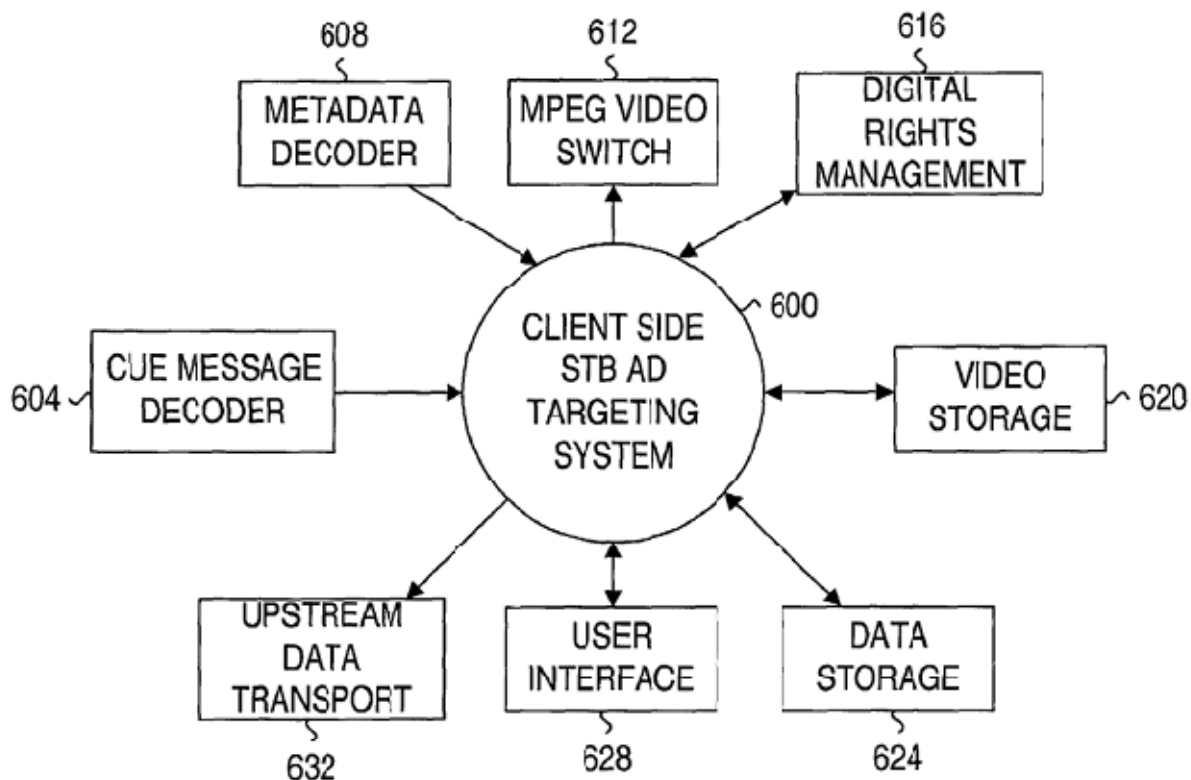
whether the current time is within the FCC's Safe Harbor hours, and if not, filter out advertisement with metadata indicating that the advertisement contains profanity or relates to alcohol or other types of adult content. Implementing this system would have been as simple as including the relevant metadata in the header of each ad, and adding a rule to the ruleset in the STB PVR.

102. It is also my opinion that a POSITA would have been motivated to incorporate the teachings of Parekh into the system of Plotnick because Parekh teaches many additional motivations for incorporating its teachings. For instance, Parekh teaches a social broadcast system that weighs users' desires, including their real-time feedback, into the process for selecting content and ads. Ex-1007, 7:34-52, 11:55-12:28. Parekh also teaches how to ensure that applicable broadcasting rules are followed and how to report played advertisement data for data collection and payment. Ex-1007, 74:7-17, 9:25, 11:29-53, 5:12-17, 9:20-22, 9:56-61, 17:36-46. Further, as I described above, a POSITA would have been motivated to ensure that any implementation of the system of Plotnick was lawful, and Parekh teaches considering FCC regulations for this purpose. For at least the reasons described above, a POSITA implementing the ad targeting system of Plotnick would have been motivated to look to other ad targeting teachings in the field, like Parekh, and would have been motivated to incorporate the teachings of Parekh.

2. Independent Claim 1

- a. 1[a]: “A system for automating compliance with local broadcasting regulations laid down by a broadcasting authority and applicable to advertisements, said advertisements being provided during time-shifted viewing/listening comprises:”

103. Plotnick and Parekh disclose and teach Claim 1’s preamble. Plotnick discloses an “ad targeting system 600,” which is a “software application that may be integrated into a PVR-enabled set-top box (STB PVR).” Ex-1005, ¶134; *see also* FIG. 6A (below).



104. Plotnick's PVR enables users to view advertisements during time-shifted viewing. For example, "a number of events such as fast-forward, commercial skip, and rewind can be used to trigger the alternative advertisement." Ex-1005, ¶62. These are well-known examples of "time-shifted viewing" because the time of playback in cases of fast-forward and rewind is different, i.e. shifted, from when the material was broadcast to the user.

105. Plotnick also discloses the STB PVR "differentiates individual viewing habits, characterizes the current viewer based on current and historical viewing information, and selects advertising appropriate for the current viewer based on the characterization." Ex-1005, ¶154. To select appropriate advertising, Plotnick's advertisements contain "control data 1006," which is metadata that "includes descriptions of the ad content, target audience, encoding attributes, delivery instructions, and contract limitations." *Id.*, ¶154. Plotnick discloses "requirements for viewership ratings, frequency of viewership by the target audience, and flight information, which indicates the networks and *times for displaying the advertisement.*" *Id.*, ¶169 (emphasis added). Advertisements are also selected based on "*what time of day it is*, what day of the week, what programs are on, and other criteria that would be well within the scope of the current invention." *Id.*, ¶194 (emphasis added).

106. Metadata to select ads based on “time of day” or “day of the week” encompass metadata relating to time restrictions of local broadcasting time regulations set by a local broadcasting authority. As I described in Section VIII.A.1 above, a POSITA would have found it obvious to include such metadata in headers associated with each advertisement in Plotnick. As I also described above in VIII.A.1, a POSITA would have found it obvious that they should ensure the Plotnick system is lawful and would have known that applicable laws included FCC time restrictions. Thus, Plotnick’s system renders obvious to a POSITA automating compliance with such regulations because the PVR processes the metadata and filters for appropriate advertisements without user action.

107. A POSITA seeking additional implementation details relating to local broadcasting regulations would have to turned to related references describing these well-known features. Parekh is one such reference, and further teaches use of a “rules engine” that controls “what [media items] are played on-air and in what order ... with a combination of guidelines and rules, such as [] regulations from regulators 110.” EX-1007, 11:14-20. Such rules “may be static which apply at all times or dynamic which apply only under certain conditions, such as time of day or size of online audience.” *Id.*, 11:26-28. Parekh says that examples of such rules include “FCC regulations for content, including: that indecent and/or profane material may not be broadcast outside the FCC Safe Harbor[.]” *Id.*, 11:29-31.

108. Such FCC regulations are local broadcasting time regulations laid down by a broadcasting authority because the FCC Safe Harbor concerns hours during which broadcasters may not transmit material deemed indecent for children and they are laid down by the FCC. This was the regulation that the Applicant agreed was the target of the '302 Patent. Ex-1004, 240.

109. A POSITA would have been motivated to implement Parekh's business rules that ensure compliance with applicable regulations (e.g., FCC time regulations) in Plotnick. Plotnick teaches "day part" and "time of day" as considerations for selecting ads for playback. As explained in Section V above and in the next paragraph below, a POSITA would have known that applicable FCC regulations are such timing considerations because those regulations define what is legal based on time of day. Ex-1005, ¶¶161, 194. A POSITA seeking to implement time of day considerations as suggested in Plotnick would have sought further teachings about such time considerations in other ad targeting teachings and would have been motivated to implement the teachings in Parekh to ensure that ads complied with FCC regulations.

110. Moreover, the importance of complying with local broadcasting time regulations laid down by a broadcasting authority, such as the FCC's Safe Harbor Rules, was well-known at the time of the '302 Patent. As explained in Section V, the FCC's authority to censor and restrict broadcasts was the subject of many news

events before December 2010 and was well-known to POSITAs. A few examples of news articles and webpages regarding these events include, e.g.: *Appeals Court Upholds Indecency Safe Harbor Rules*, Television Digest (July 12, 1995) (Ex-1028); *Cable TV Rule Targets Adults-Only Flash; FCC Wants Tighter Control of Programming Signals*, Chicago Tribune (Apr. 25, 1997) (Ex-1029); Brooks Boliek, *FCC Narrows 'Safe Harbor'; Court Says U.S. Can Restrict Adult Broadcast Fare to 10p.m.-6a.m.*, The Hollywood Reporter (July 5, 1995) (Ex-1030); Jonathan D. Salant, *FCC Head Wants Bigger Fines for Profanity*, Associated Press (Jan. 15, 2004) (Ex-1031); Bill Holland, *Stations Get Lump of Coal From FCC*, Billboard (Jan. 16, 1993) (Ex-1032). Indeed, a POSITA would inherently know and/or be motivated to account for such regulatory restrictions to, for example, avoid fines and penalties or to prevent injunctions and possible legal action. *See also Obscene, Profane and Indecent Broadcasts : Notices of Apparent Liability – OBINN*, Federal Communications Commission Enforcement Bureau, <https://www.fcc.gov/enforcement/orders/1833> (last accessed on Feb. 8, 2023) (listing “all broadcast indecency-related Notices of Apparent Liability [] issued by the FCC and/or the Enforcement Bureau since November 8, 1999”) (Ex-1033); *Commission Proposes Statutory Maximum Forfeiture Of \$55,000 Against AMFM Radio Licenses For Apparent Violations Of Indecency Rules*, Federal Communications Commission, News (October 2, 2003) (Ex-1034). It was therefore

well-known that such criteria should be included in rules, guidelines, or restrictions relating to showing advertisements. For instance, U.S. 8,752,087 to Begeja describes that advertisers, when setting criteria for their advertising campaigns, should establish guidelines based on legally required obligations such as regulations regarding targeting certain content toward children. *See* U.S. 8,752,087 at 7:34–47.

111. A POSITA would have had a reasonable expectation of success in combining these teachings because Plotnick and Parekh both use similar and well-known technologies and rules. Plotnick’s system uses similar rules to Parekh’s “business rules” (i.e., time-based regulations), including criteria limiting advertisements based on “time of day” or “day of the weeks.” A POSITA implementing the teachings of Parekh would have known to add the time restrictions defined in FCC regulations into the system of Plotnick because such combination would have simply required adding applicable restriction rules, including times when certain types of content are not allowed according to the FCC regulation as taught in Parekh, and applying such rules based on ad metadata about the content in each ad, as taught in Plotnick. As an example of Plotnick’s teaching, Figure 6C of Plotnick shows two different advertisement line ups—one targeted to adults (for Ford Taurus and Eagles) and another for children (Burger King and Toys-R-Us). A POSITA would have understood that such targeting was implemented by filtering and selecting the advertisements using the metadata associated with each ad, e.g.,

brand name, product type, target demographic, etc. *See* Ex-1005, FIG. 6C (below, showing selection of ads based on ad content). Further, as explained in Section VIII.A.1, both Plotnick and Parekh use metadata, databases, and rules to implement their teachings, and a POSITA would have understood how to apply the teachings of Parekh via these well-known and highly programmable computing techniques and components.

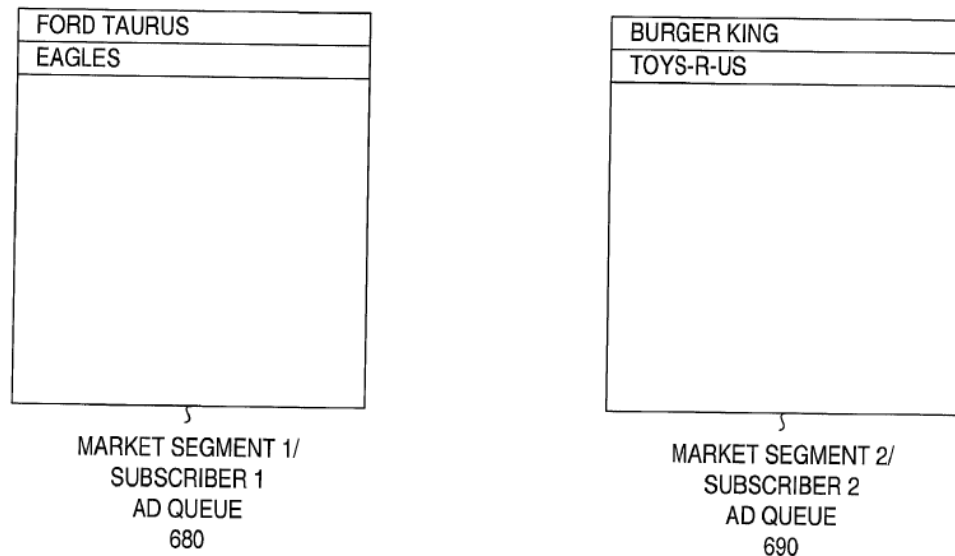


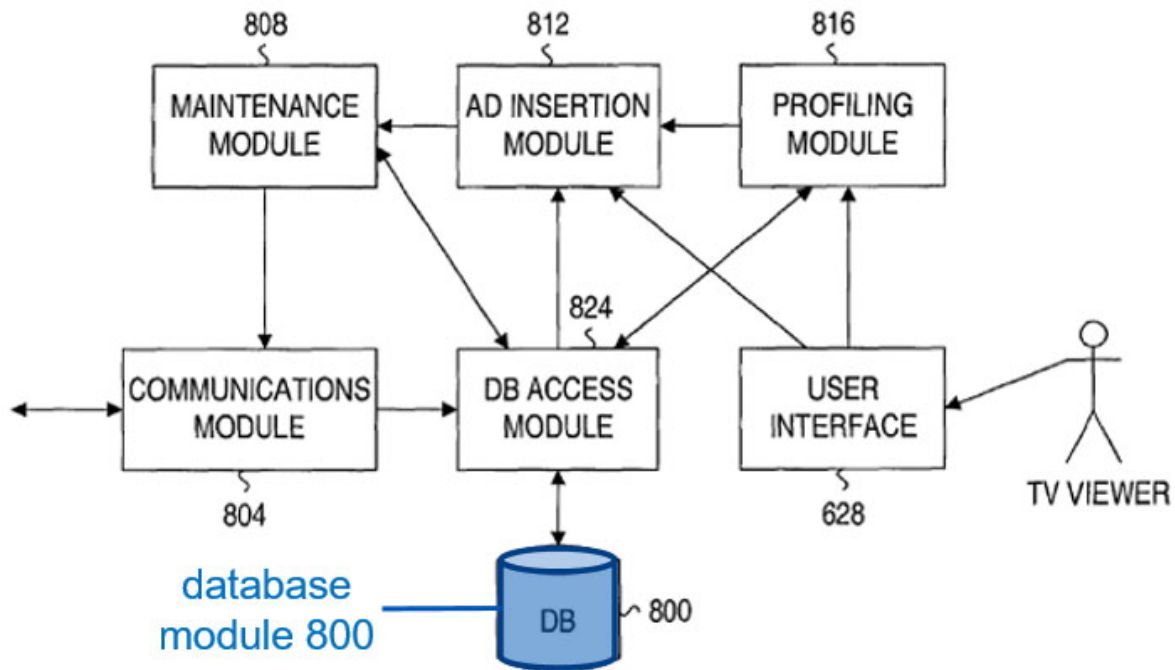
FIG. 6C

- b. 1[b]: programme supply means to supply broadcast digital video/audio programmes having therein periodic breaks for the insertion of advertisements;**

112. Plotnick discloses and teaches element 1[b]. The “programme supply means” has the structure “hard disc 62 in PVR 60, containing programme database 80” and the function “to supply broadcast digital video/audio programmes.” *See* Section VII. Plotnick discloses the “client side STB ad targeting system may be

integrated into a PVR-enabled set-top box (STB PVR).” Ex-1005, ¶134. The PVR includes a “video storage 620 component,” which is a “mass storage device, such as a hard disk drive,” that “is used to store all video audio programs on the set-top box, including ads (commercials).” *Id.*, ¶139.

113. Plotnick further discloses “database module 800” that stores “information essential to the operation” of the system, including “ad and program information (metadata), and possibly the ads themselves.” *Id.*, ¶150; *see* Figure 8 below (annotated):



114. Plotnick receives and delivers “broadcast” programming, including video or audio, “via a program delivery network,” and those programs can be stored

on and “played from the set-top box’s hard disk.” *Id.*, ¶¶91, 90, 150; *see also* ¶92 (the program delivery network may be a “digital broadcast satellite (DBS) system”). Accordingly, Plotnick discloses the structure a “hard disc 62 in PVR 60, containing programme database 80.”

115. Additionally, the programs stored in Plotnick’s PVR video storage 620 component “hav[e] therein periodic breaks for the insertion of advertisements.” Plotnick’s system uses an “ad insertion module” that “handles the processes necessary to incorporate targeted ads into television programs, including programs received in real-time or being played from the set-top box’s hard disk.” Ex-1005, ¶150. Through the ad insertion module, “ads may be inserted into the program material at indicated points or ‘avails’ (through cue messages), or inserted before (pre-pended) or after (post-pended) a program.” Ex-1005, ¶¶150, 91, 194. Figure 1 (below) illustrates Plotnick’s programming with periodic breaks for advertisements:

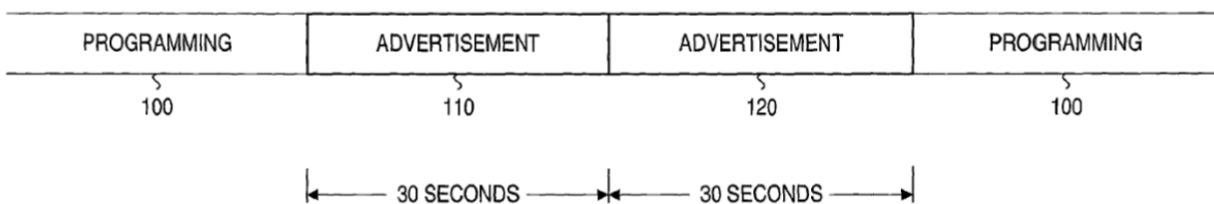
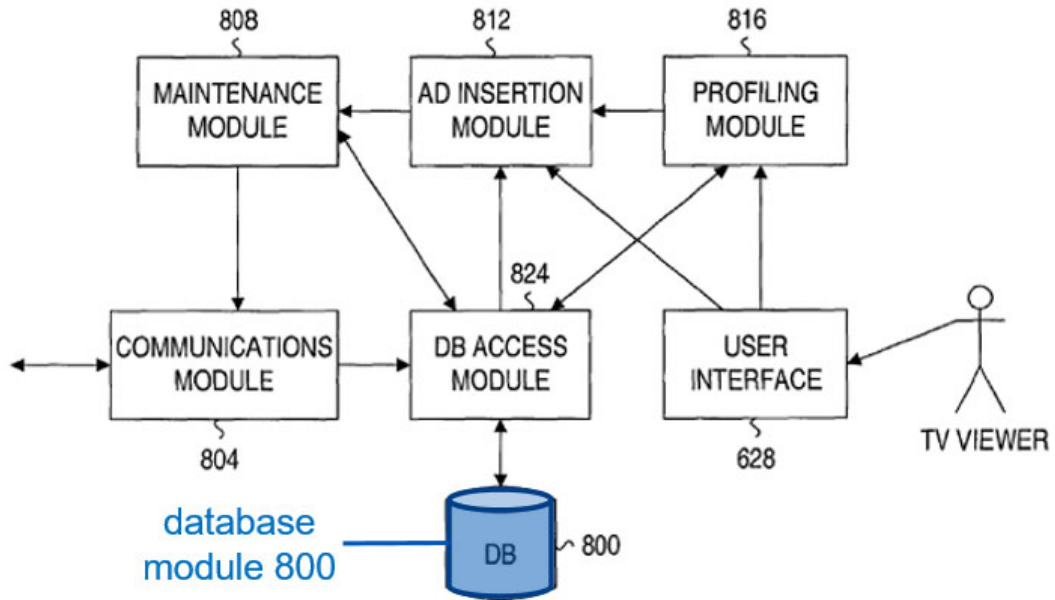


FIG. 1

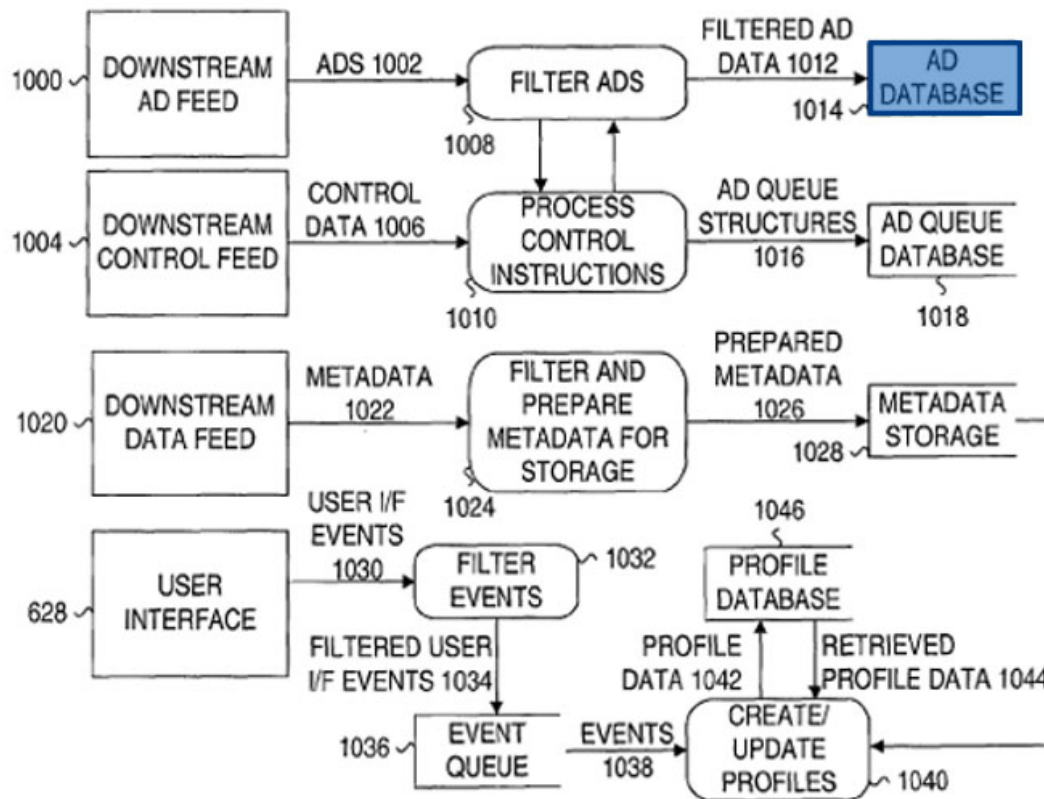
c. 1[c]:“advertisement supply means to supply advertisements within the periodic breaks,”

116. Plotnick discloses and teaches element 1[c]. The “advertising supply means” has the structure “hard disc 62 in PVR 60, containing advertisement database 70” and the function “[t]o supply advertisements within the periodic breaks.” See Section VII. As detailed in Section VIII.A.2.b, Plotnick discloses that a “client side STB ad targeting system may be integrated into a PVR-enabled set-top box (STB PVR),” and the PVR includes a “video storage 620 component,” which may be implemented as “*a hard disk drive*” and “is *used to store all video/ audio programs on the set-top box, including ads (commercials)*.” Ex-1005, ¶¶134, 139. In a block diagram of Plotnick’s STB PVR system 600, “[a] database module 800 stores information essential to the operation of the ad queuing and profiling system including ... ad and program information (metadata), and possibly the ads themselves.” *Id.*, ¶150.



Id., Fig. 8 (annotated).

117. As depicted in the Figure 10 data flow, ads are stored in an ad database on a hard disk in the PVR. *Id.*, ¶155.



Id., Fig. 10 (annotated).

118. Accordingly, Plotnick discloses the structure “hard disc 62 in PVR 60, containing advertisement database 70.”

119. Plotnick further discloses to “supply advertisements within the periodic breaks.” Plotnick discloses selecting and supplying an advertisement within periodic ad avails during a program. Ex-1005, ¶¶150, 163. Such “ad queues are used as part of or in conjunction with the video storage 620 to provide proper sequencing of ads.”

Id., ¶139. Plotnick’s PVR can perform a processing step to manage the ad database and ensure that only ads that are appropriate for the household are stored in the ad database. *Id.*, ¶156. When an ad insertion opportunity arises, the PVR selects an

appropriate advertisement to present to the viewer. *Id.*, ¶163. As detailed in Section VIII.A.2.b, Plotnick discloses that advertisements are provided “at indicated points or ‘avails’ (through cue messages), or inserted before (pre-pended) or after (post-pended) a program.” *Id.*, ¶150; *see also* FIG. 1.

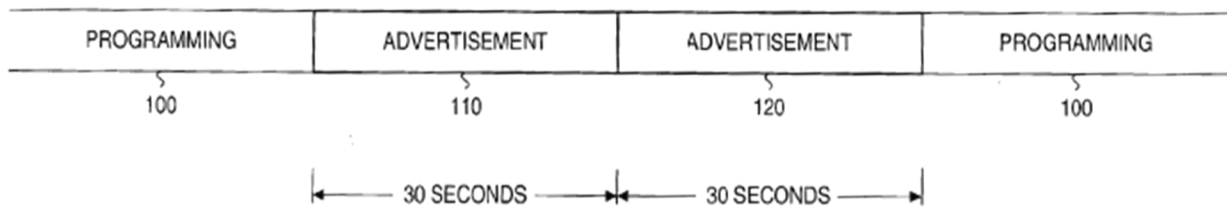


FIG. 1

Such “indicated points” or “avails” are periodic breaks within a program because they are distributed between preset blocks of content in a program.

120. A POSITA would have found it obvious that advertisements should be shown in a periodic manner to balance the desire to engage viewers of a program while also showing an optimal number of advertisements. That is, a POSITA would have known that viewers prefer to view a program of their choice rather than advertisements. A POSITA would have known that each advertisement that is shown generates income. A POSITA would also have known that showing an advertisement to a disinterested viewer decreases the advertisement’s effectiveness. Thus, a

POSITA would have found it obvious to balance and optimize the viewer's viewing experience and showing advertisements to increase profitability by showing ads periodically while viewers were still engaged in the program while also maximizing the number of ads shown and thus maximizing advertising effectiveness.

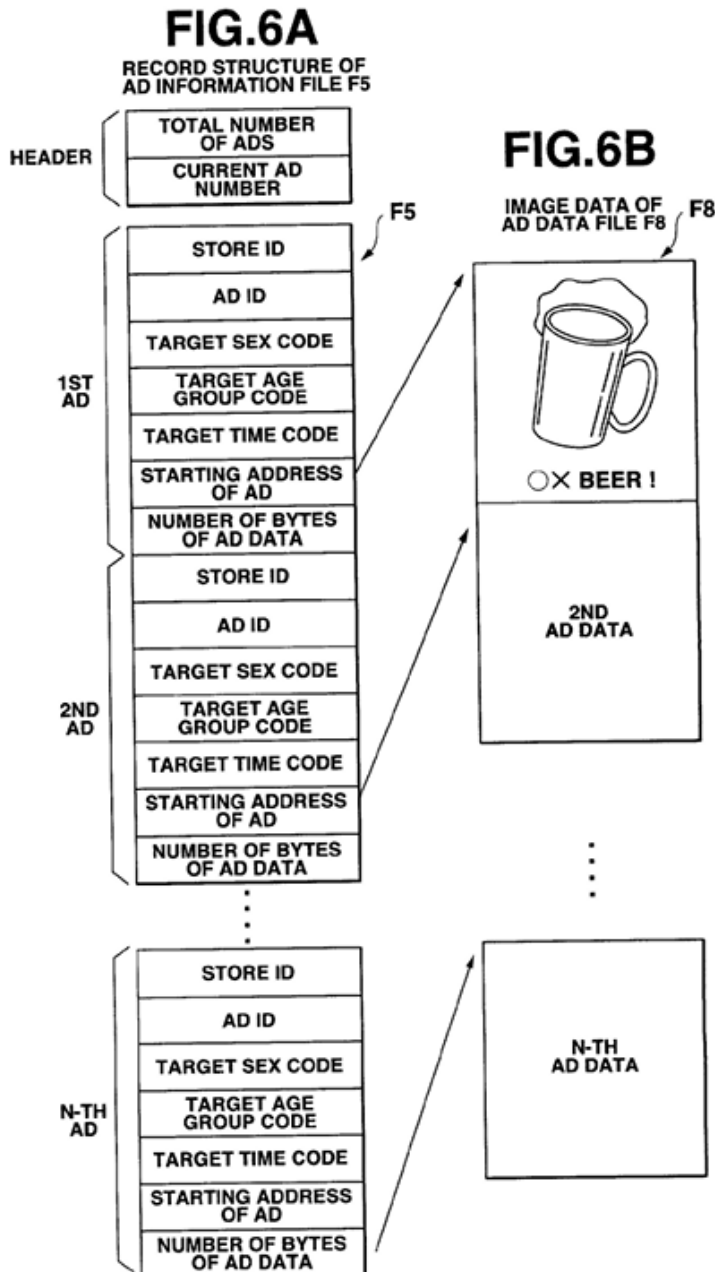
- 1) **1[c.1]: “each advertisement having associated therewith a header comprising a first field related to a local broadcasting time regulation laid down by the broadcasting authority, which local broadcasting time regulation restricts the time of day at which said advertisement may be shown,”**

121. Plotnick and Parekh teach and disclose element 1[c.1]. Plotnick discloses that advertisements include “control data 1006,” which is “ad metadata” that “includes descriptions of the ad content, target audience, encoding attributes, delivery instructions, and contract limitations.” Ex-1005, ¶154. Plotnick's disclosure of such ad metadata teaches a “header” associated with the advertisement and multiple fields for the different data that Plotnick discloses.

122. As explained in Section VIII.A.1, a POSITA would have understood that such metadata was stored in a header associated with each advertisement in Plotnick. Specifically, a POSITA would have understood that the metadata was stored in a “header” with fields. For instance, patents and publications disclosed such headers with fields long before December 2010 and did not claim them as new inventions. For example, U.S. Patent Application No. 2003/0208560 to Inoue (Ex-

1036) taught “information file[s]” that contain headers storing such metadata, as illustrated in Fig. 6A below, and did not claim that such header was a new invention.

See Ex-1036 at FIG.6A, ¶¶100-101, Claims.



123. Similarly, U.S. Patent Publication No. 2009/0070414 to Singal (Ex-1038) teaches a file format for a transfer file that includes “[h]eader 134” that “defines such information as the format(s) of the media content 138, such as MPEG, PGM, RMTP, and the like, the size, duration and bit rate of the media content 138, the size of the asset metadata 136 and user metadata 140, and other information.” *E.g.*, Ex-1038, ¶¶19-21, Table 1. Another similar system, disclosed in U.S. Patent Application No. 2009/0031390A1 to Rajakarunanayake (Ex-1025), teaches media files with “HTTP header[s]” containing metadata as shown below:

AV-Record.schemas.broadcom.com,” is shown below in Table 1.

TABLE 1

HTTP Header for Record Request:

POST /record-url HTTP/1.1

Content-Type: text/html

Network-AV-Record.schemas.broadcom.com:

File-Name: Jurassic-Park.mpg . . .

Ex-1025, ¶30; *see also id.* at ¶¶29-37. *See also* U.S. Patent Application Pub. No. 2008/0281592 to McKoen at ¶42 (Ex-1027) (disclosing an “annotation metadata engine” that “inserts the metadata and an associated time-stamp as user data bits into [] headers associated with the video stream”; U.S. Patent Application Publication No. 2008/0181301 to Kim (Ex-1026) at [0021], [0069], [0070] (disclosing analyzing video sequences by extracting “header information.”).

124. Plotnick discloses that “control data 1006” is “processed [] to generate ad queue structures that are stored in an ad queue database 1018.” Ex-1005, ¶155.

The ad queue and schedule may be generated based on “flight information, which indicates the networks and times for displaying the advertisement.” *Id.*, ¶169. The ad queue may further vary based on “what subscriber 1260 is interacting with the TV, *what time of day it is*, [or] what day of the week” it is. *Id.*, ¶194 (emphasis added). The STB PVR may also have processing rules that change the ads in the ad queue based on circumstances for instance, user interaction. *Id.*, ¶196. Plotnick further discloses, via U.S. Patent App. No. 09/742,852 (“’852 Application”), which was incorporated by reference, more details about selecting and inserting advertisements. *Id.*, ¶¶2-14, 194. The ’852 Application describes a subscriber’s system that can use “time of day” to prepare an ad queue and further describes that the ad schedule may change as circumstances, like “time of day,” change. Ex-1006, ¶¶50-51. Plotnick thus discloses that “control data 1006,” which is used to generate ad queues, has metadata relating to times for displaying the advertisement and that such metadata can be used to select ads based on “what time of day it is.” Ex-1005, ¶¶169, 194. As described in Section VIII.A.1 above, a POSITA would have found it obvious that metadata relating to times for displaying the advertisement would be stored in a field of the “control data 1006” header that is disclosed in Plotnick. Moreover, metadata relating to times for displaying the advertisement would have been stored in a first field of the “control data 1006” header because, as well known by a POSITA, the purpose of a header is to set out required metadata information

associated with the underlying data in various fields, so that the information can be retrieved in an organized and predictable way.

125. To the extent that different metadata (e.g., ad rating, topic, brand) is used to vary the ad queue based on “what time of day it is,” Plotnick also discloses including such metadata as a field of the control data. For instance, Plotnick discloses that “metadata descriptors” are “used by the PVR to identify and characterize programs” and that “[m]etadata includes descriptive items such as title, genre, [] other program related information, [] the content’s typical or intended demographic and psychographic groups.” Ex-1005, ¶¶107, 109, 136. Plotnick discloses that the control data may include “descriptions of the ad content, target audience, [] delivery instructions, and contract limitations.” Ex-1005, ¶154. Plotnick thus discloses control metadata having a field with information related to applicable local broadcasting time regulations laid down by applicable broadcasting authorities because such metadata could include, for instance, information about whether the ad content is profane, indecent, relates to alcohol, should not be shown to children during the day, or any other such information related to applicable broadcasting time regulations. For example, Figures 6B and 6C of Plotnick show identification of advertisements by brand, which could signal that the content is not child-friendly (e.g., an alcohol or casino brand). *See* Ex-1005, FIG. 6C (shown below); *see also id.*, FIG. 6B,

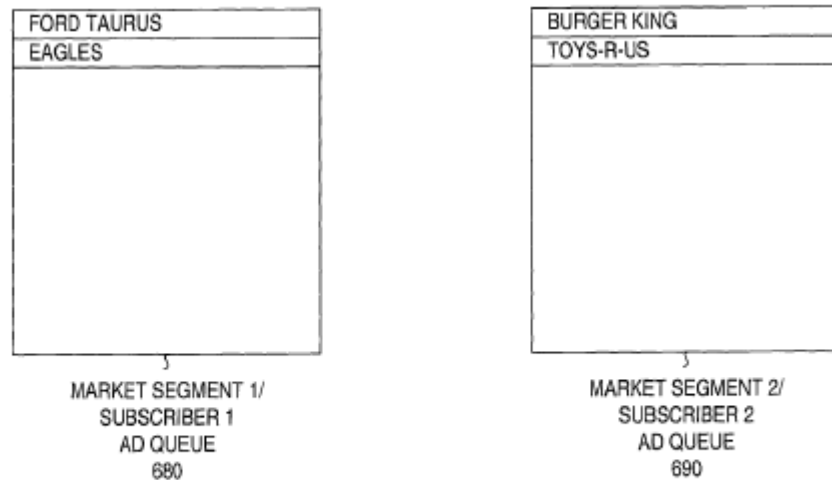


FIG. 6C

126. For instance, a POSITA would have known that broadcasting systems that distribute content over-the-air, like those described in Plotnick, would be subject to FCC regulations, which prohibit certain types of content from being broadcast at certain times of day. As explained in Section VIII.A.1, a POSITA would have considered such regulations when implementing rules for selecting advertisements based on “time of day.” Plotnick thus suggests that the “control data 1006” has a field relating to a local broadcasting time regulation laid down by a broadcasting authority.

127. A POSITA implementing the teachings of Plotnick would have been motivated to turn to related references for additional implementation details relating to advertisement metadata, headers, and rules. Parekh is one such reference and teaches “a header comprising a first field related to a local broadcasting time

regulation laid down by the broadcasting authority.” Parekh discloses a “rules engine” that controls “what [media items] are played on air” by applying “a combination of guidelines and rules, such as station policies and regulations from regulators 110.” Ex-1007, 11:14-20. These rules include “business rules,” which may apply “at all times or [be] dynamic which apply only under certain circumstances, such as time of day.” *Id.*, 11:26-28. Examples of “business rules” in Parekh include “FCC regulations for content, including: that indecent and/or profane material may not be broadcast outside the FCC Safe Harbor[.]” *Id.*, 11:29-36. As explained in Section IV.B, this FCC regulation was cited by the Applicant as an example of a local broadcasting time regulation laid down by the broadcasting authority covered by the ’302 Patent. Ex-1004, 240. Specifically, 47 C.F.R § 73.3999 restricts the time of day at which, for example, “indecent” content may be shown.

128. As set forth in Section VIII.A.1, a POSITA would have been motivated to apply Parekh’s rules related to FCC regulations in an implementation of Plotnick. A POSITA would have recognized that Parekh’s teaching to consider and apply rules related to FCC time regulations could easily be incorporated into Plotnick’s system, including into the control metadata, which already has information such as “delivery instructions and contract limitations.” Among other things, Parekh likewise teaches the use of metadata associated with each track and checking each track against

business rules like the FCC time regulations. Ex-1007, 10:47-51. Specifically, Parekh teaches that each advertisement can have associated “inclusion criterion” that is used to determine whether and how the advertisement should be integrated into a broadcast. Ex-1007, 16:17-20, 20:9-21.

129. As explained in Section VIII.A.1, a POSITA would have a reasonable expectation of success combining these teachings of Parekh into the Plotnick system. A POSITA would have found it particularly obvious to incorporate Parekh’s teaching to use metadata relating to applicable FCC broadcasting time regulations as control data in a PVR system like Plotnick. Plotnick selects and replaces ads in broadcast programs based on the time of day and specified ad schedules. Parekh teaches a similar method for selecting advertisements based on time of day regulations. Combining Plotnick and Parekh would have been straightforward—both disclose using metadata associated with each advertisement and rules to control when and how the advertisement is played. Indeed, Plotnick teaches using “time of day” and “other criteria” known to a POSITA. Ex-1005, ¶194. As explained in Section VIII.A.1, the metadata, databases, and rules techniques taught in Plotnick were known to be programmable, and a POSITA would have found it obvious to simply program the Plotnick system to include additional metadata or rules as needed to implement the teachings of Parekh to consider FCC time regulations. Also as explained in Section VIII.A.1, a POSITA also would have found it obvious to

incorporate FCC time regulations as a consideration for selecting advertisements, as taught in Parekh. Applying the predictable combined teachings of Plotnick and Parekh regarding adding metadata and associated rules to control ad timing in accordance with FCC regulations would have led to the expected result that an advertisement would only be selected to be played when permissible as defined by such rules.

2) 1[c.2]: “and a second field related to the number of times said advertisement has previously been shown during time-shifted viewing:”

130. Plotnick teaches and discloses element 1[c.2]. As explained in Section VIII.A.1, a POSITA would have known that metadata is stored in headers with fields containing metadata. Plotnick discloses that the processing component 1010 “updates the ad metadata 1006 based on ad delivery and user interaction.” Ex-1005, ¶156. A POSITA would have understood this included updating the ad metadata stored in the database of Plotnick. Additionally, after an advertisement is presented, “the system updates the ad metadata and transmits an insertion report to the head-end.” *Id.*, ¶163. As Plotnick explains, the system will include updates to the “ad metadata” based on “ad delivery,” among other things. A POSITA would have understood these metrics would include the number of times the ad was shown to the user during playback. For example, Plotnick explains that ad insertion results should be tracked so that an advertiser can be billed based on ad plays. Ex-1005 ¶170

(“The traffic and billing system 712 tracks the insertion results and bills the advertiser based on the insertions”). Additionally, Plotnick teaches an “upstream data transport module” for sending data and reports back to the broadcaster. Ex-1005, ¶141. “The upstream data transport 632 works in conjunction with the hardware to send signals upstream over cable, twisted wire pair, wireless, fiber, or other connection.” *Id.*

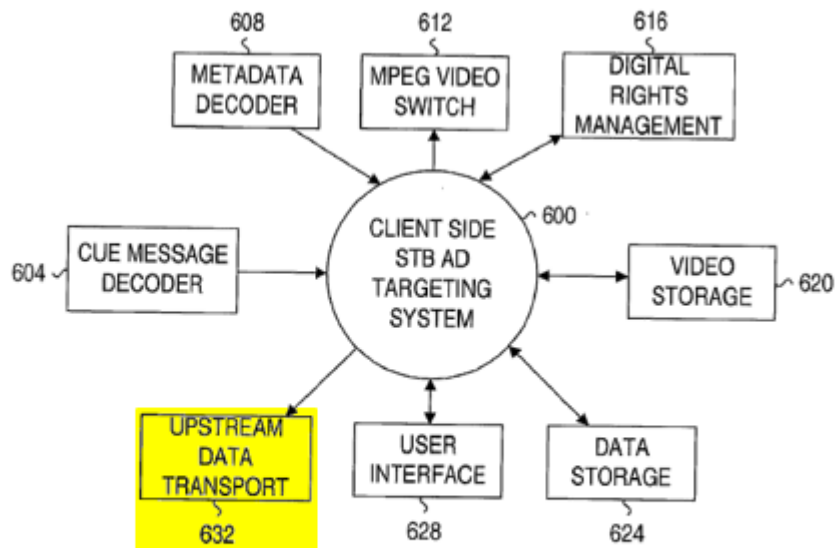


FIG. 6A

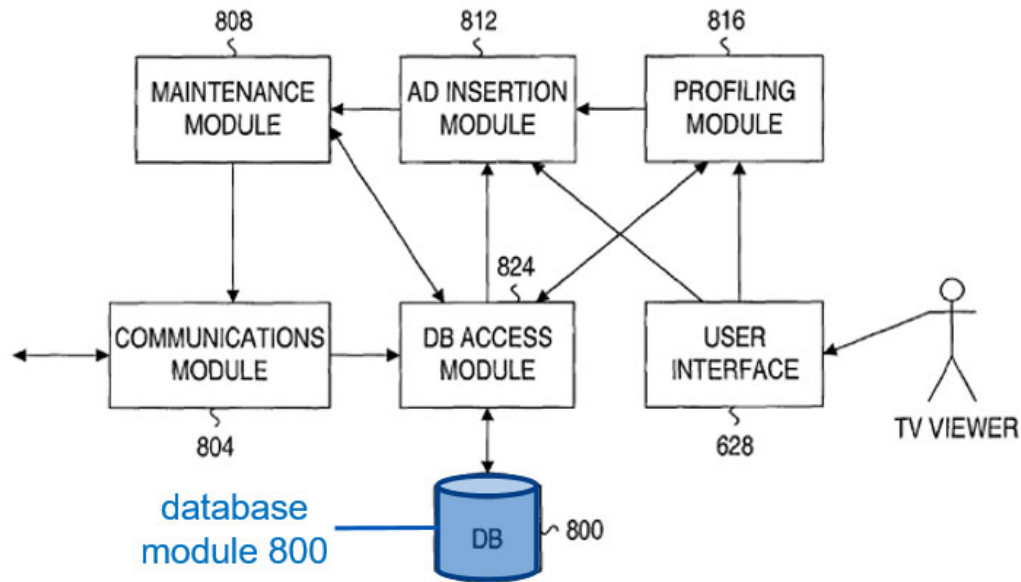
131. As Plotnick explains, viewer usage data is sent back “upstream.” *Id.* ¶168 (“the set-top box can summarize the data and transmit it upstream”). A POSITA would have been motivated to implement this “upstream” transmission of viewer delivery metadata using a second header field because the data would need to be stored and associated with the advertisement so that the required reports can

be generated, and this data should not overwrite any other existing field. A POSITA would have been motivated to store such data in the advertisement's metadata header area, which already includes broadcasting time rules, as explained in Section XII.A.2.c.1. The added metadata would simply be included as a second field to existing metadata, so that information about number of plays would be separately identifiable from the metadata relating to timing regulations but would similarly be associated with the advertisement it corresponds to. Metadata and headers were well-known and highly adaptable computing structures such that adding another metadata field to the header would not have unexpected results or required any other changes to the system—it would simply mean that there is additional data field in the header of each advertisement.

d. 1[d]: “rules database means containing rules relating to said local broadcasting time regulation;”

132. Plotnick and Parekh disclose and teach element 1[d]. The “rules database means” has the structure “hard disc 62 in PVR 60, containing rules database 90” and the function “containing rules relating to said local broadcasting time regulation.” *See* Section VII. As detailed in Section VIII.A.2.a, Plotnick discloses a “PVR-enabled set-top box (STB PVR).” Ex-1005, ¶107. Plotnick discloses that in the STB ad targeting system, “a database module 800” “stores information essential

to the operation of the ad queuing and profiling system including viewer signatures, ad and program information (metadata), and possibly the ads themselves.” *Id.*, ¶150.



Id., FIG. 8 (annotated).

133. The ad queue of ads to be displayed may be varied based on time of day. *See* Section VIII.A.2.c.1. A POSITA would have known that rules relating to applicable time regulations are stored in “database module 800” because these timing rules are “essential to operation of the ad queuing system.” Plotnick further discloses that PVR may have processing rules that can be used to select different ads based on playback circumstances. Ex-1005, ¶201, FIG. 14B. For instance, in Figure 10 of Plotnick “process control instructions” 1010 are applied to the control data of each ad to generate the ad queue structures. *Id.*, FIG. 10, ¶¶155-156. Plotnick thus

teaches a hard disc in the PVR containing a rule database with rules relating to a local broadcasting time regulation.

134. Parekh also teaches rules relating to a local broadcasting time regulation. Parekh discloses a “rules engine” that is used to control “what tracks are played on-air and in what order ... with a combination of guidelines and rules, such as station policies and regulations from regulators 110.” Ex-1007, 11:15-20. Those rules include “business rules,” which can “apply at all times or [be] dynamic which apply only under certain conditions, such as time of day.” *Id.*, 11:26-28. Examples of business rules include “FCC regulations for content, including: that indecent and/or profane material may not be broadcast outside the FCC Safe Harbor.” *Id.*, 11:29-35.

135. As detailed in Section VIII.A.1, a POSITA would have been motivated to implement Parekh’s business rules in Plotnick’s system. As explained in Section VIII.A.1, Parekh’s business rules, which include the rules about FCC broadcasting time regulation, would have been predictably added into the rules database of Plotnick with the expected result that such rules would be applied to select advertisements that do not violate the FCC time regulation based on the time of day of playback. Such rule would be easy to add or implement in Plotnick because it is merely a variation of the Plotnick rules for adjusting the ad queue based on “time of day.” And a POSITA would have been motivated to implement such rules to avoid

legal and financial liabilities and to create a system that is more likely to be adopted by others. *See* Section VIII.A.1 above.

e. **1[e]: “clock means to supply a real-time clock signal;”**

136. Plotnick discloses and teaches element 1[e]. The “clock means” has the structure of a “backchannel in Internet connection 24 or modem 22 of PVR 60” and the function “to supply a real-time clock signal.” *See* Section VII.

137. First, as the '302 Patent admits, “known systems” provided a “Real Time of day Signal RT [] via the backchannel in either the Internet connection 24 or the connection via the modem 22.” Ex-1001, 4:43-49.

138. Plotnick discloses the same or very similar structures as those disclosed in the '302 Patent. Specifically, Plotnick says that “the PVR may be connected to a variety of networks,” including “to the Internet (for return signals) via a telephone line or other network connection.” Ex-1005, ¶110. Plotnick also discloses that “[t]he ad queue 1420 is a list of the next ads 1410 that should be inserted” and “may vary based on what subscriber 1260 is interacting with the TV, *what time of day it is*, what day of the week, what programs are on, and other criteria.” *Id.*, ¶194 (emphasis added). Moreover, the “filtering and preparing component 1024 makes a determination as to whether to store the program metadata based on the program air times, network services available by the household, and *current system time*.” *Id.*,

¶158 (emphasis added). Plotnick thus discloses a backchannel connection to the Internet or a modem and also that the system obtains real-time clock signals.

139. Parekh also teaches a real-time signal by disclosing that “In some embodiments, *time and scheduling synchronization*, play list updates, device monitoring and status, playback status, etc. are provided. In some embodiments, real-time or near rear-time events may be coordinate [sic] with a broadcast, *included in real-time or near real-time in a broadcast*, and/or are otherwise supported.” Ex-1007, 19:13-20. Parekh thus teaches time and schedule synchronization and the benefits of synchronizing real-time events. Parekh, in combination with Plotnick, renders obvious synchronizing time over the Internet or modem connection, e.g., via the Network Time Protocol, and further teaches the motivation for doing so—to ensure accurate time for real-time events. The motivations taught in both Plotnick and Parekh, to consider time of day, also teach a motivation to obtain a real-time signal.

- f. **1[e.1]: “and control means arranged to read said first field and said clock signal and said rules database and to apply said local broadcasting time regulation to each advertisement before said advertisement is shown;”**

140. Plotnick discloses and teaches element 1[e.1]. The “control means” has the structure “hardware and/or software arranged to perform steps 102, 104, and 112 of FIG. 8 of the ’302 Patent, as described at 6:40–62 and 7:17–27 of the

specification” and the function(s): 1) “read said first field and said clock signal and said rules database”; 2) “to apply said local broadcasting time regulation to each advertisement before said advertisement is shown”; and 3) “to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing.” *See* Section VII.

141. As described in Section VIII.A.2.c.1, Plotnick discloses that “[t]he ad queue 1420 is a list of the next ads 1410 that should be inserted” and “may vary based on what subscriber 1260 is interacting with the TV, *what time of day it is*, what day of the week, what programs are on, and other criteria.” Ex-1005, ¶194 (emphasis added). Furthermore, as described in Sections VIII.A.1 and VIII.A.2.d, Plotnick and Parekh teach that each advertisement would have a header with a first field having metadata relating to a local broadcasting time regulation and a rules database with rules based on local broadcasting time regulations. Those fields would have been read so that the Plotnick system knows what constraints might apply to the associated advertisement. In Plotnick, “processing component 1010[,]” also referred to as “processing 1010” is within the PVR and controls what advertisements are selected for playback, including based on time of day. *E.g.*, Ex-1005, ¶¶154-0156. Plotnick discloses that “control data 1006” is “processed 1010 to generate ad queue structures 1016 that are stored in an ad queue database 1018.” *Id.*, ¶155, FIG. 10.

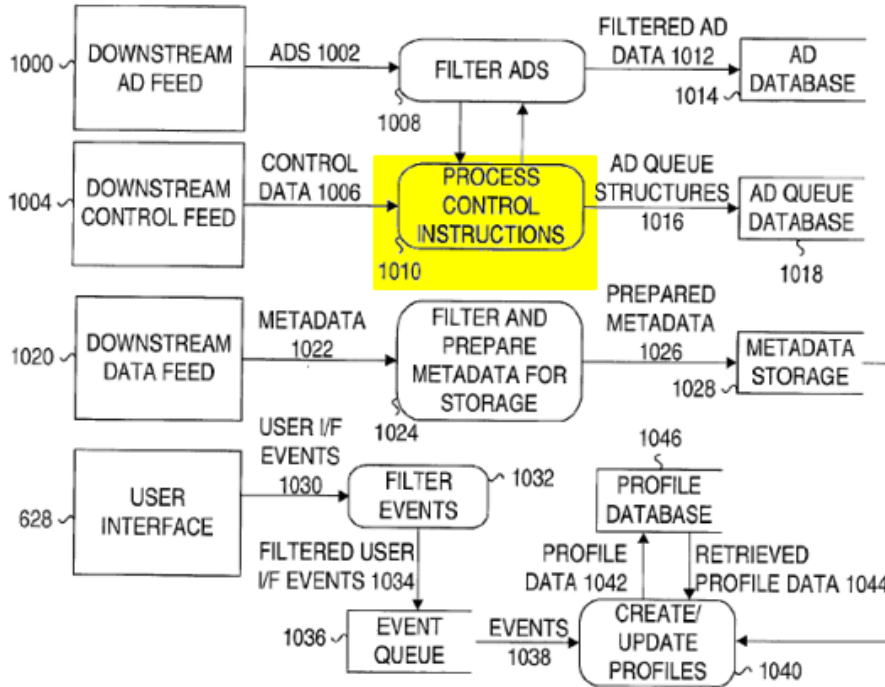


FIG. 10

142. As described above, Plotnick discloses that the ad queue may vary based on time of day. *See supra* Section VIII.A.2.c.1. In view of these disclosures of Plotnick and the teachings of Plotnick and Parekh described in the sections above, a POSITA would have understood that the processing component 1010 is reading the metadata in the first field of the header associated with each advertisement to understand that advertisement's restrictions and criteria relating to time of day, including any local broadcasting time regulations. And in order to apply the applicable time of day rules at the right time of day, processing component 1010 would necessarily have to read the real-time clock signal to know what time of day it is as well as apply the rules from the rules database relating to the time of day regulations. For example, if the header associated with an advertisement had

metadata fields indicating the advertisement related to alcohol and contained profanity, processing component 1010 would read the real-time clock signal to determine whether it is the morning and further check the rules in the rules database to determine whether content with profanity can be played during the morning. Plotnick and Parekh suggest this implementation because Plotnick discloses specifically checking the “time of day” before selecting an advertisement for playback and Parekh further teaches considering the FCC Safe Harbor regulation as part of the timing rules for selecting an advertisement.

143. A POSITA would have known that Plotnick’s processing component and processing steps 1010 are performed before each advertisement before is shown because that is how the Plotnick system selects advertisements to be played. For instance, each advertisement played in each ad “avail” slot would first be run through the rules to determine whether it could be played, e.g., at the time of day, as part of that program, or to that user. Or, if a rule did not allow the ad to be played at that time, then processing 1010 would apply the rule to check the same criteria on other stored ads. A POSITA would have known that the Plotnick system is not merely describing a system for selecting a single advertisement, but rather is intended to be used to select advertisements whenever an advertisement slot needs to be filled or an advertisement needs to be replaced, e.g., with a more timely or shorter or more relevant ad. A POSITA thus would have understood that Plotnick teaches the

functions “(1) “read said first field and said clock signal and said rules database”;
(2) “to apply said local broadcasting time regulation to each advertisement before
said advertisement is shown.”²

144. The processing 1010 in Plotnick also updates ad metadata based on ad delivery and user interaction, e.g., with “[i]nteractive ads” that have hyperlinks and wherein users can interact with the remote control or panel of the STB. Ex-1005, ¶¶156, 131, 160. “[P]rocessing 1010” in Plotnick thus records when an ad was played, in what circumstances, and whether the user interacted with the ad. Plotnick also discloses the ad targeting software containing processing 1010 is “a software application that may be integrated into a PVR-enabled set-top box (STB PVR).” Ex-1005, ¶134. Based on this disclosure, a POSITA would have understood that Plotnick’s “processing 1010” would be embodied by hardware or software in the PVR that performs these functions. Accordingly, Plotnick discloses the “control means” structure.

145. Moreover, Parekh teaches applying a “local broadcasting time regulation.” As detailed above, including in Section VI and with respect to elements 1[a] and 1[d] above, Parekh discloses selecting ads based on rules, including “FCC

² I addresses the processing component 1010’s (i.e., the “control means”) performance of the third element of the construed function, “to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing,” in Section VIII.A.2.g.

regulations for content, including: that indecent and/or profane material may not be broadcast outside the FCC Safe Harbor.” *Id.*, 11:29-35. As detailed in Section V, VIII.A.1, and with respect to elements 1[a] and 1[d] above, a POSITA would have been motivated to apply such rule from Parekh into Plotnick. As detailed in Section VIII.A.1, a POSITA would have had a reasonable expectation of success of incorporating Parekh’s teachings of FCC regulations in Plotnick because Plotnick teaches that its system is adjustable and may vary “based on what subscriber 1260 is interacting with the TV, what time of day it is, what day of the week, what programs are on, *and other criteria that would be well within the scope of the current invention.*” Ex-1005, ¶¶194, 60, 64-65. Parekh likewise teaches one such criteria that is highly relevant to Plotnick’s considerations of time of day—FCC time regulations. Ex-1007, 4:7-16, 9:23-26, 11:29-42. Further, both Plotnick and Parekh uses the well-known technique and computing functionalities of metadata, databases, storage, and rules to select appropriate advertisements. EX-1005 (Plotnick), ¶¶107, 109-110, 134, 139, 154-158; EX-1007 (Parekh), 4:4-17, 8:41-62, 9:66-10:15, 11:15-53. Such systems, metadata, and databases are highly programmable to suit the needs of any particular application, and a POSITA would have found that the teachings of Plotnick and Parekh are similar enough to combined in conventional and expected ways to select and replace advertisements played in a PVR recording in accordance with FCC time regulations.

146. Plotnick further discloses that its ad targeting system containing processing 1010 “is a software application that may be integrated into a PVR-enabled set-top box (STB PVR).” Ex-1005, ¶134. Based on this disclosure, a POSITA would have understood that Plotnick’s “processing 1010” would be embodied by hardware or software in the PVR that performs these functions. Plotnick therefore teaches equivalent “control means” structure. My discussions of claims and claim elements 1[f], 2, 3, 4, 6, 8, 9, 13, 14, 15 also further describe how Plotnick discloses and teaches the structure of the “control means.”

- g. 1[f]: “wherein the control means is further arranged to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing.”**

147. Plotnick renders obvious element 1[f]. Plotnick discloses that the processing component 1010 “updates the ad metadata 1006 based on ad delivery and user interaction.” Ex-1005, ¶156. After an advertisement is presented to a viewer, “the system updates the ad metadata and transmits an insertion report to the head-end.” *Id.*, ¶163. Moreover, as explained above in Sections VIII.A.1 and VIII.A.2.c.2, Plotnick/Parekh already teach that such information should be stored in a second header field, so an obvious place to store updates to that information in the same field. While there are any number of equivalent ways that this technique might have been implemented, POSITA would have been motivated to store updated

information in the same second header field because such a technique would utilize space already allocated for a value to track the value, instead of creating additional copies that would take additional storage space.

148. A POSITA would have been motivated to implement this teaching of “updating” metadata after an advertisement is shown by updating the second field of the header when an advertisement is shown, including during time-shifted viewing, because, as explained above, it was well-known and would have been obvious to include metadata relating to a content item in the header of that item in order. Among other things, updating such metadata in the second field of the header would ensure that metadata in the header is accurate and up-to-date and including the metadata in the second field would ensure that the metadata is associated with the correct item. Such technique would ensure that if that item is considered for playback again, the system, e.g., the STB PVR, would be able to make the determination of whether to play the item based on accurate and up-to-date information. Additionally, as explained in Sections VIII.A.1 and VIII.A.2.c.2, including this type of metadata in field of a header was a well-known technique. Updating such metadata upon playback, including in time-shifted mode, would have been easy to implement because a POSITA would have known how to update metadata, which could be as simple as incrementing the play count up when a certain amount of time has elapsed while the advertisement is played.

3. **Claim 2: “The system according to claim 1 in which each header includes a keyword, and the control means checks the keyword against the rules database during application of said local broadcasting time regulation to said advertisement.”**

149. Plotnick and Parekh disclose and teach Claim 2. As described above, Plotnick and Parekh render Claim 1 obvious. As described in Section VII above, the keyword function of the “control means” in Claim 2 is described in the ’302 Patent as covering, e.g., using “alcoholic drinks” or “politician” to control when such ads are played. Ex-1001, 4:23, 4:35-37, 6:10-12.

150. Plotnick discloses that “[s]tored ads and infomercials can be organized and *presented by subject matter*, and can be targeted to a household based on the preferences and demographics of the household.” EX-1005, ¶130. Moreover, control data 1006 “includes *descriptions of the ad content*, target audience, encoding attributes, delivery instructions, and contract limitations.” *Id.*, ¶154. The control data’s descriptions of ad content, including subject matter, are “keywords” because they are words that describe the ad and are used by Plotnick’s system to deliver appropriate, targeted ads to households.

151. Plotnick discloses a data flow for delivering targeted advertising in Figure 10 below:

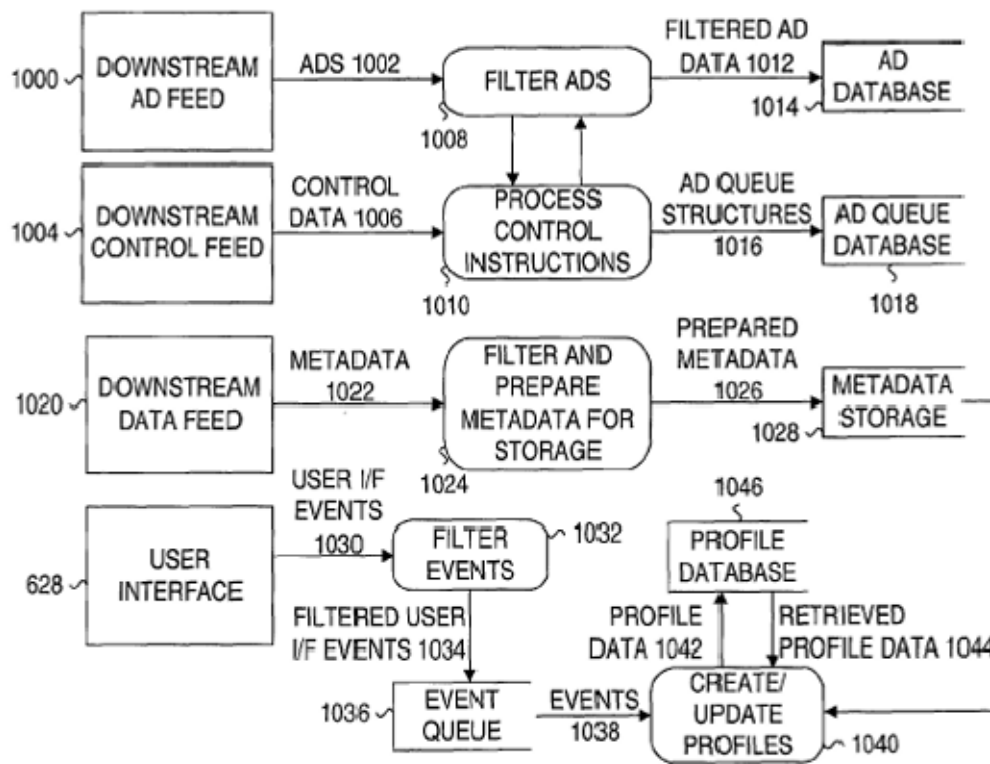


FIG. 10

152. As shown above, process control instructions 1010 and filtering 1008 process control data 1006 to “generate ad queue structures 1016 that are stored in an ad queue database 1018.” Ex-1005, ¶155. Plotnick also discloses “processing 1010” that “manages the ad database 1014 and ad queue database 1018.” *Id.*, ¶156. To manage the ad and ad queue database, processing 1010 “examin[es] the contract limits from the ad metadata 1006 to determine when to purge ads and ad metadata from the associated databases.” *Id.* Moreover, processing 1010 works with “filtering 1008” to “determine whether an ad 1002 received from the downstream ad feed 1000 is appropriate for the household by comparing the target audience specified in the

ad metadata 1006 with the viewer profiles from a profile database 1046.” *Id.*, ¶156, Fig. 10. Plotnick depicts ads selected based on content as indicated by the advertiser brand. *Id.*, FIG. 6C (below). Plotnick thus discloses applying advertisement selection rules based on brand names, which a POSITA would have understood as keywords because they are words that describe the content and control how it is presented to the user.

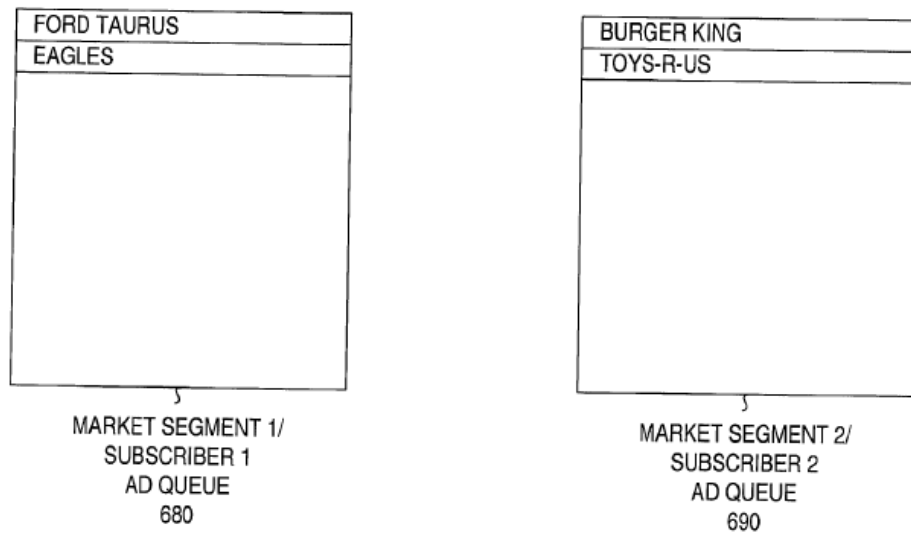


FIG. 6C

As also described with respect to claim 1 above and with respect to claims 3, 4, 6, 8, 9, 13, 14, and 15 below, Plotnick discloses and teaches the structure of the “control means.”

153. Parekh discloses consideration of a local broadcasting time regulation. As detailed above, including in Section VI.B and with respect to Claim 1, Parekh discloses “FCC regulations for content, including: that indecent and/or profane

material may not be broadcast outside the FCC Safe Harbor.” Ex-1005, 11:29-35. As detailed in Section V, VIII.A.1, and with respect to Claim 1, a POSITA would have been motivated to incorporate Parekh’s business rules into Plotnick’s system, including by, using Plotnick’s “ad filter” 1008 to determine if an ad is “appropriate” using keywords or other information about the ad (as described above) to determine if the ad is “indecent” as explained by Parekh. Ex-1005, ¶156 (“The filtering 1008 determines whether an ad 1002 received from the downstream ad feed 1000 is appropriate”); Ex-1007, 11:29-30, 12:14-28.

4. Claim 3: “The system according to claim 2 in which a further local broadcasting regulation forbids the provision of certain types of advertisement on certain days of the week and each header further indicates a day of the week validity.”

154. Plotnick and Parekh disclose and teach Claim 3. As described above, Plotnick and Parekh render Claim 2 obvious. Plotnick discloses that the ad queue may vary based on “*what day of the week*” it is. EX-1005, ¶194. Criteria affecting whether advertisements can be presented depending on the day of the week includes local broadcasting regulations forbidding certain types of advertisement on certain days of the week. As detailed in Sections VIII.A.1 and VIII.A.2.c.1, this regulation would be in control data 1006, which includes “descriptions of the ad content, target audience, encoding attributes, delivery instructions, and contract limitations” and is used to create the ad queue.

155. Parekh also discloses a “rules engine” that applies business rules to determine whether certain ads can be displayed, including “dynamic [rules] which apply only under certain conditions, such as time of day or size of online audience.” Ex-1007, 11:26-28. As examples of business rules, Parekh discloses “FCC regulations for content, including: that indecent and/or profane material may not be broadcast outside the FCC Safe Harbor.” *Id.*, 11:29-31. As detailed in Sections VIII.A.1 and VIII.A.2.c.1, a POSITA would have been motivated to incorporate Parekh’s local broadcasting regulations into Plotnick. For example, Plotnick and Parekh both teach that systems should consider the time of day when selecting which advertisements to play. Plotnick teaches a system that selects advertisements based on a variety of criteria, including based on target audience, what programs are played, the time of day, and user interaction. Ex-1005, ¶¶169, 194. In Parekh, advertisements are also selected based on various factors including target audience, what program is on, time of day, and user interaction. Ex-1007, 16:26-30, 16:42-47, 16:53-65, 17:8-16, 17:24-30

5. Claim 4: “The system according to claim 1 in which the advertisements include interactive advertisements to which a response by a consumer is requested.”

156. Plotnick and Parekh disclose and teach Claim 4. As described above, Plotnick and Parekh render Claim 1 obvious. Plotnick further discloses that “[i]nteractive ads can also be utilized to deliver advertising to subscribers,” and “[i]n

the interactive ads a user may be prompted to indicate which ad he/she wants to watch and then may asked to interact with that ad.” Ex-1005, ¶131. A POSITA would have known that Plotnick’s express disclosure of “interactive ads” that ask a user which ad they desire to watch are “interactive advertisements to which a response by a consumer is requested.”

6. Claim 6: “The system according to claim 1 in which the broadcast video/audio programme is arranged to contain information including the duration of each segment of programme between periodic breaks and the duration of the next periodic break.”

157. Plotnick and Parekh disclose and teach Claim 6. As described above, Plotnick and Parekh render Claim 1 obvious. In Plotnick, “ads may be inserted into the program material at indicated points or ‘avails’ (through cue messages), or inserted before (pre-pended) or after (post-pended) a program.” Ex-1005, ¶150; *see also id.*, ¶¶90, 194. Figure 1 illustrates Plotnick’s programming with periodic breaks for advertisements:

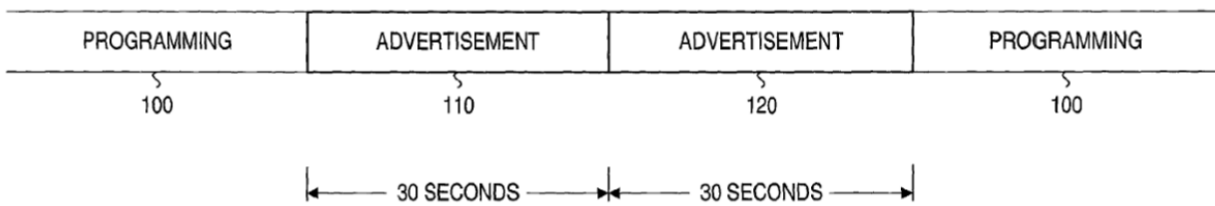


FIG. 1

Id., FIG. 1.

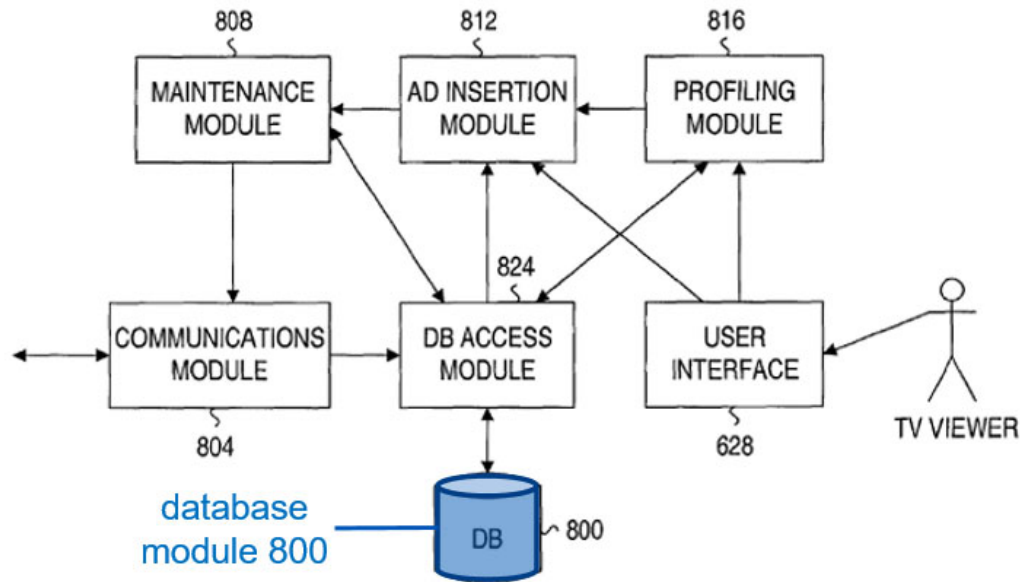
158. As Figure 1 from Plotnick shows, the programming contains two 30-second periodic advertisement breaks. A POSITA would have known that the program contains information about the duration of the breaks so that the system can seamlessly provide advertisements to users. Such markers that note when an ad avail was about to arise and when, was well-known in television broadcast systems. A POSITA would have known that information about the duration of the periodic breaks would be necessary for Plotnick's ad targeting system to match advertisements of appropriate length within each periodic break in the program. A POSITA would have also known that it would be beneficial to include information concerning the duration of the next break to match appropriate ads in advance, whether that is finding an ad of the correct length or trying to fill the time with more

than one ad. Plotnick discloses that “processing rules 1310 for a subscriber 1260 whose viewing preferences indicate that they do not to like a lot of action in their program choices may be to simply select an individual image from the advertisement 1230 and display it for the length of the alternative advertisement 1300 (i.e., 2 seconds).” Ex-1005, ¶187. Alternatively, “processing rules 1310 for a subscriber 1260 whose viewing preferences was quick changing action may be to select several images and display each of them for a *certain time* (i.e., four images each for a half-second for the two second alternative ad 1300).” *Id.*, ¶187; *see also id.*, ¶231.

7. Claim 7: “The system according to claim 1, wherein the system is a personal video recorder (PVR), and wherein the rules database means is a rules database stored locally in the PVR.”

159. Plotnick and Parekh disclose and teach Claim 7. As described above, Plotnick and Parekh render Claim 1 obvious. Plotnick’s “client side STB ad targeting system 600 is a software application that may be integrated into a PVR-enabled set-top box (STB PVR).” EX-1005, ¶134. As detailed in Section VIII.A.2.d, Plotnick discloses that the rules database means is stored in the PVR. For example, Plotnick discloses a “PVR-enabled set-top box (STB PVR).” Ex-1005, ¶107. Plotnick discloses that in the STB ad targeting system, “a database module 800” “stores information essential to the operation of the ad queuing and profiling system

including viewer signatures, ad and program information (metadata), and possibly the ads themselves.” *Id.*, ¶150.



Id., FIG. 8 (annotated).

160. A POSITA would have known that rules relating to applicable time regulations are stored in “database module 800” because these timing rules are “essential to operation of the ad queuing system.” Plotnick discloses “a database module 800” within the PVR that “stores information essential to the operation of the ad queuing and profiling system including viewer signatures, ad and program information (metadata), and possibly the ads themselves.” EX-1005, ¶150.

8. **Claim 8: “The system according to claim 1, wherein the control means is further arranged to, when the application of said local broadcasting time regulation to a particular advertisement indicates that showing the particular advertisement would violate the local broadcasting time regulation, search the advertisements stored in the advertisement supply means until either an advertisement is found that does not violate the local broadcasting time regulation or it is determined that no advertisement stored in the advertisement supply means is suitable for showing under the local broadcasting time regulation.”**

161. Plotnick and Parekh disclose and teach Claim 8. As described above, Plotnick and Parekh render Claim 1 obvious. Plotnick discloses that processing 1010 works with “filtering 1008” to “determine whether an ad 1002 received from the downstream ad feed 1000 is appropriate for the household by comparing ... the ad metadata 1006 with the viewer profiles from a profile database 1046.” Ex-1005, ¶154. “Ads that are not appropriate for viewers in this household will be discarded.” *Id.* Plotnick also discloses that the ad queue 1420, which “is a list of the next ads 1410 that should be inserted,” may “vary based on ... what time of day it is, what day of the week, what programs are on, and other criteria.” *Id.*, ¶194. As also described with respect to claims 1, 2, 3 4, and 6 above and with respect to claims 9, 13, 14, and 15 below, Plotnick discloses and teaches the structure of the “control means.”

162. Parekh teaches that if an advertisement track cannot be played at the specified time, e.g., due to FCC regulations, then it may be removed from

consideration. Ex-1007, 11:58-12:2. A POSITA would have understood that the system would then either play the next track that does not violate the regulation or, if no such track exists, determine that there is no appropriate ad.

163. A POSITA also would have found it obvious in the combination system of Plotnick and Parekh that if the current advertisement cannot be played because it violates a local broadcasting regulation then the control means should search for an alternative that does not violate the regulation. It is standard human behavior as well as a typical computing process to look for another item that works if a first item does not, especially where, as in both Plotnick and Parekh, there exists a database or repository for which a suitable option may be found. Moreover, simply stopping the search after the system determines an advertisement violates a regulation, instead of searching for a replacement ad, would be illogical.

9. Dependent Claim 9

- a. 9[a, b, c]: “The system according to claim 8, wherein the advertisements stored in the advertisement supply means include advertisements that were broadcast live with a programme being shown during time-shifted viewing and also include advertisements that were received by the system other than in the live broadcast of the programme being shown in time-shifted viewing.”**

164. Plotnick and Parekh disclose and teach elements 9[a, b, c]. As described above, Plotnick and Parekh render Claim 8 obvious. In Plotnick, “advertisements 230, 240 may be a separate video (preferred for non-related

advertisements) or may be derived from the video for the recorded advertisements 110, 120.” Ex-1005, ¶171; *see also id.*, ¶194 (“The video stream 1210 from the video server 1200 includes avails 1400 (either blank avails or avails with default ads available for replacement with targeted ads).”). Plotnick teaches substitution or manipulation of traditional video advertisements, e.g., by substituting ads during live programming or when the programming is played from a recording. Ex-1005, ¶128. Plotnick teaches playing alternative ads instead of or in addition to ads recorded from the live broadcast, and those alternative ads may be from the media buyer or the advertiser. *Id.*, Abstract, ¶178. Plotnick thus discloses that the stored advertisements may be from live recordings or another source. As also described with respect to claims 1, 2, 3 4, 6, and 8 above and with respect to claims 13, 14, and 15 below, Plotnick discloses and teaches the structure of the “control means.”

- b. 9[d]: “and wherein the control means is further arranged to show during time-shifted viewing of the programme a mix of advertisements that were received during the live broadcast of the programme and advertisements that were received other than in the live broadcast of the programme being shown during time-shifted viewing.”**

165. Plotnick and Parekh disclose and teach element 9[d]. Processing 1010 and filtering 1008 process control data 1006 to “generate ad queue structures 1016 that are stored in an ad queue database 1018.” Ex-1005, ¶155. In Plotnick, “the alternative advertisements 230, 240 are displayed in place of or in conjunction with

the fast forwarding, rewinding, skip or pausing advertisements 210, 220, when the subscriber fast forwards, rewinds, skips or pauses (trick play events) through the recorded advertisements 110, 120.” *Id.*, ¶171. Plotnick teaches that depending on circumstances, alternative ads can be played instead of ads that were recorded from the live broadcast. *Id.*, Abstract; Plotnick thus discloses that its control means, which generates ad queue structures, includes a mix of live broadcast and alternative ads to be shown during time-shifted viewing.

10. Independent Claim 12

166. Claim 1 and Claim 12 are similar, and the only additional element in Claim 12 is the “output means” (element 12[f] below), which is merely a connection between the PVR and a television set. *See* Ex-1020; Section VII *supra*.

- a. **12[a]: “A Personal Video Recorder (PVR) for use in a system for automating compliance with local broadcasting regulations laid down by a broadcasting authority and applicable to advertisements, said advertisements being provided during time-shifted viewing/listening, the PVR comprising:”**

167. As explained in Section VIII.A.2.a, Plotnick and Parekh disclose and teach Claim 12’s preamble.

- b. **12[b]: “data storage means storing a programme episode database, an advertisement database, and a rules database,”**

168. Plotnick and Parekh disclose and teach element 12[b]. The structure of the “data storage means” is “hard disc 62 in PVR 60.” *See* Section VII. Plotnick

discloses that the PVR includes a “video storage 620 component,” which stores video programs and ads and may be implemented as “a hard disk drive.” Ex-1005, ¶139. Plotnick also discloses “[a] database module 800 stores information essential to the operation of the ad queuing and profiling system including ... ad and program information (metadata), and possibly the ads themselves.” *Id.*, ¶150. A POSITA would have understood that Plotnick’s video storage component and database module disclose hard disc 62 in PVR 60.

169. The function of the “data storage means” is “storing a programme episode database, an advertisement database, and a rules database.” *See* Section VII. As detailed above, the PVR includes a “video storage 620 component” that “is used to store all video audio programs on the set-top box, including ads (commercials).” *Id.*, ¶139. Plotnick also discloses “[a] database module 800 stores information essential to the operation of the ad queuing and profiling system including ... ad and program information (metadata), and possibly the ads themselves.” *Id.*, ¶150. A POSITA would have understood that the video storage component and database module store a program episode database, advertisement database, and rules database because these databases are essential to the operation of Plotnick’s ad queuing and profiling system and store, e.g., “program information” and “the ads themselves.” *Id.*, ¶150; *see also* Sections VIII.A.2.b-d.

- c. **12[c]: “each stored advertisement having associated therewith a header comprising a first field related to a local broadcasting time regulation laid down by the broadcasting authority, which local broadcasting time regulation restricts the time of day at which said advertisement may be shown,”**

170. As explained in Section VIII.A.2.c.1, Plotnick and Parekh disclose and teach element 12[b].

- d. **12[d]: “and a second field related to the number of times said advertisement has previously been shown during time-shifted viewing, wherein the rules database contains rules relating to said local broadcasting time regulation, and wherein the stored programme episodes have periodic breaks for the insertion of advertisements;”**

171. Plotnick and Parekh disclose and teach element 12[c]. As explained in Section VIII.A.2.c.2, Plotnick and Parekh disclose “and a second field related to the number of times said advertisement has previously been shown during time-shifted viewing.” As explained in Section VIII.A.2.d, Plotnick and Parekh disclose “wherein the rules database contains rules relating to said local broadcasting time regulation.” As explained in Section VIII.A.2.b, Plotnick and Parekh disclose “and wherein the stored programme episodes have periodic breaks for the insertion of advertisements.”

- e. **12[e]: “input connection means for connection to a source of video/audio signals and a real-time clock signal;”**

172. Plotnick and Parekh disclose and teach element 12[d]. The “input connection means” has the structure “a connection between PVR 60 and aerial 20, a modem 22 or the Internet 24 *as in the prior art*” and the function “for connection to a source of video/audio signals and a real time clock signal.” *See* Section VII. As the ’302 Patent itself admits, such input connection means was known in the prior art. Ex-1001, 4:43–45.

173. The Plotnick PVR supports upstream and downstream data transmission and digital television reception, including a tuner/demod that receives programming and data. Ex-1005, ¶107. The PVR can connect to a cable network, receive signals from a satellite, or connect to the Internet via a telephone line or other network connection. *Id.*, ¶¶110, 111. The PVR can receive advertisements via those connections. *Id.*, ¶110. Plotnick thus discloses a PVR STB with a connection between the PVR and an aerial, a modem, or the Internet. Like the ’302 Patent, Plotnick discloses that “the PVR may be connected to a variety of networks,” including “to the Internet (for return signals) via a telephone line or other network connection” via the aforementioned connections. *Id.*, ¶¶110, 111. And as described in Section VIII.A.2.e, the Plotnick PVR system is aware of “*what time of day it is*,” what day of the week” and makes determinations based on “*current system time*.”

Ex-1005, ¶¶194, 158 (emphasis added). As described in Section VIII.A.2.e above, Plotnick and Parekh render obvious that such connection means provide the real-time clock signal.

f. 12[f]: “output means for connection to a consumer’s viewing/listening unit;”

174. Plotnick and Parekh disclose and teach element 12[f]. The structure of the output means is “connection between PVR 60 and TV set 68, as depicted in Figure 4.” See Section VII. As shown in Figure 3, annotated below, “video out” and “audio out” in Plotnick connect the PVR and user’s television:

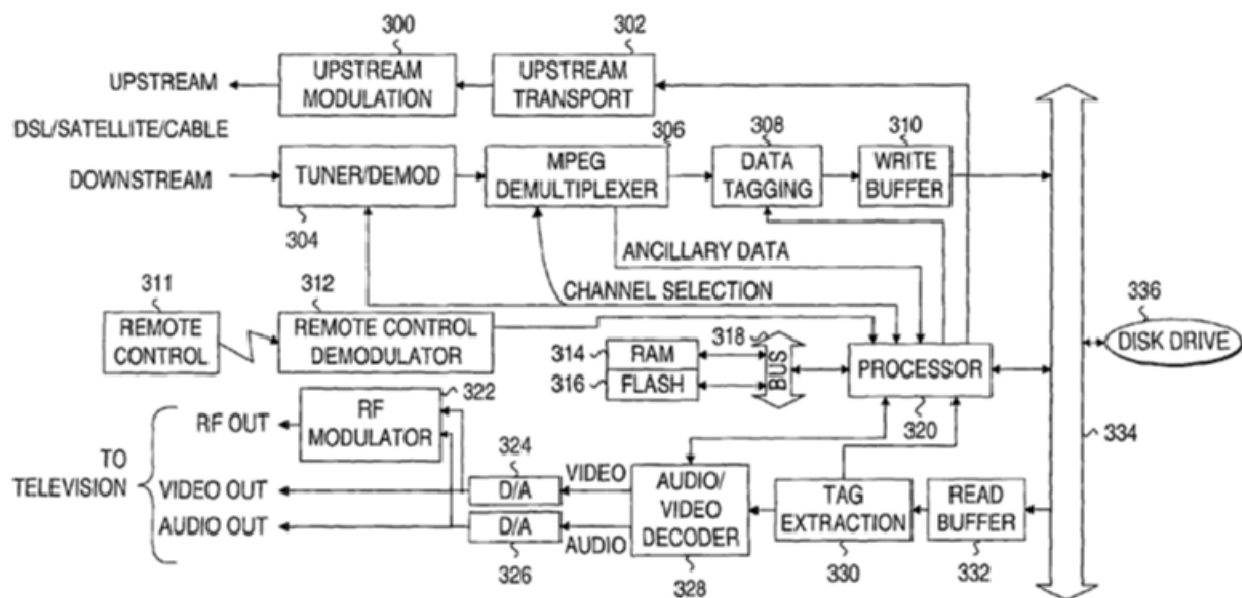


FIG. 3

175. The function for the output means is “for connection to a consumer’s viewing/listening unit.” See Section VII. A POSITA would have understood that the

video and audio out “to television” connect a user’s viewing and listening unit in the manner found in common PVR and televisions at the time of the ’302 Patent.

- g. 12[g]: “and control means arranged to read said first field and said clock signal and said rules database and to apply said local broadcasting time regulation to each advertisement before said advertisement is shown during one of the periodic breaks;”**

176. As explained in Section VIII.2.A.f, Plotnick and Parekh disclose and teach element 12[g].

- h. 12[h]: “wherein the control means is further arranged to update the second field in the header of said advertisement when said advertisement is again shown during time-shifted viewing.”**

177. As explained in Section VIII.A.2.g, Plotnick and Parekh disclose and teach element 12[h].

- 11. Claim 13: “The PVR according to claim 12 arranged to read the real-time clock, to read the first field in the header of an advertisement, to read the rules database, and to provide that advertisement to a consumer’s viewing/listening unit only when its header and the rules database do not indicate that the advertisement may not be viewed at the real time of day indicated by the clock signal.”**

178. As described above, Plotnick and Parekh render Claim 12 obvious. As explained in Sections VIII.A.2 and VIII.A.10, Plotnick and Parekh disclose and teach reading and using information from a real-time clock signal, the first field in the header of the advertisement, the rules database, and applying the rules to provide

the advertisement to the consumer's TV only when the headers and rules do not indicate an applicable time restriction at that time of day, as recited in Claim 13.

12. Claim 14: "The PVR according to claim 13 further arranged to supply to the viewing unit interactive advertisements which request a response from the viewer, and to record such a response."

179. As explained in Section VIII.A.5, Plotnick and Parekh disclose and teach Claim 14. As described above, Plotnick and Parekh render Claim 13 obvious. A POSITA would have understood that Plotnick records the viewer's response. For example, after an advertisement is presented, Plotnick discloses "the system updates the ad metadata and transmits an insertion report to the head-end." *Id.*, ¶163. Plotnick creates an "ad play report 1160" when "ads are displayed to the subscriber." *Id.*, ¶169. Recording viewer responses would be a logical step in Plotnick's provision of interactive ads and subsequent reporting. A POSITA would have known that by recording a viewer's response, the system would obtain more information to improve targeting advertising, thereby supplying more relevant and appropriate advertisements to households.

13. Claim 15: "The PVR according to claim 13, further arranged to update the second field in the header when said advertisement is provided to the consumer's viewing/listening unit."

180. As described above, Plotnick and Parekh render Claim 13 obvious. As explained in Sections VIII.A.2.g, Plotnick and Parekh disclose and teach Claim 15.

B. Ground 2: Plotnick Renders Claims 1–4, 6–9, 12–15 Obvious.

181. I understand that in another related matter, the Patent Owner has alleged that the challenged claims are met when advertisements are shown in a program based on schedules set by the advertisers. Ex-1022, 3-4; Ex-1023, 2-3. If such systems are within the scope of the challenged claims, then Plotnick alone renders the challenged obvious because Plotnick teaches selecting ads based on advertiser-defined schedules.

1. Claim 1

a. 1[a]:

182. I see in Exhibit 1022 that the Patent Owner has asserted that this element is met by a system that plays advertisements in video programming and that abides by laws. Ex-1022, 3-4; *see also* Ex-1023, 3 (excerpts below):

Google Inc. (Google), through its subsidiary YouTube, provides YouTube TV, which “lets you watch live TV, on demand video, and cloud-based DVR from major broadcast and popular cable networks.” *See* https://tv.youtube.com/welcome/?utm_source=prod.

Google’s Google Ads program provides advertisements for YouTube TV; its Display Network targeting allows advertisers to “set where or when ads are shown based on features of their ideal audience.” *See* https://ads.google.com/intl/en_us/home/resources/reach-larger-new-audiences/.

Google’s Google Ads provides advertisements that “are designed” to “abide by laws.” *See* <https://support.google.com/adspolicy/answer/6008942>. Additionally, Google attests that its ads will “comply with the local laws for any area [its] ads target.” *See* <https://support.google.com/adspolicy/answer/6023676>.

183. Based on this, I understand that the Patent Owner does not believe that the preamble of claim 1 requires “compliance with local broadcasting regulations *laid down by a broadcasting authority* and applicable to advertisements.”

184. If the Patent Owner's interpretation of claim 1 is accepted, then in my opinion, Plotnick meets the Patent Owner's interpretation of the preamble of claim 1. Plotnick provides advertisements in time-shifted viewing by an "ad targeting system 600," which is a "software application that may be integrated into a PVR-enabled set-top box (STB PVR)." Ex-1005, ¶134; *see also* FIG. 6A. Plotnick's PVR enables users to view advertisements during time-shifted viewing as Plotnick's invention is "described in relation to the recording and playback of advertisements utilizing a PVR." *Id.*, ¶95.

185. To the extent Plotnick does not disclose Patent Owner's interpretation of this limitation, Plotnick renders this limitation obvious because a POSITA would have understood that Plotnick was directed to teaching a lawful system. As described in Section VIII.A.1 above, a POSITA seeking to implement a real-world system would have designed it to comply with applicable laws, including applicable FCC broadcast regulations. A POSITA would have found it necessary to design a system that complies with applicable laws, such as local broadcasting regulations, to avoid penalties, legal action, or other adverse consequences.

186. Plotnick thus discloses, or at least renders obvious, the preamble of claim 1 under Patent Owner's interpretation.

b. 1[b]:

187. As described in Section VIII.A.2.b above, Plotnick teaches this element.

c. 1[c, c.1, c.2]:

188. I see in Exhibit 1022 that the Patent Owner has asserted that this element is met by a system that can play recorded programs and selects ads to be played with such programs based on schedules and ad frequency criteria set by the advertisers. Ex-1022, 5-6; *see also* Ex-1023, 2-3 (excerpts below):

Furthermore, YouTube allows for “day and time targeting” of advertisements. *See* <https://support.google.com/displayvideo/answer/2697407>.

Additionally, Google utilizes proprietary algorithms and machine learning to “manage ad frequency,” demonstrating that Google provides a second field related to the number of times a particular advertisement has previously been shown. *See* <https://www.blog.google/products/marketingplatform/360/privacy-safe-approach-managing-ad-frequency/>.

189. I thus understand that Patent Owner has interpreted 1[c] to ***not*** require a “local broadcasting time regulation,” much less “a header comprising a first field” related to such regulation, giving no patentable weight to these elements. *Id.*

190. Plotnick discloses selecting ads to be played (as identified in the ad queue), based on timing and frequency criteria set by advertisers, and discloses playing such ads in ad breaks in programs recorded by a PVR. Ex-1005, ¶169 (advertisers can set “frequency of viewership” and “times for displaying the advertisement”). Plotnick thus discloses this claim element under Patent Owner’s interpretation.

d. 1[d]:

191. I see in Exhibit 1022 that the Patent Owner has asserted that this element is met by a system that abides by laws and regulations. *See* Ex-1022, 6 (excerpt below):

Google's YouTube TV provides ads that "abide by laws" as referenced above in limitation [1a]. *See* <https://support.google.com/adspolicy/answer/6008942>. Google admits that it regularly reviews "changes in online trends and practices, industry norms, and **regulations**." *Id.*, emphasis added.

192. As described in Section VIII.A.1 above, a POSITA would have found it obvious to utilize the system of Plotnick in a manner that abides by laws. A POSITA would have been motivated to apply the teachings of Plotnick in a way that abides by laws and regulations to avoid penalties, potential legal action, or adverse consequences that may interfere with or altogether prevent use of the system. Plotnick thus renders this claim element obvious under Patent Owner's interpretation.

e. 1[e, e.1]

193. I see in Exhibit 1022 that the Patent Owner has asserted that elements 1[e] and 1[e.1] are met by a system that "allows advertisers to 'specify certain hours or days of the week when [they] want [their] ads to show.'" Ex-1022, 7. Patent Owner's interpretation of 1[e] and 1[e.1] does not require any particular structure, method, or frequency of obtaining a real-time clock signal. *Id.*

194. Plotnick discloses selecting ads to be played based on timing criteria set by advertisers. Ex-1005, ¶169. Plotnick thus teaches these claim elements under Patent Owner's interpretation.

f. 1[e, e.1]:

195. I see in Exhibit 1022 that the Patent Owner has asserted that these elements are met by a system that “allows advertisers to ‘specify certain hours or days of the week when [they] want [their] ads to show.’” Ex-1022, 7. Patent Owner's interpretation of 1[e] and 1[e.1] does not require any particular structure, method, or frequency of obtaining a real-time clock signal. *Id.*

196. Plotnick teaches selecting ads to be played based on timing criteria set by advertisers. Ex-1005, ¶169. Plotnick thus teaches these claim elements under Patent Owner's interpretation.

g. 1[f]:

197. I see in Exhibit 1022 that the Patent Owner has asserted that this element is met by a system that manages ad frequency. Ex-1022, 7. Plotnick discloses selecting ads to be played (identified in the ad queue), based on timing and frequency criteria from advertisers, and discloses playing such ads in breaks in programs recorded by a PVR. Ex-1005, ¶169 (advertisers set “frequency of viewership” and “times for displaying the advertisement”). Plotnick thus teaches this claim element under Patent Owner's interpretation.

2. Claim 2

198. I see in Exhibit 1022 that the Patent Owner has asserted that claim 2 is met for the same reasons that 1[a] and 1[c] are met. Ex-1022, 8. For the reasons described in Sections VIII.A.2.a and VIII.A.2.c, Plotnick teaches 1[a] and 1[c] and therefore discloses claim 2 under Patent Owner's interpretation.

3. Claim 3

199. I see in Exhibit 1022 that the Patent Owner has asserted that claim 3 is met for the same reasons that 1[a] and 1[c] are met. Ex-1022, 8. For the reasons described in Sections VIII.A.2.a and VIII.A.2.c, Plotnick teaches 1[a] and 1[c] and therefore discloses claim 3 under Patent Owner's interpretation.

4. Claim 4

200. I see in Exhibit 1022 that the Patent Owner has asserted that the dependent limitation of claim 4 is met by a system with interactive features. Ex-1022, 9. As described in Section VIII.A.5 above, Plotnick discloses advertisements wherein a user can interact by clicking on links and/or through a remote and/or panel on the STB. Plotnick thus teaches claim 4 under Patent Owner's interpretation.

5. Claim 6

201. I see in Exhibit 1022 that the Patent Owner has asserted that claim 6 is met by a system with programs having periodic breaks for advertisements because such programs "necessitate inclusion of information related to segment duration."

Ex-1022, 9. As described in Section , Plotnick teaches such system. Per Patent Owner's claim interpretation, Plotnick teaches that programs containing information related to segment duration as required by claim 6.

6. Claim 7

202. As described in Sections VIII.A.7 above, Plotnick teaches that its system is a PVR and that the rules database means is stored locally in the PVR.

7. Claim 8

203. I see in Exhibit 1022 that Patent Owner has asserted that claim 8 is met by a system that provides advertisements in accordance with 1[a] and 1[c] because searching for such advertisements "by definition results either in success, and the finding of an advertisement that 'does not violate the local broadcasting time regulation,' or in failure and the determination that no advertisement stored in the advertisement supply means is suitable for showing under local broadcasting time regulation." Ex-1022, 10-11. As discussed in Sections VIII.A.2.a and VIII.A.2.c above, Plotnick discloses an advertisement system that provides advertisements in accordance with elements 1[a] and 1[c]. Plotnick thus discloses claim 8 under Patent Owner's interpretation.

8. Claim 9

a. 9[a, b, c]:

204. I see in Exhibit 1022 that Patent Owner has asserted that claim 9 is met by a system that meets element 1[c] because such a system is configured to “provide advertisements both broadcasted live and later supplied” and “necessitates the inclusion of advertisements that were not aired live, but added ex post facto by the control means of this system.” Ex-1022, 11-12. As discussed in Section VIII.A.2.c above, Plotnick discloses a system that meets element 1[c], and as discussed in Section VIII.A.9, Plotnick discloses a system that includes advertisements that were not aired live. Plotnick thus discloses 9[a, b, c] under Patent Owner’s interpretation.

b. 9[d]:

205. I see in Exhibit 1022 that Patent Owner has mapped 1[c] to a system that shows a “mix of advertisements” during time-shifted viewing. Ex-1022, 12. As discussed in Section VIII.A.2.c above, Plotnick discloses a system that meets element 1[c], and as discussed in Section VIII.A.9, Plotnick discloses a system with a mix of advertisements during time-shifted viewing. Plotnick thus discloses 9[d] under Patent Owner’s interpretation.

9. Claim 12

a. Element 12[a]:

206. As explained in Section VIII.B.1.a, Plotnick teaches 12[a] under Patent Owner’s interpretation.

b. Element 12[b]:

207. As explained in Section VIII.B.1.b, Plotnick teaches 12[b] under Patent Owner's interpretation.

c. Element 12[c]:

208. As explained in Section VIII.B.1.c, Plotnick teaches 12[c] under Patent Owner's interpretation.

d. Element 12[d]:

209. As explained in Sections VIII.B.1.c and VIII.B.1.d, Plotnick teaches 12[d] under Patent Owner's interpretation.

e. Element 12[e]:

210. As explained in Sections VIII.B.1.e and VIII.B.1.f, Plotnick teaches 12[e] under Patent Owner's interpretation.

f. Element 12[f]:

211. As explained in Sections VIII.B.1.e and VIII.B.1.f, Plotnick teaches 12[f] under Patent Owner's interpretation.

g. Element 12[g]:

212. As explained in Sections VIII.B.1.e and VIII.B.1.f, Plotnick teaches 12[g] under Patent Owner's interpretation.

h. Element 12[h]:

213. As explained in Section VIII.B.1.g, Plotnick teaches 12[h] under Patent Owner's interpretation.

10. Claim 13

214. As explained in Section VIII.B.1, Plotnick teaches the dependent claim element of claim 13.

11. Claim 14

215. As explained in Sections VIII.B.1.g and VIII.B.4, Plotnick teaches the dependent claim element of claim 14.

12. Claim 15

216. As explained in Section VIII.B.1.g, Plotnick teaches the dependent claim element of claim 15.

IX. CONCLUSION

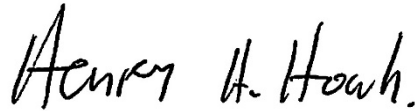
217. In signing this declaration, I recognize that it will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

218. I reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner raises and to take into account new information as it becomes available to me.

219. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

March 1, 2023

Respectfully Submitted,

A handwritten signature in black ink that reads "Henry H. Houh." The signature is written in a cursive style with a period at the end.

Dr. Henry Houh