Filed: May 7, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner,

v.

SANDPIPER CDN, LLC,

Patent Owner.

Case IPR2025-00952
Patent No. 8,719,886

PETITION FOR *INTER PARTES REVIEW*
OF U.S. PATENT NO. 8,719,886

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1021	U.S. Patent Publication No. 2002/0078233 to Biliris et al. ("Biliris")

*All emphasis is added unless otherwise indicated.

I. Introduction

Petitioner requests review and cancelation of claims 1-19 of U.S. Patent No. 8,719,886 (the "'886 patent") (Ex. 1001).

The '886 patent claims computer-implemented methods for delivery of video content across a network. '886 patent, Abstract. Content delivery systems with the features claimed in the '886 patent were known before its effective date. For example, detecting and processing trigger signals in video streams to determine whether to modify the video streams with alternate content such as an advertisement was disclosed in the prior art, including the prior art cited herein. So too were the various features of the dependent claims, such as querying an electronic programming guide (EPG) or using "proximity parameters" to determine whether to modify the video stream. Indeed, the prior art cited herein teaches all limitations of the challenged claims, and thus claims 1-19 are unpatentable as obvious for the reasons discussed below.

II. Statement of Precise Relief Requested

Petitioner requests review under 35 U.S.C. § 311 of claims 1-19 of the '886 patent and their cancelation in view of the following:

Prior Art References	
Ref. 1:	Acharya (Ex. 1005), filed June 18, 2007, and published December 18, 2008, is prior art under 35 U.S.C. § 102(e).[1]
Ref. 2:	Carle (Ex. 1006), published August 23, 2007, is prior art under 35 U.S.C. § 102(b).
Ref. 3:	Schein (Ex. 1007), published on January 2, 2003, is prior art under 35 U.S.C. § 102(b).
Ref. 4:	Fransdonk (Ex. 1008), published on September 4, 2003, is prior art under 35 U.S.C. § 102(b).

Grounds of Unpatentability	
1	Claims 1-19 are rendered obvious by Acharya in view of Carle.
2	Claims 2, 14, and 16 are rendered obvious by Acharya and Carle in view of Schein.
3	Claim 9 is rendered obvious by Acharya and Carle in view of Fransdonk.

[1] Citations to 35 U.S.C. §§ 102, 103, and 112 are to the pre-AIA statutes.

III. The ’886 Patent

A. Technology Overview

Content delivery networks (CDNs) are geographically dispersed servers for delivering content to end-users, usually on a national or global scale. Risan (Ex. 1009), Abstract; Krishnamurthy (Ex. 1019), Abstract; Mao (Ex. 1020), Abstract; Biliris, (Ex. 1021), ¶[0003]. As both the prior art and the ’886 patent recognize, the advent of the Internet increased the amount of information and content available for end users to consume. *See* Chatani (Ex. 1010), ¶[0003]; Bi (Ex. 1011), ¶¶[0004]-[0005]; *see also* ’886 patent (Ex. 1001), 1:25-53. With the proliferation of content, CDNs needed the ability to control content. Lin, ¶43. One such concern has been providing user-tailored experiences based on certain metadata about the user. Such user-tailored experiences have taken several forms, such as through targeted advertisements, and as the prior art indicates, was well-known to the ordinary artisan. *See, e.g.*, Eldering (Ex. 1012), Title; de Heer (Ex. 1018), ¶¶[0010]-[0012].

B. Summary of the ’886 Patent

The ’886 patent was filed on October 23, 2009, as U.S. Application 12/604,518 and claims priority to U.S. Provisional Application No. 61/113,941, filed November 12, 2008. ’886 patent, cover.

The ’886 patent discloses systems and methods for delivering video content to users across a network. ’886 patent, Abstract. Figure 10 (reproduced below) is representative:

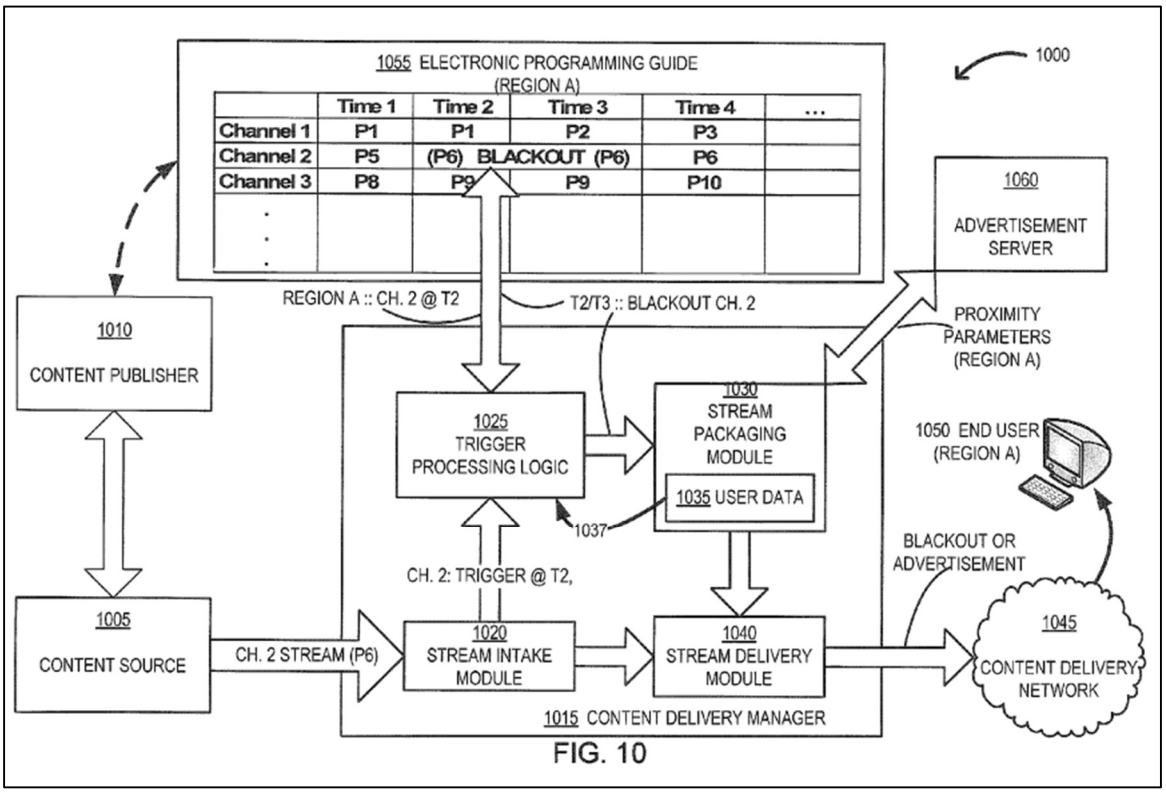


FIG. 10

’886 patent, Fig. 10.

The patent explains that the video content may include a “video stream” that includes a “trigger signal” “indicat[ing] a temporal mark injected into the video stream.” ’886 patent, Abstract; 18:28-37. The system “processes the trigger signal to determine whether to modify delivery of the video stream to the end user.” *Id.*, Abstract, 18:38-40. The patent contemplates well-known ways to modify delivery of the video, including to “black out” content or “insert[] an advertisement or

commercial into the content stream." *Id.*, 14:32-15:35; *see generally* Carle (Ex. 1006); *see also* Torrens (Ex. 1013), 297; Lin, ¶45. The '886 patent also discloses querying a centralized advertisement server over the network in determining whether to modify the content stream (e.g., insert advertisements). '886 patent, 15:47-59.

The '886 patent further describes well-known means of capturing additional information to limit an end-user's access to certain content. For example, the '886 patent discloses capturing certain "proximity parameters," e.g., geographical information such as a user's country, to determine whether to provide access to certain media content. '886 patent, 15:59-16:2, 19:44-57, 24:3-9.

IV. Level of Ordinary Skill

A person of ordinary skill in the art ("POSITA") at the time of the alleged invention of the '886 patent would have had at least a bachelor's degree in computer science, or a related field, and at least two years of work/research experience in the field of content delivery management or networks. Additional educational background beyond a bachelor's degree can make up for a lack of work and/or research experience, and more than two years of relevant work and/or research experience can compensate for a lesser level of education. Lin, ¶48.

V. Claim Construction

The Board construes claims under the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2018).

Under this standard, terms receive their plain and ordinary meaning as understood by one of ordinary skill in the art, consistent with the disclosure and prosecution history. *Phillips*, 415 F.3d at 1314-19. Claims should only be construed to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). No claim terms need to be construed by the Board at this time, and all should be given their ordinary meanings.

VI. Claims 1-19 Are Unpatentable Over the Prior Art

As explained below, the '886 patent claims recite a combination of well-known prior art elements that perform their known functions to produce predictable results. Lin, ¶66. Therefore, claims 1-19 are unpatentable as obvious under 35 U.S.C. § 103.

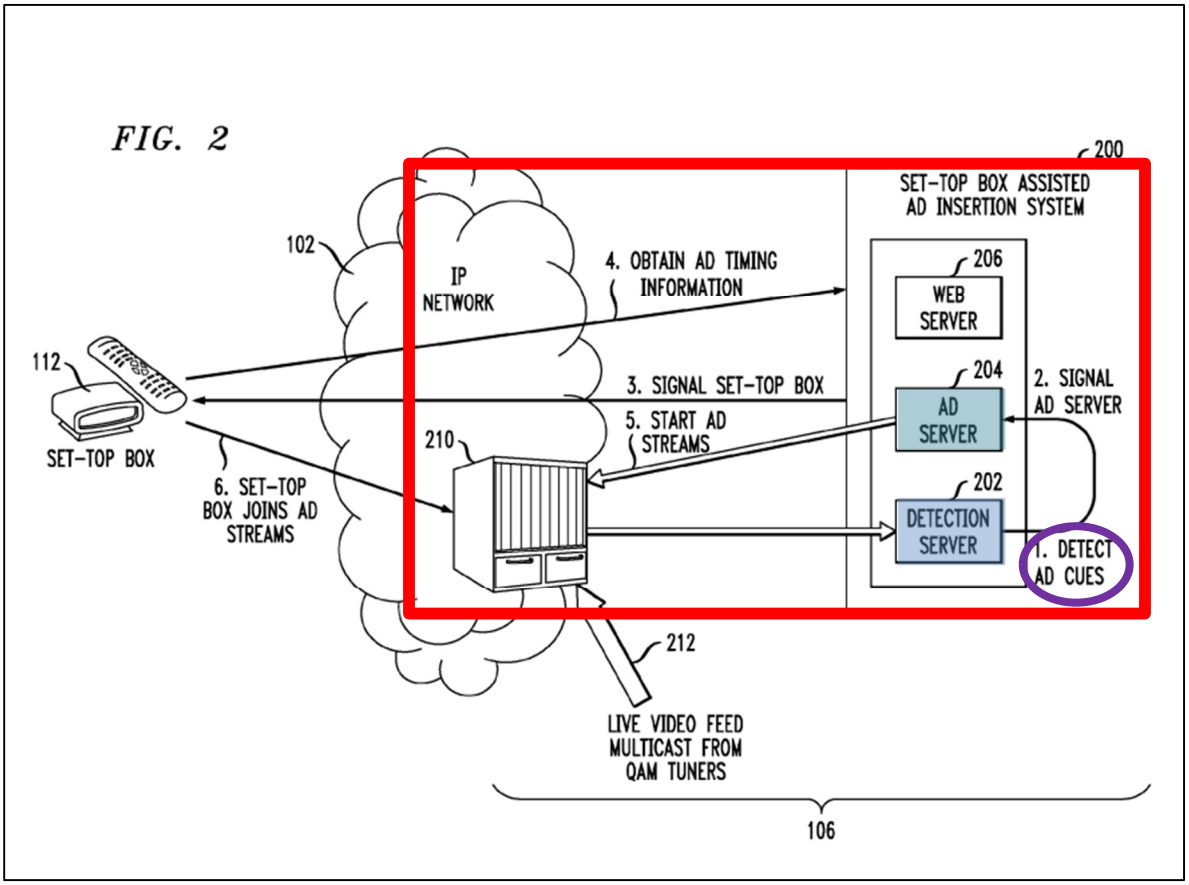
A. Ground 1: Acharya in View of Carle Renders Obvious Claims 1-19

1. Overview of the Combination

a. Acharya

Like the '886 patent, Acharya (Ex. 1005) discloses methods and systems for distributing a media content stream via a network. Acharya, Abstract, Figs. 1-4. Also similar to the '886 patent, Acharya discloses detecting "ad markers or other ad cues" within the content stream to provide timing information indicating when the content stream can be modified to include an advertisement. Acharya, ¶[0034]; *see also id.*, Abstract, ¶[0029].

Acharya describes an exemplary embodiment in connection with Figure 2 (below) that includes an ad insertion system 200 comprising **a detection server 202** and **an ad server 204.** Acharya, ¶[0032], Fig. 2. The detection server and the ad server may be distinct servers or combined into a common processing server. *Id.*, ¶[0009]. Moreover, while ad insertion system 200 is shown separate from network element 210, Acharya discloses that these components may be implemented together in network element 210. Acharya, ¶[0052].



Acharya, Fig. 2 (annotated).

Detection server 202 processes a content stream associated with live video feed 212 received from a service provider 106 to detect ad markers or cues, which are used to generate timing information (e.g., beginning and duration) about the advertisement. Acharya, ¶¶[0029], [0034]. The timing information is sent to ad server 204 and user interface devices 112,[2] and ad server 204 uses the timing information to start one or more ad streams. Acharya, ¶¶[0029], [0035]-[0036], [0039]-[0041]. In this regard, Acharya's disclosures are also consistent with the '886

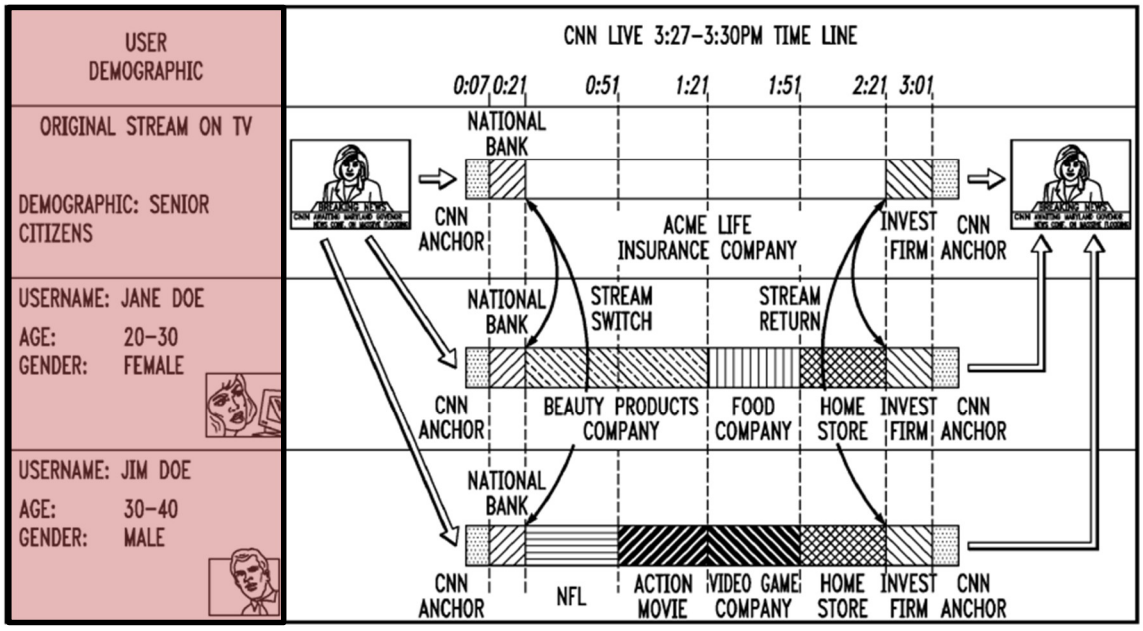
[2] While Acharya discloses a set top box (STB) as one exemplary user interface device, it explains that other user interface devices may be used, including "receivers, computers, or other processor-based devices, in any combination." Acharya, ¶[0019]; *see also id.* ¶[0030]. Thus, a POSITA would have understood Acharya's discussions regarding STBs to apply equally to all such user interface devices, including computer-based user interface devices. Lin, ¶53. This is consistent with Acharya's similar disclosures that its teachings are applicable to any type of signal distribution system, including "a cable television system, a satellite television system, an IPTV [Internet Protocol television] system, or portions or combinations of these and other systems." Acharya, ¶[0019]; *see also id.* ¶¶ [0005], [0028], [0031]; Lin, ¶53. The Petition therefore refers to Acharya's "user interface device(s)," consistent with Acharya's disclosures.

patent's disclosures that its user devices 122 apply to a variety of devices such as "PCs, workstations, [and] ***set-top boxes***" among others. *See* '886 patent, 7:4-10; Lin, ¶53. Acharya explains that its cues may include "conventional SCTE-35 signaling messages" in the video stream, which are used to generate timing information that indicates information like channel, start time, and duration of an ad slot where the modification is to occur. *Id.*, ¶¶[0034]-[0036].

After processing the advertisements, the advertisement streams are sent to the user's user interface device ("device") for modifying their video stream. *Id.*, ¶¶[0041]-[0042]. Acharya discloses multiple exemplary techniques for its process in connection with Figures 4A-4C, discussed further herein. *Id.*, ¶¶[0015], [0042]-[0044], [0053]-[0060].

Likewise, Acharya teaches capturing and storing ***user-specific demographic information*** to enable targeted advertisement on a per-user or per-group basis, as illustrated by Figure 5 (below). Acharya, ¶¶[0008], [0016], [0047], [0061]-[0062].

FIG. 5



Acharya, Fig. 5 (annotated).

Acharya is analogous to the ’886 patent because they are in the same field of endeavor: providing user-tailored content. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *compare* Acharya, Title (“Targeted advertisement insertion with interface device assisted switching”), ¶[0010] (“For example, a given implementation can provide targeted advertisement insertion on a per-subscriber basis in a subscription television system”) *with* ’886 patent, 11:6-10 (“Methods and systems described . . . provide a means for performing real-time processing and modification of content streams….”); Lin, ¶56.

b. Carle

Like the '886 patent and Acharya, Carle (Ex. 1006) discloses methods and systems for providing substituted media content to users during predetermined time periods. Carle, Abstract, ¶¶[0004], [0011]. For example, Carle teaches that television content occasionally needs to be "blacked out" in certain locations. *Id.*, ¶[0001]. In these instances, Carle discloses that its system may substitute programming so that an advertisement or other program plays during the blackout period. *Id.*, ¶¶[0017], [0020], [0108]. Thus, like Acharya, Carle's "[p]rogram substitutions involve replacing a primary video stream with an alternate video stream." *Id.*, ¶[0045].

Carle describes an exemplary embodiment in connection with Figure 5 (below) that includes a media server 510, which includes various server functionalities, including an acquisition server 102. Carle, ¶[0110]. The acquisition server receives content from publishers, (*id.*, ¶[0015]), and queries an acquisition service database 112 "to get configuration information, rights, and boundary keys," which "starts the program substitution." *Id.*, ¶[0043]. The acquisition server also includes a BlackoutID in the video stream, which "signal[s] a program substitution event." *Id.*, ¶[0035]. Like Acharya, Carle discloses that conventional SCTE-35 signaling can be used for its program substitution. *Id.*, ¶[0042]. Carle also discloses that media server 510 obtains content from content source 512, program guide data

from program source 514, and advertising data from advertisement source 516, for distribution to client systems 504. *Id.*, ¶¶[0108]-[0111].

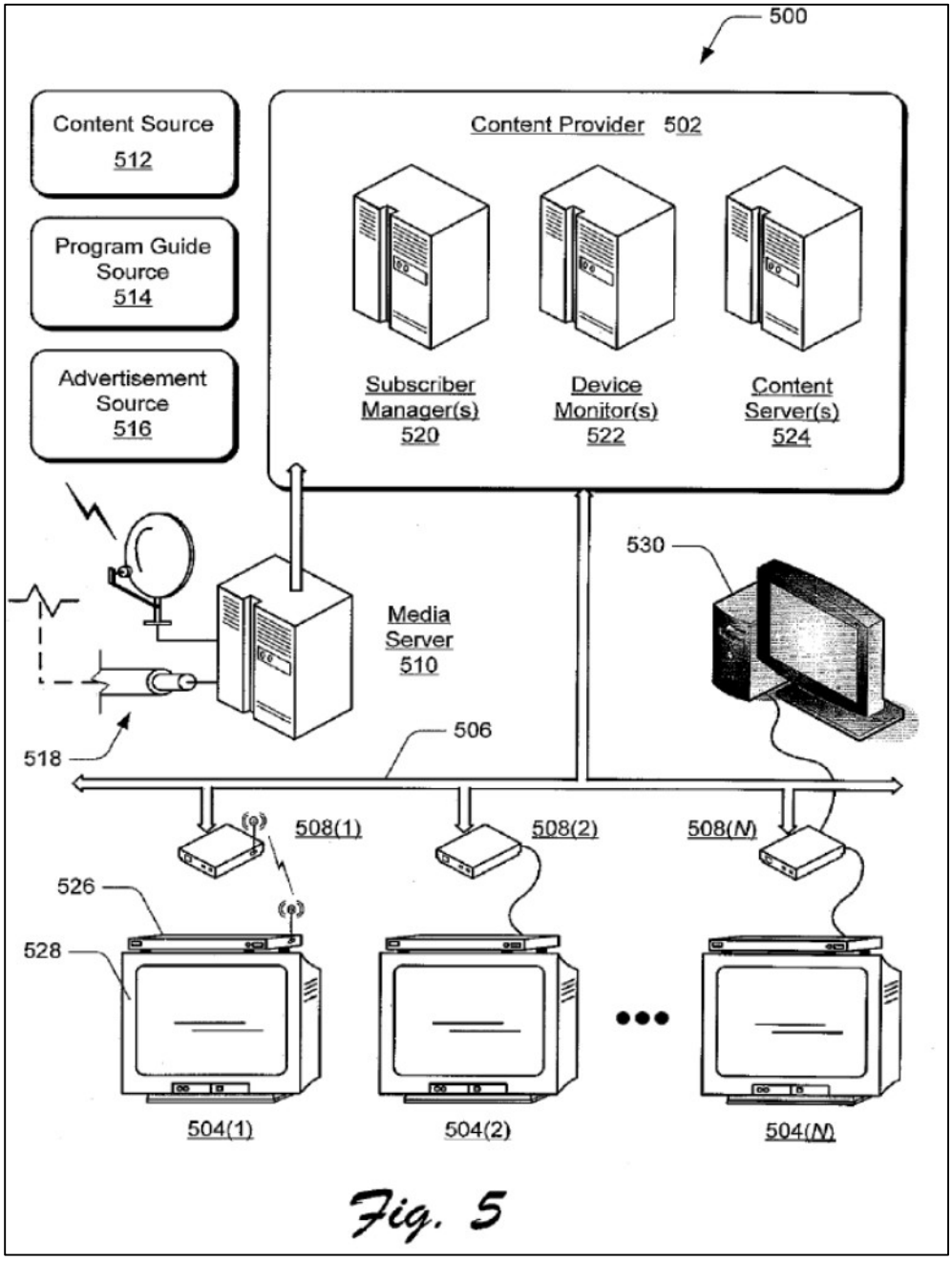


Fig. 5

Carle, Fig. 5.

As part of its program substitution process, Carle captures geographic information such as a client's/user's ZIP code, postal address, and/or geographic region code. Carle, ¶¶[0014], [0024]. Carle also discloses that the clients may be grouped by "geographic location, client type, client subscriptions, and the like." *Id.*, ¶[0025]. Carle's system uses these groupings to determine, for a particular blackout window, whether certain groups will access the original content or the alternate content provided via the program substitution. *Id.*, ¶¶[0026]-[0027], [0037], [0047], Fig. 2; Lin, ¶¶57-59. Carle is analogous to the '886 patent because they are in the same field of endeavor: providing user-tailored content. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *Compare* Carle, ¶¶[0004], [0011] (providing substituted media content to groups of clients) *with* '886 patent, Abstract; Lin, ¶60.

c. Combination of Acharya and Carle and Motivation to Combine

A POSITA would have found it obvious and would have been motivated to combine Acharya and Carle because they describe similar systems that achieve similar goals. Lin, ¶¶67-69. For example, both references describe systems and methods for providing alternate, targeted content to users. *See, e.g.*, Acharya, Abstract, ¶¶[0006]-[0010]; Carle, Abstract, ¶¶[0004], [0011]. And both references are applicable (but not limited) to similar Internet Protocol Television ("IPTV") systems (e.g., systems that deliver video/television content over an Internet Protocol

("IP") network), use server-side functionality to detect timing information within video streams, and use the same SCTE-35 signaling for communicating such timing information. *See supra* Sections VI.A.1.a-VI.A.1.b; Acharya, ¶[0028]; Carle, ¶[0012]; *see also* Kan, ¶¶[0021]-[0023], [0057].

A POSITA would have found it obvious to combine Carle's teachings into Acharya. Lin, ¶68. As explained above, Acharya describes a system for detecting ad cues, indicating various ad slots within a video stream, and providing targeted advertising to users in those slots. *See supra* Section VI.A.1.a; Acharya, ¶[0034]. Acharya describes using and detecting conventional SCTE-35 signaling messages that denote these slots within the video stream. *See supra* Section VI.A.1.a. Carle discloses using the same conventional signaling techniques but expands the advertisement insertion process to account for blackout scenarios where certain users or groups of users are unable to view originally scheduled content. *See supra* Section VI.A.1.b; Carle, ¶¶[0026]-[0027], [0037], [0047]. For example, Carle discloses that when a blackout occurs, certain users, based on information such as geographical data, may be provided with alternate programming in the form of advertisements. Carle, ¶[0017]. A POSITA would have been motivated to incorporate Carle's teachings into Acharya to expand the use of Acharya's targeted advertisement system to include the insertion of advertisements during blackout periods, as Carle expressly teaches. This combination would have enhanced the utility of the

combined system by allowing for targeted advertising not only during regularly scheduled advertising slots (based on Acharya's teachings), but also during blackout periods (based on Carle's teachings). Lin, ¶68.

Moreover, a POSITA would have expected success in making this combination due to the similarities in Acharya's and Carle's systems. Both systems describe examples using IPTV-based systems that utilize in-band SCTE-35 signaling messages to signal the beginning and end of advertisement insertion windows. Thus, the combination would have been nothing more than the combination of similar, familiar elements (Acharya's and Carle's use of SCTE-35 based signaling messages to inject advertisements into a video stream) according to known methods to produce the predictable and desired result of expanding Acharya's targeted advertisement system to account for blackout periods. For example, one of Acharya's goals is to continue providing relevant program content for specific users. *See* Acharya, ¶[0010]. Carle would contribute to this goal by accounting for windows of "black out" periods for certain geographic regions, allowing the combined system to provide targeted advertising content during this time period. *See* Carle, ¶¶[0001], [0020]-[0021].

Because Acharya and Carle are analogous art, a POSITA would have had a reasonable expectation of success in implementing Carle's teachings into Acharya's system. Lin, ¶70. Applying Carle's teachings to Acharya would have been

straightforward, using known techniques disclosed in Carle and the prior art to enhance Acharya's system and methods in the same manner. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-18 (2017); Lin, ¶70.

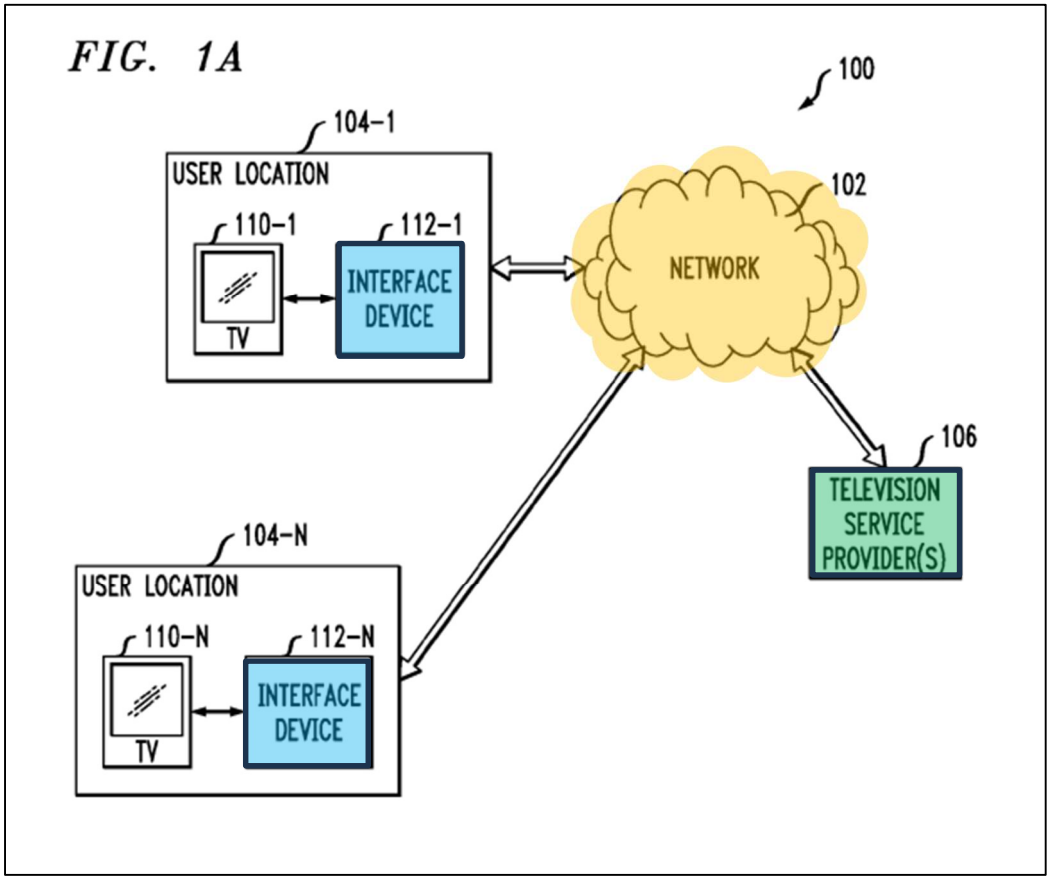
2. Independent Claim 1

a. [1.pre]: "A computer-implemented method for delivery of video content across a network comprising:"

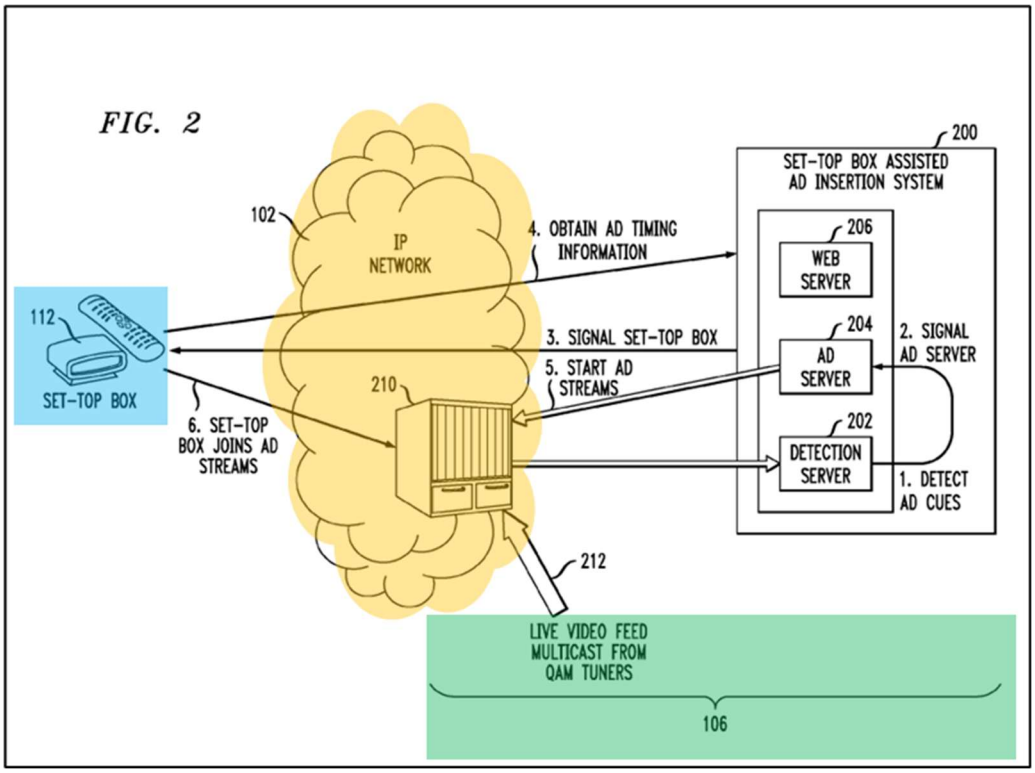
To the extent the preamble is limiting, Acharya, alone or in view of Carle, teaches [1.pre]. Lin, ¶71.

Acharya discloses [1.pre] because Acharya discloses embodiments, including in connection with Figures 1A and 2 (discussed in greater detail below), that teach "techniques for providing targeted advertisements within [signal distribution] systems." Acharya, ¶[0001], Figs. 1A, 2. Acharya discloses, including in connection with Figure 1A, that its signal distribution system 100 includes **a network 102** over which media streams ("video content") are delivered from **television service providers 106** to end users to access at their respective **user interface devices 112**. Acharya, ¶[0019], Fig. 1A. Acharya's network 102 comprises any type of network, including an IP network, suitable for transporting signals associated with television services or any other type of audio/video content ("video content"). Acharya, ¶¶[0020], [0029], [0066]. For example, Acharya teaches its disclosures can be

applied equally to cable and satellite television systems and networks. Acharya, ¶[0065].



Acharya, Fig. 1A (annotated). Acharya explains that Figure 2 (below) shows an "implementation" of an "advertisement insertion process" in the system of Figure 1A. Acharya, ¶[0013].



Acharya, Fig. 2 (annotated). Acharya explains, with reference to Figure 2, that multiple video streams are delivered to a user interface device 112 over the network 102. *Id.*, ¶¶[0031]-[0032]. Acharya further discloses that its methods are computer-implemented, as claimed. Acharya, ¶[0031], claims 1, 19.

Carle also discloses [1.pre] because Carle discloses embodiments, including in connection with system 500 of Figure 5, that "facilitate the distribution of program content, program guide data, and advertising content to multiple users … via an IP-based network 506." Carle, ¶¶[0108]-[0109]. A POSITA would have been motivated to combine Acharya and Carle at least for the reasons discussed above. *See supra* Section VI.A.1.c.

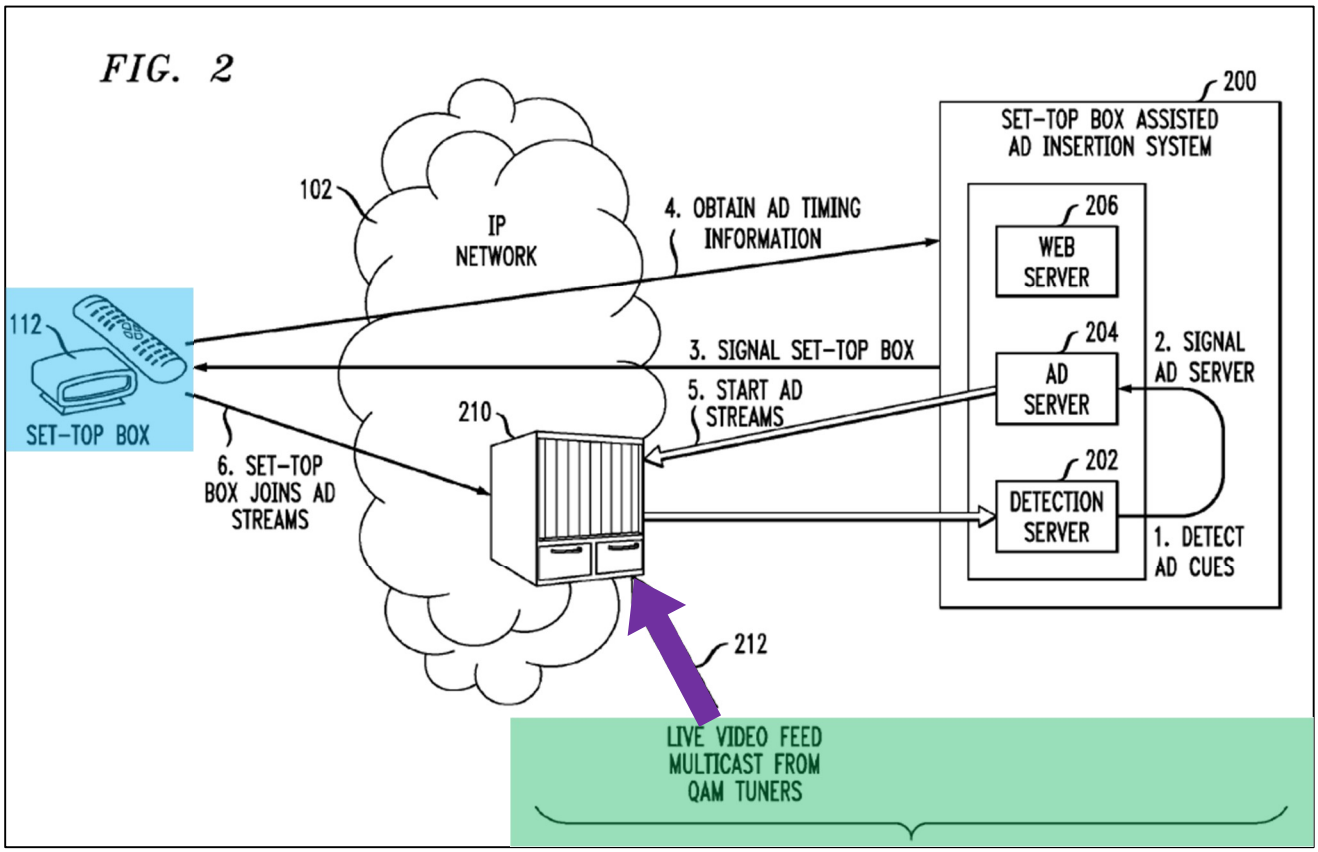
b. [1.a]: "receiving a video stream from a content source for delivery to a client of a content publisher, wherein the client subscribes to the content publisher to receive video content;"

Acharya, alone or in view of Carle, teaches [1.a]. Lin, ¶75.

Acharya discloses "receiving a video stream from a content source for delivery to a client of a content publisher" because Acharya discloses that network element 210 receives **a live video feed 212** ("receiving a video stream") from head end equipment, e.g., IPTV network head end equipment associated with **television service provider 106** ("content source"). Acharya, ¶¶[0031]-[0032]; *see also id.*, ¶[0019]. Using the system and process shown in Figure 2, "multiple streams are delivered to" **user interface device 112** ("for delivery to a client of a content publisher"). Acharya, ¶[0031]; *see also id.*, ¶¶[0019], [0045], [0055] (describing "deliver[ing] content to subscribers via network 102"). Acharya discloses that user interface devices 112 are at respective locations 104 that correspond to respective subscribers, (including individuals, families, businesses, organizations, etc.), who access television services. Acharya, ¶[0021]. Thus, to the extent Sandpiper contends that "client" encompasses users, Acharya discloses such users associated with user interface devices 112.

Acharya's content source is also its content publisher (i.e., **television service provider 106**). Lin, ¶¶76-78. This is consistent with the '886 patent, which

contemplates that the content publisher and content source "may also be one and the same (i.e., the same entity) sharing the same functional and logical characteristics while residing at the same physical location." '886 patent, 11:37-40.



Acharya, Fig. 2 (annotated).

Acharya also discloses that "the client subscribes to the content publisher to receive video content" because it states that **user interface devices 112** are at locations 104 where "subscribers [are] permitted to access one or more television services by virtue of his or her subscription." Acharya, ¶[0021]; *see also id.*, ¶¶[0022]-[0023], [0055]. Moreover, in its discussion of the prior art, Acharya

explains how conventional signal distribution systems provide interface equipment (e.g., user interface devices) that are configured to receive, from system head end equipment, media streams related to "particular subscription television services to which that subscriber is entitled by virtue of the subscription." Acharya, ¶[0002]; *see also id.*, ¶¶[0003]-[0004].

Carle also discloses this limitation. Lin, ¶79. For example, Carle explains that media server 510 (which includes acquisition server 102) receives program content ("video stream") from **content source 512** ("content source"). Carle, ¶[0110]. The video stream is also for delivery to users ("client[s]") of a **content provider 502** ("content publisher") who subscribe to the content provider to receive content. *Id.*, ¶¶[0108]-[0113].

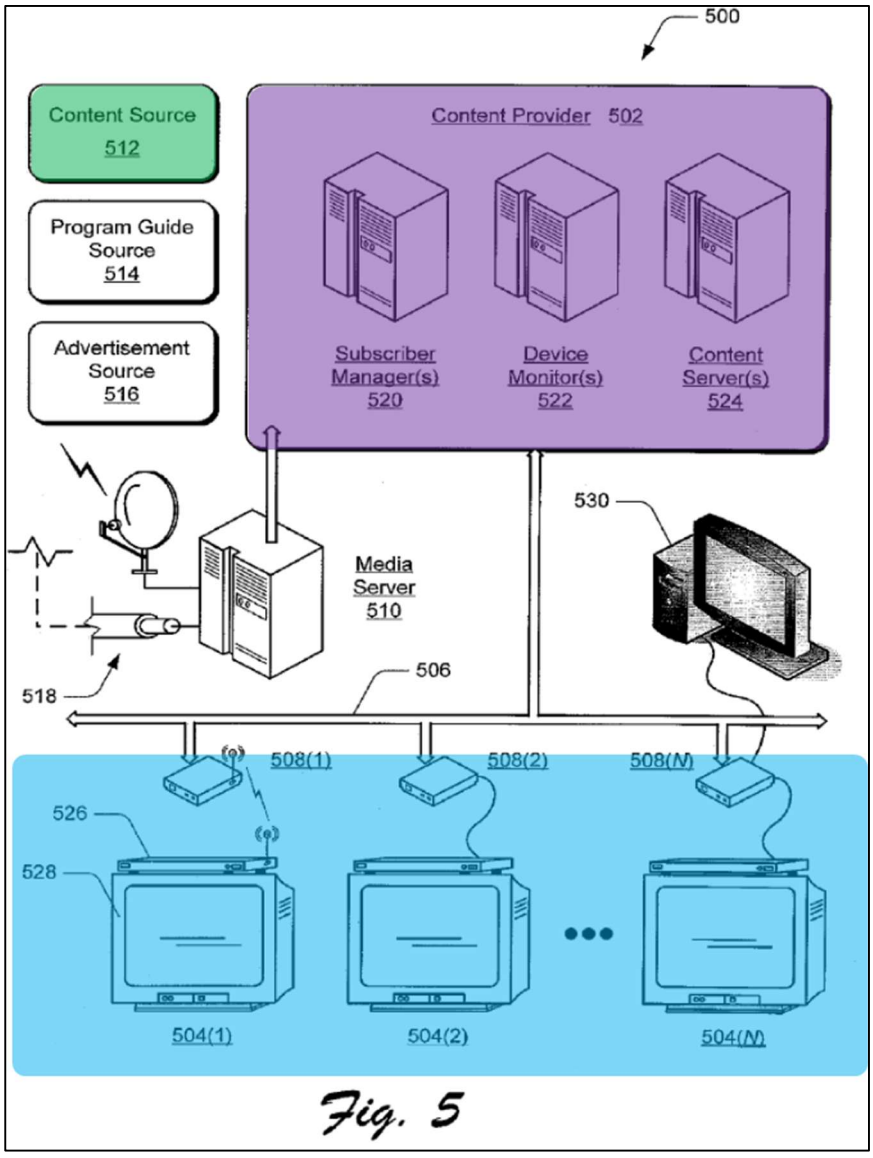


Fig. 5

Carle, Fig. 5 (annotated). A POSITA would have been motivated to combine Acharya and Carle at least for the reasons discussed above. *See supra* Section VI.A.1.c; Lin, ¶80.

c. [1.b]: "detecting a trigger signal within the video stream, wherein the trigger signal is indicative of a temporal mark injected into the video stream by the content publisher;"

Acharya, alone or in combination with Carle, teaches [1.b]. Lin, ¶81. Acharya discloses "detecting a trigger signal within the video stream" because it discloses that detection server 202 receives **live video feed 212** ("video stream") and "processes the original content stream [("video stream")] to detect ad markers or other ad cues in that stream." Acharya, ¶¶[0034], [0054]. Acharya explains that the ad markers or ad cues can include "conventional SCTE-35 signaling messages inserted into packets of an MPEG stream" ("trigger signals"). *Id.*

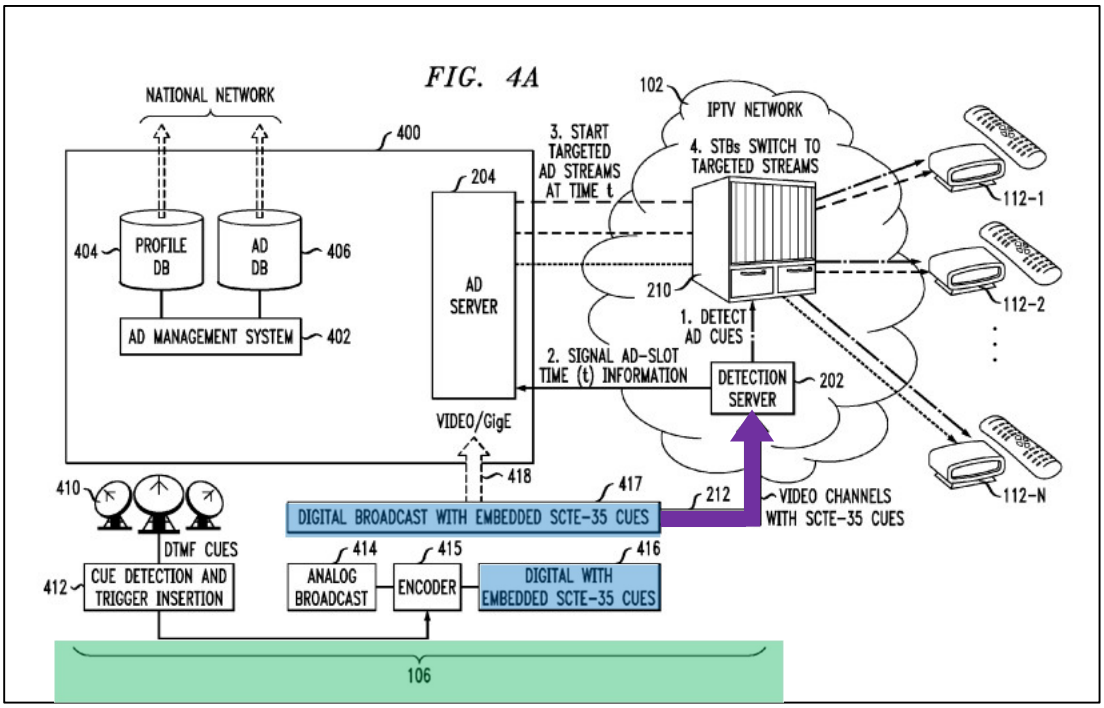
A POSITA would have been familiar with SCTE-35 signaling messages and would have known that SCTE-35 was a standard protocol used to signal events in a video stream such as advertisements, programming segments, etc. Lin, ¶¶82-83; *see also* Kan (Ex. 1015), ¶[0004] ("Advertisement insertion in traditional solutions is often based on a set of standards known as the Society of Cable Telecommunications Engineers, (SCTE) Nos. 35 and 30."); ¶[0032] ("By configuration, profile, or other criteria, the SCTE 35 triggers the end device … to join a particular multicast advertisement stream of interest."). Indeed, Carle uses the same conventional SCTE-35 signaling to signal program substitution for an advertisement during a blackout window. *See supra* Section VI.A.1.b; Carle, ¶[0042].

Likewise, a POSITA would have known that SCTE-35 provides injection points, referred to as "cues" or "cue tones," to indicate actual insertion points for targeted advertisements in a given streaming content. *See* Urdang (Ex. 1016), ¶[0014] ("Cue tones have been inserted into analog program streams **by content providers** to indicate insertion points for advertisements by cable systems."), ¶[0015] (describing SCTE-35 protocol that supports splicing digital streams provided by means including cue messaging). Acharya's detection server 202 detects these SCTE-35 cues supplied by live video feeds 212 to signal timing information for upcoming segments during which ad server 204 will start one or more targeted ad streams. Acharya, ¶¶[0055]-[0057]; Lin, ¶83.

Acharya also discloses that the ad cues are "indicative of a temporal mark injected into the video stream by the content publisher" because Acharya describes, in connection with Figures 4A-4C, that the cues are "embedded" into a video stream at service provider 106 before being transmitted to detection server 202 as a live video feed 212. Acharya, ¶¶[0053]-[0054]; *see also id.*, Fig. 4A (below). The ad cues, including the SCTE-35 signaling messages, indicate a time slot (e.g., a start time and a duration ("trigger signal[s]")) in the video stream where alternate content (e.g., a commercial or advertisement) can be inserted, consistent with how "temporal mark" is used by the '886 patent. *Compare* Acharya, ¶[0034] ("For example, the detected ad cues may be utilized to provide timing information indicating the

beginning and duration of a given ad slot in the original content stream."), *with* '886 patent, 18:29-33 ("The trigger signal can be indicative of a temporal mark injected into the video stream by the content publisher (e.g., the trigger signal indicates that a commercial and/or ***advertisement should be inserted into the content stream***.")); *see also* Acharya, ¶¶[0035]-[0036].

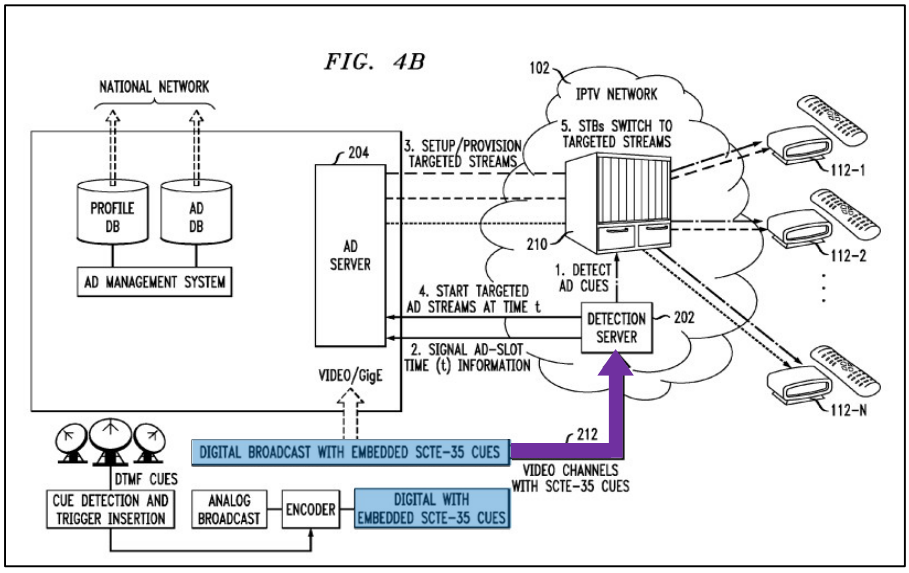
Carle discloses a similar process for detecting a trigger signal and confirms Acharya's teaching that cues are injected into the video stream by the content publisher. Lin, ¶86. For example, as discussed, Carle's programming substitution may be handled by the same SCTE-35 signaling used in Acharya. Carle, ¶[0042]. This program substitution is managed by the acquisition server 102, which can be included in media server 510. Carle, ¶¶[0043]-[0044], [0110]. Carle confirms that the content provider directs this process via "scheduled program substitutions or by manual input." Carle, ¶[0023]; *see also id.*, ¶¶[0021]-[0023], [0026]-[0027]. A POSITA would have been motivated to combine Carle and Acharya for the reasons discussed above. *See supra* Section VI.A.1.c.

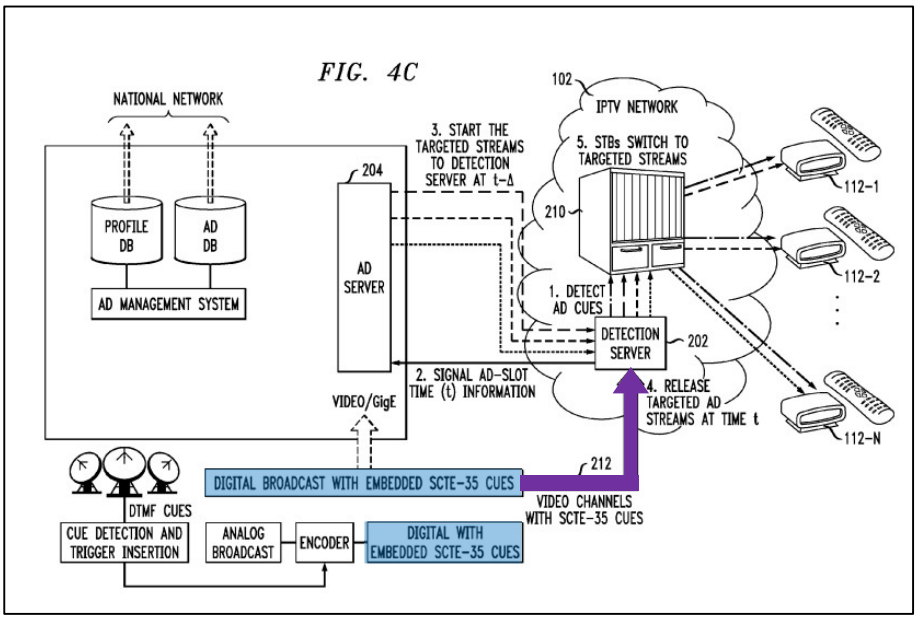


Acharya, Fig. 4A (annotated).

Acharya provides several examples of its network system detecting ad cues within a video stream in connection with Figures 4A-4C. Acharya, ¶[0053], Figs. 4A-4C. For example, Figure 4A shows various analog broadcast signals 414 being converted to **digital signals with embedded SCTE-35 cues 416** or **digital broadcast signals 417** "having embedded SCTE-35 cues." Acharya, ¶[0054], Fig. 4A. And Acharya confirms **live video feed 212** "comprises multiple video channels with embedded SCTE-35 cues." *Id.* This feed with the embedded cues is provided to detection server 202 as shown above. *Id.* Moreover, as indicated with limitation [1.a], **live video feed 212** is provided by **television service provider 106** [("content publisher")]. Acharya's Figures 4B and 4C present alternate arrangements that

include the same elements as disclosed in Figure 4A, which includes the **digital signals 416** and **digital broadcast signals 417** with embedded SCTE-35 cues that feed into **live video feed 212** and are provided to detection server 202. *See below* Figures 4B, 4C.





Acharya, Figs. 4B, 4C (annotated).

d. [1.c]: "processing the trigger signal to determine whether to modify delivery of the video stream to the client; and"

Acharya, alone or with Carle, teaches [1.c]. Lin, ¶88.

Acharya discloses "processing the trigger signal" because it teaches that after its detection server 202 detects ad markers or ad cues, "they are ***processed*** to obtain the precise timing information" that "indicat[es] the beginning and duration of a given ad slot in the original content stream." Acharya, ¶[0034]. This processing "determine[s] whether to modify delivery of the video stream to the client" because the timing information determined by detection server 202 is signaled to ad server 204 to determine when to start one or more ad streams. Acharya, ¶¶[0035]-[0036], [0041]; *see also id.* ¶¶[0057]-[0059] (describing, with reference to Figures 4A-4C, using the timing information to determine whether and when to "start[] one or more targeted ad streams"). For example, Acharya explains that a given SCTE-35 ad cue that is signaled to ad server 204 may comprise the following information: "CHANNEL=2, START_PTS=413245896, DURATION=60000" to signify that "a 60-second ad slot is about to come on Channel 2 starting at the specified video PTS" (presentation time stamp). Acharya, ¶[0036]. Acharya explains that its timing information is generated, identifying the beginning and duration of a given ad slot (Acharya, ¶[0034]), and thus, Acharya teaches "determine whether to modify delivery of the video stream to the client" because it utilizes the timing information

at ad server 204 to determine whether to switch a specific client to a specific ad stream based on the processed trigger signal. Acharya, Abstract, ¶[0041].

Carle describes a similar process because it describes using "in-band" SCTE-35 signaling to signal the start and end of a program substitution. Carle, ¶[0042]. This involves "replacing a primary video stream with an alternate video stream" in a similar manner to Acharya's methods. Carle, ¶¶[0045]-[0046]; Lin, ¶90. For example, Carle discloses that an example program substitution even may be defined by information including Start Date & Time and End Date & Time for that substitution. Carle, ¶¶[0050]-[0058]. As discussed, this program substitution is managed by acquisition server 102, which can be included in media server 510. Carle ¶¶[0043]-[0044], [0110].

A POSITA would have been motivated to combine Acharya and Carle at least for the reasons discussed above. *See supra* Section VI.A.1.c. As a further example, a POSITA would have been motivated and found it obvious to incorporate Carle's processing of SCTE-35 messages related to blackout periods into Acharya's system for inserting targeted ads in slots identified by SCTE-35 signaling messages. Lin, ¶91. Doing so would have been nothing more than the application of a known technique (Carle's processing of SCTE-35 messages for inserting advertisements during a blackout period) to improve a similar system (Acharya's targeted advertisement system already using SCTE-35 messages) to achieve the predictable

result of a system that allows for sending targeted advertisements to users during blackout periods based on their location and/or demographics. Lin, ¶91.

e. [1.d]: "if necessary, modifying delivery of the video stream in accordance with the processing of the trigger signal, wherein processing the trigger signal comprises querying a data repository having information related to a content programming schedule associated with the content publisher."

Acharya, alone or with Carle, teaches [1.d]. Lin, ¶92.

Acharya discloses "if necessary, modifying delivery of the video stream in accordance with the processing of the trigger signal" because it discloses that ad server 204 uses the timing information, as discussed above for limitation [1.c], to determine when to start one or more ad streams and deliver them to the user interface device over network 102. Acharya, ¶¶[0034], [0041]; *see also id.*, ¶¶[0042]-[0043].

As discussed, Acharya discloses, with regard to Figures 4A-4C, multiple examples by which ad streams are delivered to the user interface device. Acharya, ¶¶[0042]-[0044], [0053]-[0060]. In one example, ad server 204 may start ad streams at times indicated by detection server 202 and communicate them to the user interface device through network element 210. Acharya, ¶¶[0042], [0057], Fig. 4A. In another example, detection server 202 may directly control when ad streams are started by the ad server, which again sends the ad streams to the user interface device through network element 210. Acharya, ¶¶[0043], [0058], Fig. 4B. In yet another

example, detection server 202 may direct ad server 204 to stream ad streams back to detection server 202, which then monitors the ad streams and releases them to the user interface device at an appropriate time. Acharya, ¶¶[0044], [0059], Fig. 4C. In each example, Acharya's server-based system modifies delivery of the video stream in accordance with the processing of the trigger signals because it releases ad streams based on the timing information determined from the ad cues. *See id*., ¶¶[0042]-[0044], [0057]-[0059], Figs. 4A-4C.

Acharya discloses modifying delivery of the video stream "if necessary" because it discloses that certain scenarios may not require switching to alternate media content. For example, Acharya discloses scenarios where relatively short ad breaks (e.g., 10-15 seconds) "may not be appropriate to switch to the targeted ad stream." Acharya, ¶[0040]. Instead, local ads (e.g., ads stored at the client) may be used, as indicated by the ad server 204. Acharya, ¶¶[0040]-[0041].

Acharya also discloses "wherein processing the trigger signal comprises querying a data repository having information related to a content programming schedule associated with the content publisher." Acharya discloses that as part of its processing of ad cues via the SCTE-35 signaling, its detection server parses (e.g., queries) both a "program association table (PAT) and program map table (PMT)." Acharya, ¶[0034]. This parsing (e.g., "querying") of the tables ("data repository") identifies the specific streams carrying ad cues, enabling detection server 202 to

monitor the correct portions of the incoming content stream for SCTE-35 messages. Acharya, ¶[0034]. A POSITA would have understood that a PAT contains a list of programs available on a particular transport stream, which are associated with the PMT that allow a user's device to locate and decode the elements of a specific program for viewing. *See* Wasilewski (Ex. 1017) at 2:2-4 ("The PAT specifies the packet identifiers (PIDs) for the packets which carry Program Map Tables (PMTs) for the components of one or more programs on a transport stream."); 7-9 ("The PMT specifies the PIDs and therefore which elementary streams and descriptors are associated to form each program."); Lin, ¶96. Thus, these PAT/PMTs contain information that associates program identifiers with their corresponding streams and components, effectively providing a content programming schedule for stream monitoring and ad cue insertion. Acharya, ¶[0034]; *see also* Wasilewski, 2:7-9. Thus, the timing information for when a given targeted ad should start (e.g., the "processing of the trigger signal") occurs as a result of the parsing and monitoring of Acharya's associated PAT/PMTs, which include information related to a content programming schedule. *Id.*; Lin, ¶96.

Carle also discloses modifying delivery of the video stream in accordance with processing the trigger signal because, as discussed above, Carle describes a program substitution process that "replac[es] a primary video stream with an alternate video stream" such as an advertisement, using SCTE-35 messages in a

similar manner to Acharya. Carle, ¶¶[0042], [0045]-[0046]; *see supra* Section VI.A.2.d.

Carle also discloses that "processing the trigger signal comprises querying a data repository having information related to a content programming schedule associated with the content publisher." Lin, ¶¶97-98. Carle explains that media server 510 obtains content from content source 512, program guide data from program guide source 514, and advertising content from advertisement source 516. Carle, ¶[0110]. Moreover, acquisition server 102, that can be part of media server 510, queries the acquisition service database 112 "to get configuration information, rights, and boundary keys," which "starts the program substitution," e.g., the processing of SCTE-35 signals to modify the content stream. Carle ¶[0043]; *see id.* ¶[0042]. Carle explains, for example, that these keys and information allow its system to provide or block access to content (including providing alternate advertising information) during a blackout window. Carle, ¶¶[0017], [0019]-[0024]; Lin, ¶98.

As discussed above, a POSITA would have found it obvious to combine Carle with Acharya. *See supra* Section VI.A.1.c. Moreover, a POSITA would have been motivated to combine Carle's querying of data repositories—including program guide data, advertisement information, configuration information, rights, and boundary keys—with Acharya to determine when a blackout or other opportunity

for inserting an advertisement into a video stream is approaching, and to delineate between users or groups of users to provide targeted content based on a user's geographic location (as taught by Carle) and/or demographic (as taught by Acharya). Lin, ¶99. A POSITA would have recognized that the combination would include benefits such as the ability to provide targeted advertising during blackouts while ensuring that users authorized to view the original content (e.g., those not subject to the blackout) retained the ability to view the content. Lin, ¶99. Moreover, a POSITA would have anticipated success in making such a combination as it is nothing more than combining known elements (Acharya's and Carle's similar content insertion systems, including Carle's express disclosures of querying its programming databases as part of that process) to produce the expected results taught by Carle of inserting targeted advertising into a blackout window. Lin, ¶99.

3. Claim 2: "The computer-implemented method as in claim 1, wherein the data repository includes an Electronic Programming Guide (EPG) configured to provide a schedule that identifies various content provided by the content publisher will be available for reception by authorized clients of the content publisher."

Acharya in view of Carle teaches the additional limitation of claim 2. Lin, ¶100. As discussed above for limitation [1.d], Carle teaches querying multiple data repositories, including obtaining "program guide data" from program guide source 514. Carle, ¶[0110]. Carle further explains that this program guide data is stored in

"an EPG server." *Id.* A POSITA would have understood that "EPG" stands for "Electronic Programming Guide," and thus would have understood that the "program guide data" retrieved from the program guide source 514 includes an Electronic Program Guide (EPG), as claimed. Lin, ¶100.

EPGs were well known in the art, and a skilled artisan would have understood that EPGs like the one in Carle "provide a schedule that identifies various content provided by the content publisher will be available for reception by authorized clients of the content publisher," as claimed. Lin, ¶101; *see also* Schein (Ex. 1007), ¶¶[0036], [0116]-[0120]; Eldering, Abstract, ¶¶[0002]-[0007], Fig. 1; Urdang, ¶¶[0003]-[0004]; Wasilewski, 1:53-2:59, 5:29-57, claims 3, 11, 20. Carle confirms this by explaining that the program guide data is used to generate "guides for display which enable a user to navigate through an onscreen display and locate broadcast programs [and other] content of interest to the user." Carle, ¶[0105].

4. Claim 3: "The computer-implemented method as in claim 1, further comprising: receiving a response from the data repository that includes synchronization information for modifying, if necessary, the delivery of the video stream to the client, the synchronization information further including at least one of geo-filtering information and advertisement information."

Acharya in view of Carle teaches the additional limitations of claim 3. Lin, ¶102. As explained for limitation [1.d], Acharya, alone or with Carle, teaches

querying a data repository and modifying, if necessary, delivery of the video stream to the client.

Acharya teaches "receiving a response from the data repository that includes synchronization information" because part of Acharya's detection server 202 includes identifying ad cues in a given stream by receiving and parsing PAT and PMT information. Acharya, ¶[0034]. Detection server 202 thus receives timing information that is used for synchronizing targeted ads to the given stream. *Id.*

Acharya also discloses that synchronization information corresponds to "advertisement information" because Acharya discloses using "ad cues" via "conventional SCTE-35 signaling." Acharya, ¶[0034]. A POSITA would have understood this signaling is about, *inter alia*, advertisements. *See* Urdang, ¶¶[0015], [0049]-[0050]; Lin, ¶104. Also, Acharya's timing information communicates a message to a client device on the location and length of a given advertisement. Acharya, Abstract, ¶[0036]. This timing information is then used to switch between streams, consistent with the '886 patent's teachings for synchronization information. *Compare id.*, ¶¶[0029], [0041] *with* '886 patent, 19:2-5 ("As its name suggests, the synchronization information can inform the content delivery manager…***when and how*** to modify the video stream[.]"). Thus, Acharya teaches the additional limitations of claim 3.

Moreover, when presented with mutually exclusive steps of a claim, Petitioner need only demonstrate one such limitation is disclosed to anticipate the limitation. *See Apple, Inc. v. Evolved Wireless LLC*, No. IPR2016-01177, Paper 27 at 13 (PTAB Dec. 20, 2017) ("[S]ince there can be only one value for each of A and B at a given time, … as used here must mean 'considering A, B, or both.'").

Additionally, Carle discloses "receiving a response from the data repository that includes synchronization information," where the synchronization information includes both "geo-filtering information" and "advertisement information." As discussed for limitation [1.d], Carle discloses querying data repositories—including for program guide data, advertisement information, configuration information, rights, and boundary keys. The rights and key information in Carle correspond to different "[c]lients[, who] may be grouped based on geographic location, types of services to which they are subscribed, and so forth." Carle, ¶[0014]. This information is used to ensure that devices with the proper permissions are not blacked out and devices without permission are included in the program substitution (e.g., advertisement). Carle, ¶¶[0037]-[0038]. Carle further explains that the geographic information used for substitution may include information such as zip codes, regions, or other codes. Carle, ¶[0024]; *see also id.*, ¶[0025] (describing process for blacking out certain content based on key information sent to client devices, grouped

by geographic location). Thus, Carle also teaches the additional limitations of claim 3.

5. Claim 4:

d. [4.a]: "The computer-implemented method as in claim 1, wherein modifying delivery of the video stream comprises: in response to querying the data repository, discontinuing the delivery of the video content based on programming data received from the data repository; and"

Acharya, alone or with Carle, teaches limitation [4.a]. Lin, ¶106.

As discussed above for limitation [1.d], Acharya, alone or in view of Carle, teaches modifying delivery of the video stream and querying a data repository. For example, as discussed for limitation [1.d], a POSITA would have been motivated to combine Carle's querying of data repositories—including program guide data, advertisement information, configuration information, rights, and boundary keys—with Acharya to determine when a blackout or other opportunity for inserting an advertisement into a video stream is approaching, and to delineate between users or groups of users to provide targeted content based on a user's geographic location (as taught by Carle) and/or demographic (as taught by Acharya).

This provisioning of targeted content teaches "in response to querying the data repository, discontinuing the delivery of the video content based on programming data received from the data repository" because Acharya teaches using timing information to provide targeted advertisements in a given stream. Acharya, ¶[0034].

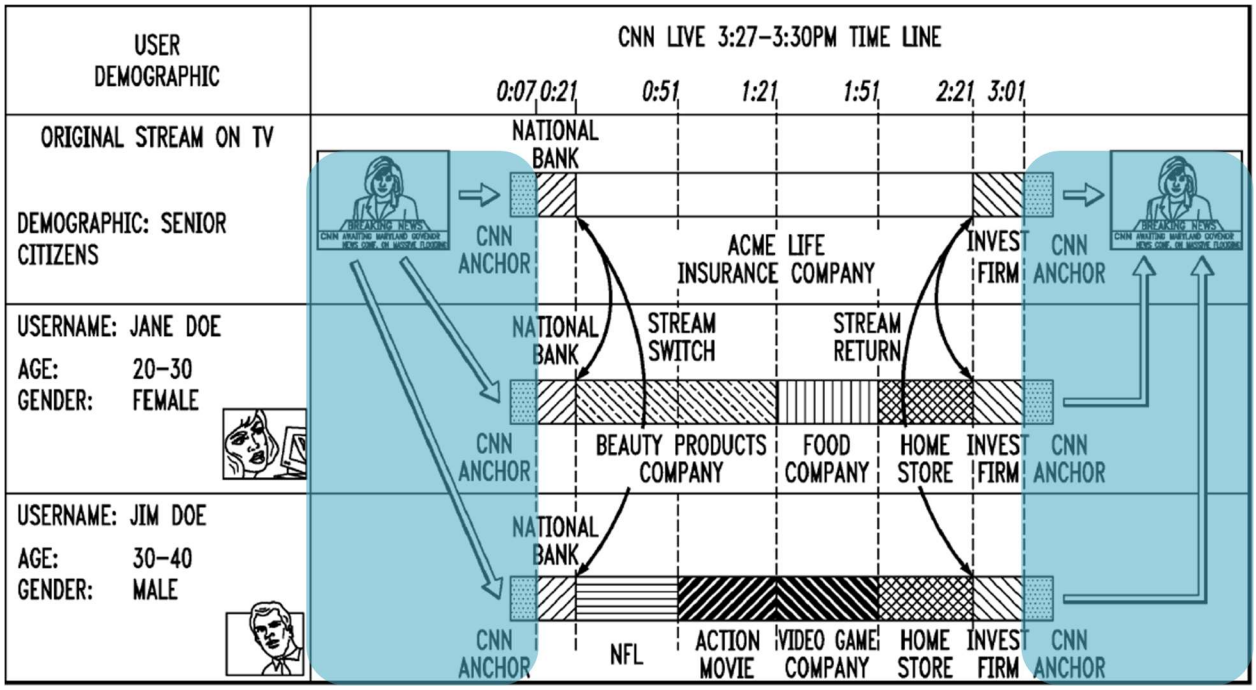
At the time for a given advertisement, as designated by an ad cue, the original stream switches ("discontinuing the delivery of the video content") to the targeted stream. *Id.*, Abstract, ¶¶[0029], [0045]. Acharya's switching is "based on programming data received from the data repository" because its timing information derives from the program association table (PAT) and program map table (PMT), which identify specific program identifiers in a given stream for targeting. Acharya, ¶¶[0034]-[0035]. Moreover, when combined with Carle as discussed above, the switching is based on programming data received from the data repository because Carle discloses adding the advertisement during a blackout period based on programmed blackout times and user geographic location. *See* Carle, ¶¶[0043]-[0045].

e. [4.b]: "continuing to receive the video stream from the content source, wherein the continued receipt of the video stream enables detection of a second trigger signal that would be capable of reinitiating delivery of the video stream to the client."

Acharya teaches limitation [4.b]. Lin, ¶109.

Acharya discloses "continuing to receive the video stream from the content source" because it teaches switching from an original stream to a targeted ad stream "before returning to the original stream." Acharya, ¶¶[0008], [0045]. Acharya also "enables detection of a second trigger signal that would be capable of reinitiating delivery of the video stream to the client" because it provides that when the duration of an advertisement slot has ended, as defined by the SCTE-35 message, all

respective client devices may return to an original stream. Acharya, ¶¶[0061]-[0062]; *see id.*, ¶¶[0034]-[0036] (describing obtaining "precise timing information" from the SCTE-35 signaling message that includes a start time (e.g., "trigger signal") and a duration (e.g., "second trigger signal")). For example, as Acharya's Figure 5 illustrates below, following a three-minute advertising slot starting at 3:27:07 and ending at 3:30:01, all respective streams return to the original stream (i.e., the **CNN broadcast** as illustrated).



Acharya, Fig. 5 (annotated).

6. Claim 5: " The computer-implemented method as in claim 1 further comprising: extracting synchronization information from the trigger signal, wherein the synchronization information indicates a type of event associated with the video stream, the synchronization information further specifying temporal information relative to the detection of the trigger signal."

Acharya discloses the additional limitation of claim 5. Lin, ¶111.

As discussed above for claim 3, Acharya discloses extracting synchronization information from the trigger signal to signal certain advertisement slots for targeting ("a type of event associated with the video stream"). *See supra* Section VI.A.4; *see also* Acharya, ¶¶[0036]-[0037]. Acharya's ad cues signal that its information relates to advertisements. *See supra* Section VI.A.4. A POSITA would understand Acharya's use of SCTE-35 signaling "indicates a type of event associated with the video stream" since SCTE-35 uses segmentation messages to identify, *inter alia*, the type of program content (e.g., advertisement breaks, program begin/end). *See* Urdang, ¶¶[0015] (incorporating the SCTE-35 standard ("DVS 253 Standard")), ¶[0052] ("Content and rights-related segmentation messages may be formatted in accordance with the DVS 253 Standard."), ¶¶[0049]-[0050] (listing types of content indicated in segmentation messages, such as network and local commercials, respective start and end points), ¶¶[0053]-[0060] (discussing aspects of segmentation messages); Lin, ¶111. Acharya's "advertisement information" specifies "temporal information relative to the detection of the trigger signal"

because its timing information communicates a message to client devices on the location and length of a given advertisement. Acharya, Abstract, ¶[0036]. This timing information is then used to switch between streams, consistent with the '886 patent's teachings for synchronization information. *Compare id*., ¶¶[0029], [0041] *with* '886 patent at 19:2-5 ("As its name suggests, the synchronization information can inform the content delivery manager…when and how to modify the video stream[.]").

7. Claim 6: "The computer-implemented method as in claim 4, wherein the type of event indicated by the synchronization information includes at least one of an advertisement event, a program initiation event, and a program termination event."

Acharya discloses the additional limitation of claim 6. Lin, ¶112.

As discussed above for claim 5, Acharya discloses synchronization information from the trigger signal to signal certain advertisement slots for targeting. Acharya, ¶¶[0036]-[0037]. This includes, *inter alia*, communicating to client devices the start (i.e., "program initiation event") and length of an upcoming ad slot (i.e., "advertisement event"). A POSITA would have understood that providing the start time and length time of a given advertisement in turn provides the time at which the advertisement will terminate—i.e., start time + length time = termination time (i.e., "program termination event"). Acharya, ¶[0048]; Lin, ¶113. Likewise, a POSITA would have known SCTE-35 signaling incorporates fields related to program

initiation, termination, or event type. *See supra* claim 5; Urdang, ¶¶[0015], [0049]-[0060]; Lin, ¶113.

8. Claim 7: "The computer-implemented method as in claim 1, wherein processing the trigger signal comprises: applying proximity parameters associated with the client to the trigger signal in order to determine whether to modify the delivery of the video stream to the client."

Acharya in view of Carle teaches the additional limitation of claim 7. Lin, ¶114.

As discussed above for limitation [1.c], Acharya, alone or with Carle, teaches processing the trigger signal. Moreover, as discussed above in Section VI.A.1.b, as part of its program substitution process, Carle captures geographic information such as a client's/user's ZIP code, postal address, and/or geographic region code ("proximity parameters"). Carle, ¶¶[0014], [0024]. Carle also discloses grouping clients by these geographic proximity parameters and using these groupings to determine, for a particular blackout window ("applying proximity parameters associated with the client to the trigger signal"), whether certain groups will access the original content or the alternate content provided via the program substitution ("to determine whether to modify delivery of the video stream to the client."). *Id.*, ¶¶[0025]-[0027], [0037], [0047], Fig. 2; Lin, ¶115. Carle provides an example of how proximity parameters may be used in its system to provide alternate content during a blackout period, explaining that users in Ottawa will not be able to view an

Ottawa Senators home game if the city does not sell out all tickets for the game. Carle, ¶¶[0001], [0019]-[0020]. In this case, the devices of the users in Ottawa may display an advertisement during the blackout period.

Moreover, a POSITA would have found it obvious to combine Acharya and Carle for the reasons discussed above in Sections VI.A.1.c, VI.A.2.d-VI.A.2.e; Lin, ¶116.

9. Claim 8:

a. [8.a]: "The computer-implemented method as in claim 7, wherein modifying delivery of the video stream comprises: discontinuing delivery of the video stream to the client based on the application of the proximity parameters to the trigger signal, wherein the proximity parameters indicate that the client is not authorized to receive the video stream due to at least one of:"

Acharya in view of Carle teaches [8.a] for similar reasons to those discussed above regarding claim 7 and limitations [1.c] and [1.d]. Lin, ¶117. For example, as discussed regarding limitations [1.c] and [1.d], Carle discloses modifying delivery of the video stream, including "discontinuing delivery of the video stream to the client" because it describes a program substitution process that "replac[es] a primary video stream with an alternate video stream" such as an advertisement, using SCTE-35 messages in a similar manner to Acharya. Carle, ¶¶[0042], [0045]-[0046]; *see supra* Section VI.A.2.d. And as discussed above for claim 7, Carle's program substitution process applies geographic proximity parameters of clients or client

groups to determine, for a particular blackout window ("applying proximity parameters associated with the client to the trigger signal"), whether certain groups will access the original content (i.e., are authorized to receive the video stream) or the alternate content provided via the program substitution. *Id.*, ¶¶[0025]-[0027], [0037], [0047], Fig. 2; Lin, ¶117. Again, Carle provides an example of how proximity parameters may be used in its system to provide alternate content during a blackout period, explaining that users in Ottawa will not be able to view an Ottawa Senators home game if the city does not sell out all tickets for the game. Carle ¶¶[0001], [0019]-[0020]. In this case, the Ottawa location associated with the users' devices indicates that they are not authorized to view the video stream of the home game. Lin, ¶117.

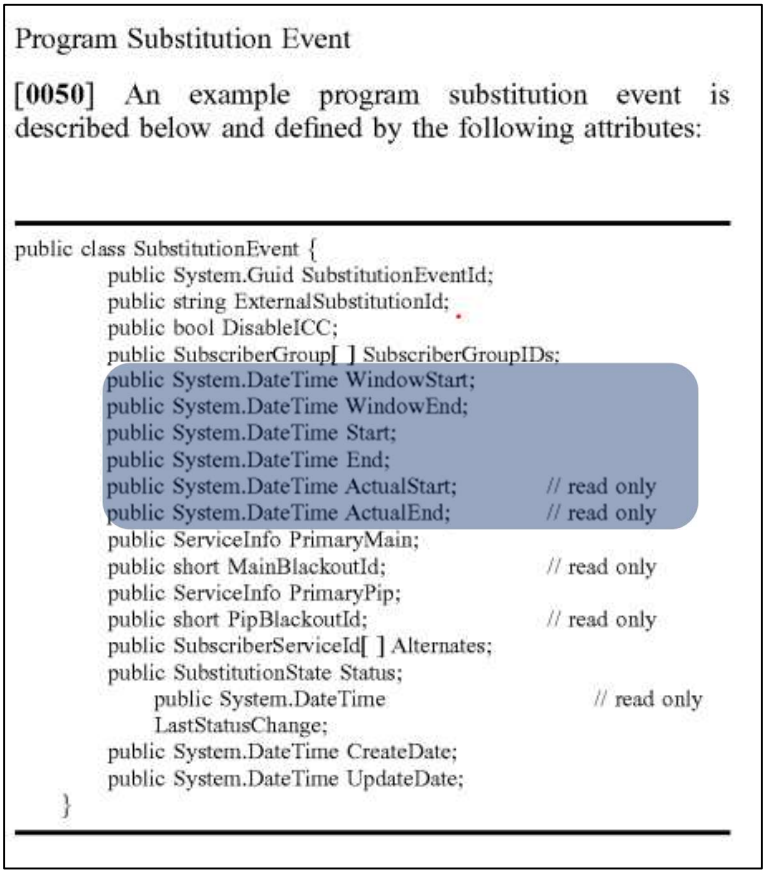
b. [8.b.i]: "a time relative to the detection of the trigger signal; and"

Acharya in view of Carle teaches limitation [8.b.i]. Lin, ¶118.

As discussed above for limitation [8.a], Carle discloses discontinuing delivery of a video stream during a blackout period.

As part of Carle's program substitution process for a blackout, an operator (i.e., a content publisher) may define what clients or group of clients are or are not permitted to access the restricted media content "at a particular time." Carle, ¶¶[0014], [0026], Fig. 2 (block 208). Carle further discloses that its blackout

program substitution event can be defined by attributes that include specific times (i.e., "a time relative to the detection of the trigger signal"):



Program Substitution Event

[0050] An example program substitution event is described below and defined by the following attributes:

```
public class SubstitutionEvent {
        public System.Guid SubstitutionEventId;
        public string ExternalSubstitutionId;
        public bool DisableICC;
        public SubscriberGroup[ ] SubscriberGroupIDs;
        public System.DateTime WindowStart;
        public System.DateTime WindowEnd;
        public System.DateTime Start;
        public System.DateTime End;
        public System.DateTime ActualStart;          // read only
        public System.DateTime ActualEnd;            // read only
        public ServiceInfo PrimaryMain;
        public short MainBlackoutId;                 // read only
        public ServiceInfo PrimaryPip;
        public short PipBlackoutId;                  // read only
        public SubscriberServiceId[ ] Alternates;
        public SubstitutionState Status;
            public System.DateTime                   // read only
            LastStatusChange;
        public System.DateTime CreateDate;
        public System.DateTime UpdateDate;
    }
```

Carle, ¶[0050] (annotated).

Carle captures both the period ("WindowStart" , "WindowEnd") and times ("Start", "End") for substitution events. Carle, ¶[0050]. Carle teaches the use of both because for certain programs, the window may last longer or shorter than originally planned, and thus, incorporating a buffer provides additional context for the system (e.g., whether a sportscast finishes earlier than an average game versus if the game progresses into overtime). Carle, ¶¶[0056]-[0057]. Thus, Carle determines whether

to discontinue delivery of the video stream to the client based on proximity parameters that include actual start and end date times ("relative times") for the substitution event. *Id.*, ¶¶[0059]-[0060]; Lin, ¶¶119-20.

c. [8.b.ii]: "a geographic location associated with the client of the content publisher."

Acharya in view of Carle teaches limitation [8.b.ii] for the reasons explained in claim 7 and limitation [8.a]. Lin, ¶121.

As explained above, a POSITA would have found it obvious to use Carle's blackout programming and geographic location means to supplement Acharya's general content substitution system. Lin, ¶122; *see supra* Sections VI.A.1.c, VI.A.2.d-VI.A.2.e.

10. Claim 9: "The computer-implemented method as in claim 7, wherein the proximity parameters include an Internet Protocol (IP) address of the client, the method further comprising: processing the IP address to determine a geographic region associated with the network from where the client receives video content."

Acharya in view of Carle teaches claim 9. Lin, ¶123.

As explained above regarding claims 7 and 8, Carle discloses grouping restricted client devices for its program substitution process based on various factors including a client's location ("proximity parameters"). Carle, ¶[0014]. Carle discloses using different means for identifying a client device's specific geographic location such as ZIP codes, FIPS/SAME codes, or some other "Geographic Region

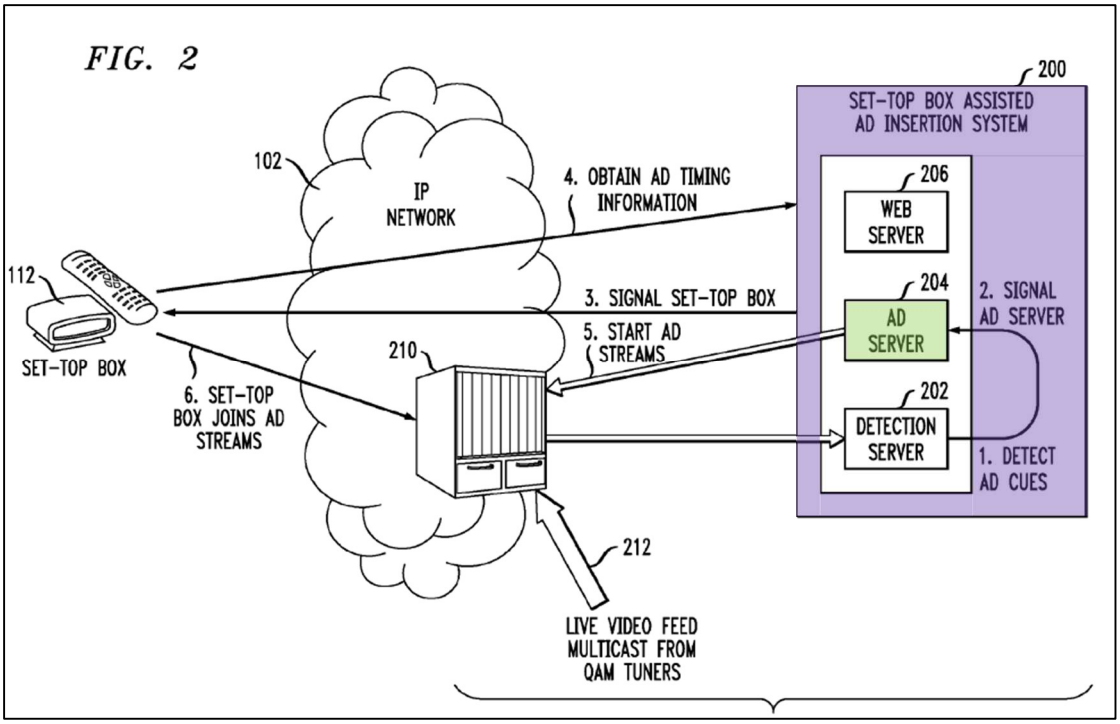
Code." Carle, ¶[0025]. Moreover, Carle discloses providing a list of all devices within a given region and identifying devices by their MAC addresses. Carle, ¶[0089]. To the extent Acharya and Carle do not expressly disclose using an IP-address to determine a client's geographic location, a POSITA would have understood that it was well-known for a user's IP-address to be used for this purpose. *See, e.g.*, Fransdonk (Ex. 1008), ¶¶[0373]-[0378], Fig. 24; Norris (Ex. 1014), 7:1-13, 49-53; Lin, ¶124. Thus, Carle's disclosure of using different geographical information coupled with a POSITA's knowledge that it was well-known to track a client device's geographical location using an IP-address renders obvious claim 9's additional limitations. A POSITA would have been motivated to make this substitution because it is nothing more than the application of a known technique (using IP-addresses to determine client location) to a known system (the Acharya-Carle system that inserts targeted advertisements during blackout periods based on user location) to achieve a predictable result (geographically targeted advertisement insertion during a blackout period as specifically taught by Carle). Lin, ¶124.

As explained above, a POSITA would have found it obvious to use Carle's geographic location means in combination with Acharya's system. Lin, ¶125.

11. Claim 10: "The computer-implemented method as in claim 1, wherein processing the trigger signal comprises determining that an advertisement should be injected into the video stream."

Acharya, alone or with Carle, teaches claim 10. Lin, ¶126.

Acharya discloses its ad insertion system, upon detection of an ad cue, will determine a number of advertisements that its ad server should transmit to client devices.



See Acharya, Fig. 2 (annotated); *see also id.*, Title, Abstract, ¶¶[0001], [0008]-[0010], [0029]-[0032], [0035]-[0036], [0062], Figs. 3, 4A-4C, 5. Likewise, as discussed above, Carle discloses that its program substitution process inserts advertisements into the video stream during blackout periods. *See supra* VI.A.2.d-VI.A.2.e.

12. Claim 11: "The computer-implemented method as in claim 10 further comprising:"

a. [11.a]: "based on information extracted from the trigger signal, selecting an advertisement to inject into the video stream, wherein the selected advertisement is targeted to a geographic location associated with the client; and"

Acharya in view of Carle teaches limitation [11.a] as explained for claim 3. Lin, ¶128. Moreover, Carle discloses that "[t]o provide more flexibility, the program substitution system provides for having different secondary video streams in different locales." Carle, ¶[0047]. This is so "different subscriber groups (which map to locales) can . . . substitute different primary video streams with different alternate video streams." *Id.* Thus, Carle discloses that the "selected advertisement is targeted to a geographic location associated with the client," as claimed. Lin, ¶128

b. [11.b] "wherein modifying delivery of the video stream comprises: injecting the selected advertisement into the video stream for delivery to the client."

Acharya, alone or with Carle, teaches limitation [11.b] as explained for claim 10. Lin, ¶129.

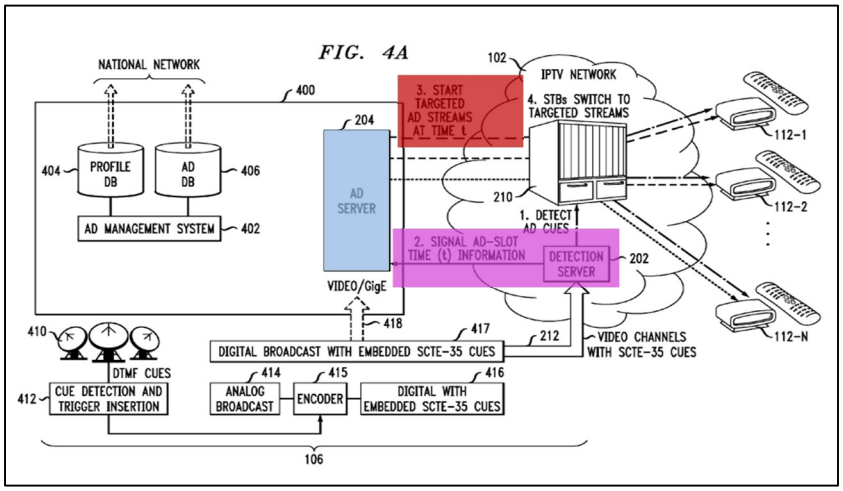
13. Claim 12

a. [12.a]: "The computer-implemented method as in claim 10, wherein determining that an advertisement should be injected into the video stream includes: querying an advertisement server;"

[12.b]: "receiving a response from the advertisement server that identifies a plurality of candidate advertisements for injection into the video stream; and"

Acharya, alone or with Carle, teaches limitations [12.a] and [12.b]. Lin, ¶130.

As discussed above, Acharya and Carle both disclose determining that an advertisement should be injected into the video stream. *See supra* claim 10. Acharya also discloses "querying an advertisement server" as part of this process because it expressly states that its system comprises elements including **ad server 204**, depicted below in Figure 4A. Acharya, ¶¶[0032], [0041], [0053], Figs. 2, 3, 4A-4C.



Acharya, Fig. 4A (annotated). Acharya teaches "querying the advertisement server" as illustrated in Figure 4A above, because detection server 202 provides timing

information to ad server 204. Acharya, ¶¶[0035]-[0036]. Based on the timing information, ad server 204 provides multiple targeted ad streams to start ("plurality of candidate streams"). Acharya, ¶¶[0008], [0057]-[0059], [0062], Figs. 4A-4C.

b. [12.c]: "from the plurality of candidate advertisements, selecting a candidate advertisement for injection into the video stream based on proximity parameters associated with the client of the video stream, wherein the proximity parameters specify a geographic location of the client to where video content is transmitted; and"

Acharya in view of Carle teaches limitation [12.c]. Lin, ¶132. While Acharya discloses receiving a response and selecting targeted advertisements, Carle discloses selecting targeted content based on proximity parameters (e.g., geographic location) associated with a client device as discussed for claims 3, 7, and 11. Lin, ¶132.

As explained above, a POSITA would have found it obvious to use Carle's geographic-based targeting scheme to supplement Acharya's targeted advertisement system to arrive at the claimed limitation for geographic-based advertisement targeting. *See supra* Sections VI.A.1.c, VI.A.2.d-VI.A.2.e; Lin, ¶133.

c. [12.d]: "wherein modifying delivery of the video stream comprises: injecting the selected candidate advertisement into the video stream for delivery to the client, wherein the selected candidate advertisement is targeted for the geographic location of the client."

Acharya in view of Carle teaches [12.d] as explained for claims 3 and 11. Lin, ¶134.

14. Claim 13: "The computer-implemented method as in claim 1, wherein the trigger signal is generated relative to the content source by a human associated with the content publisher"

Acharya in view of Carle teaches the additional limitation of claim 13. Lin, ¶135.

As explained for limitations [1.b]-[1.d], both Acharya and Carle disclose using and detecting trigger signals for determining if and when to modify a video stream. For example, Carle (like Acharya) discloses using SCTE-35 signaling messages to signal the start or stop of program substitution. Carle, ¶[0042]. Moreover, Carle explains that these trigger signals used for program substitution are "generated relative to the content source by a human associated with the content publisher" because Carle discloses that the "[p]rogram substitution can be handled . . . by manual input" where "a management interface is provided[] to allow for the manual creation and modification of program substitutions. This interface is typically used at the direction of the affected content provider." Carle, ¶[0023]. Carle continues to explain that in the manual context, "an operator defines" the blackout window corresponding to the program substitution by either scheduling it or starting it "manually." Carle, ¶[0026], Fig. 2.

15. Independent Claim 14

a. [14.pre]: "A computer-implemented method for streaming video content across a network comprising"

Acharya in view of Carle teaches [14.pre] as explained for limitation [1.pre]. Lin, ¶137.

b. [14.a]: "receiving a video stream from a content source for delivery to a client of a content publisher, wherein the content source is associated with the content publisher, and the client has been pre-authorized to receive video content from the content publisher"

Acharya in view of Carle teaches [14.a] as explained for limitation [1.a]. Lin, ¶138.

c. [14.b]: "detecting a trigger signal within the video stream, wherein the trigger signal is indicative of a temporal mark injected into the video stream by a human associated with the content publisher"

Acharya in view of Carle teaches [14.b] as explained for claim 13. Lin, ¶139.

d. [14.c]: "querying an Electronic Programming Guide (EPG) to determine whether to modify the delivery of the video stream to the client, wherein the EPG is configured to provide a schedule that identifies when various content provided by the content publisher will be available for reception by authorized clients of the content publisher"

Acharya in view of Carle teaches [14.c] as explained for claim 2. Lin, ¶140.

e. [14.d]: "receiving a response from the EPG, wherein the response includes at least one of advertisement information and geo-filtering information; and"

[14.e]: "modifying delivery of the video stream to the client in accordance with the at least one of advertisement information and geo-filtering information"

Acharya in view of Carle teaches [14.d] & [14.e] as explained for claim 3. Lin, ¶141.

16. Independent Claim 15

a. [15.pre]: "A system configured for delivery of video content across a network comprising:"

To the extent limiting, Acharya discloses [15.pre] for the reasons explained for [1.pre]. Lin, ¶142.

b. [15.a]: "a content server configured to receive a video stream from a content source for delivery to a client of a content publisher, wherein the client subscribes to the content publisher to receive video content, wherein the content server comprises information related to a content programming schedule associated with the content publisher;"

Acharya in view of Carle teaches [15.a] as explained for limitations [1.a] and [1.d]. Lin, ¶143. The "content server" in the context of claim 15 includes Acharya's network element 210, which as explained above, can include the other components of Acharya's system, including detection server 202 and ad server 204. Acharya ¶[0052]; *see supra* Section VI.A.1.a. It likewise includes Carle's media server 510,

which as explained above, can include various server functionalities like acquisition server 102. *See supra* Sections VI.A.1.b, VI.A.2.b-VI.A.2.c. Acharya's network element 210 and Carle's media server 510 perform similar functions, including receiving the video content, advertising content, and programming content, as discussed above. *See supra* Sections VI.A.1.c, VI.A.2.a-VI.A.2.b. In the combined Acharya-Carle system, it would have been obvious to combine the functionalities of these servers into a content server. A POSITA would have understood that it was conventional to combine server side functionality from multiple servers into one server (or one set of servers). Lin, ¶144. A POSITA would have been motivated to do this to reduce hardware costs and achieve efficiencies associated with centralizing the processing of data in the server-side systems disclosed by the combination of Acharya and Carle. Lin, ¶144.

c. [15.b]: "wherein the content server is configured to detect a trigger signal within the video stream, the trigger signal being indicative of a temporal mark injected into the video stream by the content publisher;"

Acharya teaches [15.b] as explained for limitation [1.b]. Lin, ¶145.

d. [15.c]: "wherein the content server is further configured to process the trigger signal to determine whether to modify delivery of the video stream to the client;"

Acharya teaches [15.c] as explained for limitation [1.c]. Lin, ¶146.

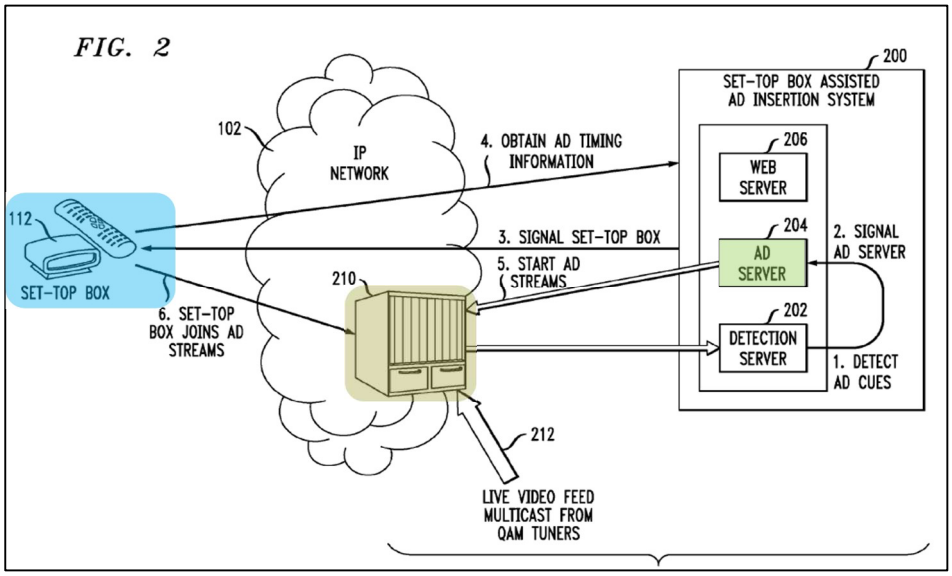
e. [15.d]: "wherein the content server is further configured to modify delivery of the video stream in accordance with the processing of the trigger signal; and"

Acharya teaches [15.d] as explained for limitation [1.d]. Lin, ¶147.

f. [15.e]: "a content delivery network configured to receive the modified video stream from the server and then deliver the modified video stream to the client."

Acharya in view of Carle teaches [15.e]. Lin, ¶148.

Acharya discloses the claimed "content delivery network" because its signal distribution system 100 comprises a network 102 over which media streams may be sent to one or more users by television service providers 106. Acharya, ¶[0019], Fig. 1A. Targeted ad streams provided by **ad server 204** are directed through **network element 210** before delivery to individual client devices (e.g., **user interface device 112**). *Id.*, ¶¶[0032], [0034], [0051], [0053]-[0054], Figs. 2, 4A-4C.



Acharya, Fig. 2 (annotated); Lin, ¶149.

Carle also discloses the claimed "content delivery network" because its system includes network 506 over which its client systems 504 receive program content, program guide data, and advertising data from the system. Carle, ¶¶[0109]-[0110].

17. Claim 16

a. [16.a]: "The system as in claim 15: wherein the information comprises an Electronic Programming Guide (EPG) configured to provide a schedule that identifies when various content provided by the content publisher will be available for reception by authorized clients of the content publisher;"

Acharya in view of Carle teaches [16.a] as explained for claim 2. Lin, ¶151.

b. [16.b]: "wherein the content server is configured to query the data repository for scheduling information related to the various content provided by the content publisher; and"

Acharya in view of Carle teaches [16.b] as explained for claim 2 and limitation [1.d]. Lin, ¶152.

c. [16.c]: "wherein the content server is further configured to receive a response from the data repository that includes synchronization information for modifying, if necessary, the delivery of the video stream to the client, and wherein the synchronization information further includes at least one of geo-filtering information and advertisement information"

Acharya in view of Carle teaches [16.c] as explained for claim 3. Lin, ¶153.

18. Claim 17

a. [17.a]: "The system as in claim 16 further comprising: in response to querying the data repository, the content server is configured discontinue the delivery of the video content based on programming data received from the data repository; and"

Acharya, alone or with Carle, teaches [17.a] as explained for limitation [4.a]. Lin, ¶154.

b. [17.b]: "wherein the content server is further configured to continue to receive the video stream from the content source, wherein the continued receipt of the video stream enables detection of a second trigger signal that would be capable of reinitiating delivery of the video stream to the client"

Acharya teaches [17.b] as explained for limitation [4.b]. Lin, ¶155.

19. Claim 18:

a. [18.a]: "The system as in claim 15 further comprising: wherein the content server is configured to apply proximity parameters associated with the client to the trigger signal in order to determine whether to modify the delivery of the video stream to the client; and"

Acharya in view of Carle teaches [18.a] as explained for claim 7. Lin, ¶156.

b. [18.b]: "wherein the content server is further configured to discontinue delivery of the video stream to the client based on the application of the proximity parameters to the trigger signal, wherein the proximity parameters indicate that the client is not authorized to receive the video stream due to at least one of:"

Acharya in view of Carle teaches [18.b] as explained for limitation [8.a]. Lin, ¶157.

c. [18.c.i]: "a time relative to the detection of the trigger signal; and"

Acharya in view of Carle teaches [18.c.i] as explained for limitation [8.b.i]. Lin, ¶158.

d. [18.c.ii]: "a geographic location associated with the client of the content publisher."

Acharya in view of Carle teaches [18.c.ii] as explained for limitation [8.b.ii]. Lin, ¶159.

20. Claim 19

a. [19.a]: "The system claim 15 further comprising: an advertisement server;"

Acharya teaches [19.a] as explained for limitation [12.a]. Lin, ¶160.

b. [19.b]: "wherein the content server is configured to determine that an advertisement should be injected into the video stream;"

c. [19.c]: "in response to querying the advertisement server, the content server is configured to receive a response from the advertisement server that identifies a plurality of candidate advertisements for injection into the video stream;"

Acharya teaches limitations [19.b] and [19.c] as explained for claim 10 and limitations [12.a] and [12.b]. Lin, ¶161.

d. [19.d]: "from the plurality of candidate advertisements, the content server is further configured to select a candidate advertisement for injection into the video stream based on proximity parameters associated with the client of the video stream, wherein the proximity parameters specify a geographic location of the client to where video content is transmitted; and"

Acharya in view of Carle teaches [19.d] as explained for limitation [12.c]. Lin, ¶162.

e. [19.e]: "wherein the content server is configured to inject the selected candidate advertisement into the video stream for delivery to the client, wherein the selected candidate advertisement is targeted for the geographic location of the client."

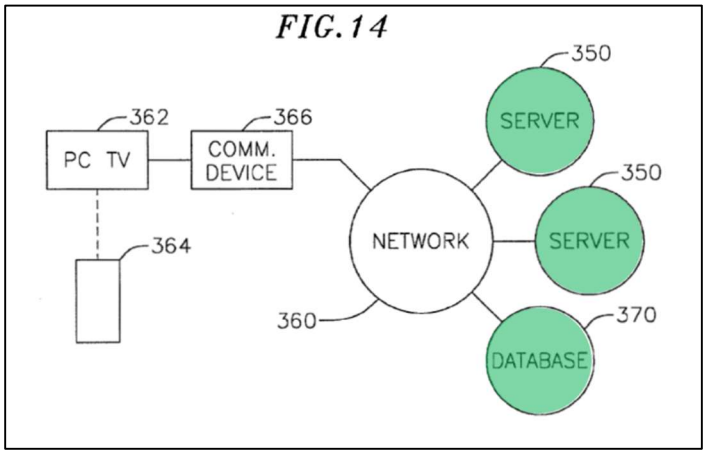
Acharya in view of Carle teaches [19.e] as explained for limitation [12.d]. Lin, ¶163.

B. Ground 2: Acharya and Carle in View of Schein Renders Obvious Claims 2, 14 and 16

1. Overview of the Combination

a. Schein

Schein (Ex. 1007) discloses systems and methods for linking television viewers with advertisers and broadcasters. Schein, Title, Abstract, ¶¶[0007], [0112], Figs. 12-15. To link these television viewers with advertisers and broadcasters, Schein discloses multiple embodiments of an "EPG system" that can be implemented in any TV system. Schein, ¶[0036]. In one embodiment in connection with Figure 14 (below), Schein discloses that servers 350 and database 370 store the EPG (also referred to in Schein as the "television schedule information" or "television schedule guide") for access over a computer network 360. Schein, ¶¶[0116]-[0118].



Schein, Fig. 14 (annotated). Schein provides additional details regarding the contents of the EPG/television schedule guide that are consistent with the understanding of a

POSITA, including that it lists the content available at different times for different channels, and can provide personalized TV listings, including based on geography. Schein, ¶¶[0118]-[0120].

Schein is analogous to the '886 patent because they are in the same field of endeavor: providing media content to end users in content delivery systems. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *compare Schein*, ¶[0006] (discussing allowing viewers to retrieve, search, select, and interact with streaming content via remote databases) *with* '886 patent, 21:24-29 (providing satellite, broadcast, and cable television distribution means for delivering video content to subscribers); Lin, ¶¶61-63.

b. Combination of Acharya and Carle with Schein and Motivation to Combine

Acharya, Carle, and Schein are similar. Lin, ¶164. Like Acharya and Carle, Schein describes systems and methods for personalizing the delivery of programming content. *See, e.g.*, Schein, ¶[0004] ("One…opportunity is to provide viewers with additional information associated with a particular program[.]"); ¶[0005] (discussing benefits of having functionality to interface with particular viewers).

A POSITA would have found it obvious to incorporate the television programming information contemplated by Schein into the combination of Acharya

and Carle. Lin, ¶165. Both Acharya and Carle contemplate the type of EPG/television schedule guide provided by Schein. *See* Acharya, ¶[0002] (describing background of invention as providing subscribers with equipment to communicate with head end equipment configured to receive the particular content the user is subscribed to); Carle, ¶¶[0108]-[0112] (describing providing EPG data to servers and clients). As discussed above in the overview of Schein, Schein provides additional implementation details regarding the content included in EPGs, like the one disclosed in Carle. Thus, incorporating the additional details regarding the content of an EPG (as taught by Schein) would be nothing more than incorporating these known implementation details in the prior art elements already included in the Acharya-Carle combination (e.g., Carle's EPG). Lin, ¶165.

Because Acharya, Carle, and Schein are analogous art, a POSITA would have had a reasonable expectation of success in including the known details of Schein's television schedule information system into the Acharya-Carle system that already teaches querying an EPG for programming data. Lin, ¶166. Applying Schein's teachings to Acharya-Carle would have been straightforward, using known techniques disclosed in Schein and the prior art to enhance the combined system in the same manner. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-18 (2017); Lin, ¶166.

2. Claim 2

Acharya and Carle in view of Schein teaches claim 2. Lin, ¶167.

As explained above for limitation [1.d] and claim 2 in Ground 1, Carle teaches querying multiple data repositories, including obtaining "program guide data" from program guide source 514, and that this data is stored in an "EPG [Electronic Programming Guide] server." Carle, ¶[0110]. The analysis for Ground 1 explains that EPGs were known in the art, and that a POSITA would have understood Carle's EPG to provide a schedule that identifies when various content provided by the content publisher will be available for reception by authorized clients of the content publisher." *See supra* Section VI.A.3; Lin, ¶168.

Schein confirms this understanding and further discloses querying a data repository that includes an EPG as recited in claim 2. Schein discloses that its "EPG system" can be implemented in any TV system. Schein, ¶[0036]. In one embodiment in connection with Figure 14, Schein discloses that servers 350 and database 370 store the EPG (also referred to in Schein as the "television schedule information" or "television schedule guide") for access over a computer network 360. Schein, ¶¶[0116]-[0118]. The television schedule guide identifies "listings information for all channels in the viewer's local cable line-up" as well as "personalized TV listings" for a user. Schein, ¶[0118]. It may also include listings based on a geographical region associated with the user. Schein, ¶[0119]. And it includes listings that can be

searched based on time, among other factors. Schein, ¶[0120]. Thus, Schein discloses that its EPG provides "a schedule that identifies various content provided by the content publisher will be available for reception by authorized clients of the content publisher," as claimed.

Schein also discloses that content publishers can search this television schedule information for opportunities to provide targeted content to users. Lin, ¶¶169-70. For example, Schein discusses embodiments in connection with Figure 15 that provide similar remote accessibility to content programming (e.g., television guide database 408). Schein, ¶¶[0123]-[0124]. Similarly, "commercial provider 410 (e.g., Budweiser) and/or television station broadcast 412 (e.g., ABC) also have databases directly coupled" to user devices that, together, can be searched and retrieved through any of the television guide database 408, commercial provider 410 and/or broadcaster 412. Schein, ¶[0125], Fig. 15.

A POSITA would have been motivated and found it obvious to combine Schein's implementation details surrounding EPGs with the Acharya-Carle system to facilitate queries to the EPG (as disclosed by both Carle and Schein) for the reasons discussed above in Section VI.B.1; Lin, ¶171.

3. Claim 14

Acharya and Carle teach limitations [14.pre], [14.a], [14.b], [14.d], and [14.e] as explained in Ground 1. Lin, ¶172 Further, Acharya and Carle in view of Schein teach limitation [14.c] as explained for claim 2 in Ground 2. Lin, ¶172.

4. Claim 16:

a. [16.a]

Acharya and Carle in view of Schein teaches [16.a] as explained for claim 2 in Ground 2. Lin, ¶173.

b. [16.b]

Acharya and Carle in view of Schein teaches [16.b] as explained for claim 2 in Ground 2. Lin, ¶174.

c. [16.c]

Acharya and Carle teach [16.c] as explained for claim 3 and limitation [16.c] in Ground 1. Lin, ¶175.

C. Ground 3: Acharya and Carle in Further View of Fransdonk Renders Obvious Claim 9

1. Overview of the Combination

a. Fransdonk

Fransdonk (Ex. 1008) discloses methods and systems that authorize delivery of content over a network based on whether access criteria are met, including distributing and managing access to content based on geographic access controls.

Fransdonk, Abstract, ¶[0374]; Lin, ¶64. In its disclosed embodiments, Fransdonk provides multiple ways of using geographic access controls, such as a physical delivery address or a content requester's IP address, as was well known to those skilled in the art. Fransdonk, ¶¶[0373]-[0374]; Lin, ¶64.

Fransdonk is analogous to the '886 patent because they are in the same field of endeavor: providing user-tailored content based on, *inter alia*, geographic considerations. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); *Compare* Fransdonk, Abstract ("A method and system … to distribute content via a network in a geographically controlled manner.") *with* '886 patent, 15:15-17 ("[I]nsertion of [content] may be targeted to end users in a particular geographic region."); Lin, ¶65.

b. Combination of Acharya, Carle, and Fransdonk and Motivation to Combine

As discussed in Ground 1, a POSITA would have found it obvious and been motivated to combine Acharya and Carle. *See supra* Section VI.A.1.c. Fransdonk also describes similar systems and contributes to similar goals. Lin, ¶176. Carle already discloses determining geographic location using various parameters such as a client's/user's ZIP code, postal address, and geographic region code. Carle, ¶¶[0014], [0017], [0024]-[0025]. Fransdonk discloses similar means of determining a user's geographic location, including using a physical address and/or an IP address. Fransdonk, ¶¶[0373]-[0378], Fig. 24; Lin, ¶176.

A POSITA would have found it obvious to combine Fransdonk's teachings into Acharya and Carle. Lin, ¶177. As discussed above, Fransdonk discloses using a content requester's IP address to "map…to a geographic location." Fransdonk, ¶[0374]. A POSITA would have been motivated to use Fransdonk's IP-address teachings because it would improve upon Carle's existing capability of identifying and delivering geographically-relevant content. *See* Carle, ¶¶[0001], [0020]-[0021]; Fransdonk, ¶¶[0374]-[0376], Fig. 24. A POSITA would have been motivated to make this substitution because it is nothing more than the application of a known technique (using IP-addresses to determine client location) to a known system (the Acharya-Carle system that inserts targeted advertisements during blackout periods based on user location) to achieve a predictable result. Lin, ¶177.

Because Fransdonk is analogous art to Acharya and Carle, a POSITA would have had a reasonable expectation of success in implementing Fransdonk's teachings into the Acharya-Carle system. Lin, ¶178. Applying Fransdonk's teachings to Acharya and Carle would have been straightforward, using known techniques disclosed in Fransdonk, and the prior art to enhance Acharya's and Carle's system and methods in the same manner. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417-18 (2017); Lin, ¶178.

2. Claim 9

Acharya and Carle in view of Fransdonk teaches claim 9. Lin, ¶179.

As explained in Ground 1, Carle discloses proximity parameters "to determine a geographic region associated with the network from where the client receives video content." *See supra* Section VI.A.10. To the extent Acharya and Carle do not expressly use an IP-address as a proximity parameter, Fransdonk does. Lin, ¶180. Fransdonk discloses its conditional access agent "determines the source IP address of the request received from the content requester…to map the source IP address to a geographic location." Fransdonk, ¶[0374]. Moreover, Fransdonk "processes" the IP address because Fransdonk explains its conditional access agent "makes a determination as to whether…the geographic location associated with the source IP address…[complies] with the geographic access criteria" to view certain content. Fransdonk, ¶[0376], Fig. 24; Lin, ¶180.

As explained above, a POSITA would have found it obvious to use Fransdonk's IP-address location means in augmenting the combined teachings of Acharya and Carle. Lin, ¶181.

VII. The Board Should Institute Review

A. 35 U.S.C. § 325(d)

The factors in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17-18 (PTAB Dec. 15, 2017), favor institution. *See also Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8-11 (PTAB Feb. 13, 2020) (precedential).

Advanced Bionics, step 1, and *Becton, Dickinson* factors (a), (b), and (d) favor institution because none of the references in this Petition were before the Office during prosecution. *See* Ex. 1002; '886 patent, cover. The references are also not cumulative of the prosecution prior art because cited art teaches and renders obvious all challenged claims.

B. 35 U.S.C. § 314

The district court found the '886 patent claims ineligible under 35 U.S.C. § 101. Order GRANTING Defendant's Motion to Dismiss Counts II and IV of the Complaint, *Sandpiper CDN, LLC v. Google LLC*, No. 2:24-cv-03951 (C.D. Cal. Sept. 16, 2024), ECF No. 28 at 15. Sandpiper subsequently filed an amended complaint not asserting the '886 patent, but stating Sandpiper "reserves its right to appeal the Court's Order." First Amended Complaint for Patent Infringement, *Sandpiper CDN, LLC v. Google LLC*, No. 2:24-cv-03951 (C.D. Cal. Jan. 13, 2025), ECF No. 57 at 1, 22. Thus, any trial will not involve the '886 patent at least until after any appeal, causing the *Fintiv* factors to weigh strongly against discretionary denial.

Factor 1 favors institution because "the [district court's § 101] judgment has the same effect as a stay." *Wyze Labs, Inc. v. Sensormatic Elecs., LLC*, IPR2020-01486, Paper 14 at 9-10 (PTAB Apr. 6, 2021); *accord Apple Inc. v. Geoscope Techs. Pte. Ltd.*, IPR2024-00255, Paper 14 at 13 (PTAB May 31, 2024). Because the district

court invalidated the claims based on a "ground that could not have been raised before the Board, [this case] does not raise concerns of inefficient duplication of efforts or potentially inconsistent results." *Apple*, Paper 14, at 12. Likewise, the district court will not address any anticipation and obviousness issues involving the '886 patent (if it addresses them at all) before the Board's final written decision, removing any concerns about duplication of efforts. *Wyze Labs*, Paper 14 at 10. Moreover, Petitioner cannot delay filing this petition due to the 35 U.S.C. § 315(b) statutory bar. *See id.*

Factor 2 favors institution because any trial in the related litigation will not involve the '886 patent as Sandpiper has not asserted the '886 patent in its amended complaint.

Factor 3 favors institution because the Court and parties have expended few resources in litigation. Indeed, since the court's September 16, 2024 ruling that the claims were patent-ineligible, the parties have not expended resources involving the '886 patent, and any future resources will not involve the '886 patent.

Factor 4 favors institution because there is no overlap between issues raised here (§§ 102/103) and in the related proceeding (§ 101). "[The Board] cannot institute a trial in an *inter partes* review to determine whether the claims are directed to eligible subject matter under § 101," making the patentability challenges in the petition "materially different from the legal issue considered by the [district] court."

Wyze Labs, Paper 14 at 16. Thus, "this factor weighs heavily in favor of institution." *Id.*

Factor 5 favors institution because, despite Petitioner being the defendant in the parallel proceeding, any trial involving the '886 patent will occur well after a Final Written Decision as Patent Owner must first appeal and succeed in reversing the district court's § 101 judgment. *See Wyze Labs*, Paper 14 at 16.

Factor 6 favors institution. No other party has sought review of the '886 patent, minimizing any likelihood of serial or parallel petitions. Petitioner relies on prior art that the Office never applied, presents different invalidity grounds, and relies on Dr. Lin's declaration. *Supra*, §VII.A. The public interest against "leaving bad patents enforceable" supports institution. *Thryv, Inc v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020).

VIII. Mandatory Notices

A. Real Party-in-Interest

The Petitioner and real party-in-interest is Google LLC.[3]

B. Related Matters

Sandpiper asserted the '886 patent in the following litigations:

- *Sandpiper CDN, LLC v. Google LLC*, No. 2:24-cv-03951 (N.D. Cal., May 10, 2024).

[3] Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

C. Lead and Back-Up Counsel, and Service Information

Lead Counsel	Back-up Counsel
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Petitioner consents to electronic service at the following email address: Google-Sandpiper-IPRs@finnegan.com.

IX. Grounds for Standing

Petitioners certify the ’886 patent is available for *inter partes review* and that Petitioners are not barred or estopped from requesting *inter partes review*.

X. Conclusion

Petitioner requests institution of *inter partes* review and cancellation of the challenged claims.

Respectfully submitted,

Dated: May 7, 2025

By: /Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)

CLAIM APPENDIX

[1.pre] 1. A computer-implemented method for delivery of video content across a network comprising:

[1.a] receiving a video stream from a content source for delivery to a client of a content publisher, wherein the client subscribes to the content publisher to receive video content;

[1.b] detecting a trigger signal within the video stream, wherein the trigger signal is indicative of a temporal mark injected into the video stream by the content publisher;

[1.c] processing the trigger signal to determine whether to modify delivery of the video stream to the client; and

[1.d] if necessary, modifying delivery of the video stream in accordance with the processing of the trigger signal, wherein processing the trigger signal comprises querying a data repository having information related to a content programming schedule associated with the content publisher.

[2] 2. The computer-implemented method as in claim 1, wherein the data repository includes an Electronic Programming Guide (EPG) configured to provide a schedule that identifies when various content provided by the content publisher will be available for reception by authorized clients of the content publisher.

[3] 3. The computer-implemented method as in claim 1, further comprising:

receiving a response from the data repository that includes synchronization information for modifying, if necessary, the delivery of the video stream to the client, the synchronization information further including at least one of geo-filtering information and advertisement information.

[4.a] 4. The computer-implemented method as in claim 1, wherein modifying delivery of the video stream comprises:

in response to querying the data repository, discontinuing the delivery of the video content based on programming data received from the data repository; and

[4.b] continuing to receive the video stream from the content source, wherein the continued receipt of the video stream enables detection of a second trigger signal that would be capable of reinitiating delivery of the video stream to the client.

[5] 5. The computer-implemented method as in claim 1 further comprising:

extracting synchronization information from the trigger signal, wherein the synchronization information indicates a type of event associated with the video stream, the synchronization information further specifying temporal information relative to the detection of the trigger signal.

[6] 6. The computer-implemented method as in claim 4, wherein the type of event indicated by the synchronization information includes at least one of an advertisement event, a program initiation event, and a program termination event.

[7] 7. The computer-implemented method as in claim 1, wherein processing the trigger signal comprises: applying proximity parameters associated with the client to the trigger signal in order to

determine whether to modify the delivery of the video stream to the client.

[8.a] 8. The computer-implemented method as in claim 7, wherein modifying delivery of the video stream comprises:

discontinuing delivery of the video stream to the client based on the application of the proximity parameters to the trigger signal, wherein the proximity parameters indicate that the client is not authorized to receive the video stream due to at least one of:

[8.b.i] a time relative to the detection of the trigger signal; and

[8.b.ii] a geographic location associated with the client of the content publisher.

[9] 9. The computer-implemented method as in claim 7, wherein the proximity parameters include an Internet Protocol (IP) address of the client, the method further comprising:

processing the IP address to determine a geographic region associated with the network from where the client receives video content.

[10] 10. The computer-implemented method as in claim 1, wherein processing the trigger signal comprises determining that an advertisement should be injected into the video stream.

[11.a] 11. The computer-implemented method as in claim 10 further comprising:

based on information extracted from the trigger signal, selecting an advertisement to inject into the video stream, wherein the selected advertisement is targeted to a geographic location associated with the client; and

[11.b] wherein modifying delivery of the video stream comprises: injecting the selected advertisement into the video stream for delivery to the client.

[12.a] 12. The computer-implemented method as in claim 10, wherein determining that an advertisement should be injected into the video stream includes:

querying an advertisement server;

[12.b] receiving a response from the advertisement server that identifies a plurality of candidate advertisements for injection into the video stream; and

[12.c] from the plurality of candidate advertisements, selecting a candidate advertisement for injection into the video stream based on proximity parameters associated with the client of the video stream, wherein the proximity parameters specify a geographic location of the client to where video content is transmitted; and

[12.d] wherein modifying delivery of the video stream comprises: injecting the selected candidate advertisement into the video stream for delivery to the client, wherein the selected candidate advertisement is targeted for the geographic location of the client.

[13] 13. The computer-implemented method as in claim 1, wherein the trigger signal is generated relative to the content source by a human associated with the content publisher.

[14.pre] 14. A computer-implemented method for streaming video content across a network comprising:

[14.a] receiving a video stream from a content source for delivery to a client of a content publisher, wherein the content source is associated with the content publisher, and the client has been pre-authorized to receive video content from the content publisher;

[14.b] detecting a trigger signal within the video stream, wherein the trigger signal is indicative of a temporal mark injected into the video stream by a human associated with the content publisher;

[14.c] querying an Electronic Programming Guide (EPG) to determine whether to modify the delivery of the video stream to the client, wherein the EPG is configured to provide a schedule that identifies when various content provided by the content publisher will be available for reception by authorized clients of the content publisher;

[14.d] receiving a response from the EPG, wherein the response includes at least one of advertisement information and geo-filtering information; and

[14.e] modifying delivery of the video stream to the client in accordance with the at least one of advertisement information and geo-filtering information.

[15.pre] 15. A system configured for delivery of video content across a network comprising:

[15.a] a content server configured to receive a video stream from a content source for delivery to a client of a content publisher, wherein the client subscribes to the content publisher to receive video content, wherein the content server comprises information related to a content programming schedule associated with the content publisher;

[15.b] wherein the content server is configured to detect a trigger signal within the video stream, the trigger signal being indicative of a temporal mark injected into the video stream by the content publisher;

[15.c] wherein the content server is further configured to process the trigger signal to determine whether to modify delivery of the video stream to the client;

[15.d] wherein the content server is further configured to modify delivery of the video stream in accordance with the processing of the trigger signal; and

[15.e] a content delivery network configured to receive the modified video stream from the server and then deliver the modified video stream to the client.

[16.a] 16. The system as in claim 15

wherein the information comprises an Electronic Programming Guide (EPG) configured to provide a schedule that identifies when various content provided by the content publisher will be available for reception by authorized clients of the content publisher;

[16.b] wherein the content server is configured to query the data repository for scheduling information related to the various content provided by the content publisher; and

[16.c] wherein the content server is further configured to receive a response from the data repository that includes synchronization information for modifying, if necessary, the delivery of the video stream to the client, and wherein the synchronization information further includes at least

one of geo-filtering information and advertisement information.

[17.a] 17. The system as in claim 16 further comprising:

in response to querying the data repository, the content server is configured discontinue the delivery of the video content based on programming data received from the data repository; and

[17.b] wherein the content server is further configured to continue to receive the video stream from the content source,

wherein the continued receipt of the video stream enables detection of a second trigger signal that would be capable of reinitiating delivery of the video stream to the client.

[18.a] 18. The system as in claim 15 further comprising:

wherein the content server is configured to apply proximity parameters associated with the client to the trigger signal in order to determine whether to modify the delivery of the video stream to the client; and

[18.b] wherein the content server is further configured to discontinue delivery of the video stream to the client based on the application of the proximity parameters to the trigger signal, wherein the proximity parameters

indicate that the client is not authorized to receive the video stream due to at least one of:

[18.c.i] a time relative to the detection of the trigger signal; and

[18.c.ii] a geographic location associated with the client of the content publisher.

[19.a] 19. The system claim 15 further comprising:

an advertisement server;

[19.b] wherein the content server is configured to determine that an advertisement should be injected into the video stream;

[19.c] in response to querying the advertisement server, the content server is configured to receive a response from the advertisement server that identifies a plurality of candidate advertisements for injection into the video stream;

[19.d] from the plurality of candidate advertisements, the content server is further configured to select a candidate advertisement for injection into the video stream based on proximity parameters associated with the client of the video stream, wherein the proximity parameters specify a

geographic location of the client to where video content is transmitted; and

[19.e] wherein the content server is configured to inject the selected candidate advertisement into the video stream for delivery to the client, wherein the selected candidate advertisement is targeted for the geographic location of the client.

37 C.F.R. § 42.24(D) CERTIFICATION

Pursuant to 37 C.F.R. § 42.24(a)(1)(i), Petitioner certifies that this petition complies with the requirements of 37 C.F.R. § 42.24. Excluding parts of this Petition exempted under § 42.24(a), this Petition contains 13,219 words, as measured by the word-processing system used to prepare this paper.

Dated: May 7, 2025

/Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review of U.S. Patent No. 8,719,886 the associated Power of Attorney, and Exhibits 1001-1021, were served on May 7, 2025, by FedEx Priority Overnight® on the correspondence address of record indicated in the Patent Office's Patent Center system for U.S. Patent No. 8,719,886.

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Dated: May 7, 2025

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