

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GENIUS SPORTS LTD.,
Petitioner

v.

SPORTSCASTR INC.,
(D/B/A PANDA INTERACTIVE),
Patent Owner.

IPR2024-01310
U.S. Patent No. 11,039,218

PETITION FOR *INTER PARTES* REVIEW UNDER 37 C.F.R. §42.101

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	MANDATORY NOTICES UNDER 37 C.F.R. §42.8(A)(1)	3
A.	Real Parties-in-Interest	3
B.	Related Matters.....	3
C.	Lead and Back-up Counsel and Service Information	4
D.	Fee Payment	4
III.	REQUIREMENTS FOR IPR UNDER 37 C.F.R. §42.104	5
A.	Grounds for Standing	5
B.	Identification of Challenge and Relief Requested	5
1.	Claims for Which IPR Is Requested	5
2.	Grounds for Challenge.....	5
3.	Claim Construction	6
4.	How the Claims Are Unpatentable	7
5.	Evidence Supporting This Challenge	7
IV.	TECHNOLOGY BACKGROUND: PROTOCOLS FOR REAL- TIME OR LOW-LATENCY DATA TRANSMISSION	8
A.	HTTP Polling	8
B.	WebSocket.....	9
V.	THE '218.....	9
A.	Alleged Problem.....	9
B.	Alleged Invention	10
C.	Prosecution History	13

VI. LEVEL OF ORDINARY SKILL IN THE ART	14
VII. OVERVIEW OF THE PRIMARY REFERENCES	14
A. Ellis.....	14
B. Herzog	16
VIII. EACH OF THE CHALLENGED CLAIMS IS UNPATENTABLE	19
A. Ground 1A: Claims 12-15 Are Obvious Over Ellis in View of Spivey.....	19
1. Motivation to Combine.....	19
2. Independent Claim 12.....	24
3. Dependent Claim 13	31
4. Dependent Claim 14	33
5. Dependent Claim 15	33
B. Ground 1B: Claims 1-11 Are Obvious Over Ellis in View of Spivey and Herzog	34
1. Motivation to Combine.....	34
2. Independent Claim 1	38
3. Dependent Claim 2.....	42
4. Dependent Claim 3.....	42
5. Dependent Claim 4.....	42
6. Dependent Claim 5.....	44
7. Dependent Claim 6.....	44
8. Dependent Claim 7.....	45
9. Dependent Claim 8.....	47
10. Dependent Claim 9.....	47

11.	Dependent Claim 10	48
12.	Dependent Claim 11	50
C.	Ground 2A: Claims 1-9 and 12-14 Are Obvious Over Herzog in View of Spivey	50
1.	Motivation to Combine	50
2.	Independent Claim 1	55
3.	Dependent Claim 2.....	68
4.	Dependent Claim 3.....	68
5.	Dependent Claim 4.....	69
6.	Dependent Claim 5.....	69
7.	Dependent Claim 6.....	70
8.	Dependent Claim 7.....	71
9.	Dependent Claim 8.....	72
10.	Dependent Claim 9.....	72
11.	Independent Claim 12	73
12.	Dependent Claim 13	76
13.	Dependent Claim 14	77
D.	Ground 2B: Claims 10-11 and 15 Are Obvious Over Herzog in View of Spivey and Ellis.....	77
1.	Motivation to Combine	77
2.	Dependent Claim 10	80
3.	Dependent Claim 11	82
4.	Dependent Claim 15	82
IX.	SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS.....	82

X.	THE BOARD SHOULD NOT EXERCISE DISCRETIONARY DENIAL.....	83
A.	The '218 Has Not Been Subject to a Prior Petition	83
B.	<i>Fintiv</i>	83
C.	The Presented Grounds and Argument are Dissimilar to the Art and Arguments Previously Presented to the Office	84
1.	The Examiner Did Not Properly Consider Ellis During Prosecution.....	84
2.	The Examiner Erred in Failing to Consider Ellis in Combination with Other Prior Art	85
XI.	CONCLUSION	87

*All emphases and coloring added, unless otherwise noted.

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH</i> , IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....	84, 85, 86
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020).....	83
<i>Becton, Dickinson and Co. v. B. Braun Melsungen AG</i> , IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017)	84, 85, 86
<i>General Plastic Indus. Co. v. Canon Kubushiki Kaisha</i> , IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017).....	83
<i>Geo. M. Martin Co. v. Alliance Machine Sys. Int’l. LLC</i> , 618 F.3d 1294 (Fed. Cir. 2010)	82
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005)	6
<i>Sotera Wireless, Inc. v. Masimo Corp.</i> , IPR2020-01019, Paper 12 (P.T.A.B. Dec. 1, 2020)	83
<i>SportsCastr Inc. v. Genius Sports Ltd.</i> , No. 2:23-cv-04771-JRG (E.D. Tex.)	3
Statutes	
35 U.S.C. §101	2
35 U.S.C. §102	3, 5, 6, 13
35 U.S.C. §103	6
35 U.S.C. §112(b)	7
35 U.S.C. §314(a)	83, 84

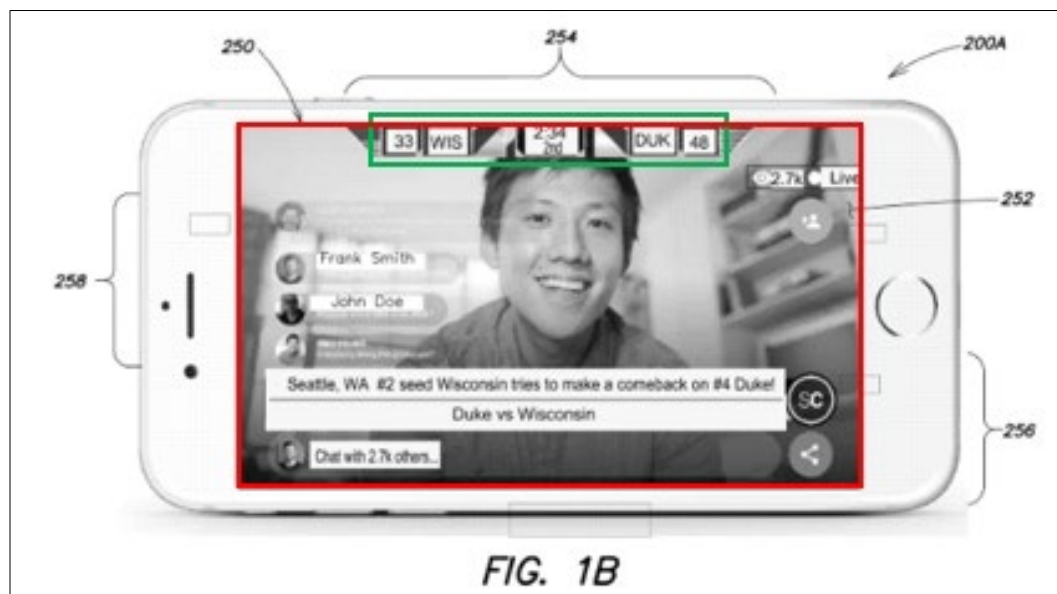
Other Authorities

37 C.F.R. §42.8(A)(1).....	3
37 C.F.R. §42.10(b)	4
37 C.F.R. §42.100(b)	6
37 C.F.R. §42.104	5
37 C.F.R. §42.108(a).....	83

I. INTRODUCTION

U.S. Patent No. 11,039,218 (“’218”) is a replay of previously disclosed server components, arranged in a previously disclosed way, to accomplish a previously accomplished goal. Ex.1001 ¶¶63-71. The ’218 does not claim to have invented any new component. Rather, the ’218 is directed to the basic concept of transmitting two or more related types of content to user devices over the Internet using known real-time communication protocols. *Id.*

The ’218 provides a video feed (*i.e.*, a live stream of a sporting event) and at least one data feed (*i.e.*, the sporting event’s score) to each device over separate “communication channels.” *Id.* ¶¶63-66; Ex.1009, 19:26-32, 20:16-30, 23:4-18. The ’218’s final product is a **scoreboard feature** displayed on top of a **video feed**:



Ex.1009, Fig. 1B. But displaying content related to a live sporting event, such as the game’s **score, clock, and advertisements**, has existed since at least 1994:



Ex.1045.

Moreover, the '218 even acknowledges that adapting this feature to live streaming and internet-based content distribution systems existed well before the '218's earliest possible priority date of August 5, 2016. Ex.1009, 2:13-36. For example, the '218 admits that Twitch.tv, released in 2011, was a “live streaming video platform” that included “social networking components”—*e.g.*, additional content such as comments and other social-media interactions. *Id.*

Although the '218 framed the purported invention as an “inventive server and memory storage architecture,”¹ the prior art discloses the '218's server and

¹ Petitioner intends to challenge the '218 claims as ineligible under 35 U.S.C. §101. But that issue, and the fact that the '218's parent application successfully traversed a §101 rejection through argument in an undocumented interview agenda, is not the subject of this IPR.

memory storage architecture. *Id.*, 3:21-24; Ex.1001 ¶71. The Examiner never rejected the '218 claims under §§102 or 103 and merely identified three broadly related references when indicating that the claims were allowable. None of those references contemplate a control server which receives from the Internet first event information germane to a sporting event or a server coupled to the control server which transmits the first event information to users in “real time” with low latency using the emerging WebSocket protocol.

As discussed below, Ellis, Spivey, and Herzog disclose every limitation of claims 1-15 (“Challenged Claims”) and any differences in the arrangement of their disclosed architecture or data flow processes would have been obvious. Ex.1001 ¶71. Thus, for the reasons detailed in the asserted grounds below, Petitioner respectfully requests *inter partes* review (“IPR”) of the Challenged Claims.

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8(A)(1)

A. Real Parties-in-Interest

Genius Sports Ltd. (“Petitioner”) is the real party-in-interest.

B. Related Matters

Patent Owner (“PO”) has asserted the '218 against Petitioner in *SportsCastr Inc. v. Genius Sports Ltd.*, No. 2:23-cv-04771-JRG (E.D. Tex.), filed October 5, 2023 (“Texas Litigation”). Petitioner has filed six contemporaneous IPR petitions, two for each patent in the '218’s family, each of which is asserted in the Texas Litigation and each of which shares the same specification: U.S. Patent Nos.

Petition for *Inter Partes* Review of U.S. Patent No. 11,039,218

10,805,687 (IPR2024-01305 and IPR2024-01307); 10,425,697 (IPR2024-01308 and IPR2024-01309); and 11,039,218 (IPR2024-01310 and IPR2024-01311).² This case may affect, or be affected by, the Texas Litigation.

C. Lead and Back-up Counsel and Service Information

Lead Counsel	Backup Counsel
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A Power of Attorney accompanies this Petition pursuant to 37 C.F.R. §42.10(b). Petitioner consents to electronic service by email at GS-SC-IPR@kirkland.com.

D. Fee Payment

Petitioner authorizes the U.S. Patent Office (“USPTO”) to charge the filing fee and any other necessary fees to Deposit Account No. 506092.

² Each patent in the family will be referenced by its last three digits. PO recently amended its complaint in the Texas Litigation to include U.S. Patent No. 11,871,088, which issued within the past nine months. Ex.1012, Cover.

III. REQUIREMENTS FOR IPR UNDER 37 C.F.R. §42.104

A. Grounds for Standing

Petitioner certifies the '218 is available for IPR and that Petitioner is not barred or estopped from requesting IPR on the grounds identified herein.

B. Identification of Challenge and Relief Requested

1. Claims for Which IPR Is Requested

Petitioner challenges claims 1-15 of the '218.

2. Grounds for Challenge

Petitioner challenges the claims based on the following references:³

1. U.S. Patent Application Publication No. 2014/0229992 to Ellis et al. ("Ellis"), filed April 22, 2014, published August 14, 2014, is prior art under §102(a). Ellis was not before the USPTO during the '218's prosecution.⁴

³ Each reference qualifies as prior art under 35 U.S.C. §102 regardless of whether the '218 is entitled to its earliest provisional filing date. If PO attempts to prove it is entitled to its provisional filing date, Petitioner reserves the right to challenge the sufficiency of PO's proofs.

⁴ Ellis is a continuation of U.S. Patent App. Pub. No. 2008/0062318 ("Ellis '318"). Ellis '318 was identified through a PCT search opinion, Ex.1011, (PCT International Search Report, Aug. 6, 2018). *See* §X.C.1 below.

Petition for *Inter Partes* Review of U.S. Patent No. 11,039,218

2. U.S. Patent Application Publication No. 2016/0036910 to Spivey (“Spivey”), filed August 4, 2014, published February 4, 2016, is prior art under §102(a). Spivey was not before the USPTO during the ’218’s prosecution.

3. U.S. Patent Application Publication No. 2015/0163379 to Herzog (“Herzog”), filed December 11, 2013, published June 11, 2015, is prior art under §102(a). Herzog was not before the USPTO during the ’218’s prosecution.

Petitioner requests IPR on the following grounds:

Ground	Basis	Claims	References
1A	§103	12-15	Ellis in view of Spivey
1B	§103	1-11	Ellis in view of Spivey and Herzog
2A	§103	1-9 and 12-14	Herzog in view of Spivey
2B	§103	10-11 and 15	Herzog in view of Spivey and Ellis

3. Claim Construction

Claims are construed according to the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). 37 C.F.R. §42.100(b). The claim terms of the ’218 should be given their plain and ordinary meaning as understood by a person of skill in the art (“POSA”). The claim constructions proposed for

purposes of this proceeding are not a concession by Petitioner as to the proper scope of any claim term in litigation nor a waiver of any argument in any litigation that claim terms in the '218 are indefinite or otherwise invalid or unpatentable.⁵ Petitioner reserves the right to respond to any of PO's constructions.

4. How the Claims Are Unpatentable

Section VIII, *infra*, explains how the Challenged Claims are unpatentable.

5. Evidence Supporting This Challenge

A list of exhibits is provided at the end of the Petition. The relevance of this evidence and the specific portions supporting the challenge are provided, *e.g.*, in Section VIII, *infra*. Petitioner submits a declaration of Dr. Wicker Ph.D., Ex.1001, in support of this Petition. To the extent Ex.1001 is not specifically cited to below,

⁵ Petitioner reserves the right to challenge (in the Texas Litigation or otherwise) the claim terms “online gaming information is shared in a synchronized manner by the first viewer client device and the second viewer client device” (claim 4), “reduce synchronization errors between the first viewer client device and the second viewer client device” (claim 6), “provide a single synchronized update and mitigate client-by-client latency and/or synchronization issues” (claim 7), and “a second socket address of the first real-time information socket” (claim 10), under §112(b), because these terms do not inform a POSA of their scope with reasonable certainty.

Petitioner nonetheless relies on the entirety of Ex.1001 in support of this Petition and reserves the right to rely on Ex.1001 in response to arguments raised by PO.

IV. TECHNOLOGY BACKGROUND: PROTOCOLS FOR REAL-TIME OR LOW-LATENCY DATA TRANSMISSION

Transmission control protocol (TCP) and internet protocol (IP), together known as “TCP/IP,” aim to ensure reliable, low-latency, end-to-end data transmission between network-connected devices by dividing transmissions into “packets” and specifying rules for transmitting, routing, and receiving packetized messages. Latency, as it relates to live streaming, is the time delay between when an event occurs and when the distributed content related to that event, *e.g.*, video, audio, or other data, is displayed on a user device. Before the ’218, developers and standards development organizations had built on top of TCP/IP or created additional protocols to facilitate real-time transport of video and other data over the Internet. Ex.1001 ¶¶41-57.

A. HTTP Polling

HTTP is a protocol that is built on top of TCP/IP. And HTTPS is a secure version of HTTP that uses encryption and verification to protect data. HTTP polling consists of a sequence of request-response messages between a client and a server. Upon receiving a request, the server responds with a new message, if there is one, or with an empty response if no new message is available for that client. After a short time Δ , called the polling interval, the client polls the server again to

see if any new messages are available. Various real-time applications including chat, online games, and text messaging used HTTP polling in the 2016 time frame. Ex.1001 ¶¶50-51.

B. WebSocket

WebSocket was a known alternative to HTTP polling in the 2016 time frame. It is a client-server communication protocol that is bi-directional, full-duplex, and continuous. Real-time web applications commonly feature WebSocket connections to facilitate a persistent stream of data from a backend server to the end client. Once a WebSocket connection is established between a server and a client, the client receives instant updates from the server without the need to poll. Ex.1001 ¶¶52-53, 58-59.

V. THE '218

The '218 issued from Application No. 17/141,631 (“’631 Application”), which was filed January 5, 2021. Ex.1009, Cover. The '631 Application claimed priority to Provisional Application No. 62/371,558, which was filed August 5, 2016. *Id.*, 1:9-42.

Because the application was filed after March 16, 2013, its patentability is governed by the AIA.

A. Alleged Problem

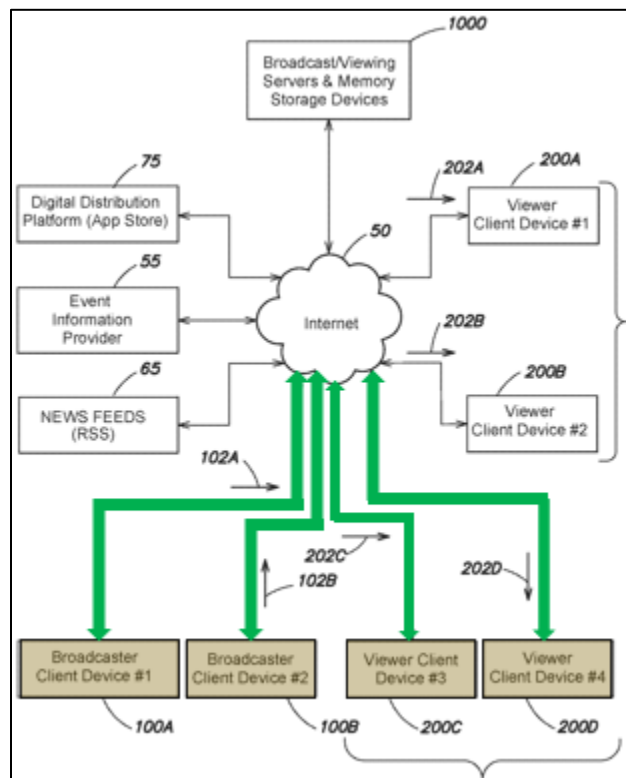
According to the '218, prior art techniques for streaming video to multiple users suffered from a latency problem in which there would be a delay between the

generation of a video and the time in which a user would receive the video stream.

Ex.1009, 2:45-65, 5:37-46; Ex.1001 ¶¶62.

B. Alleged Invention

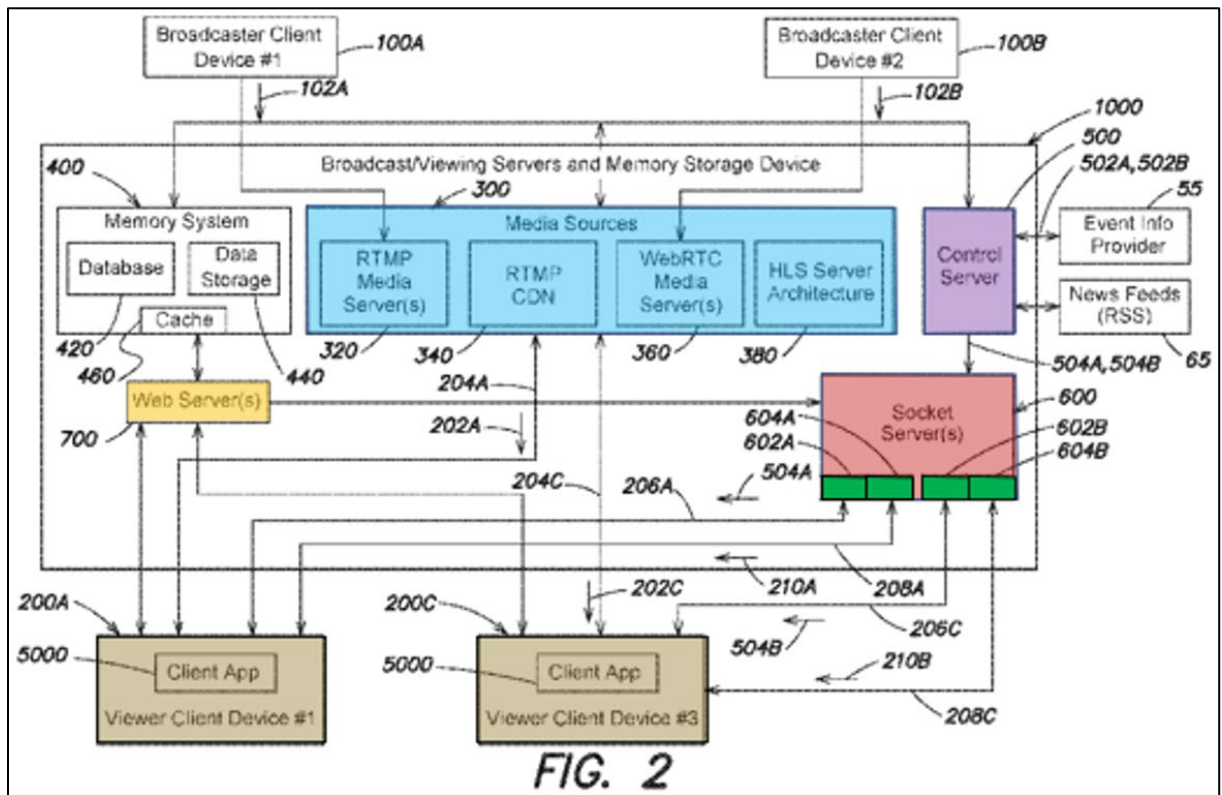
The '218 purports to solve this latency issue. Ex.1009, 5:37-46; Ex.1001 ¶¶63-71. The '218 is directed to a “server and memory storage architecture” for obtaining, and providing to viewers, (1) an “audio and/or visual feed” including “commentary associated with [a] live event” and (2) a “separate event data feed including real time information associated with the ... live event.” Ex.1009, 3:16-29; *see also id.*, 7:26-47. A block diagram of the system is shown in Figure 1A:



Id., 11:29-32, Fig. 1A. Figure 1A depicts providing “a first viewer client device (200A)” of “a first plurality of viewer client devices (200A, 200B)” that receive

“copies (202A, 202B) of a first broadcaster’s live stream of digital content (102A).” *Id.*, 9:34-39, 9:47-50.

Figure 2 shows additional system details. For instance, Figure 2 depicts viewer client devices (“VCDs”), media sources, a control server, a socket server, event sockets, a web server, an event information provider, and a memory system.



Id., Fig. 2.

Media Sources. The '218 describes media sources as generic “computer servers.” *Id.*, 19:26-32, 56:5-15. Although in some implementations the media sources may include media servers directed to specific known protocols, such as RTMP, WebRTC, and HLS, the media sources’ purpose is to “receive a live stream of video-based commentary from a given broadcaster client device and

provide copies of the live stream of video-based commentary to one or more [VCDs].” *Id.*

Control Server. The ’218 describes a control server as a generic server that retrieves “event information” from an “event information provider” to pass to the socket server, discussed below. *Id.*, 19:60-67, 21:56-67. The event information is “germane to” a particular “live sporting event.” *Id.*, 21:55-65.

Webserver. The web server is a generic server designed to facilitate communications “between the servers/memory storage devices [] and one or more mobile broadcaster/viewer client device executing the client app.” Ex.1009, 18:64-19:6. According to the ’218, “much of the instructive communication between the client devices and the servers/memory storage devices [] occurs via the web server(s).” Ex.1009, 19:7-9. The webserver also facilitates communications “to and from web-based client devices (that access the web server(s) via a web portal at a particular URL).” *Id.*, 19:4-6.

Socket Server(s). The ’218 describes socket server(s) as generic servers. *Id.*, 56:5-16. The socket server’s purpose is to “facilitate communication” of “synchronized event information retrieved by the control server” between the control server and the VCDs. *Id.*, 20:19-30. The socket server uses “one or more sockets ... dedicated to the particular event” allowing VCDs “to establish an event information channel with the socket server.” *Id.*, 20:24-30. The socket server then

shares event information in “event messages” via the event information channel “in a synchronized manner” to all viewers “following the particular event.” *Id.* The socket server may facilitate communication of “chat messages” in a similar manner. *Id.*, 20:31-63.

Although the ’218 claims that the foregoing server architecture and its functionality are “inventive,” as explained in more detail herein, the prior art discloses or renders obvious every limitation of at least one of the Challenged Claims. *See* §VIII, *infra*.

C. Prosecution History

The ’218 issued without a single claim amendment. Ex.1011, 303-09. And the Examiner did not issue a single rejection under 35 U.S.C. §§102 or 103. *See id.* Although the Examiner did not apply (*i.e.*, map) any prior art against the claims, the Examiner did characterize three references as being deficient: Bocharov (US2011/0083144), DeWeese (US2001/0039209), and Shoff (US2001/0001160). *Id.*, 241-49 (April 13, 2021 Non-Final Office Action). In contrast to Ellis, Herzog, and Spivey, none of these references disclose, among other things, a control server to retrieve, via the Internet, first event information germane to a first sporting event, or a socket server having an event socket corresponding to the first event information.

VI. LEVEL OF ORDINARY SKILL IN THE ART

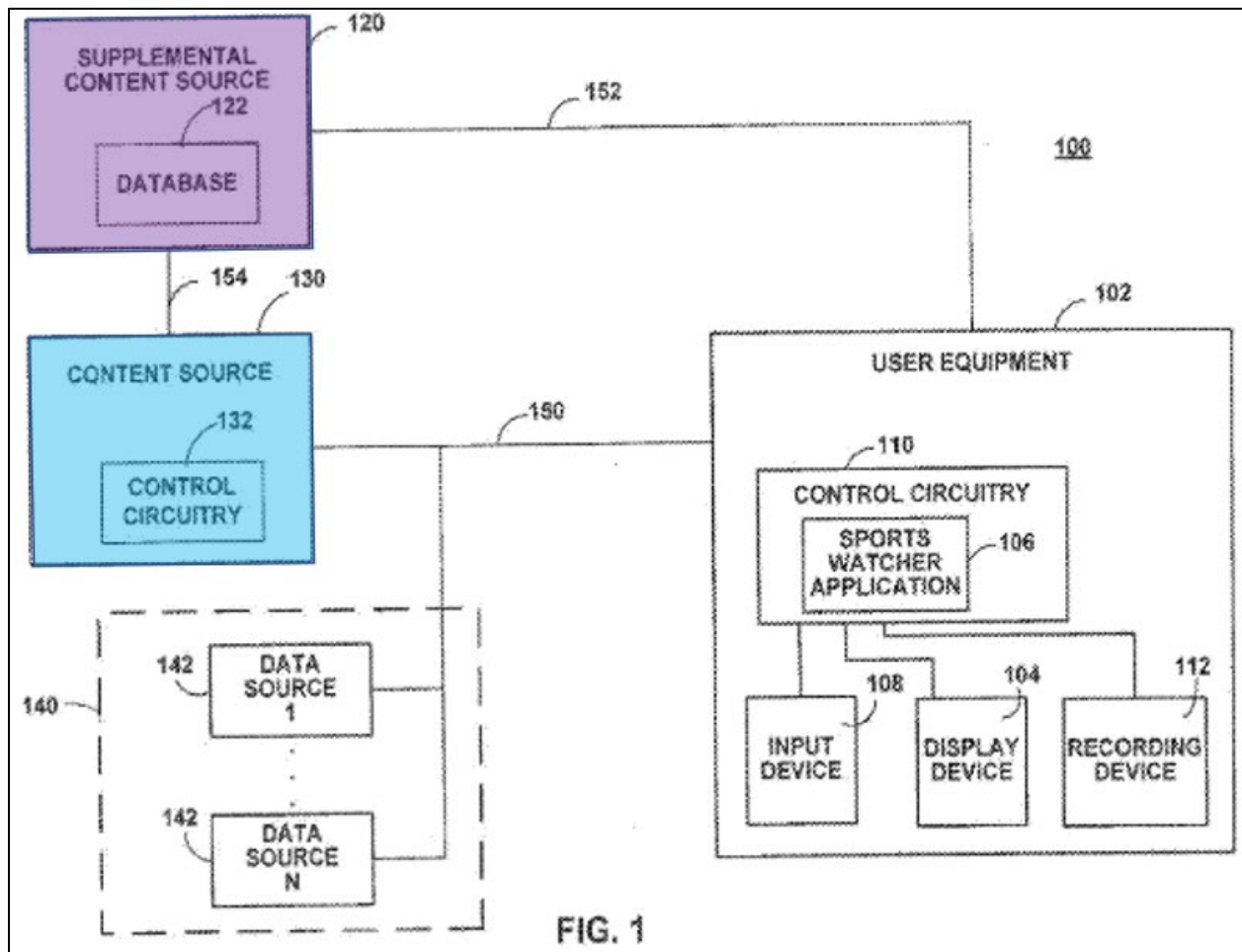
A POSA in the field of computer networking at the time of the alleged invention, August 5, 2016, would have had at least a bachelor's degree, or equivalent, in electrical engineering, computer engineering, computer science, or a related field or an equivalent number of years of working experience, and one to two years of experience in networking environments, including at least some experience with live-streaming network architecture. Ex.1001 ¶¶72-76. Additional education or experience in related fields could compensate for deficits in the above qualifications. *Id.*

VII. OVERVIEW OF THE PRIMARY REFERENCES

A. Ellis

Ellis identified the need for current delivery systems to provide “a custom set of features and functionality for specific types of media content, such as sporting events” Ex.1016 ¶4. Ellis explained that the current systems “fail to take full advantage of today’s high-end user equipment devices.” *Id.* ¶5. To solve the above problems, Ellis discloses broadcasting systems and methods for “enhanced sports-related media content access and display.” *Id.*, Abstract.

Ellis’s Figure 1 is an illustrative media system:



Id. ¶15, Fig. 1. As depicted, Ellis’s system contains a **content source**, a **supplemental content source** (“SCS”), data sources, user equipment, and a sports watcher application. *Id.*, Fig. 1.

While the system provides the video feed over communication path 150, the SCS further provides real-time information over a separate communication path 152. *Id.* ¶¶41-42, Fig. 1. Importantly, “in some embodiments, this sports-related information is provided to user equipment 102 as a plurality of real-time data

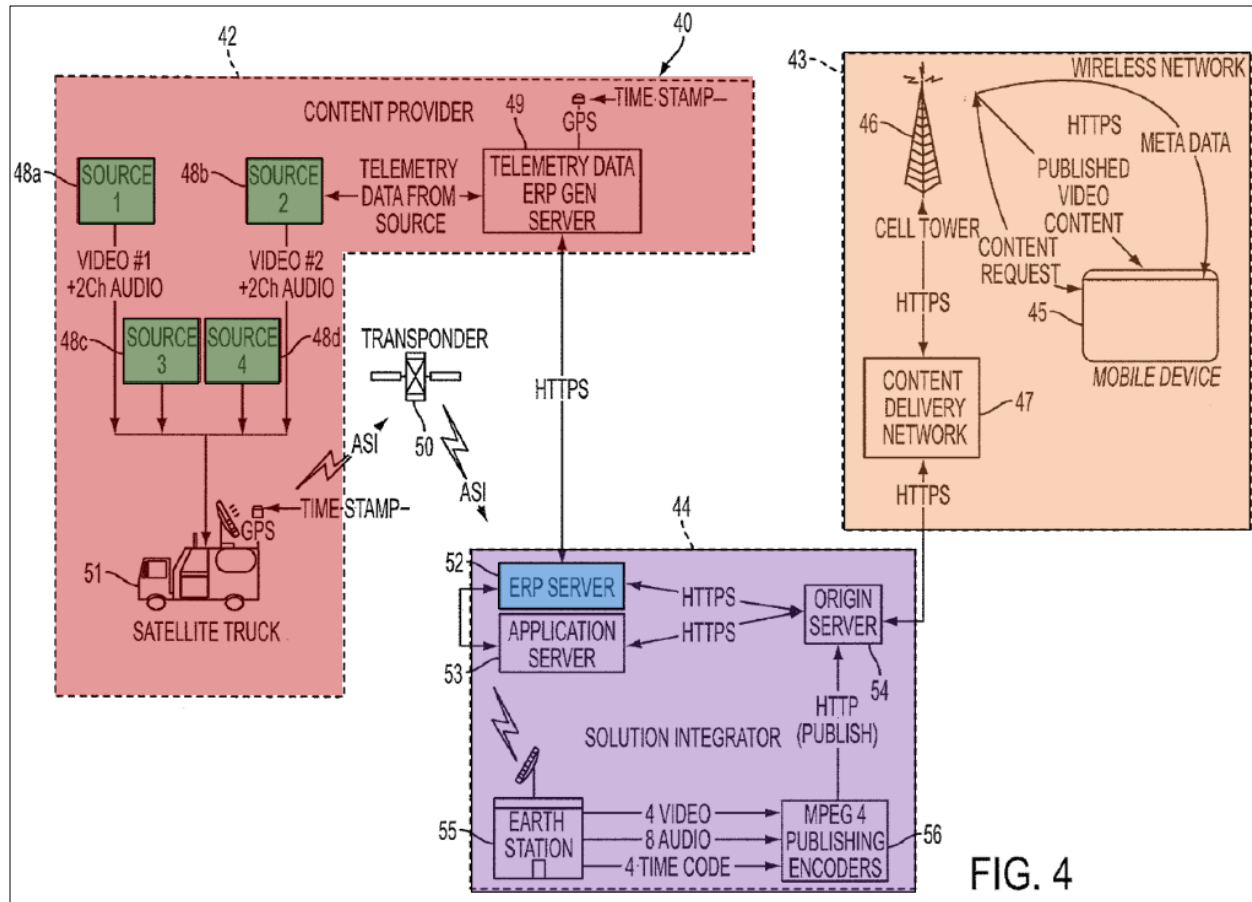
feeds” where each “data feed may be individually accessed or subscribed to”

Id. ¶41. The SCS communication path 152 is protocol agnostic.

B. Herzog

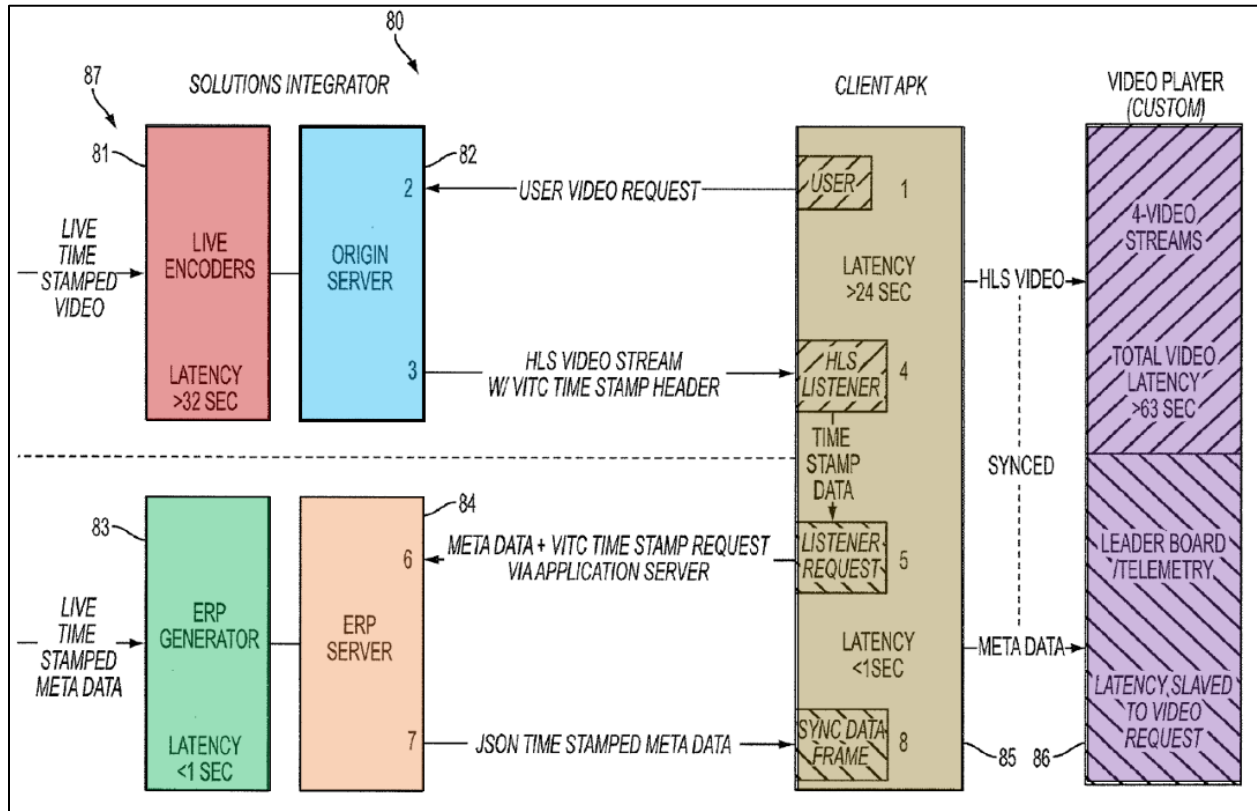
According to Herzog, it “may be desirable to provide a mobile device, such as a tablet” with a “video that is streamed live from the Internet to a client playing using” HLS while also providing “additional information related to the HLS video,” such as meta-data. Ex.1015 ¶3.

Herzog uses an “Indianapolis Car Race” as a primary example to explain how its system transmits live “video, audio, and metadata ... from a sports venue via different communication paths,” to a client device. *Id.* ¶16. Herzog’s Figure 4, shown below, depicts an illustrative streaming network:



Id., Fig. 4. Herzog's Figure 4 shows a **content provider**, a **solutions integrator**, and a **wireless network**. *Id.* ¶¶43, 45. The content provider "is configured to provide video and audio data of an event occurring in real time and provide telemetry data (meta-data) including several parameters changing during the event." *Id.* ¶45. Video and audio data includes "multiple video/audio streams of race cars and drivers, as they are imaged at different locations on the race track." *Id.* Figure 4 shows "four **video/audio streams** provided from four different imaging sources, namely sources 48a-48d." *Id.* ¶46. These channels are transmitted to an **Enhanced Result Protocol (ERP) generator** server configured to provide telemetry data in

HTTPS format to the solutions integrator. *Id.* ¶47. The solutions integrator is depicted in further detail below in Figure 6:



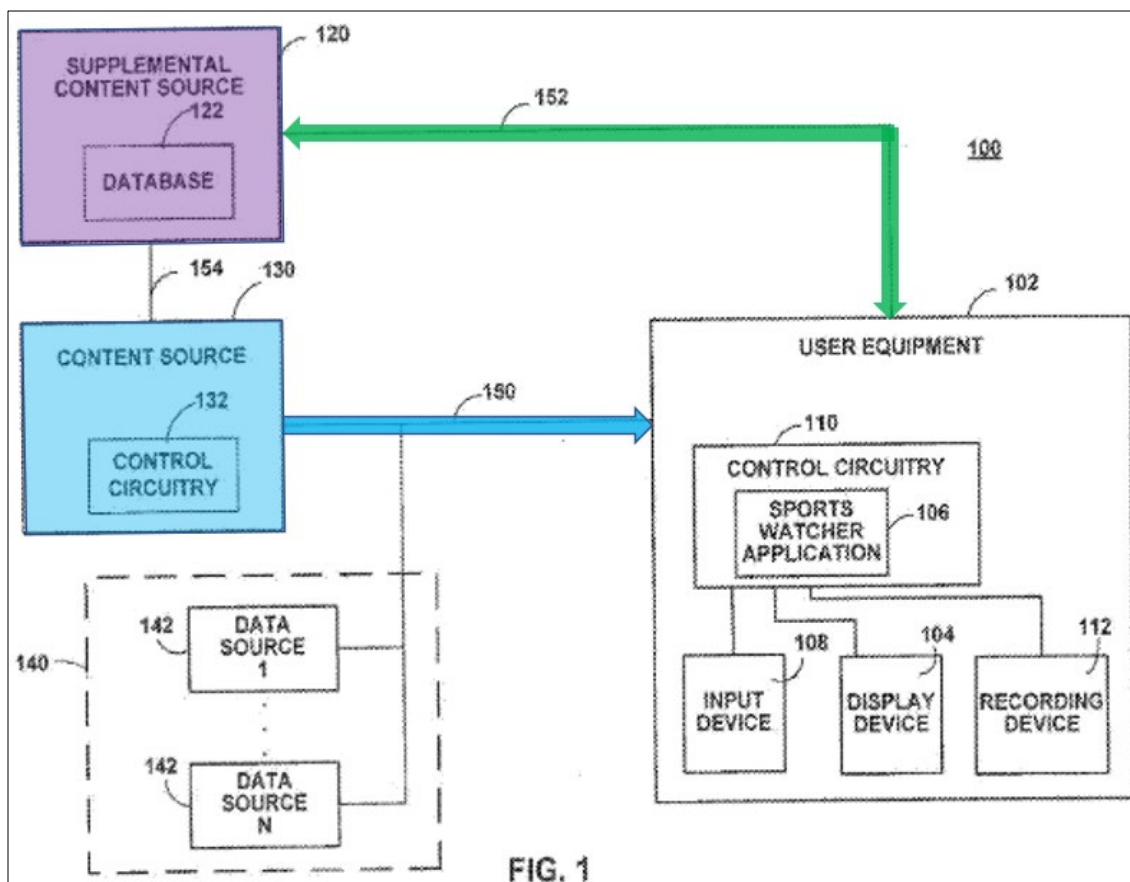
Id., Fig. 6. Once **live encoders** receive “time stamped video/audio data and convert the same into an MPEG stream with a VITC time stamp header,” they then send the data to an **origin server** to “publish[] the data as an HLS video stream with a VITC time stamp header.” *Id.* ¶67. In parallel, the **ERP generator** extracts various parameters from the live time stamped meta-data (*e.g.*, the status of each car and driver in a race), then sends those parameters to the **ERP server** for publishing “in an HTTPS communications format.” *Id.*

VIII. EACH OF THE CHALLENGED CLAIMS IS UNPATENTABLE

A. Ground 1A: Claims 12-15 Are Obvious Over Ellis in View of Spivey

1. Motivation to Combine

Ellis discloses the '218's broad functionality. Specifically, Ellis's two-part delivery method/system comprises transmitting a **video stream** originated by a **content source** (*i.e.*, "media source") over communication path 150 and transmitting a **data stream** originated by a **SCS** over a separate communication path 152, as shown below:



Ex.1016, Fig. 1; Ex.1001 ¶106. Ellis teaches that the SCS “may be any suitable content source” that provides live data feeds containing “score, play, and up-to-date game summary information to user equipment.” Ex.1016 ¶¶41, 155.

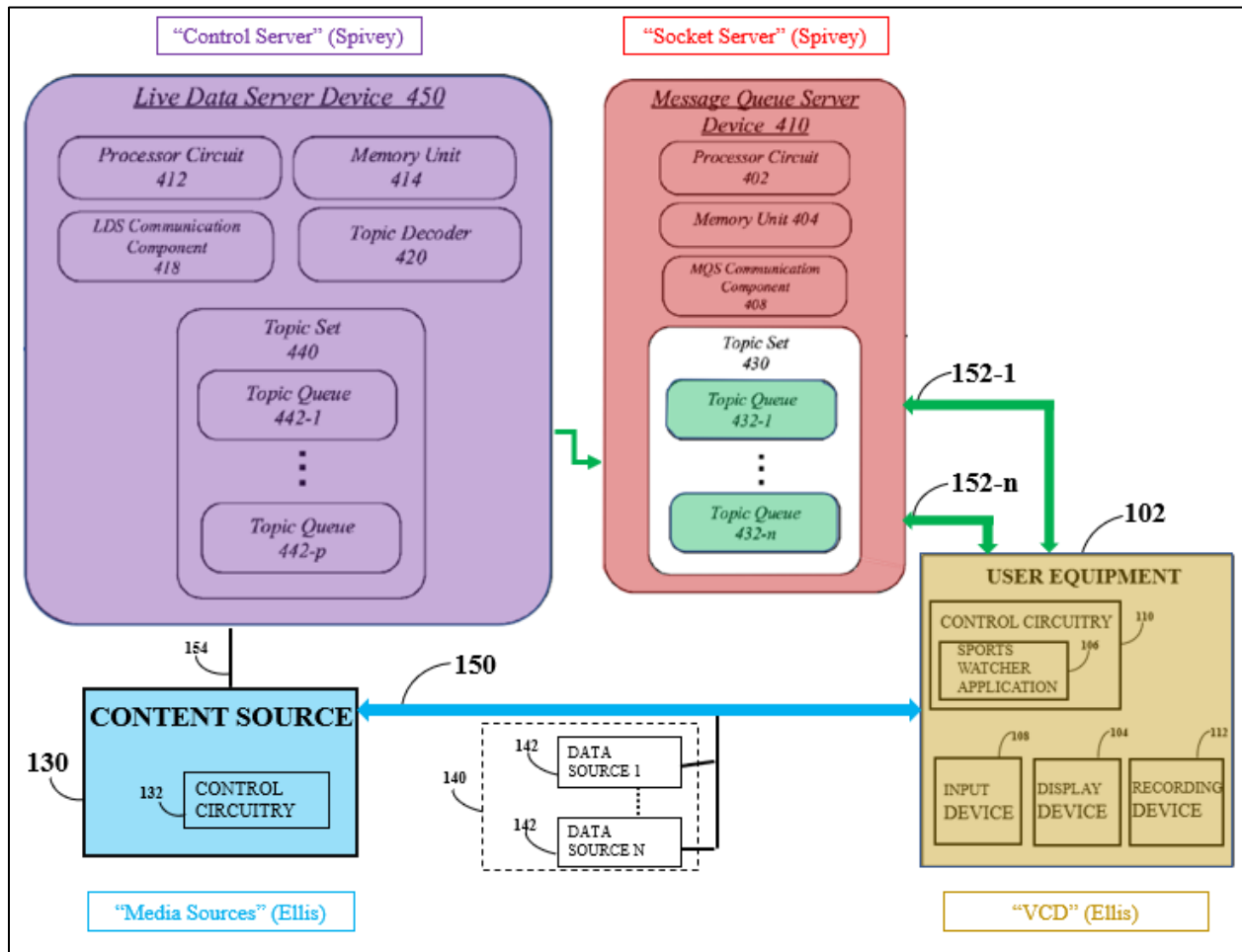
Although Ellis discloses the claimed functionality of delivering live video and real-time supplemental content data over separate channels, Ellis does not explicitly disclose some of the '218's backend architecture/process flows for delivering the supplemental content data. Specifically, Ellis does not disclose transmitting the supplemental content data to user equipment via a socket server. However, a POSA would have found it obvious to implement Ellis's SCS as a websocket server, as taught by Spivey, to achieve full-duplex communications between a client and a remote host with low latency. Ex.1001 ¶¶106-108 (citing Ex.1046).

A POSA would have understood that socket servers were well-known components for implementing real-time data delivery, such as in Ellis, with reduced latency. Ex.1001 ¶¶107-109; §IV, *supra*; Ex.1017 ¶¶96 (describing pushing a data payload from the message queue server device, *i.e.*, a socket server, to the client device “with a time delay of 100 milliseconds or less”); 35 (broadly describing a message queue server as “one or more electronic devices capable of receiving, processing and sending information for the system,” including a wide range of exemplary devices). For example, a POSA would have appreciated

Spivey’s teaching that network components—specifically the **Live Data Server Device (LDSD)** (*i.e.*, “control server”) and **Message Queue Server Device (MQSD)** (*i.e.*, “socket server”)—are useful in a data delivery system because they help dramatically reduce latency. Ex.1017 ¶¶28 (system designed to reduce delay “to an order of milliseconds”); 43 (client device may request and participate in a websocket connection); 96 (pushing digital content to a client device “substantially simultaneously . . . e.g., with a time delay of 100 milliseconds or less”) Ex.1001 ¶109. A POSA would have also appreciated the benefits associated with the websocket connection that Spivey’s socket server makes to communicate with VCDs, (Ex.1017 ¶¶43, 61, 74, 92), including convenient and efficient full-duplex communications between a client and a remote host with low latency. Ex.1001 ¶¶109-110 (citing Ex.1046); §IV.B. Thus, a POSA would have been motivated to integrate Spivey’s LDSD and MQSD into Ellis’s data delivery system to reduce latency to a time period “at least two orders of magnitude shorter than conventional time periods of legacy devices,” as taught by Spivey and to obtain additional benefits associated with websocket communications. Ex.1017 ¶96; Ex.1001 ¶¶109-110.

A POSA would have done so by implementing Ellis’s SCS using Spivey’s **LDSD** (*i.e.*, “control server”) and adding Spivey’s **MQSD** (*i.e.*, “socket server”), as

illustrated below in the annotated, combined flow chart of Ellis Figure 1 and Spivey Figure 4:



See Ex.1016 ¶¶39, 41, Fig. 1 (recreated); Ex.1017, Fig. 4 (recreated) (combined as explained above); Ex.1001 ¶111. The combined system would maintain the video content delivery system and upgrade the supplemental content data delivery system by including a socket server to provide real-time data with reduced latency. Ex.1001 ¶111.

A POSA would have been motivated to modify Ellis in light of Spivey because both references relate to the same technical subject matter—content delivery for real-time events. *Id.* ¶¶112-113; Ex.1016, Abstract; Ex.1017, Abstract. Both Ellis and Spivey describe methods and/or systems for streaming video and/or event data to one or more users, such that video and/or event data are transmitted simultaneously. *See, e.g.*, Ex.1016 ¶156; Ex.1017, Abstract; Ex.1001 ¶¶112-113. A POSA would have also combined Ellis and Spivey because the references solve the same or similar problems, namely, providing video and/or event data to multiple users over the Internet quickly to multiple users. Ex.1001 ¶¶112-113.

Implementing certain portions of Spivey’s system into Ellis’s system would have been obvious because doing so would have required only the simple substitution of known elements for another to obtain predictable results. *Id.* ¶114. For example, Ellis discloses compatible hardware and software components to act as a source for event information to be transmitted to users. *See, e.g.*, Ex.1016 ¶47 (“Content source 130, supplemental content source 120, and data sources 140 are shown in FIG. 1 as separate elements” but “[i]n practice, their functionality may be combined into a single mechanism and provided from a single system at a single facility, or their functionality may be provided by multiple systems at multiple facilities.”). Predictably, therefore, a POSA would have simply substituted portions of Ellis’s SCS with Spivey’s LDS and MQSD. Ex.1001 ¶114. For example, it

would have been obvious to substitute any of Ellis's elements with any combination of Spivey's LDS, MQSD, and/or Live Data Source(s), which are similarly involved in transmitting live event data to users and may be configured in any manner. Ex.1001 ¶¶114-115.

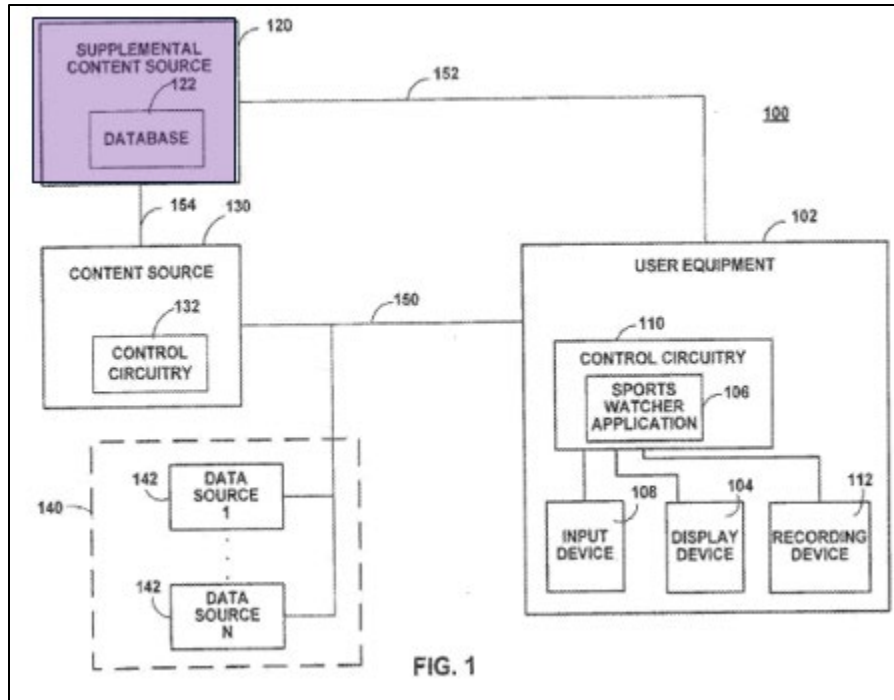
A POSA would have had a reasonable expectation of success in integrating Spivey's control server and socket server into Ellis's data delivery system. *Id.* ¶¶106-115. Understanding the compatibility of these similar systems, a POSA would have had a reasonable expectation of success in integrating Spivey's system of "topic queues and open duplex communication connections" employing websockets to transmit "data from a live event (e.g., news event, a gaming event, sporting event, etc.)" to multiple users "in real-time." Ex.1017 ¶27; Ex.1001 ¶115.

2. Independent Claim 12

a. Limitation 12.0⁶

To the extent the preamble is limiting, Ellis discloses this subject matter. Ellis discloses a SCS providing first event information germane to the first sporting event through a "plurality of real-time data feeds," one of which can include "sports score and game status information," while the other carries "sports commentary." Ex.1016 ¶41. Figure 1 illustrates Ellis's SCS:

⁶ Ex.1010 is a claim listing that enumerates each claim element.



Id., Fig. 1; Ex.1001 ¶167.

b. Limitation 12.1

Figure 1 of Ellis illustrates that the SCS transmits “sports-related information” to user equipment 102 over communication path 152. Ellis teaches that the SCS may be any suitable content source configured to provide real-time sports information, but does not specify that the SCS is a socket server which transmits the sports-related information to the user equipment.

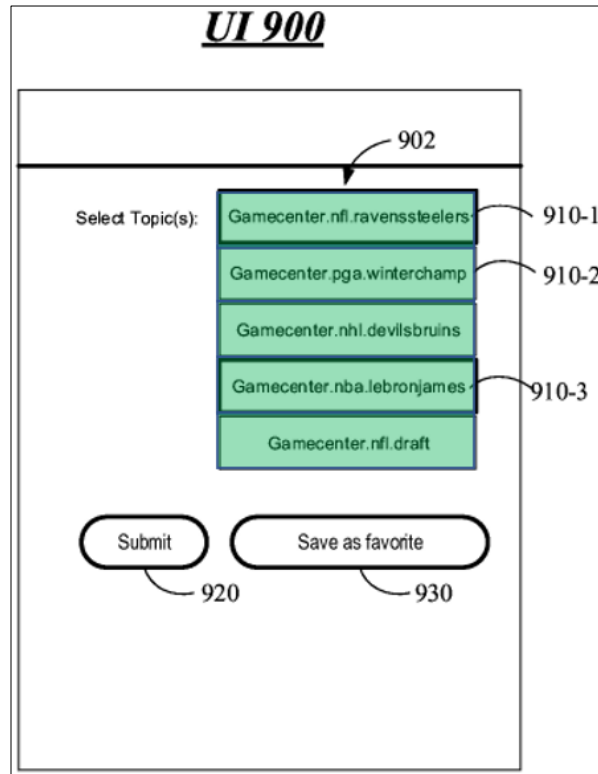
Spivey’s entire system is based on providing “live event data in real time.” Ex.1017, Abstract. For example, according to Spivey, client devices “may request and participate in a websocket connection,” which “typically comprises a two-way connection between two entities.” *Id.* ¶¶43, 61. A POSA would have known that a

websocket connection is between a socket server and at least one client. Ex.1001 ¶¶168-173.

The '218 explains that a socket server contains “one or more first event sockets [] dedicated to the first event information.” Ex.1009, 22:1-4. The first event socket has a corresponding EventID that the VCD “uses ... to connect to [the] socket,” *e.g.*, by using a “URL including the ... EventID in a path of the URL.” *Id.*, 22:5-17. Thus, a POSA would have understood a “socket” to be a uniquely addressable communication endpoint on a server where first event information is provided to a VCD. Ex.1001 ¶170 (citing Ex.1009, 20:64-21:13, 22:5-25). A first event socket corresponding to the first event information germane to the first sporting event is simply a socket where information about one sporting event is provided to VCDs. *Id.*

Spivey’s **topic queues** are “where data payloads are placed” that, for example, “relate to a specific game between two NFL teams.” Ex.1017 ¶¶51-52. The data payloads, “[w]hen the live event is a sporting event,” include, “for example, a score, a play, ..., and so forth.” *Id.* ¶48. Topic queues have a corresponding “topic label” which is used “to identify a topic queue.” *Id.* ¶49. “A topic label may be, for example” a “text string such as ‘gamecenter.nfl.ravenssteelers.’” *Id.* ¶66.

Client devices use these topic label text strings to connect and subscribe to MQSD's topic queues. First, client devices "request a live data connection" with the MQSD by "select[ing] or enter[ing] the address or connection information to a particular" MQSD. *See id.* ¶¶81-82. This "address may resemble a uniform resource locator (URL)." *Id.* ¶82. Second, as shown in Figure 9, client devices can use the topic labels to select "the topics available from [the MQSD] in a topic selection list" and "subscribe to" those topic queues:



Id. ¶¶83-84, Fig. 9. Third, "the data payload" may be pushed to the subscribed connected devices that requested that topic. *Id.* ¶96. Thus, a POSA would have understood that Spivey's topic queues disclose first event sockets corresponding to the first event information germane to the first sporting event. Ex.1001 ¶¶168-173.

c. Limitation 12.2

Ellis in view of Spivey discloses this limitation. Spivey discloses receiving a digital content copy via a video communication channel between at least one media source and the VCD. For example, Spivey discloses transmitting a first media source's internet address to establish an internet communication channel. Ex.1017 ¶82, Fig. 8. Spivey teaches that a particular MQSD's address "may resemble a uniform resource locator (URL)." *Id.* ¶82. When a client device connects and subscribes to an MQSD using these topic queues, the MQSD pushes a "data payload" carrying digital content relating to a sporting event (*e.g.*, statistics or plays) to that device. *Id.* ¶¶96, 104. The MQSD does so using "any one and the combination of wired and/or wireless networks including ... the Internet." *Id.* ¶179.

Although Ellis does not explicitly disclose transmitting at least one instruction to the client device to cause the device to request a digital content stream, a POSA would have considered transmitting instructions for a user "to take some action" to receive content as suggested by the '218 (20:51-63) as an obvious marketing strategy to increase viewership of the digital content. Ex.1001 ¶¶174-176. Like the '218, Ellis teaches that sports related content may include online discussion boards and chat rooms enabling the system to message end users. Ex.1016 ¶38. And Spivey teaches in a similar vein that a user interface lists topics

available for subscription from a message queue server. Once a user subscribes to at least one topic, the live data app sends the selected topics to the MQSD⁷ requesting online gaming information updates. Ex.1001 ¶¶174-176.

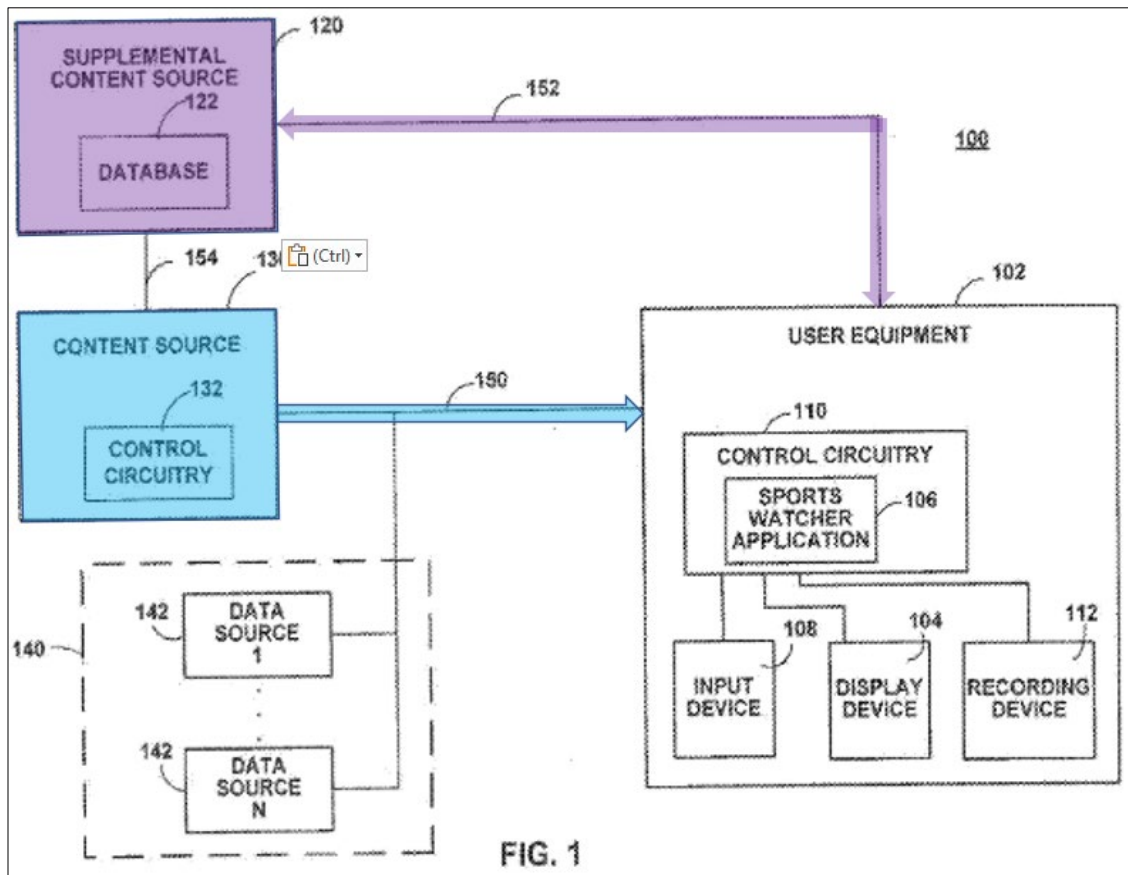
In the alternative, Ellis discloses transmitting at least one instruction to the first client device to cause the first client device to request a first copy of a first stream of digital content relating to the first sporting event. Ex.1016 ¶¶44 (“the interactive sports watcher application is a self-executing” application downloaded to user equipment); 51-52 (user equipment executes instructions of interactive sports watcher application). Thus, a POSA would have understood that Ellis

⁷ Spivey often discusses a connection between the client device and the system using a live data access server (“LDAS”), however, Spivey also discloses that the message queue server device may be “accessible to clients over the network directly.” Ex.1017 ¶¶36, 84. For example, “MQS communication component 308 ... may push data from topic queues 332-1, 332-n to the subscribers of the topics corresponding to those topic queues.” *Id.* ¶46. Also, the system does not require an LDAS, only that it “may include a[n] [LDAS].” *Id.* ¶38. Thus, a POSA would have understood Spivey to disclose a direct connection between the client devices and MQSD. Ex.1001 ¶¶175, 562, 597. A POSA would have used this implementation because reducing the amount of server transfers would reduce latency, which is Spivey’s main purpose.

necessarily transmits instructions to the client device during a digital handshake procedure between its user equipment and media sources at the outset of a connection. Ex.1001 ¶176.

d. Limitation 12.3

Ellis discloses that a “content source” streams “broadcast programming” to multiple different users over individual “communication path[s] 150.” Ex.1016 ¶¶39-40. Meanwhile, the system provides “real-time sports scores and game summary information” to those user equipment devices from the SCS using individual communication path 152:



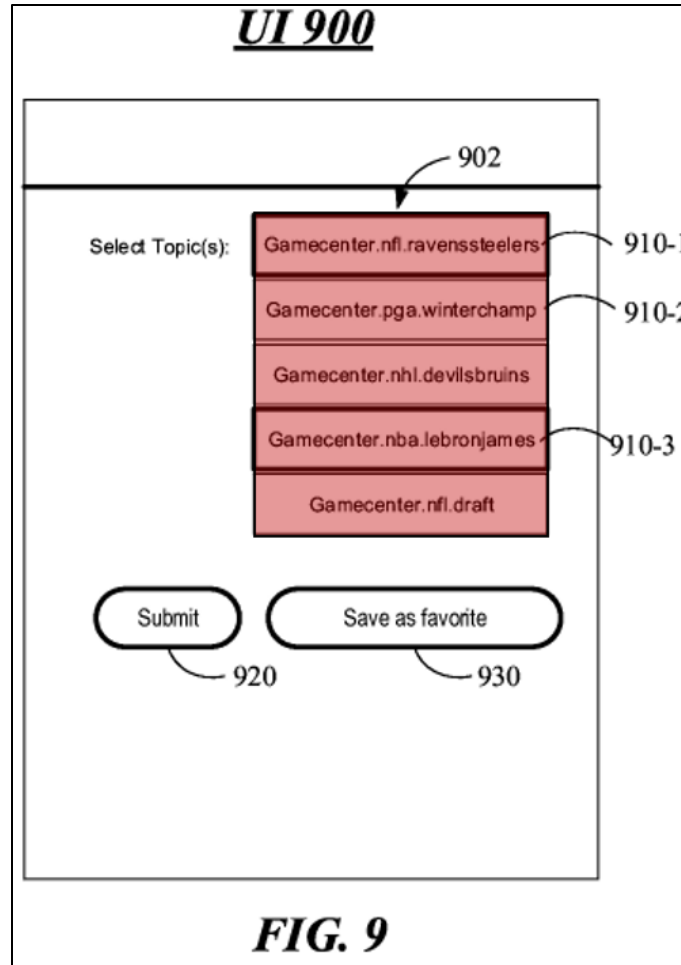
Id. ¶¶39, 41, Fig. 1. Thus, a POSA would have understood that the first live stream copies of digital content in Ellis do not provide event information using video internet communication channels. Ex.1001 ¶177.

3. Dependent Claim 13

a. Limitations 13.0-13.3

Ellis in view of Spivey discloses this limitation. Spivey discloses a user interface “to allow the operator to select or enter the address or connection information to a particular” MQSD.⁸ Ex.1017 ¶¶81-82. As shown below in Figure 9, the **address** “may resemble a uniform resource location (URL).”

⁸ See §VIII.A.2.c, n.7.



Id. ¶82; Fig. 9. Each URL corresponds to a specific sporting event, such as an NFL game between the Baltimore Ravens and the Pittsburgh Steelers, “a Professional Golf Association event,” or an NBA topic about LeBron James. *Id.* ¶85. VCDs use these topic label text strings to connect and subscribe to MQSD’s topic queues. *See id.* ¶¶81-84, Fig. 9. Spivey’s “data payload” may be pushed to the subscribed connected devices that requested that topic. *Id.* ¶96; §§VIII.A.2.b, VIII.A.2.c.

Furthermore, as explained above, a POSA would have understood that Ellis/Spivey’s websocket connection necessarily establishes an event information

communication channel that communicatively couples the client device to the event socket. *See* §§VIII.A.1, VIII.A.2; Ex.1001 ¶¶178-179; Ex.1017 ¶¶87, 92.

4. Dependent Claim 14

a. Limitation 14.0

Ellis in view of Spivey discloses this limitation. Ex.1001 ¶180. As stated, Ellis discloses transmitting an instruction to a VCD. *See* §VIII.A.2.c, *supra*.

Spivey discloses receiving digital content via a video communication channel and ultimately displaying it on the VCD. *See* §VIII.A.2.c, *supra*. Spivey further discloses transmitting a first address to a media source to a VCD, enabling the VCD to request and receive a stream of digital content. The topic queues in Spivey are functionally equivalent to event sockets in that they uniquely correspond to a particular event. *See* Ex.1016 ¶66. Each topic queue can carry multiple hierarchically related addresses (or “topic labels”) corresponding not only to a particular event but also to specific aspects of the event, such as gaming information. *Id.* ¶104. When a client device subscribes to a topic queue, the MQSD pushes data from the topic queue to the subscriber via the internet. *Id.* ¶¶46, 179.

5. Dependent Claim 15

a. Limitations 15.0-15.2

Ellis in view of Spivey discloses this limitation. Ellis discloses transmitting event information over a separate connection to user equipment. Ex.1016 ¶¶39-40, 47; Fig. 1; §VIII.A.2. The real-time event information can include, for example,

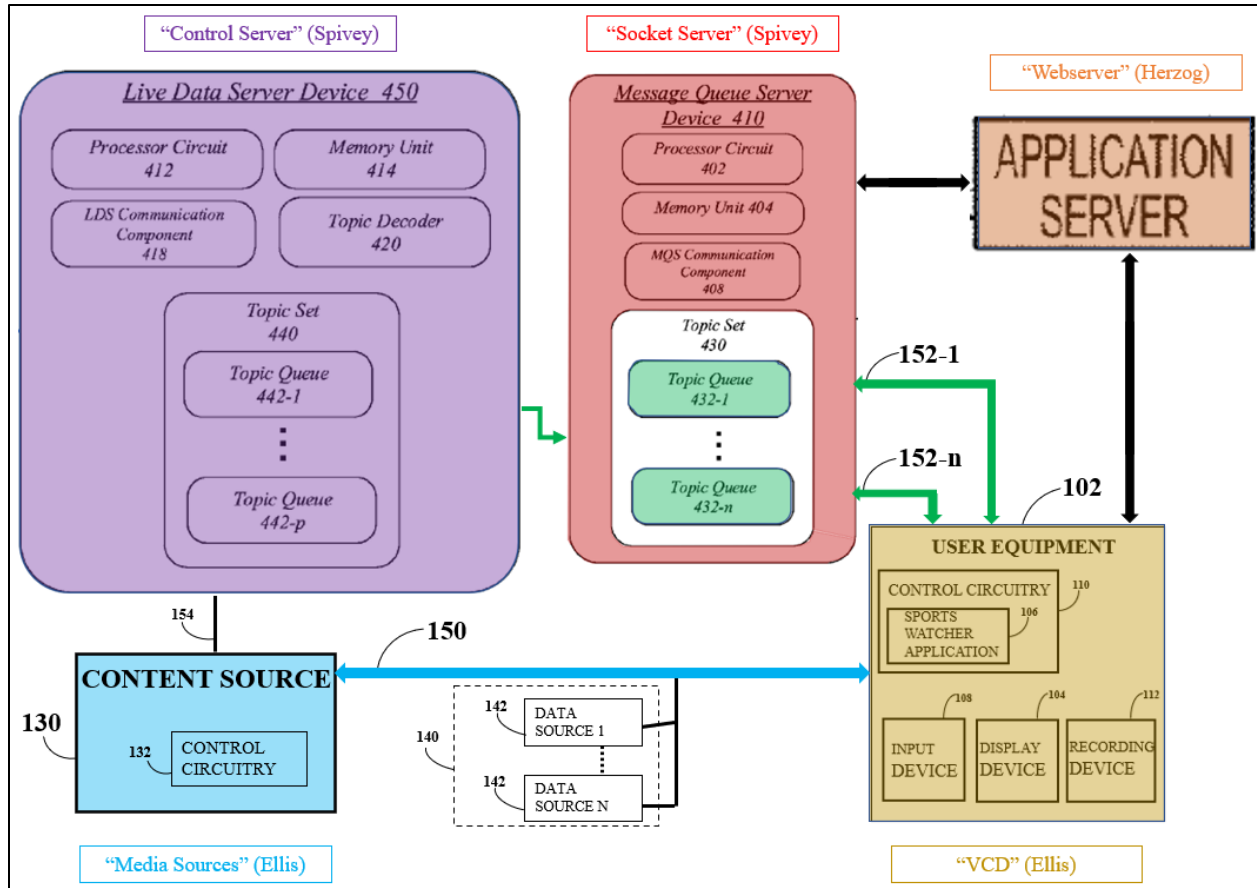
chat messages, advertising content, a scrollable description, live score and status updates, point spread, money line, and other wagering information, and other game-specific information. Ex.1016 ¶¶41, 72-73, 93, 126, 132, 149; Fig. 6. A POSA would have looked to Spivey to use websockets to reduce latency in the real-time data delivery of the event information. Ex.1001 ¶181.

B. Ground 1B: Claims 1-11 Are Obvious Over Ellis in View of Spivey and Herzog

1. Motivation to Combine

The motivation to combine Ellis with Spivey is discussed above. *See* §VIII.A.1. A POSA would have further been motivated to combine Ellis and Spivey with Herzog. Although the combination of Ellis and Spivey discloses a webserver, generally, the combination does not disclose a webserver implemented specifically to facilitate communication between a client device and socket server. Ex.1016 ¶40 (a content source may be “any suitable source of media content, such as, a[n] . . . Internet or network media/web server”); Ex.1017 ¶35 (“Message queue server 120 may comprise one or more electronic devices capable of receiving, processing, and sending information for the system. Examples of an electronic device may include . . . a web server”). However, a POSA would have understood that webserver were well-known components in streaming systems that were useful for facilitating communication between **client devices** and **socket servers**. Ex.1001 ¶¶116-119; Ex.1015 ¶¶26, 51, 56-58.

For example, Herzog teaches that its **application server** (*i.e.*, “webserver”) “provide[s] ancillary functions in support of the communication services and/or application services provided through [the] network” Ex.1015 ¶26. A POSA would have understood that using Herzog’s **application server** was advantageous because its ancillary functions reduce latency by “satisf[y]ing time synchronization requirements between a client application residing in mobile device 45 and the solution integrator 44,” which includes an origin server (*i.e.*, socket server). *Id.* ¶51; Ex.1001 ¶118. Herzog’s **application server** accomplishes this by “receiv[ing] the request from the client application software and [] sending the meta-data with [a] .JSON time stamp via the ERP server [*i.e.*, the control server]. . . .” Ex.1015 ¶58. A POSA would have been motivated to integrate Herzog’s **application server** into the Ellis/Spivey combination by placing it in between Ellis’s client device and Spivey’s **MQSD** (*i.e.*, socket server), as depicted by the annotated figure below:



See Ex.1015 ¶¶51, 58; Figs. 4, 6 (recreated); Ex.1016 ¶¶39, 41; Fig. 1 (recreated); Ex.1017, Fig. 4 (recreated) (combined as explained above); Ex.1001 ¶118. Placing Herzog’s application server in the location shown above would enable it to facilitate communication by “receiving the request” from the client device and sending back synchronized, time-stamped meta-data via the MQSD, to solve “latency issues.” Ex.1015 ¶56; Ex.1001 ¶118. A POSA would have understood that, by integrating Herzog’s application server, the new system would benefit from “synchroniz[ing] two different types of data, for example, video/audio data

and meta-data . . . so that they display appropriately on a mobile device in correct time synchronization”. Ex.1015 ¶64; Ex.1001 ¶118.

A POSA would have had a reasonable expectation of success in integrating Herzog’s webserver into Ellis and Spivey’s data delivery system. For example, Spivey’s Message Queue Server (MQS) functions as an intermediary between live data sources and client devices by “process[ing] live data to provide live data quickly to the client devices” Ex.1017 ¶36. Spivey teaches that the MQS may comprise a wide array of devices, including “a webserver,” so long as a single apparent criterion is met: the device must be “capable of receiving, processing, and sending information for the system.” *Id.* ¶35. A POSA would have appreciated that Spivey’s robust framework could easily be integrated with Herzog’s webserver to facilitate client device communication because Spivey broadly claims that nearly any electronic device can serve that purpose. A POSA would have understood that a webserver was “capable of receiving, processing, and sending information for the system” and, therefore, held a reasonable expectation of success in integrating the webserver into Spivey’s network. *Id.*; Ex.1001 ¶119.

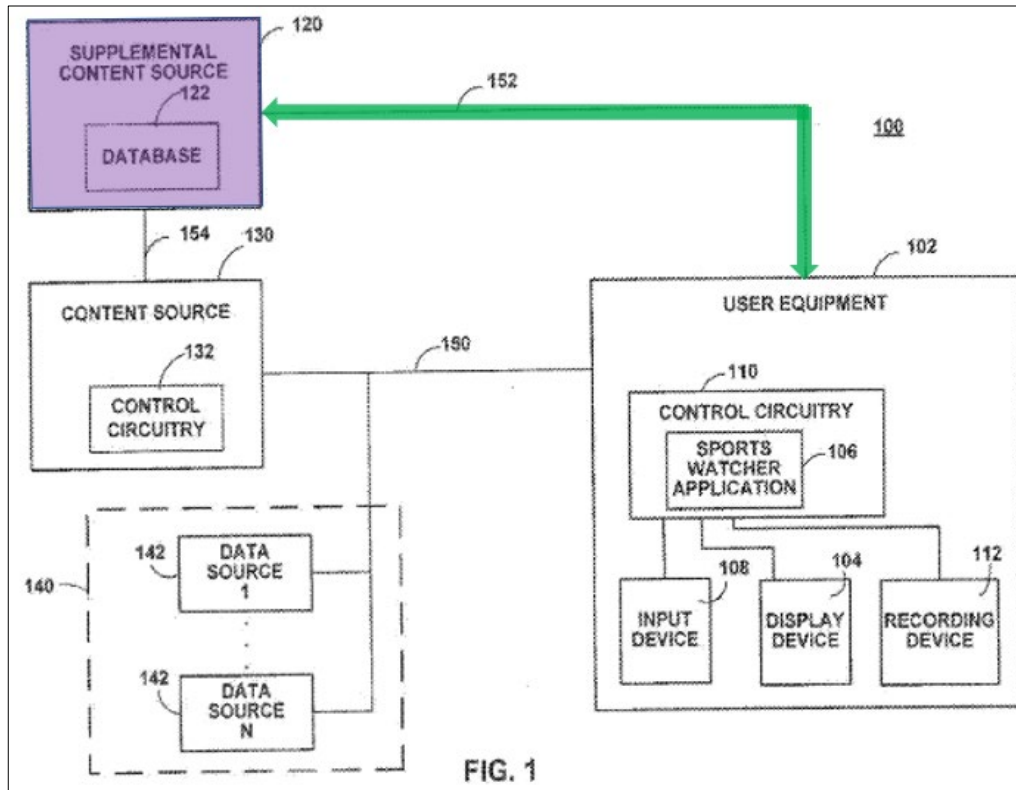
2. Independent Claim 1

a. Limitation 1.0

To the extent the preamble is limiting, Ellis discloses this limitation. *See* Ex.1016, Abstract. Ellis further discloses this limitation for the reasons stated above. *See* §VIII.A.2.a; Ex.1001 ¶226.

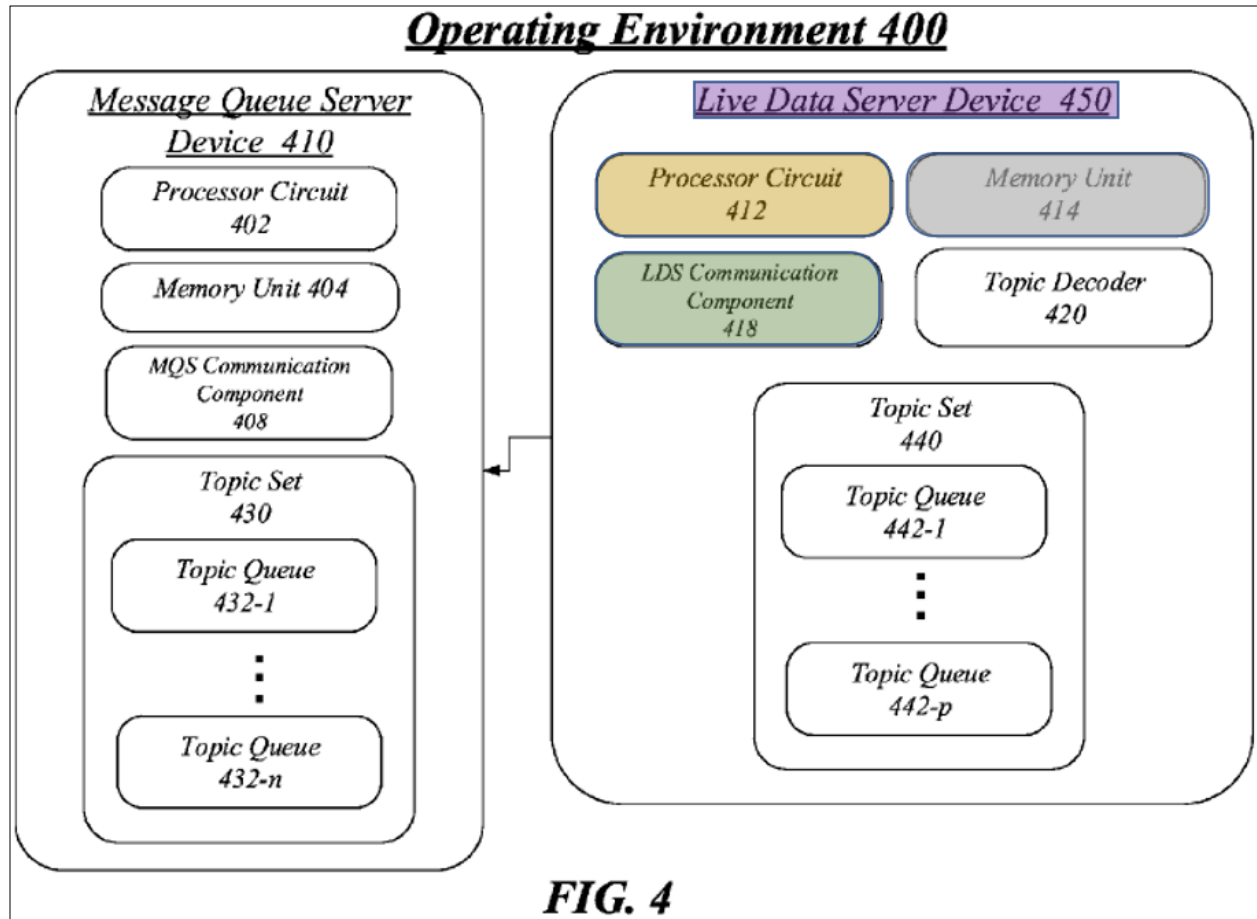
b. Limitation 1.1

Ellis discloses **SCS**, which are “any suitable source of media content” such as an “Internet or network media/web server, or any other suitable facility or system for originating or distributing passive or interactive content to user equipment.” Ex.1016 ¶¶40-41 (defining a SCS as “any suitable content source configured to provide real-time sports scores and game summary information . . . and any other sports-related information to user equipment 102.”); *id.* (defining a content source). Ellis’s **SCS** receive a live event broadcast and distribute real-time sports content to users via communications paths. *See id.* ¶¶39-41, 45, 47; *see also* Ex.1001 ¶227. The **SCS** retrieve this real-time sports content on a periodic basis. Ex.1016 ¶¶44, 175, 182. Figure 1 shows a **SCS** distributing digital content to users over communication path 152:



Ex.1016 ¶¶39-41; Fig. 1. These communication paths facilitate Internet data transmission from content sources “configured to provide real-time sports scores and game summary information” to user equipment via “a satellite path, a fiber-optic path, a cable path, or any other suitable wired or wireless path.” *Id.* ¶¶41, 45.

To the extent Ellis’s SCS does not inherently contain a control server, Spivey’s live data server device (“LDSD”), as shown in Figure 4, contains the same basic components as the ’218’s control server:



Ex.1017, Fig. 4. The **LDS** is a generic server comprising one or more **processors**, memory devices, and **communication interfaces**. *Id.*; Ex.1009, 56:5-16; Ex.1001 ¶229. Moreover, the LDS performs the same functions as the '218's control server. Ex.1001 ¶¶228-229. The LDS contains an LDS communication component that allows LDSD "to receive live data and transmit the data payloads to MQS device 410." Ex.1017 ¶55. The live data received by the LDS includes "sports scores and breaking news" and, when related to baseball, can include "a score, a play, an error, an injury, a player-at-bat, and so forth." *See id.* ¶¶27, 48, 66 ("A data payload may include ... information about the live event in progress, such

as a score, a name of the player that scored or made a play, an injury, a penalty, an error, a new record set, and so forth.”); Ex.1001 ¶229. The LDSO retrieves the live data over the internet from the live data source because the live data sources are “associated with the live event,” and servers in Spivey communicate over the internet. Ex.1017 ¶¶35, 37, 178; Ex.1001 ¶229. Thus, a POSA would have understood that Ellis alone, or, in the alternative, Ellis as modified by Spivey, discloses this limitation. Ex.1001 ¶229.

c. Limitation 1.2.1

Ellis in view of Spivey discloses this limitation for the reasons stated above. *See* §VIII.A.2.b, *supra*; Ex.1001 ¶230.

d. Limitations 1.2.2-1.2.3

Ellis in view of Spivey discloses this limitation for the reasons stated above. *See* §VIII.A.2.b, *supra*; Ex.1001 ¶231.

e. Limitation 1.3.1

As explained above, Herzog’s application server (*i.e.*, a “webserver”) is communicatively coupled to Ellis/Spivey’s socket server to transmit media source addresses to the VCDs to establish video communication channels. *See* §§VIII.A.2.c, VIII.B.1, *supra*; Ex.1001 ¶232.

f. Limitation 1.3.2

Ellis in view of Spivey and Herzog disclose this limitation for the reasons stated above. *See* §§VIII.A.4.a, VIII.B.1, *supra*; Ex.1001 ¶233.

3. Dependent Claim 2

a. Limitations 2.0-2.1

Ellis in view of Spivey and Herzog discloses this limitation. As explained above, a POSA would have considered it obvious to combine Herzog's application server with the content source in Ellis, which can be an "[i]nternet or network media/webserver." Ex.1001 ¶234; Ex.1016 ¶40; *see* §§VIII.B.2.e, VIII.A.2.b, *supra*. Furthermore, as explained above, Spivey discloses the first socket address includes an EventID that corresponds to the first event socket, such that the first VCD uses a first URL including the first EventID in the first URL to connect to the first event socket. *See* §VIII.A.3.

4. Dependent Claim 3

a. Limitations 3.0-3.1

Ellis in view of Spivey discloses this limitation. As explained above, the first event information Internet communication channel between the socket server and the first VCD is established by using the websocket protocol, which uses a persistent connection. *See* §§IV.B, VIII.A.1, VIII.A.2.b; Ex.1001 ¶235.

5. Dependent Claim 4

a. Limitations 4.0-4.1

As stated above with respect to limitation 1.3.1, Herzog discloses a webserver transmitting to a second VCD. *See* §VIII.B.2.e, *supra*. This limitation differs in that it recites a webserver transmitting to a second VCD rather than a

first, but Spivey discloses a first socket address to establish a first event information internet communication channel, and a POSA looking to Ellis would have understood that a socket address can establish a second, separate channel. *Id.* ¶¶39-40; *see* §§VIII.B.2.f, VIII.A.2.d, *supra*; Ex.1001 ¶236. Moreover, Spivey teaches that information is transmitted via a connection between a topic queue and the first user equipment device, which users can access using a URL. *See* Ex.1017 ¶¶81-82. The user can then access the specific topic queue she wishes to receive information from by using a text string (*e.g.*, a topic label or Event ID) associated with a topic queue. *Id.* ¶78, Fig. 9; §VIII.A.2.

b. Limitations 4.2

This limitation is substantially the same as limitations 1.2.1-3, which Ellis and Spivey disclose for the reasons stated above. *See* §§VIII.B.2.c, VIII.B.2.d, *supra*. This limitation adds, however, that the online gaming information is shared in a synchronized manner between VCDs. Spivey discloses this, as it teaches that “the embodiments discussed herein may reduce [] delay to an order of milliseconds (ms) (*e.g.*, 100ms) or less, providing a significant advantage over the conventional practices.” Ex.1017 ¶28. Spivey further teaches that digital content “may be pushed to the subscribed connected client devices substantially simultaneously with . . . a time delay of 100 milliseconds or less.” *Id.* ¶96. According to Spivey, “‘substantially simultaneously’ means that the set of actions execute within the

same defined period of time. The defined period of time may be of any length as suitable for a given implementation.” *Id.*; Ex.1001 ¶237.

6. Dependent Claim 5

a. Limitation 5.0

Ellis in view of Spivey and Herzog discloses this limitation. This limitation is substantially the same as limitation 2.1. *See* §VIII.B.3.a, *supra*. This limitation differs, however, in that it recites a second VCD using a second URL, rather than a first VCD using a first URL, to connect to the event socket. This difference is negligible, given that Ellis discloses transmitting sporting event information to a “number of users [that] may have one or more user equipment devices” Ex.1016 ¶39; Ex.1001 ¶238.

7. Dependent Claim 6

a. Limitations 6.0-6.1

Ellis alone, or Ellis in view of Spivey, discloses a control server, as set forth above for claim 1.1, which obtains and transmits online gaming information to VCDs. *See* §VIII.B.2.b. Both Ellis’s SCS and Spivey’s LDS are a single point of entry for the system to obtain this online gaming information. *See* §§VIII.B.1, VIII.B.2.b, VIII.A.2.b; Ex.1016, Fig. 1; Ex.1017, Fig. 4; Ex.1001 ¶239. Spivey pushes digital content to VCDs “substantially simultaneously . . . e.g., with a time delay of 100 milliseconds or less”. Ex.1017 ¶96.

8. Dependent Claim 7

a. Limitations 7.0-7.1

Ellis in view of Spivey and Herzog discloses these limitations. To the extent Ellis/Spivey does not explicitly disclose that its control server detects a change in status, it would have been obvious to a POSA that the control server does detect a change in status, as confirmed by Herzog, for example. Ex.1001 ¶240. Herzog discloses a socket server communicatively coupled to an ERP server, or control server, which receives “the request for meta-data with the . . . time stamp” then “transmits the meta-data with a corresponding .JSON time stamp of the live event” to the socket server. Ex.1015 ¶¶75-76; *see* §VIII.B.2.e, *supra* (equating Herzog’s “origin server” to the ’218’s “socket server”). Herzog’s time stamps are essential to tracking the status of each parameter continuously received and monitored by the ERP server. Ex.1015 ¶75. The telemetry data transmitted from the ERP server to the socket server “may include varying parameters regarding the status of each car and driver in the race,” as an example, and may include “as many as 50 different parameters that are available for monitoring of each race car” *Id.* ¶45. As explained above, changes in telemetry data status are ultimately transmitted from the ERP server to the socket server. *See* §VIII.B.2.e, *supra*. To the extent that Herzog’s telemetry data does not constitute online gaming information, a POSA would have considered it obvious to cover such information in view of Spivey,

teaching that topic queues can push sporting event payload data “corresponding not only to a particular event but also to specific aspects of the event.” Ex.1001 ¶240; Ex.1017 ¶104; *see* VIII.B.2.f, *supra*.

b. Limitations 7.2

Ellis in view of Spivey and Herzog discloses this limitation. Ellis in view of Spivey discloses a socket server transmitting online gaming information to a plurality of VCDs via a first event socket for the reasons stated above. *See* §VIII.B.2.d, *supra*. Given that Spivey recites a websocket connection (*i.e.*, a bi-directional, full-duplex, and continuous connection), this data transmission would include not only the online gaming information but also changes in that information as contemplated by Herzog. Ex.1001 ¶241; Ex.1017 ¶27; *see* §§IV.B, VIII.B.8.a, *supra*. Both Spivey and Herzog leverage this network architecture to provide synchronized data and mitigate latency. Ex.1044 ¶66 (system “for synchronizing two different types of data that are streamed at different rates with different latencies”); Ex.1017 ¶96 (system in which data “may be pushed to the subscribed connected client devices substantially simultaneously” in parallel, where “‘substantially simultaneously’ means that the set of actions execute within the same period of time”).

9. Dependent Claim 8

a. Limitation 8.0

Herzog discloses this limitation. This limitation is substantially the same as limitation 1.3.1. *See* §VIII.B.2.e, *supra*. This limitation differs only in that it recites a second VCD and internet communication channel rather than a first, but Herzog discloses this as a “system of a network/devices that provides various communications for mobile devices” via “different communication paths” in an “HTTP format.” Ex.1015 ¶¶6, 16; Cl. 4. To the extent Herzog does not disclose a second VCD or internet communication channel, a POSA would have considered it obvious in view of Ellis and Spivey for the reasons stated above. Ex.1001 ¶242; *see* §§VIII.A.1, VIII.B.1 *supra*.

10. Dependent Claim 9

a. Limitations 9.0-9.1

Ellis in view of Spivey and Herzog discloses this limitation. Ellis in view of Herzog discloses a second VCD, first media source, and first digital content relating to the first sporting event for the reasons stated above. *See* §VIII.B.9, *supra*. Spivey teaches that a VCD can be a subscriber to the media source of digital content. For example, Spivey describes topic label text strings to connect and subscribe to MQSD’s topic queues. Ex.1017 ¶¶131, 134; *see* §§VIII.A.2.b, VIII.A.2.c, *supra*. After selecting a particular topic label relating to a sporting event, the VCD can “display a selection user interface element to allow the

operator to select one or more topics to subscribe to.” *See* §§VIII.A.2.b, VIII.A.2.c, *supra*; Ex.1017 ¶75; Fig. 10; Ex.1001 ¶243.

b. Limitation 9.2

Ellis in combination with Spivey and Herzog discloses this limitation. As explained above with respect to the webserver, a POSA would have considered it obvious to combine Herzog’s application server with Ellis’s content source, which can be an “[i]nternet or network media/webserver.” Ex.1001 ¶244; Ex.1016 ¶40; *see* §§VIII.B.2.e, VIII.B.3.a, *supra*. This webserver would be operative to stream digital sports-related digital content to a plurality of VCDs. *See* §VIII.B.2.d, *supra*. To communicate with the webserver, Spivey teaches that a VCD may use a URL containing a topic label text string to connect and subscribe to MQSD’s topic queues. Ex.1017 ¶¶81-82; Fig. 9; §VIII.A.2. This URL, or media source StreamID, contains a portion indicating the type of digital content the VCD can expect to receive and display if it subscribes to the media source (*e.g.*, “Gamecenter.nfl.ravenssteelers” to indicate an NFL game, “Gamecenter.pga.winterchamp” to indicate a PGA event, etc.). *Id.* Fig. 9.

11. Dependent Claim 10

a. Limitations 10.0-10.1

Ellis in view of Spivey discloses this limitation. As described with respect to limitation 1.2.1, Ellis in view of Spivey discloses a socket server transmitting real-time information. *See* §VIII.B.2.c, *supra*. Although limitation 1.2.1 does not

further specify that the information should relate to the first digital content, a POSA would have understood this to be the case because the information in Spivey is eventually transmitted to a VCD as digital content. Ex.1001 ¶245; Ex.1017 ¶96. Moreover, for the reasons stated above, Ellis in view of Spivey discloses transmitting real-time information to at least the first VCD of a plurality via a real-time information Internet communication channel. *See* §VIII.B.5.b, *supra*. Ellis also discloses transmitting this information from content sources “configured to provide real-time sports scores and game summary information” to user equipment. Ex.1016 ¶41.

b. Limitation 10.2

This limitation is substantially the same as the limitation 1.4 with two exceptions. *See* §VIII.B.5.a, *supra*. First, it discloses a first VCD and second socket address, rather than a second VCD and first socket address. Given that Ellis discloses transmitting multiple streams of digital content to multiple different users, a POSA would have considered it obvious to have a webserver transmit to either a first or second VCD a first or second socket address. Ex.1001 ¶¶246-247; Ex.1016 ¶¶39, 94. Second, this limitation specifies that the information socket and Internet communication channel should operate in real-time. Ellis discloses a multiple-sporting-event system that retrieves real-time data for all events. *Id.* ¶41 (disclosing that “sports-related information is provided to user equipment [] as a

plurality of real-time data feeds” and “[e]ach data feed may be individually accessed or subscribed to by user equipment”).

12. Dependent Claim 11

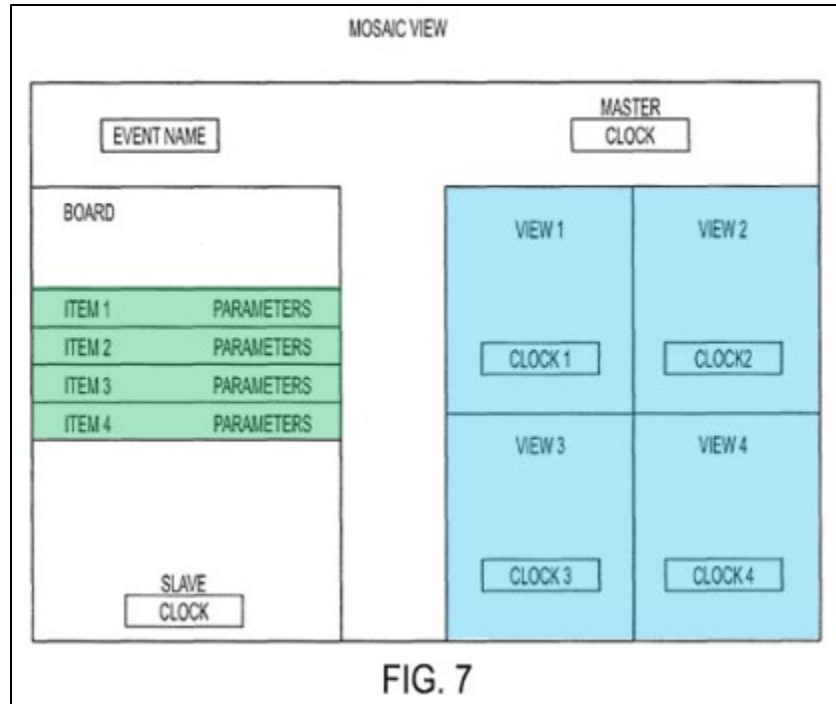
a. Limitation 11.0

Ellis discloses this limitation for the same reasons stated above. *See* §VIII.A.5.a, *supra*; Ex.1001 ¶248.

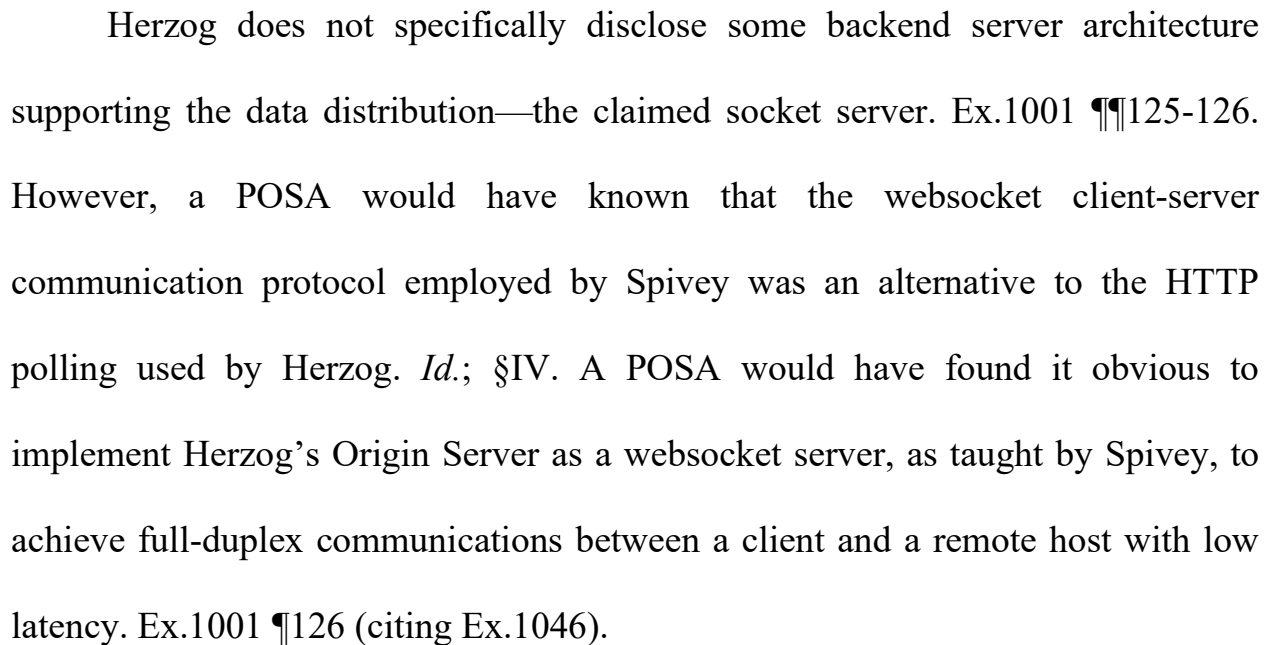
C. Ground 2A: Claims 1-9 and 12-14 Are Obvious Over Herzog in View of Spivey

1. Motivation to Combine

Herzog discloses methods and systems for viewing multiple videos related to the same sporting event in addition to live information about the event (meta-data). Ex.1001 ¶125. For example, Herzog’s Figure 7 shows “four different **videos** of a live event and **meta-data** of multiple parameters” from which a user can select:



Ex.1015 ¶¶12, 80-81; Fig. 7. Herzog provides these [video](#) and [data](#) streams over separate connections:



As noted above, *see* §VIII.A.1, a POSA would have understood that socket servers were well-known components for implementing real-time data delivery, such as in Herzog, with reduced latency. Ex.1001 ¶127; §IV, *supra*; Ex.1017 ¶¶35, 96. A POSA also would have appreciated the benefits associated with Spivey’s MQSD (*i.e.*, “socket server”) which establishes websocket connections with client devices, including convenient and efficient full-duplex communications between a client and a remote host with low latency. Ex.1017 ¶¶27-28, 43, 61, 74, 92, 96; Ex.1001 ¶127 (citing Ex.1046); §IV.B. A POSA, looking to improve Herzog’s latency issues, would have looked to implement a system such as Spivey. Ex.1001 ¶127.

A POSA would have done so by incorporating Spivey into Herzog’s current data delivery system by implementing Spivey’s MQSD at Herzog’s Origin Server to achieve a predictable result of decreased latency data delivery. *See* Ex.1015 ¶¶50-51, Fig. 4; Ex.1017, Fig. 4; Ex.1001 ¶128. The combined system would maintain Herzog’s video content delivery system and upgrade the data delivery system to reduce latency. Ex.1001 ¶128.

A POSA would have been motivated to combine Herzog with Spivey for many of the same reasons that a POSA would have been motivated to combine Ellis with Spivey. Ex.1001 ¶129. First, Herzog and Spivey relate to the same technical subject matter—content delivery for real-time events. *See* Ex.1017,

Abstract; Ex.1015, Abstract. Both references describe methods and/or systems for streaming video and/or event data to one or more users, such that video and/or event data are transmitted simultaneously. *See, e.g.*, Ex.1017, Abstract; Ex.1015, Abstract; Ex.1001 ¶129. Second, the references solve the same or similar problems, namely, providing video and/or event data to multiple users over the Internet quickly. *See, e.g.*, Ex.1017 ¶27; Ex.1015 ¶¶3, 19, 51.

A POSA would have had a reasonable expectation of success in combining Herzog with Spivey because Spivey contemplates being implemented in a digital content delivery system such as Herzog, stating that it can be used with “any well-known communication techniques and protocols, such as techniques suitable for use with packet-switched networks (e.g., public networks such as the Internet, private networks such as the enterprise intranet, and so forth)” Ex.1017 ¶155; Ex.1001 ¶130.

A POSA would have been motivated to combine Herzog with Spivey because Spivey provides a complementary solution describing the details of the backend architecture for organizing and transmitting event data to multiple users. Ex.1017, Abstract; Ex.1001 ¶130.

Combining certain portions of Herzog and Spivey would have been obvious because doing so would require only the simple substitution of known elements for another to obtain predictable results. Ex.1001 ¶131. Herzog encourages this

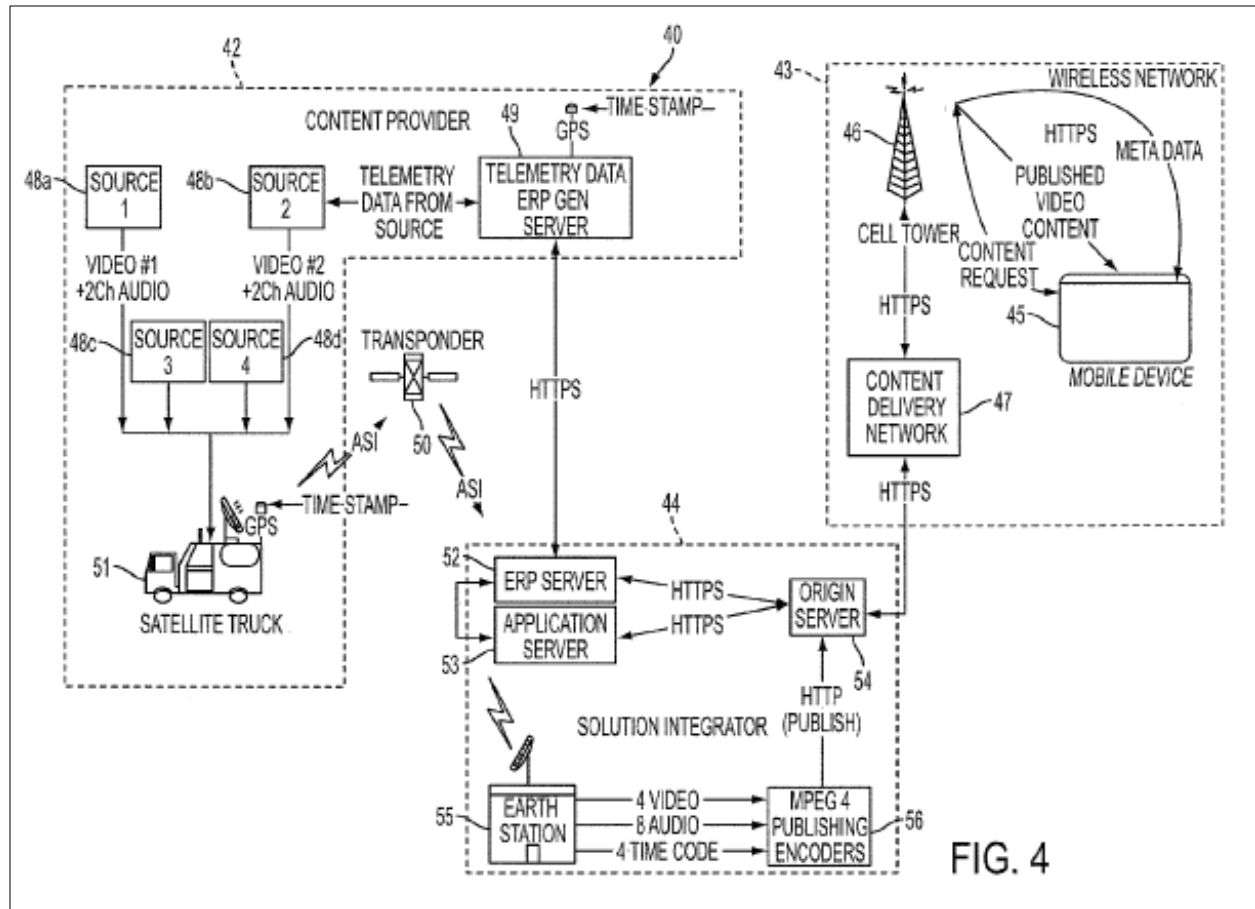
flexibility, stating that it encourages “modifications ... in various forms and examples, and that the teachings may be applied in numerous applications.”

Ex.1015 ¶90. To a POSA, it would have been obvious to substitute any of Herzog’s meta-data distribution elements with any combination of Spivey’s LDSD, MQSD, and/or Live Data Source(s), which are similarly involved in transmitting live event data to users and may be configured in any manner. *See* Ex.1017 ¶34; Ex.1001 ¶131.

2. Independent Claim 1

a. Limitation 1.0

Herzog provides “live video and audio data” to user devices over a “communication network.” Ex.1001 ¶266; *see* Ex.1015, Abstract. Herzog’s primary embodiment includes providing “multiple video/audio streams of race cars and drivers [*i.e.*, sources 48a-d], as they are imaged at different locations on the race track:”



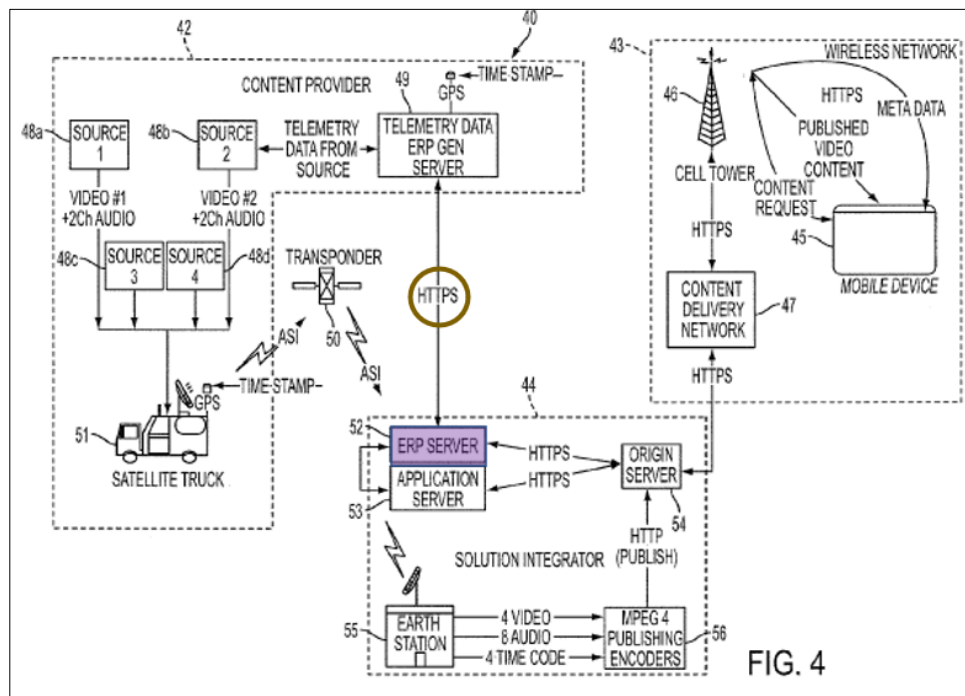
Ex.1015 ¶45; Fig 4. This system makes these video feeds available to “mobile stations” and other “similar users.” *Id.* ¶19. Each user can then request video from “one or more channels of video/audio for viewing a live event.” *Id.* ¶70. The user then “receives both the video/audio stream” via HLS. *Id.* ¶51. Thus, Herzog provides a system where multiple different users can select the same, or different, live stream of digital content relating to a sporting event. Ex.1001 ¶266.

Herzog also provides event information germane to the sporting event. Specifically, Herzog transmits “meta-data” such as “the status of each car and driver in the race” and may include “lap number, car speed and acceleration” but

there may be as many as “50 different parameters that are available.” Ex.1015 ¶45; Ex.1001 ¶267. A POSA would have understood such parameters to include online gaming information. Ex.1001 ¶267.

b. Limitation 1.1

Herzog’s **ERP Server** connects to the “ERP Gen Server” over the internet:



Ex.1015 ¶¶45, 47, 50; Fig. 4. The ERP Server is a generic server that retrieves meta-data from the ERP Gen Server. *Id.* ¶¶16, 47, 50. It contains the same components as the '218's control server: a processor, memory device, and communication interfaces. *Id.* ¶¶13, 85-86; Fig. 8; Ex.1009, 56:5-16. The ERP Server “acts as an intermediary between the ERP generator server and the origin server.” *Id.* ¶50. The meta-data retrieved includes event information germane to the sporting event. Ex.1015 ¶45; Ex.1001 ¶268. The ERP Server retrieves this

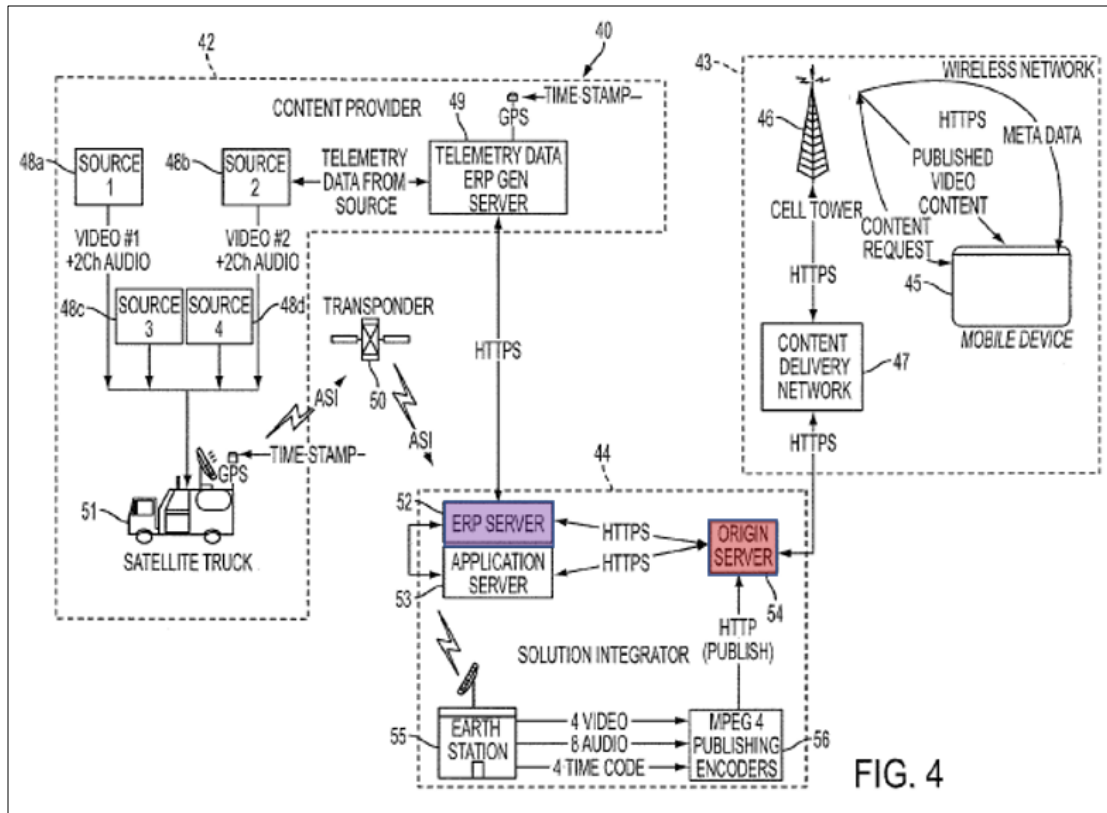
information over the internet because it retrieves the information in HTTPS format, an internet communication protocol. Ex.1015 ¶¶17, 50; Ex.1001 ¶268.

While a periodic time interval, *e.g.*, every .1 seconds, is not mentioned in Herzog, a POSA would have understood that HTTP is a pull-oriented protocol where receivers such as the ERP server need to explicitly ask for new data. To reduce latency using an HTTP connection, a POSA would have known to have Herzog's ERP server periodically check for the content availability as often as possible. Ex.1001 ¶269. Alternatively, it would have been an obvious design choice to use a periodic update to limit queries to the system and load on the components. *Id.* Thus, a POSA would have understood that Herzog and Spivey both disclose this limitation. *Id.*

c. Limitation 1.2.1

Herzog in view of Spivey discloses a **socket server** communicatively coupled to the **control server** (which, as discussed above, is disclosed by Herzog's **ERP Server**).

Herzog discloses providing event information, including online gaming information, over a separate connection to user equipment. Ex.1015 ¶¶48-52, 67; Figs. 4, 6; Ex.1001 ¶270. That process includes the **ERP Server** transmitting data to the **Origin Server**:

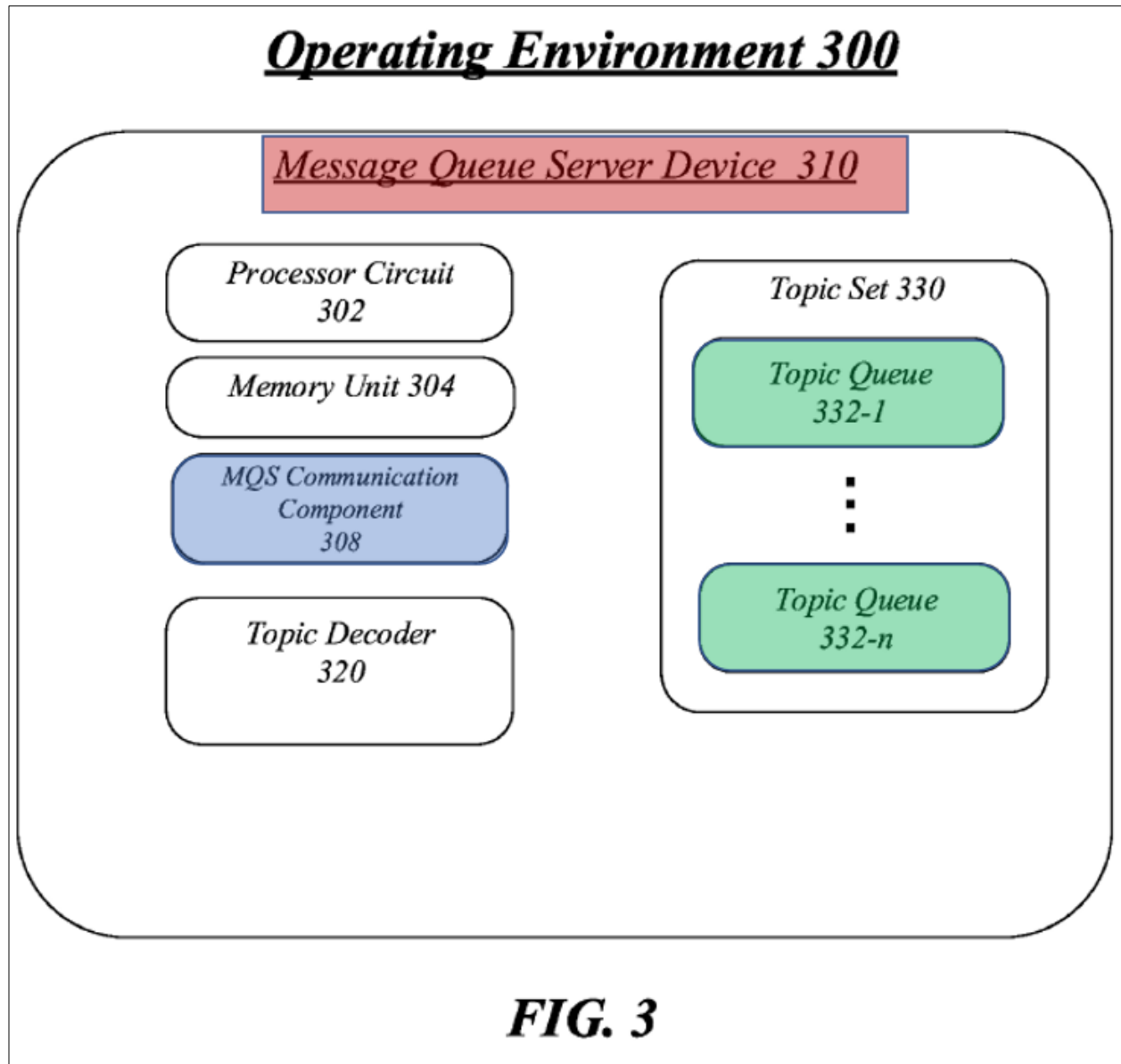


Ex.1015 ¶¶50-51, 83; Fig. 4. As explained above, a POSA would have incorporated Spivey’s MQSD into Herzog’s Origin Server, to reduce latency.

Ex.1001 ¶270; §VIII.C.1.

Like the ’218’s socket server, Spivey’s MQSD is a generic server that contains processors, memory, and communication components. Ex.1017 ¶¶35, 53; Figs. 3, 4. Moreover, Spivey’s MQSD carries out the same purpose as the ’218’s socket server. The MQSD “receive[s]” and “process[es] live data to provide live data” to “the subscribed connected client devices substantially simultaneously.” *Id.* ¶36; *see id.* ¶¶45 (“[MQS] device 310 may be a representative example of message queue server 120”); 54 (MQSD is “substantially similar” to “MQS device 310”);

96. To accomplish this, the MQSD receives live event data from the LDS, which just “receive[d] live data:”



Id. ¶55; Fig. 3. MQSD contains the MQS communication component which would allow the MQSD to communicate with the ERP Server, as contemplated in Spivey. *See id.* ¶¶46 (communication component 308 transmits and receives data), 54 (communication component 408 is analogous to 308); 55 (“LDS communication

component 418 ... allows [LDSD] to ... transmit the data payloads to [MQSD].”); Ex.1015, Fig. 4; Ex.1001 ¶271.

After receiving the data, the MQSD organizes the received live data “into one or more of a plurality of **topic queues**” dedicated to storing information about “a specific game.” Ex.1017 ¶¶47, 52. After sorting the data into the proper topic queues, the MQSD shares the information “substantially simultaneously” to “the subscribed connected client devices.” *Id.* ¶96. Thus, a POSA would have understood that Herzog’s **ERP server** transmitting HTTPS information to **Spivey’s MQSD** as disclosing the ’218’s **socket server** being communicatively coupled to a **control server**. Ex.1001 ¶¶272.

Further, Herzog’s ERP Server “receives the meta-data from ERP generator server 49 in HTTPS communication format” and “acts as an intermediary between the ERP generator server and the origin server.” Ex.1015 ¶50. Figure 4 shows that the meta-data is provided to the origin server from the ERP server in HTTPS format:

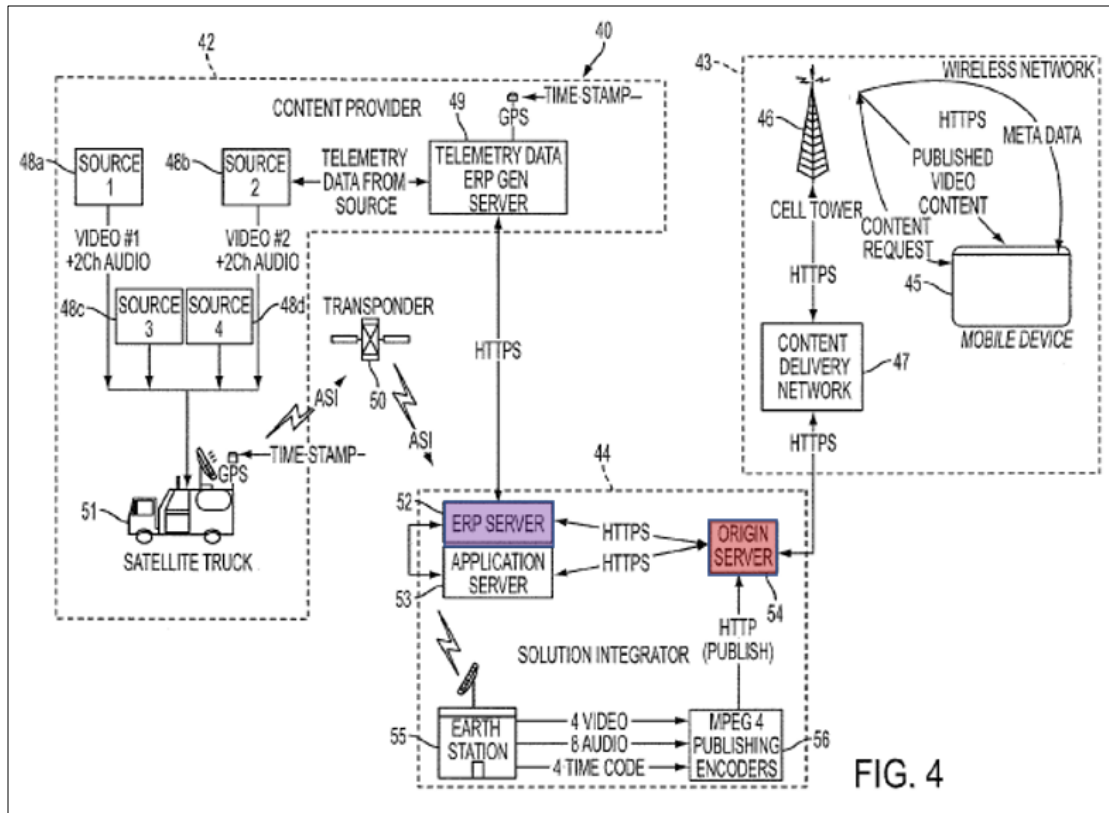


FIG. 4

Ex.1015 ¶¶50-51, Fig. 4. Incorporating Spivey's MQSD into Herzog's origin server would thus allow the MQSD (socket server) to receive from the ERP Server (control server) the meta-data provided (first event information). Ex.1001 ¶¶270-273. Thus, a POSA would have understood that Herzog in view of Spivey discloses a socket server receiving from the control server at least the first event information. Ex.1001 ¶273.

d. Limitations 1.2.2-1.2.3

- i. First event socket corresponding to the first event information germane to the first sporting event

A POSA would have understood that Spivey's topic queues disclose the '218's first event sockets corresponding to the first event information germane to the first sporting event. Ex.1001 ¶274; *see* §VIII.A.2.b.

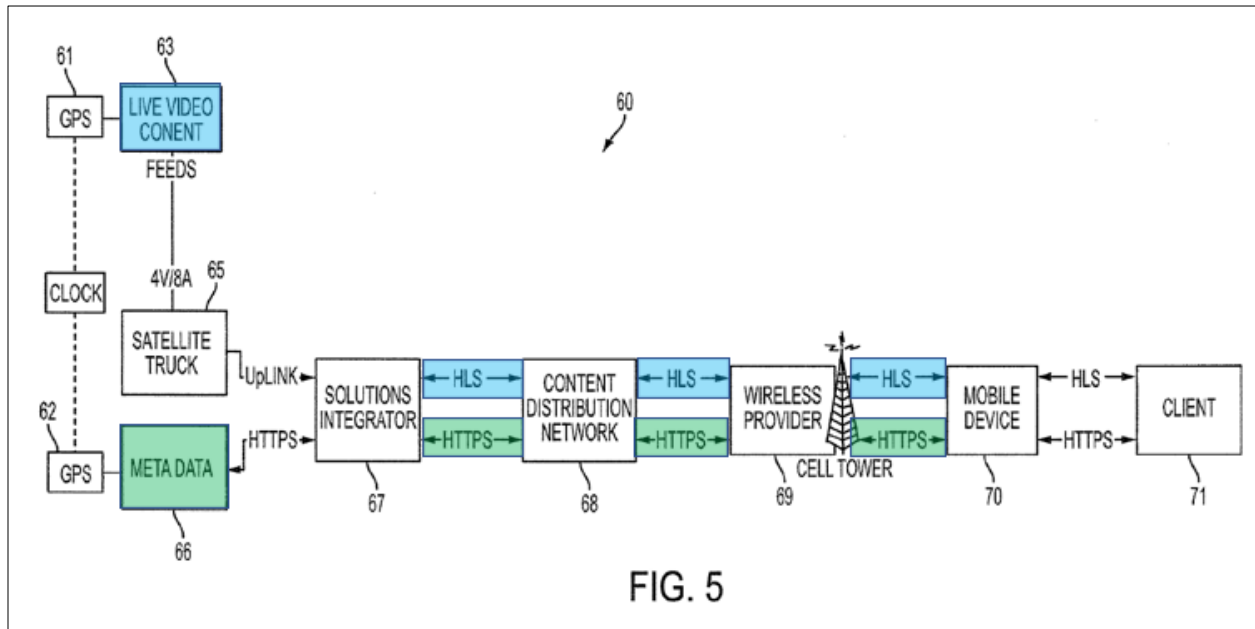
- ii. Transmitting the first event information to at least the first VCD of the plurality of VCDs

Both Herzog and Spivey disclose transmitting the first event information to the first VCD of the plurality of VCDs. For example, in Spivey, the MQSD “may push data from topic queues ... to the subscribers of the topics corresponding to those topic queues.” Ex.1017 ¶46. In Herzog, the Origin Server may be configured to transmit “the meta-data to the content delivery network 47,” which the user receives “in an HTTPS communications protocol.” Ex.1015 ¶51. A POSA would have known that the websocket client-server communication protocol employed by Spivey was an alternative to the HTTP polling used by Herzog. Ex.1001 ¶275; §IV.

- iii. Transmitting via a first event information Internet communication channel between a first event socket of the at least one socket server and the first VCD

Herzog in view of Spivey discloses providing first event information over a separate internet communication channel. Spivey's entire system is based on providing “live event data in real time.” Ex.1017, Abstract. The MQSD can be an “internet server.” *See id.* ¶35. Spivey communicates with client devices over “any

... combination of wired and/or wireless networks including ... the Internet.” *Id.* ¶179. For example, client devices “may request and participate in a websocket connection,” which “typically comprises a two-way connection between two entities.” *Id.* ¶¶43, 61. Moreover, consistent with Spivey, Herzog discloses providing **event information** over a separate communication path than the **video signal** where there is “a unique video and meta-data source that do not follow the same path of transmission:”



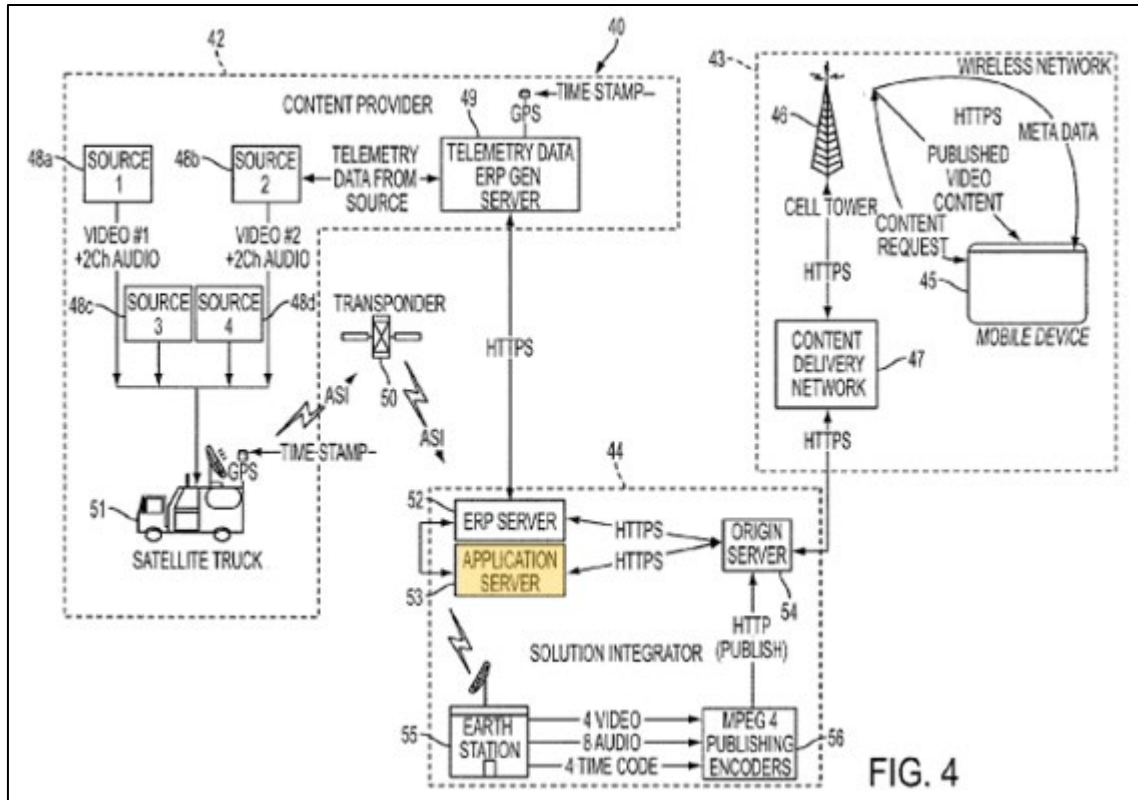
Ex.1015 ¶¶47-51, 83; Figs. 1, 4, 6. Thus, a POSA would have understood Spivey to disclose transmitting first event information via a separate internet connection. Ex.1001 ¶276.

Further, this information is provided via a connection between a topic queue and the first VCD. Users can access the MQSD using a URL. *See* Ex.1017 ¶¶81-

82. Then, the user can access the specific topic queue they wish to receive information from by using a text string, *e.g.*, a topic label or Event ID, associated with a topic queue. *Id.* ¶179; Fig. 9 (“Gamecenter.nfl.ravenssteelers.”). Thus, a POSA would have understood that Herzog in view of Spivey discloses distributing event information from a socket to a user device over an internet connection. Ex.1001 ¶277. Further, a POSA would have understood that the internet connection is established using a URL and text string identifying a uniquely addressable communication endpoint on the MQSD, where first event information is transmitted to a VCD. Ex.1001 ¶277.

e. Limitation 1.3.1

Herzog discloses an “application server 53” (*i.e.*, webserver), which is “configured to receive the request from the client application software and begin sending the meta-data with the corresponding .JSON time stamp via the ERP server 52 in the solution integrator 44.” Ex.1015 ¶58. Herzog’s application server is depicted below in Figure 4:



Ex.1015, Fig. 4. The application server facilitates streaming between the origin server and client device by receiving a “request with the time code call out” from the client device, then prompting the origin server to transmit a meta-data stream to the client devices. *Id.* ¶51. While doing so, the application server “satisfies time synchronization requirements between a client application residing in mobile device 45 and the solution integrator 44.” *Id.*

The application server accomplishes this using a media source Internet address establishing a communication channel between a media source and client device. Ex.1001 ¶279. Specifically, Herzog discloses a server address, albeit indirectly, when describing the type of content a client device may store. Ex.1015

¶35 (“The memories 114, 116 also store various data, such as telephone numbers and server addresses”). To the extent Herzog does not explicitly reference a media source address, a POSA would have understood that the system in Herzog necessarily requires such an address to stream digital content corresponding to the online gaming information from the media source to the client device. Ex.1001 ¶¶278-279. Specifically, a POSA would have understood that Herzog’s HTTPS communication format uses the Transmission Control Protocol (TCP), which in turn uses the Internet Protocol (IP). *Id.* These protocols require an IP address (*i.e.*, Internet address such as 130.24.20) to designate the location from which client devices can receive requested digital content. *Id.*

f. Limitation 1.3.2

Herzog in view of Spivey discloses a socket address of an event socket. *Id.* ¶280; §VIII.C.1. Specifically, a POSA would have understood that Spivey’s event socket contains a socket address. Spivey’s WebSocket operates over HTTP through a single socket and thus requires an IP address to designate the location from which client devices can receive the online gaming information. Ex.1001 ¶280. Users can access the MQSD using a URL. *See* Ex.1017 ¶¶81-82. Then, the user can access the specific topic queue they wish to receive information from by using a text string, *e.g.*, a topic label or EventID, associated with a topic queue. *Id.* ¶179, Fig. 9 (“Gamecenter.nfl.ravenssteelers.”). Thus, a POSA would have

understood that Herzog in view of Spivey discloses distributing event information from an event socket to a user device over an internet connection. Ex.1001 ¶280. Further, a POSA would have understood that the internet connection is established using a URL and text string identifying a uniquely addressable communication endpoint on the MQSD, *i.e.*, the socket address, where first event information is transmitted to a VCD. Ex.1001 ¶280.

3. Dependent Claim 2

a. Limitations 2.0-2.1

Herzog in view of Spivey discloses this limitation. As explained above, Herzog in view of Spivey discloses transmitting a socket address from a webserver to a client device. *See* §§VIII.C.2.e, VIII.C.2.f, *supra*. Further, Spivey discloses using a URL to establish an internet connection, in which the URL contains an EventID and socket address. *See* §VIII.C.2.f, *supra*; Ex.1001 ¶281.

4. Dependent Claim 3

a. Limitations 3.0-3.1

Herzog in view of Spivey discloses a first event information Internet communication channel to carry online gaming information between the event socket and client device for the reasons stated above. *See* §VIII.C.2.d, *supra*. This channel is established by using the websocket protocol, which uses a persistent connection. *See* §§IV.B, VIII.A.1, VIII.A.2.b; Ex.1001 ¶282.

5. Dependent Claim 4

a. Limitations 4.0-4.1

Herzog in view of Spivey discloses a webserver facilitating communication between a client device and socket server by transmitting a socket address to a client device of a plurality of devices. *See* §§VIII.C.2.d, VIII.C.2.e, *supra*. Herzog in view of Spivey further discloses that this socket address establishes an event information Internet communication channel between the event socket and client device. *See* §VIII.C.2.d, *supra*.

b. Limitation 4.2

Herzog in view of Spivey discloses a socket server transmitting online gaming information germane to a sporting event to a client device via an event information Internet communication channel. *See* §VIII.C.2.d, *supra*. Herzog further discloses sharing online gaming information in a “synchronous manner” using a “VITC time stamp” as the “master time for synchronization.” Ex.1015 ¶¶16, 58. Because the meta-data is synchronized to the videos, and the videos are delivered to the client devices at the same time, the meta-data is necessarily shared in a synchronized manner by the two client devices. Ex.1001 ¶¶283-284.

6. Dependent Claim 5

a. Limitation 5.0

Herzog in view of Spivey discloses this limitation for the reasons stated above. *See* §VIII.C.3.a, *supra*; Ex.1001 ¶285.

7. Dependent Claim 6

a. Limitations 6.0-6.1

Herzog discloses an **ERP server** (*i.e.*, control server) that transmits event information, including online gaming information, to a client device for the reasons stated above. *See* §§VIII.C.2.b, VIII.C.2.c, *supra*. As shown below in Figure 4, the ERP Server 52 acts as the single point of entry for transmitting online gaming information from the content provider to the client device:

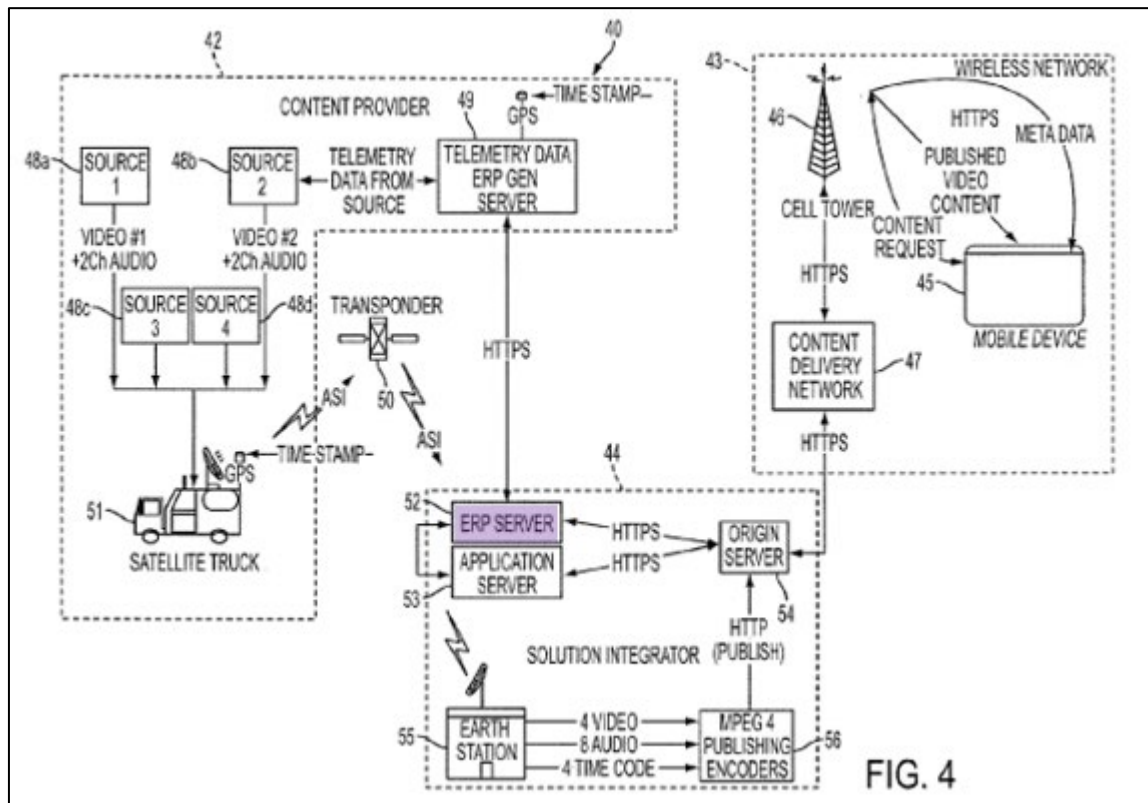


FIG. 4

Ex.1015; Fig. 4. Herzog further discloses that, to improve synchronization, the “solution integrator 44, is configured to receive the request from the client application software and begin sending the meta-data with the corresponding

.JSON time stamp via the ERP server 52 in the solution integrator 44.” *Id.* ¶58; *see also* §VIII.C.5.b; Ex.1001 ¶286.

8. Dependent Claim 7

a. Limitations 7.0-7.1

Herzog discloses an ERP server (*i.e.*, control server) designed to mitigate client-by-client and/or synchronization issues for the reasons stated above. *See* §§VIII.C.2.b, VIII.C.7.a, *supra*. Herzog further discloses detecting a change in the status of event information by continuously monitoring and transmitting changes in telemetry data, including “lap number, car speed and acceleration, tire pressure, etc. In a car race, there may be as many as 50 different parameters that are available for monitoring of each race car, in order to assess how well the driver is performing during any interval of the race.” Ex.1015 ¶45; Ex.1001 ¶287. To the extent Herzog does not specifically disclose that its ERP server detects a change in status, it would have been obvious to a POSA that the ERP server does detect a change in status, for the same reasons explained above. *See* §VIII.B.8.a; Ex.1001 ¶287.

b. Limitation 7.2

Herzog discloses a socket server transmitting online gaming information to a plurality of client devices via an event socket for the reasons stated above. *See* §VIII.C.2.d, *supra*. Herzog further discloses a solutions integrator, including a socket server, to provide a single synchronized update and mitigate client-by-client

latency for the reasons stated above. *See* §§VIII.C.5.b, VIII.C.7.a, *supra*; Ex.1001 ¶288.

9. Dependent Claim 8

a. Limitation 8.0

Herzog discloses a webserver transmitting a media source address to a client device to establish a video Internet communication channel for the reasons stated above. *See* §VIII.C.2.e, *supra*. Herzog further discloses transmitting the video and meta-data streams to multiple client devices. *See* §VIII.C.2.

10. Dependent Claim 9

a. Limitations 9.0-9.1

Herzog in view of Spivey discloses a client device, media source, and digital content relating to the first sporting event for the reasons stated above. *See* §VIII.C.2.e, *supra*. Spivey teaches that a client device can be a subscriber to the media source of digital content. For example, Spivey describes topic label text strings to connect and subscribe to MQSD's topic queues. Ex.1017 ¶¶51, 131; Ex.1001 ¶290; §§VIII.A.2, VIII.C.2.

b. Limitation 9.2

As explained above, Herzog discloses an application server (*i.e.*, webserver) operative to stream digital sports-related digital content to a plurality of client devices. *See* §§VIII.C.2.d, VIII.C.2.e, *supra*. To communicate with the webserver, Spivey teaches that a VCD may use a URL containing a topic label text string to

connect and subscribe to MQSD's topic queues. Ex.1017 ¶¶81-82; Fig. 9; §§VIII.A.2; VIII.C.2. This URL, or media source StreamID, contains a portion indicating the type of digital content the client device can expect to receive and display if it subscribes to the media source (*e.g.*, "gamecenter.nfl.ravenssteelers" to indicate an NFL game, "gamecenter.nfl.ravenssteelers.stats," referring to statistics about a specific NFL game). *Id.* ¶¶52, 85; Ex.1001 ¶291.

11. Independent Claim 12

a. Limitation 12.0

Herzog in view of Spivey discloses this limitation, for the reasons stated above. *See* §VIII.C.2.a, *supra*.

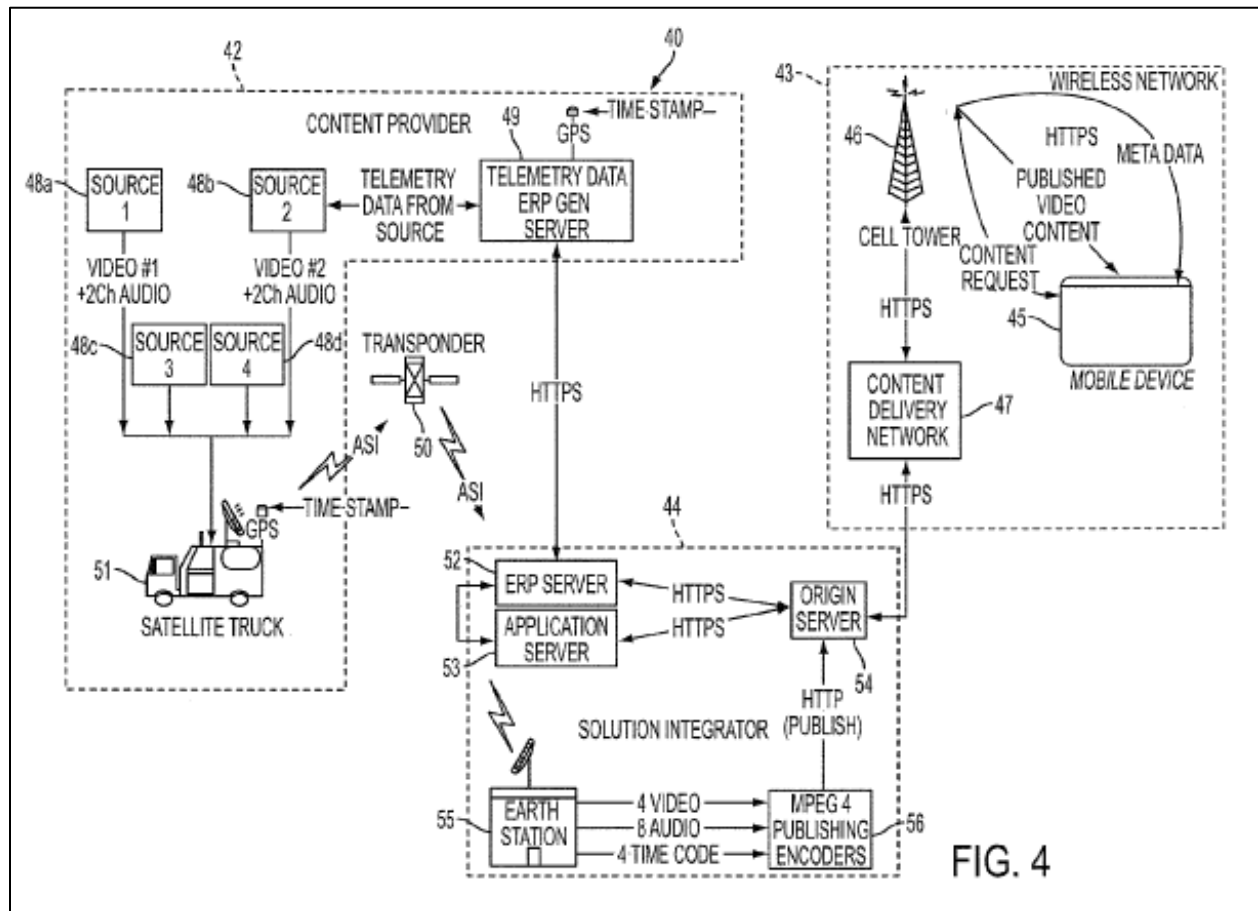
b. Limitation 12.1

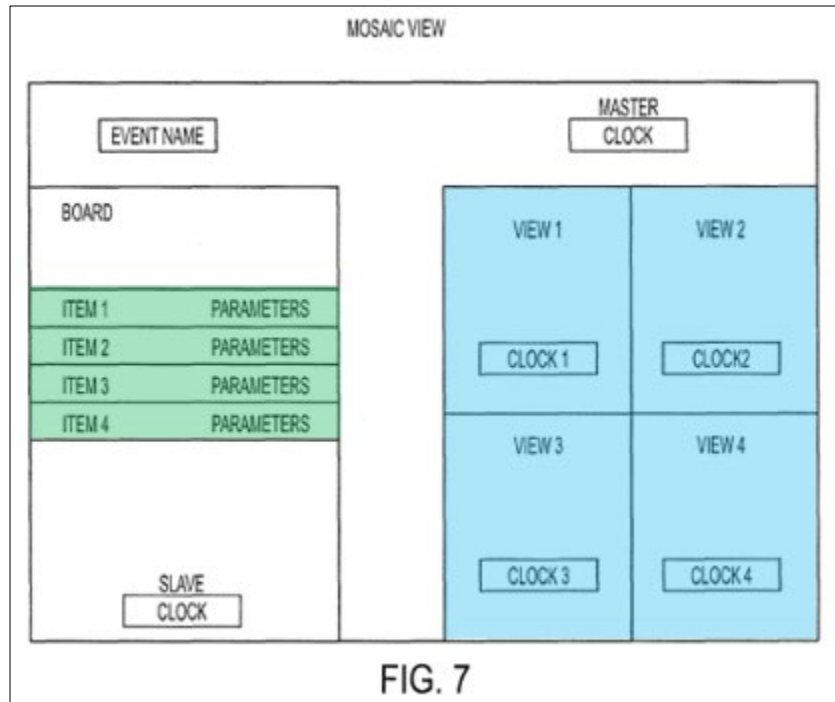
Herzog in view of Spivey discloses this limitation, for the reasons stated above. *See* §§VIII.C.2.c, VIII.C.2.d, *supra*.

c. Limitation 12.2

Herzog discloses transmitting at least one instruction to the first client device to cause the first client device to request a first copy of a first stream of digital content relating to the first sporting event. *See* Ex.1015 ¶¶28, 84, 86, 88, cl. 11 (user device executes instructions). Furthermore, a POSA would have understood that Herzog necessarily transmits instructions to the client device during a digital handshake procedure between its user equipment and media sources at the outset of a connection. Ex.1001 ¶¶294-296.

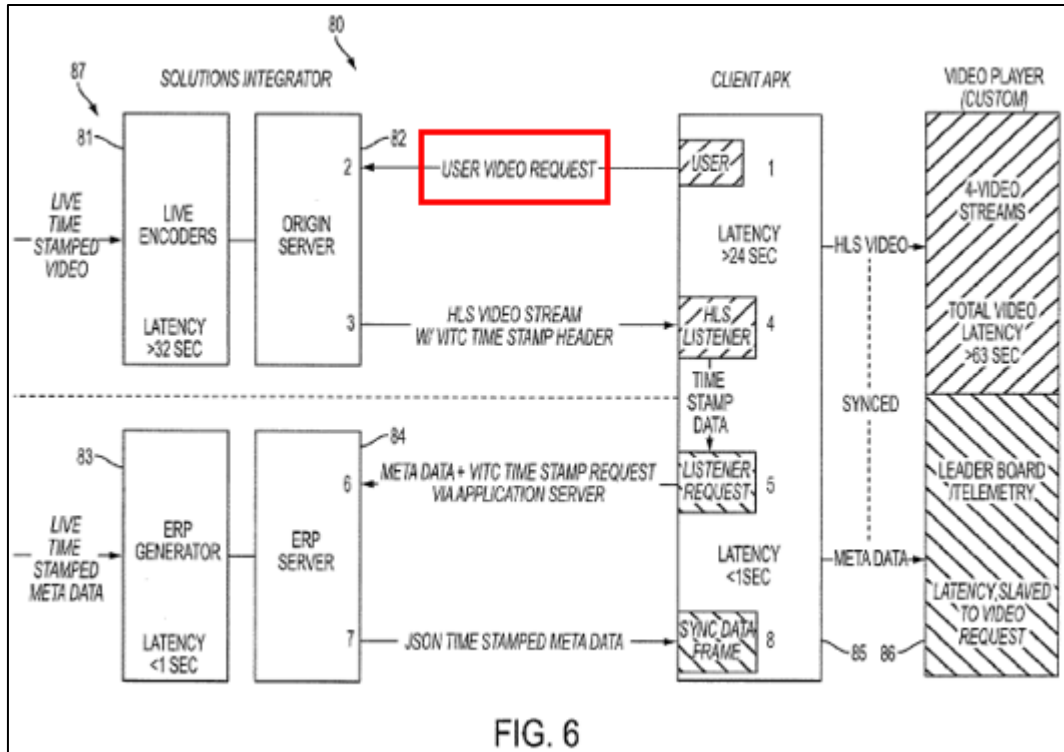
Herzog also discloses causing a display to render **video** event and **live event information** relating to the sporting event, as shown below in Figures 4 and 7:





Ex.1015 ¶12; Figs. 4, 7. Herzog accomplishes this by streaming “multiple paths of... content” (*i.e.*, sources 48a-d), then “display[s] the different streaming content in a synchronous manner.” *Id.* ¶16. Herzog discloses that these sources relate to a sporting event, as they originate from a “sports venue.” *Id.*

Furthermore, as shown below in Figure 6, Herzog discloses a client device receiving digital video content relating to a sporting event on a first communication channel after making a “user video request”:



Ex.1015, Fig. 6. Herzog makes clear that a client device receives such video content via a communication channel, as it discloses that “it may be desirable for a user to view video that is streamed live from the Internet to a client player using” HLS. *Id.* ¶13.

d. Limitation 12.3

Herzog discloses this limitation for the reasons stated above. *See* §VIII.C.2.d.iii, *supra*.

12. Dependent Claim 13

a. Limitations 13.0-13.3

Herzog in view of Spivey discloses this limitation for the reasons stated above. *See* §VIII.C.3.a, *supra*.

13. Dependent Claim 14

a. Limitation 14.0

Herzog in view of Spivey discloses transmitting an instruction to the client device, causing it to request a live stream of digital content via a video communication channel between the media source and the client device and to display the video. *See* §VIII.C.11, *supra*. Herzog further teaches that these instructions include a media source address. *See* §VIII.C.2.e, *supra*.

D. Ground 2B: Claims 10-11 and 15 Are Obvious Over Herzog in View of Spivey and Ellis

1. Motivation to Combine

The motivation to combine Herzog with Spivey is discussed above. *See* §VIII.C.1. A POSA would have further been motivated to combine Herzog and Spivey with Ellis. Ex.1001 ¶¶149-154.

As explained, Herzog in combination with Spivey discloses a system providing video streams and event information streams to multiple users. *See* §VIII.A. To the extent Herzog in combination with Spivey does not disclose a third stream, the claimed real-time information stream, a POSA would have found it obvious to implement such a stream into Herzog/Spivey, in view of Ellis.

As set forth above, Ellis discloses a similar content delivery system configured to delivery live video and data over separate channels. *See* §VIII.A.1. Ellis further teaches that its system is configured to transmit chat information.

Ex.1016 ¶132 (users “may also leave feedback regarding the commentary that other users in the media system may view when they access the same commentary.”). A POSA would have understood that Ellis discloses a system that transmits and receives real-time information, such as chat information, regarding the live stream of digital content. Ex.1001 ¶150; *see also* Ex.1016 ¶126 (“To create and send a message (e.g., instant message or email message), the user may select send message option.”).

Ellis provides this information on a separate channel to users. Ellis discusses transmitting the video “broadcasts” over communication path 150 and “game summary information, ... and any other sports-related information” over communication path 152. Ex.1016 ¶41; *see* §VIII.A.2.d. Ellis provides that in “some embodiments, this sports-related information is provided to user equipment 102 as a plurality of real-time data feeds.” Ex.1016 ¶41. Thus, a POSA would have understood that Ellis teaches transmitting via a first real-time information Internet communication channel between a real-time information socket of the at least one socket server and the first VCD. Ex.1001 ¶151.

Herzog in view of Spivey and Ellis discloses a socket specifically designated for chat information. Spivey utilizes topic queues to organize “data payloads” that “relate to a specific game between two NFL teams.” Ex.1017 ¶¶51-52; *see* §VIII.A.2.b, *supra*. The data payloads, “[w]hen the live event is a sporting event,”

include, “for example, a score, a play, ..., and so forth.” Ex.1017 ¶48. Topic queues may be “hierarchically related.” *Id.* ¶52. This means that when the system looks at the text string associated with the data payload, the system “may place the data payload only in the topic queue exactly matching the topic label.” *Id.* ¶104; Ex.1001 ¶152. For example, if there were two topics “at the same hierarchal level” the data payloads placed in “gamecenter.nfl.ravenssteelers.statistics” would not be placed in” another topic queue “gamecenter.nfl.ravenssteelers.plays.” In sum, the statistics would be separate from the chat information. Ex.1001 ¶152. Thus, a POSA would have understood Spivey to disclose a real-time information socket corresponding to the real-time information, such as chat information, relating to the digital content. *Id.*

A POSA would have been motivated to integrate Ellis’s additional real-time information apparatus into Herzog/Spivey’s system. Ex.1001 ¶153.

A POSA would have been motivated to combine Ellis with Herzog/Spivey because Ellis builds on Herzog’s functionality by explicitly disclosing providing more content options, *e.g.*, real-time information, such as chat information or advertising content, to a content distribution system such as Herzog: “[C]ontent source 130 may be any suitable source of media content, such as ... [an] Internet or network media/webserver, or any other ... system for originating and distributing ... content to user equipment 102” that provides “broadcast programming” and

“sporting events.” Ex.1016 ¶¶40-41; 62, Fig. 1, 2B; Ex.1001 ¶153. Moreover, a POSA would have understood that users would enjoy the interactive aspect Ellis’s real-time information stream would offer. Ex.1001 ¶153.

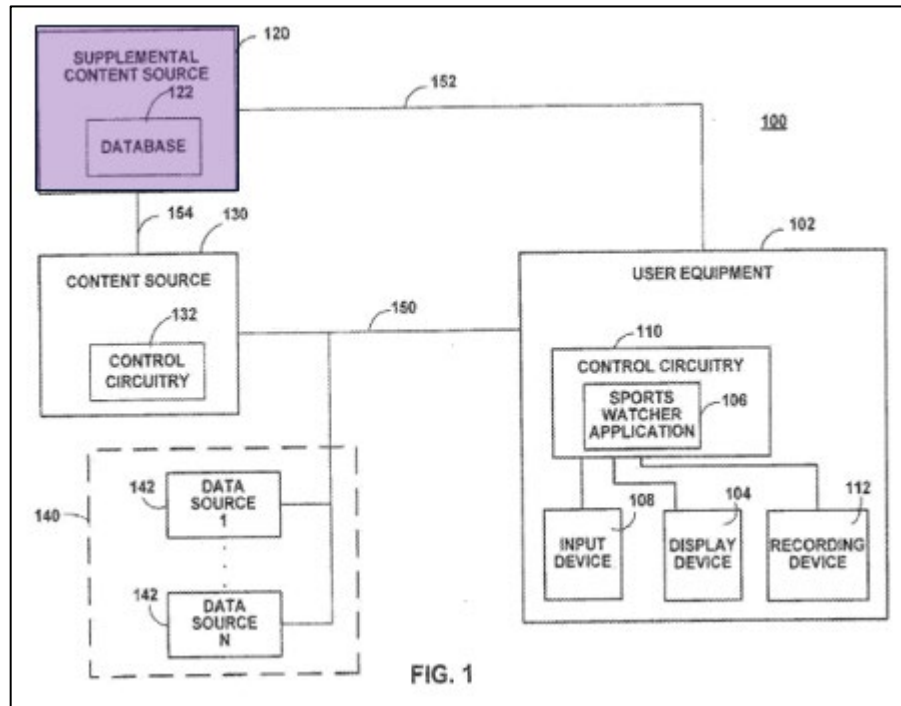
For a POSA, adding an additional real-time information stream to a system such as Herzog (among other content types), which already provides multiple live streams to clients, applies a known technique to a known device that was ready for improvement to yield a predictable result. Ex.1001 ¶154. A POSA would have had a reasonable expectation of success because Ellis specifically contemplates being implemented in a digital content delivery system such as Herzog, stating that it can be used with “any suitable source of media content,” which includes IPTV content “delivered on a particular network address (e.g., multicast address) on which an IP socket is currently joined.” Ex.1016 ¶¶39-40, 74; Ex.1001 ¶154.

2. Dependent Claim 10

a. Limitations 10.0-10.1

Herzog in view of Spivey and Ellis discloses this limitation. *See* §VIII.D.1; Ex.1001 ¶328. Herzog/Spivey discloses a socket server transmitting digital content to a plurality of client devices via an information Internet communication channel between a socket server and client device. *See* §VIII.C.2.d, *supra*. Herzog/Spivey further discloses that the event information socket corresponds to the digital content relating to the sporting event. *See* §VIII.C.2.d, *supra*. Ellis discloses a **SCS**

(i.e., a **control server**) providing first event information germane to the first sporting event through a “plurality of real-time data feeds,” one of which can include “sports score and game status information,” while the other carries “sports commentary.” *Id.* ¶41. Figure 1 illustrates Ellis’s SCS:



Id., Fig. 1. Ellis’s SCS may be “any suitable content source configured to provide real-time . . . spread and wagering data, and any other sports-related information to user equipment 102.” *Id.* ¶41. This real-time data feed may include chat information, as explained above. *See* §VIII.D.1

b. Limitation 10.2

Herzog discloses a webserver transmitting a socket address of an event information socket to a client device to establish an event information Internet

communication channel. *See* §§VIII.C.2.d, VIII.C.5.a, *supra*. Ellis discloses that the event information channel can carry real-time data. *See* §VIII.D.1, *supra*.

3. Dependent Claim 11

a. Limitation 11.0

Ellis discloses real-time data feeds capable of transmitting real-time information to client devices. *See* §VIII.D.1, *supra*. Ellis further discloses that such real-time information can include chat information, (Ex.1016 ¶132), or an advertisement, (*id.* ¶43; Fig. 5). Further, Herzog discloses current event information relating to telemetry data (*i.e.*, the digital content). Ex.1015 ¶45; Ex.1001 ¶330.

4. Dependent Claim 15

a. Limitations 15.0-15.2

Herzog in view of Spivey and Ellis discloses these limitations for the same reasons stated above. *See* §§VIII.D.1, VIII.D.2, VIII.D.3.a.

IX. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

Petitioner is unaware of any evidence of secondary considerations that have a nexus to the claimed inventions that would overcome the Petition’s showing of obviousness. Ex.1001 ¶768. Indeed, the sheer number of “[i]ndependently made, simultaneous inventions, made within a comparatively short space of time, are persuasive” “indicia of obviousness.” *Geo. M. Martin Co. v. Alliance Machine Sys. Int’l. LLC*, 618 F.3d 1294, 1304-1305 (Fed. Cir. 2010) (quotations omitted).

X. THE BOARD SHOULD NOT EXERCISE DISCRETIONARY DENIAL

A. The '218 Has Not Been Subject to a Prior Petition

The '218 has not been subject to any prior IPR or PGR petitions. Thus, this is not a “follow-on” petition and there is no basis for the Board to exercise its discretion to deny the Petition under 35 U.S.C. §314(a) and 37 C.F.R. §42.108(a). *General Plastic Indus. Co. v. Canon Kubushiki Kaisha*, IPR2016-01357, Paper 19 (PTAB Sept. 6, 2017).

B. *Fintiv*

Evaluation of the factors under *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) and further in light of the clarifications made by the Director of the USPTO favors institution. *See* Ex.1013 (“June 21, 2022 Director’s Memo”), 2.

First, Petitioner has simultaneously stipulated to PO that if this IPR is instituted, Petitioner will not pursue invalidity on the specific grounds raised here or on any other ground that reasonably could have been raised in this IPR. Ex.1021; *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 13-14 (P.T.A.B. Dec. 1, 2020) (precedential). Based on this stipulation alone, discretionary denial under §314(a) is not appropriate. Ex.1013, 3.

Moreover, this Petition presents “compelling” arguments for unpatentability of the Challenged Claims, including a strong case for obviousness applying prior

art either not of record (Herzog) or substantively considered by the Examiner (Ellis). This too weighs against the Board exercising its discretion under §314(a). *See* Ex.1013, 4-5.

For the reasons set forth above, the Board should decline to exercise its discretion to deny institution under §314(a).

C. The Presented Grounds and Argument are Dissimilar to the Art and Arguments Previously Presented to the Office

Section 325(d) denial would be improper because this Petition presents new prior art, ground, and arguments not previously considered by the Office. *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020), and *Becton, Dickinson and Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017). Further, to the extent that the same art was considered by the Office, the Examiner committed material error in failing to consider the prior art in combination with the previously undisclosed art contained in this Petition.

1. The Examiner Did Not Properly Consider Ellis During Prosecution

This Petition presents different art than that considered by the Examiner during prosecution. In determining whether discretionary denial is appropriate, the PTAB first looks to (i) the similarities and material differences between the asserted art and the prior art previously evaluated; (ii) the cumulative nature of the

asserted art and the prior art previously evaluated; and (iii) the extent of the overlap between the arguments made during examination and the manner of reliance on the prior art in determining whether the same or substantially the same art or arguments were presented to the office. *See Becton, Dickinson* at *6-*8; *Advanced Bionics* at *4.

Under the *Advanced Bionics* step 1 and *Becton, Dickinson* factors (a), (b), and (d) described above, Ellis was not before the Examiner during prosecution. Ellis is a continuation of U.S. Patent App. Pub. No. 2008/0062318 (“Ellis ’318”). Ellis ’318 was identified through a PCT search opinion, Ex.1011, (PCT International Search Report, Aug. 6, 2018). The search opinion categorized Ellis ’318 as an “A” reference, indicating the reference was a “document defining the general state of the art which is not considered to be of particular relevance.” *Id.*, 207. Beyond the Examiner signing an Information Disclosure Sheet listing Ellis ’318 as one of 41 references, the Examiner did not substantively address Ellis ’318 in any correspondence with the applicant, nor cite it in any rejection, prior to issuing a Notice of Allowance. As such, Ellis was not substantively “considered” during the prosecution of the ’218 and discretionary denial is inappropriate.

2. The Examiner Erred in Failing to Consider Ellis in Combination with Other Prior Art

If the above factors are met, then the PTAB must consider (i) the extent to which the asserted art was evaluated during examination; (ii) whether the petitioner

sufficiently explained how the Examiner erred in evaluating the prior art; and (iii) the extent to which additional evidence and facts presented warrant reconsideration of the prior art or arguments in determining whether the Office committed material error. *See Becton, Dickinson* at *7-*8; *Advanced Bionics* at *4.

Here, it is clear from *Becton, Dickinson* factors (c), (e), and (f) and *Applied Bionics* step 2, that the Office made a material error by not using Ellis in a rejection of any claim. Assuming, *arguendo*, that Ellis was substantively considered by the Office during prosecution, the combination of Ellis with other prior art such as Spivey and Herzog was not considered by the Office during prosecution. As shown above in Section VIII, Ellis in view of Spivey and Herzog—neither of which were before the Examiner during prosecution—renders obvious the alleged allowable subject matter. Ellis does not explicitly disclose some of the '218's backend architecture for establishing the connections with user devices and data delivery. Specifically, Ellis does not disclose the claimed control server, socket server, and webserver. However, a POSA would have found it obvious to integrate each of these known, generic components into Ellis, as taught by Spivey (the control server and socket server) and Herzog (the webserver), to implement Ellis's content delivery system with reduced latency. As such, the claimed invention is rendered obvious by Ellis in view of those two references—a combination that the Examiner never had the opportunity to consider. Even if Ellis

was considered during the prosecution, the Office committed material error by mis-appreciating its significance when combined with other art that was available at the time but not identified in the prosecution history.

XI. CONCLUSION

For the foregoing reasons, Petitioner respectfully requests that the Board institute IPR and cancel the Challenged Claims.

Date: August 23, 2024

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

This Petition complies with the type-volume limitations as mandated in 37 C.F.R. §42.24. According to the word processing system used to prepare this document, the brief contains 13,976 (14,000 limit) words.

/s/ *W. Todd Baker*

W. Todd Baker

CERTIFICATE OF SERVICE

In compliance with 37 C.F.R. §§42.105, 42.6(e), the undersigned hereby certifies that a copy of the foregoing Petition and supporting exhibits were served on the 23rd day of August, via Federal Express® directed to PO at the correspondence address of record:

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TABLE OF EXHIBITS⁹

Exhibit No.	Description
Exhibit 1001	Declaration of Dr. Stephen Wicker, Ph.D.
Exhibit 1002	<i>Curriculum Vitae</i> of Dr. Stephen Wicker, Ph.D.
Exhibit 1003	U.S. Patent No. 10,805,687
Exhibit 1004	Claim Listing of U.S. Patent No. 10,805,687
Exhibit 1005	Reserved
Exhibit 1006	U.S. Patent No. 10,425,697
Exhibit 1007	Claim Listing of U.S. Patent No. 10,425,697
Exhibit 1008	Reserved
Exhibit 1009	U.S. Patent No. 11,039,218
Exhibit 1010	Claim Listing of U.S. Patent No. 11,039,218
Exhibit 1011	Certified File History of U.S. Patent No. 11,039,218
Exhibit 1012	U.S. Patent No. 11,871,088
Exhibit 1013	Director Vidal Memorandum re: <i>Sotera</i> Stipulations
Exhibit 1014	SportsCastr's Complaint for Patent Infringement against Genius Sports
Exhibit 1015	U.S. Patent Pub. No. 2015/0163379 ("Herzog")

⁹ Unless otherwise specified, citations are to the original page, column, and line numbers in exhibits. Brackets ([]) are used to refer to the sequential page numbers added to exhibits pursuant to 37 C.F.R. §42.63(d)(2)(i).

Exhibit 1016	U.S. Patent Pub. No. 2014/0229992 (“Ellis”)
Exhibit 1017	U.S. Patent Pub. No. 2016/0036910 (“Spivey”)
Exhibit 1018	U.S. Patent Pub. No. 2015/0163379 (“Mitic”)
Exhibit 1019	SportsCastr’s Preliminary Infringement Contentions
Exhibit 1020	SportsCastr’s Response to Genius Sports’ First Set of Interrogatories
Exhibit 1021	Genius Sports’ proposed <i>Sotera</i> Stipulation to SportsCastr
Exhibit 1022	James F. Kurose & Keith W. Ross, <i>Application Layer</i> , in Computer Networking A Top-Down Approach (Michael Hirsch et al. eds., 4th ed. 2012) (“Kurose”)
Exhibit 1023	John Dilley et al., <i>Globally Distributed Content Delivery</i> , IEEE Internet Computing (Sept.-Oct. 2002).
Exhibit 1024	Mário Marques da Silva, <i>Multimedia Communications and Networking</i> (2012) (“Silva”)
Exhibit 1025	<i>A Brief History of the Internet</i> , ONLINE LIB. LEARNING CENTER. (Feb. 9, 2024), https://www.usg.edu/galileo/skills/unit07/internet07_02.phtml (“Online Library”)
Exhibit 1026	Hisayuuki Ohmata et al., <i>Hybridcast: A new media experience by integration of broadcasting and broadband</i> , 2013 ITU Kaleidoscope: Building Sustainable Communities, April 2013 (“Ohmata”)
Exhibit 1027	Henning Schulzrinne et al., <i>RTP: A Transport Protocol for Real-Time-Applications</i> , DataTracker (January 1996), https://datatracker.ietf.org/doc/html/rfc1889 (“Schulzrinne”)
Exhibit 1028	Brijesh Kumar, <i>Making Sense of Video Streaming Protocols</i> , LinkedIn. (Aug. 11, 2016), https://www.linkedin.com/pulse/making-sense-video-streaming-protocols-dr-brijesh-kumar/ (“Kumar”)
Exhibit 1029	Ian Fette & Alexey Melnikov, <i>The WebSocket Protocol</i> , RFC Editor. (Dec. 2016), https://www.rfc-editor.org/rfc/rfc6455.html .

Exhibit 1030	Marcin Warczygłowa, <i>Real-time Web Application with Websockets and Vert.X</i> (Nov. 10, 2015), https://blog.allegro.tech/2015/11/real-time-web-application-with-websockets-and-vert-x.html .
Exhibit 1031	Randall Stewart & Chris Metz, <i>SCTP: new transport protocol for TCP/IP</i> , 5 IEEE 64, (2001) (“Stewart”)
Exhibit 1032	Lydon Ong, John Yoakum &, <i>An Introduction to the Stream Control Transmission Protocol (SCTP)</i> , Datatracker. (May. 2002), https://datatracker.ietf.org/doc/rfc3286/ (“Ong”)
Exhibit 1033	Jan Newmarch, <i>Introduction to Stream Control Transmission Protocol</i> , LINUX J. (Sep. 1, 2007), https://www.linuxjournal.com/article/9748 (“Newmarch”)
Exhibit 1034	Kyung-Hoe Kim et al, <i>A transmission control SCTP for real-time multimedia streaming</i> , 54 Computer Networks 1418, (2010) (“Kim”)
Exhibit 1035	High Scalability, <i>How Facebook Live Streams to 800,000 Simultaneous Viewers</i> , ByteByteGo (Jun. 27, 2016), https://blog.bytebytego.com/?utm_source=hs&utm_medium=ann&utm_campaign=top (“ByteGo”)
Exhibit 1036	Hardeep Singh Parmar & Michael C. Thornburgh, <i>Adobe’s Real Time Messaging Protocol</i> , Veriskope. (Dec. 21, 2002) (“Parmer”)
Exhibit 1037	Ilya Grigorik, <i>WebRTC</i> , in <i>High Performance Browser Networking</i> , (2013) (“Grigorik”)
Exhibit 1038	Sam Dutton, <i>Get started with WebRTC</i> , web.dev. (Jul. 23, 2012), https://web.dev/articles/webrtc-basics (“Dutton”)
Exhibit 1039	Andy Salo, <i>MPEG DASH: A Technical Deep Dive and Look at What’s Next</i> , RGB Networks, (2012) (“Salo”)
Exhibit 1040	Jan Ozer, <i>Upstream, Justin.tv, Livestream, and Bambuser: Streaming Unplugged</i> , Streaming Media Magazine., Jun.-Jul. 2012 (“Ozer”)
Exhibit 1041	Christopher Mueller, <i>MEPG-DASH vs. Apple HLS vs. Microsoft Smooth Streaming vs. Adobe HDS</i> , BITMOVIN. (Mar. 29, 2015), https://bitmovin.com/mpeg-dash-vs-apple-hls-vs-microsoft-smooth-streaming-vs-adobe-hds/ (“Mueller”)

Exhibit 1042	Stefan Saroiu et al., <i>An analysis of Internet Content Delivery Systems</i> , ACM SIGOPS Operating System Review, Vol. 36 (Dec. 31, 2002), https://doi.org/10.1145/844128.84415 (“Saroiu”)
Exhibit 1043	Charles Marion & Julien Jomier, <i>Real-time Collaborative Scientific WebGL Visualization with Websocket</i> , Ass’n Computing Machinery, August 4-5, 2012 (“Marion”)
Exhibit 1044	Mark Sweney, <i>First ads appear on YouTube Clips</i> , The Guardian, Aug. 22, 2007 (“Sweney”)
Exhibit 1045	Richard Sandomir, <i>The Innovation That Grew and Grew</i> , N.Y. Times, June 12, 2014 (“Sandomir”)
Exhibit 1046	Victoria Pimentel & Bradford G. Nickerson, <i>Communicating and Displaying Real-Time Data with WebSocket</i> , 16 IEEE (2012) (“Pimentel”)
Exhibit 1047	Lucian Popa et al., <i>HTTP as the narrow waist of the future internet</i> , 2010 ACM SIGCOMM Workshop, October 2013 (“Popa”)