

MCKOOL SMITH, P.C.
LOS ANGELES, CA

1 Alan P. Block
2 ablock@mckoolsmith.com
3 **MCKOOL SMITH, P.C.**
4 300 South Grand Avenue, Suite 2900
5 Los Angeles, California 90071
6 Telephone: (213) 694-1200
7 Facsimile: (213) 694-1234

8 Richard A. Kamprath*
9 rkamprath@mckoolsmith.com
10 Alexandra Easley*
11 aeasley@mckoolsmith.com
12 **MCKOOL SMITH, P.C.**
13 300 Crescent Court, Suite 1200
14 Dallas, Texas 75201
15 Telephone: (214) 978-4000
16 Facsimile: (214) 978-4044

17 Hannah Mirzoeff*
18 hmirzoeff@mckoolsmith.com
19 **MCKOOL SMITH, P.C.**
20 1301 Avenue of the Americas, 32nd Floor
21 New York, New York 10019
22 Telephone: (212) 402-9400
23 Facsimile: (212) 402-9444

24 Joshua W. Budwin*
25 jbudwin@mckoolsmith.com
26 **MCKOOL SMITH, P.C.**
27 303 Colorado Street, Suite 2100
28 Austin, Texas 78701
Telephone: (512) 692-8700
Facsimile: (512) 692-8744

Kevin Burgess*
kburgess@mckoolsmith.com
MCKOOL SMITH, P.C.
104 East Houston Street, Suite 300
Marshall, Texas 75670
Telephone: (903) 923-9000
Facsimile: (903) 923-9099

1 *Pro Hac Vice Applications forthcoming.

2 Attorneys for Plaintiffs

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4 InterDigital, Inc., InterDigital VC Holdings, Inc.,
5 InterDigital Madison Patent Holdings, SAS, and
6 InterDigital CE Patent Holdings, SAS

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**IN THE UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
WESTERN DIVISION AT LOS ANGELES**

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INTERDIGITAL, INC., INTERDIGITAL)
11 VC HOLDINGS, INC., INTERDIGITAL)
12 MADISON PATENT HOLDINGS, SAS,)
13 AND INTERDIGITAL CE PATENT)
HOLDINGS, SAS,)

Case No. 2:25-cv-895

**COMPLAINT FOR PATENT
INFRINGEMENT**

14

Plaintiffs,)

JURY TRIAL DEMANDED

15

v.)

16

17 THE WALT DISNEY COMPANY, DISNEY)
MEDIA AND ENTERTAINMENT)
18 DISTRIBUTION LLC, DISNEY DTC LLC,)
19 DISNEY STREAMING SERVICES LLC,)
DISNEY ENTERTAINMENT & SPORTS)
20 LLC, DISNEY PLATFORM)
21 DISTRIBUTION, INC., BAMTECH, LLC,)
HULU, LLC, AND ESPN, INC.,)

Defendants.)

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1 InterDigital, Inc., InterDigital VC Holdings, Inc., InterDigital Madison Patent
2 Holdings, SAS, and InterDigital CE Patent Holdings, SAS (collectively, “Plaintiffs”
3 or “InterDigital”) bring this action for patent infringement against The Walt Disney
4 Company; Disney Media and Entertainment Distribution LLC; Disney DTC LLC;
5 Disney Streaming Services LLC; Disney Entertainment & Sports LLC; Disney
6 Platform Distribution, Inc.; BAMTech, LLC; Hulu, LLC; and ESPN, Inc.
7 (collectively, “Defendants” or “Disney”). Plaintiffs, on personal knowledge as to their
8 own acts, and upon information and belief as to all others based on diligent
9 investigation, allege as follows:
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13 **NATURE OF THE ACTION**

14 1. For years, Defendants have directly infringed and continue to infringe the
15 following issued United States Patents: U.S. Patent No. 8,406,301 (“the ’301 Patent”);
16 U.S. Patent No. 10,805,610 (“the ’610 Patent”); U.S. Patent No. 11,381,818 (“the
17 ’818 Patent”); U.S. Patent No. 9,185,268 (“the ’268 Patent”); and U.S. Patent No.
18 8,085,297 (“the ’297 Patent”) (collectively, the “Asserted Patents”) (attached hereto as
19 Exhibits A.1-E.1). Plaintiffs accordingly file this Complaint seeking a judgment of
20 and relief for Defendants’ persistent and pervasive infringement of the Asserted
21 Patents.
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25 2. When companies use InterDigital’s patented technologies without
26 permission, InterDigital’s approach is to engage such companies in good faith with the
27 goal of carefully finding a mutually beneficial solution with them. This solution
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1 usually takes the form of a globally negotiated patent license achieved through a
2 mutual and trusting exchange of technical information and license offers, under the
3 protection of confidentiality in order to resolve the unauthorized patent use by mutual
4 agreement—and without resort to litigation.
5

6 3. Keeping with this approach, in July 2022 InterDigital reached out to
7 Disney to request that the parties discuss the licensing of InterDigital’s patented
8 technologies used by Disney.
9

10 4. Disney is still not authorized to use InterDigital’s patents. This
11 Complaint is therefore necessary to put an end to Disney’s infringing conduct. Today,
12 Defendants continue their widespread infringement of the Asserted Patents by
13 utilizing the claimed technology that enables the efficiency and efficacy of
14 Defendants’ video streaming business.
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16

17 **THE PARTIES**

18 5. Plaintiff InterDigital, Inc. is a Pennsylvania corporation with its principal
19 place of business at 200 Bellevue Parkway, Suite 300, Wilmington, DE 19809.
20

21 6. Plaintiff InterDigital VC Holdings, Inc. is a Delaware corporation with its
22 principal place of business at 200 Bellevue Parkway, Suite 300, Wilmington, DE
23 19809. InterDigital VC Holdings, Inc. is a wholly owned subsidiary of InterDigital,
24 Inc.
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26 7. Plaintiff InterDigital Madison Patent Holdings, SAS is a French société
27 par actions simplifiée (simplified joint stock company) with its principal place of
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1 business at 3 Rue du Colonel Moll, Paris, France 75017. InterDigital Madison Patent
2 Holdings, SAS is a wholly owned subsidiary of InterDigital, Inc.

3
4 8. Plaintiff InterDigital CE Patent Holdings, SAS is a French société par
5 actions simplifiée (simplified joint stock company) with its principal place of business
6 at 3 Rue du Colonel Moll, Paris, France 75017. InterDigital CE Patent Holdings, SAS
7 is a wholly owned subsidiary of InterDigital, Inc.
8

9 9. Defendant The Walt Disney Company is a Delaware corporation with a
10 principal place of business at 500 South Buena Vista Street, Burbank, California,
11 91521. The Walt Disney Company has designated CSC–Lawyers Incorporating
12 Service, 2710 Gateway Oaks Drive, Sacramento, California 95833 as its agent for
13 service of process. On information and belief, The Walt Disney Company is the parent
14 company that manages and directs operations, together with its subsidiaries, for all
15 Disney video streaming entities.¹
16
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18 10. Defendant Disney Media and Entertainment Distribution LLC is a
19 Delaware limited liability company with a principal place of business at 500 South
20 Buena Vista Street, Burbank, California 91521. Disney Media and Entertainment
21 Distribution LLC has designated CSC–Lawyers Incorporating Service, 2710 Gateway
22 Oaks Drive, Sacramento, California 95833 as its agent for service of process. On
23 information and belief, Disney Media and Entertainment Distribution LLC is an
24 indirectly wholly owned subsidiary of the Walt Disney Company that handles profit
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28 ¹ The Walt Disney Co., Annual Report (Form 10-K), at 2 (Nov. 14, 2024).

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1 and loss management, distribution, operations, sales, advertising, data, and technology
2 function for the Disney+, Hulu, Hulu Live, and ESPN+ video streaming services.²

3
4 11. Defendant Disney DTC LLC is a Delaware limited liability company
5 with a principal place of business at 500 South Buena Vista Street, Burbank,
6 California 91521. Disney DTC LLC has designated CSC–Lawyers Incorporating
7 Service, 2710 Gateway Oaks Drive, Sacramento, California 95833 as its agent for
8 service of process.³ On information and belief, Disney DTC LLC is an indirectly
9 wholly owned subsidiary of The Walt Disney Company that is responsible for content
10 planning and management, third party media sales efforts, affiliate marketing, affiliate
11 related business operations, contract negotiation for distribution deals, and procuring
12 content delivery network and cloud computing for the Disney+, Hulu, Hulu Live, and
13 ESPN+ video streaming services.⁴

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19 ² *The Walt Disney Company Announces Strategic Reorganization Of Its Media and Entertainment*
20 *Businesses*, THE WALT DISNEY COMPANY (Oct. 12, 2020), <https://thewaltdisneycompany.com/the-walt-disney-company-announces-strategic-reorganization-of-its-media-and-entertainment-businesses/>; *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024), Dkt. 18 at 1.

21
22 ³ Public filings indicate that Disney DTC LLC may now be known as Disney Platform Distribution,
23 Inc. *See e.g., In re Disney DTC, LLC*, No. 05-23-00485-CV, 2024 WL 358117 (Tex. App. Jan. 31, 2024). On this basis, all allegations relating to Disney DTC LLC shall also apply to Disney Platform Distribution, Inc.

24 ⁴ The “Terms of Use” page on the ESPN website links to a Disney webpage that states, “Disney
25 DTC LLC and/or its affiliates and subsidiaries (collectively, ‘Disney’ ‘we’ or ‘us’) are pleased to
26 provide to you certain websites, software, applications, content, products, and services in any media
27 format or channel, now known or hereafter devised (‘Disney Products’ and ‘Products’), which may
28 be branded Disney, ABC, ESPN, Marvel, Pixar, Lucasfilm, FX, Searchlight Pictures, 20th Century Studios, National Geographic, or another brand owned or licensed by Disney.” *Terms of Use*, THE WALT DISNEY COMPANY (May 24, 2024), <https://disneytermsofuse.com/english/>. *See also Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024), Dkt. 18 at 1.

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12. Defendant Disney Streaming Services LLC (“DSS”) is a Delaware limited liability company with a principal place of business at 500 South Buena Vista Street, Burbank, California 91521. Disney Streaming Services LLC has designated CSC–Lawyers Incorporating Service, 2710 Gateway Oaks Drive, Sacramento, California 95833 as its agent for service of process. On information and belief, Disney Streaming Services LLC is an indirectly wholly owned subsidiary of the Walt Disney Company and provides financial and marketing functions for the Disney+, Hulu, Hulu Live, and ESPN+ video streaming services.⁵

13. Disney Entertainment & Sports LLC (“DES”), formerly known as Disney Streaming Technology LLC and/or Disney Technology LLC,⁶ is a Delaware limited liability company with a principal place of business at 500 South Buena Vista Street, Burbank, California 91521. Disney Entertainment & Sports LLC has designated CSC–Lawyers Incorporating Service, 2710 Gateway Oaks Drive, Sacramento, California 95833 as its agent for service of process. On information and belief, Disney Entertainment & Sports LLC is an indirectly wholly owned subsidiary of the Walt

⁵ Disney Streaming Services, LLC is listed as the distribution entity for both Disney+ and ESPN+ on the Disney website. *The Walt Disney Family of Companies*, THE WALT DISNEY COMPANY, <https://privacy.thewaltdisneycompany.com/en/company-overview/>. See also *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024), Dkt. 18 at 2.

⁶ Delaware and California public filings indicate that Disney Entertainment & Sports LLC was previously called Disney Streaming Technology LLC and/or Disney Technology LLC. For the avoidance of doubt, and with the goal to provide adequate notice to the appropriate party, all allegations relating to Disney Entertainment & Sports LLC shall also apply to Disney Streaming Technology LLC and Disney Technology LLC, and vice versa.

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1 Disney Company and design and maintains the websites for the Disney+, Hulu, Hulu
2 Live, and ESPN+ video streaming services.⁷

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4 14. Defendant Disney Platform Distribution, Inc. (“DPD”) is a Delaware
5 corporation with a principal place of business at 500 South Buena Vista Street,
6 Burbank, California 91521. Disney Platform Distribution, Inc. has designated CSC–
7
8 Lawyers Incorporating Service, 2710 Gateway Oaks Drive, Sacramento, California
9 95833 as its agent for service of process. On information and belief, Disney Platform
10 Distribution, Inc. is an indirectly wholly owned subsidiary of The Walt Disney
11 Company that manages distribution efforts, affiliate marketing, affiliate-related
12 business operations, contract negotiation, content delivery networks, and cloud
13 computing services for the Disney+, Hulu, Hulu Live, and ESPN+ video streaming
14 services.⁸

15
16
17 15. Defendant BAMTech, LLC (“BAMTech”) is a Delaware limited liability
18 company with a principal place of business at 1211 Avenue of the Americas, New
19 York, New York 10036. BAMTech, LLC has designated CSC–Lawyers Incorporating
20 Service, 2710 Gateway Oaks Drive, Sacramento, California 95833 as its agent for
21 service of process. On information and belief, BAMTech, LLC is an indirect
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25 ⁷ See *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024),
Dkt. 18 at 2.

26 ⁸ The subscriber agreement for Disney+, ESPN+, and Hulu is hosted on a Disney webpage and
27 refers to Disney Platform Distribution, Inc. as a relevant entity. *Disney+, ESPN+, and Hulu*
28 *Subscriber Agreement*, DISNEY+ (Jan. 27, 2025), <https://www.disneyplus.com/legal/subscriber-agreement>. See also *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024), Dkt. 18 at 2.

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1 subsidiary of The Walt Disney Company, which owns 80% of BAMTech, and Hearst
2 Brazil, Inc., a subsidiary of The Hearst Corporation, which owns the remaining 20%
3 of BAMTech.⁹ On information and belief, BAMTech, LLC is responsible for
4 developing and maintaining the ESPN+ website,¹⁰ in addition to providing technology
5 that is used in connection with the Disney+, Hulu, and ESPN+ video streaming
6 services.¹¹
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9 16. Defendant Hulu, LLC (“Hulu”) is a Delaware limited liability company
10 with a principal place of business at 2500 Broadway, Santa Monica, California 90404.
11 Hulu, LLC has designated CSC–Lawyers Incorporating Service, 2710 Gateway Oaks
12 Drive, Sacramento, California 95833 as its agent for service of process. On
13 information and belief, Hulu, LLC is an indirect subsidiary of the Walt Disney
14 Company, which owns 66.67% of Hulu, and Comcast Hulu Holdings, LLC, a
15 subsidiary of Comcast Corporation, which owns the remaining 33.33% of Hulu.¹² On
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20 _____
21 ⁹ *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024), Dkt.
22 18 at 2.

23 ¹⁰ The Walt Disney Co., Annual Report (Form 10-K), at 89 (Nov. 14, 2024) (stating that The Walt
24 Disney Company purchased MLB’s 15% interest in BAMTech LLC in November 2022). The
25 “Privacy Policy” tab on the BAMTech website links to a page on a Disney website. *See Company
26 Timeline*, BAMTECH, LLC, <https://www.bamtechmedia.com/>. The subscriber agreement for
27 Disney+, ESPN+, and Hulu is hosted on a Disney webpage and refers to BAMTech, LLC as a
28 relevant entity. *Disney+, ESPN+, and Hulu Subscriber Agreement*, DISNEY+ (Jan. 27, 2025),
<https://www.disneyplus.com/legal/subscriber-agreement>.

26 ¹¹ Alex Werpin, *Disney Pays \$900M for MLB’s Remaining Stake in Streaming Company
27 BAMTech*, HOLLYWOOD REP. (Nov. 29, 2022),
<https://www.hollywoodreporter.com/business/digital/disney-pays-900m-for-bamtech-1235271788/>.

28 ¹² *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024),
Dkt. 18 at 2.

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1 information and belief, Hulu, LLC operates the Hulu and Hulu Live video streaming
2 services.¹³

3
4 17. Defendant ESPN, Inc. (“ESPN”) is a Delaware corporation with a
5 principal place of business at ESPN Plaza, Bristol, Connecticut 06010. ESPN, Inc. has
6 designated CSC–Lawyers Incorporating Service, 2710 Gateway Oaks Drive,
7 Sacramento, California 95833 as its agent for service of process. On information and
8 belief, ESPN, Inc. is an indirect subsidiary of the Walt Disney Company, which owns
9 80% of ESPN, and Hearst Brazil, Inc., a subsidiary of The Hearst Corporation, which
10 owns the remaining 20% of ESPN.¹⁴ On information and belief, ESPN, Inc. manages
11 and operates the ESPN+ video streaming service.¹⁵

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14 **JURISDICTION AND VENUE**

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16 18. This action includes claims of patent infringement arising under the
17 patent laws of the United States, 35 U.S.C. §§ 1 et seq. This Court has subject matter
18 jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

19
20 19. Defendants are subject to this Court’s personal jurisdiction consistent
21 with the principles of due process and/or the California Long Arm Statute. This Court
22

23
24 ¹³ The Walt Disney Co., Annual Report (Form 10-K), at 88-89 (Nov. 14, 2024) (stating that The
25 Walt Disney Company owns 67% of Hulu and purchased NBC Universal’s 33% interest in Hulu in
26 November 2023, however the acquisition is not yet complete). The “Privacy Policy” tab on the Hulu
27 website links to a page on a Disney website. *See* HULU, <https://www.hulu.com/welcome>.

28 ¹⁴ *Adeia Techs. Inc. et al. v. The Walt Disney Company et al.*, No. 1:24-cv-01231 (D. Del. 2024),
Dkt. 18 at 2.

¹⁵ The Walt Disney Co., Annual Report (Form 10-K), at 7 (Nov. 14, 2024) (stating that ESPN is
80% owned by the Walt Disney Company). The “Terms of Use” tab on the ESPN website links to a
page on a Disney website. *See* ESPN, <https://www.espn.com/>.

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1 has general personal jurisdiction over Defendants because each of their affiliations
2 with the State of California are so systematic and continuous to render each Defendant
3 at home in California.
4

5 20. This Court also has specific personal jurisdiction over Defendants
6 because each Defendant has sufficient minimum contacts and/or has engaged in
7 continuous and systematic activities in the forum due to business conducted within
8 California, including in the Central District of California. Personal jurisdiction also
9 exists over Defendants because each Defendant, directly or through subsidiaries,
10 makes, uses, sells, offers for sale, imports, advertises, makes available, and/or markets
11 products and/or services within California, including in the Central District of
12 California, that infringe one or more claims of the Asserted Patents. Further, on
13 information and belief, Defendants have placed or contributed to placing infringing
14 products and/or services into the stream of commerce knowing or understanding that
15 such products and/or services would be sold and used in the United States, including
16 in this District. Defendants are registered to do business in California and maintain
17 agents authorized to receive service of process within California.
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22 21. Venue is proper in the Central District of California pursuant to 28
23 U.S.C. §§ 1391(b)-(c) and/or 1400(b) because Defendants have committed acts of
24 infringement in this District and have regular and established places of business in this
25 District. By way of example and without limitation, Defendants make, use, sell, offer
26 to sell, and/or import products and/or services that are accused of infringing the
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1 Asserted Patents into and/or within this District. Defendants further maintain a
2 permanent and/or continuing presence within this District.

3
4 22. Defendants maintain multiple places of business within this District.
5 For example, Defendants The Walt Disney Company, Disney Entertainment & Sports
6 LLC, and Disney Streaming Services LLC, all maintain an office in this District at
7
8 500 South Buena Vista Street, Burbank, California 91521.

9 23. Moreover, Defendant ESPN, Inc. maintains an office within the Central
10 District of California, located at 800 W. Olympic Blvd., Los Angeles, California
11
12 90015.

13 24. Defendant Hulu, LLC maintains its headquarters at 2500 Broadway,
14 Santa Monica, California 90404.

15
16 25. Defendants have solicited business in the Central District of California,
17 have transacted business within this District, and have attempted to derive financial
18 benefit from the residents of this District, including benefits directly related to
19
20 Defendants' infringement of the Asserted Patents.

21 26. In a recent action, Defendants The Walt Disney Company, Disney
22 Streaming Services LLC, Disney Entertainment & Sports LLC, Disney Platform
23 Distribution, Inc., BAMTech, LLC, Hulu, LLC, and ESPN, Inc. admitted that the
24 Central District of California is a proper venue for patent infringement actions brought
25
26 against them. *See WAG Acquisition, LLC v. The Walt Disney Company et al.*, No.
27
28 2:21-cv-08230 (C.D. Cal. 2021), Dkt. 74 ¶ 3 (“Disney admits that it has a regular and

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1 established place of business in the District and that, in this case, venue is proper in
2 the District.”); *Id.* at Dkt. 90 ¶ 3 (“DSS and Hulu admit that they have a regular and
3 established place of business in the District and that, in this case, venue is proper in
4 the District.”); *Id.* at Dkt. 99 ¶ 3 (“[DES], DPD, ESPN, and BAMTech admit they
5 have a regular and established place of business in the District and that, in this case,
6 venue is proper in the District.”); *InCom Corporation v. The Walt Disney Company et*
7 *al.*, No 2:15-cv-03011 (C.D. Cal. 2015), Dkt. 43 ¶¶ 2, 6 (“Defendants admit that
8 TWDC is a corporation organized under the laws of the State of Delaware and has its
9 principal place of business at 500 S. Buena Vista Street, Burbank, California. . . .
10 TWDC admits that venue is proper under 28 U.S.C. § 1400(b) with respect to
11 TWDC.”).

12 FACTUAL BACKGROUND

13 A. InterDigital & Its Persisting Innovation

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18 27. InterDigital is one of the most successful and innovative research and
19 development companies of the last half century, both domestically and globally. As a
20 dynamic and groundbreaking engineering company, for more than fifty years
21 InterDigital has been at the forefront of developing foundational video, wireless
22 communication, and other digital technologies.
23
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25 28. Every year, InterDigital pours a massive amount of money into its world-
26 class research and IP portfolio development engine. For example, in the most recently
27 reported fiscal year alone, InterDigital reinvested well over nine figures—a sum
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1 representing nearly 50% of its recurring revenues—back into this cycle of innovation.
2 At its facilities throughout the United States, and its bespoke video research
3 laboratories in Rennes, France, InterDigital researches, develops, engineers, and
4 licenses advanced video-related innovations as well as other cutting-edge technology.
5 As discussed in further detail below, InterDigital has designed and developed a range
6 of key technologies instrumental to video coding and related implementation
7 techniques.
8

9
10 29. InterDigital and its employees’ technical contributions have been
11 recognized the world over. Its employees have held or currently hold more than 100
12 significant leadership positions on global industry-leading standard setting bodies.
13 InterDigital has also won many awards for its technical discoveries. As just one
14 example, InterDigital has been named as one of the world’s 100 most innovative
15 businesses by LexisNexis for the past three years.¹⁶ InterDigital is one of the world’s
16 largest pure research and innovation companies, and relies heavily on the cycle of
17 invention to enable its future research and development efforts. In particular,
18 InterDigital relies on obtaining fair compensation for its novel contributions to
19
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23 ¹⁶ See *Innovation Momentum 2022: The Global Top 100*, LEXISNEXIS (Jan. 18, 2022),
24 <https://go.lexisnexisip.com/hubfs/~IP%20-%20Intellectual%20Property%20Files/IP%20-%20PatentSight/2022%20Innovation%20Momentum%20Report/LexisNexis%20Innovation%20Momentum%20Report%202022.pdf>; *Innovation Momentum 2023: The Global Top 100*, LEXISNEXIS
25 (Jan. 2023), <https://www.lexisnexisip.com/wp-content/uploads/2024/02/LexisNexis-Innovation-Momentum-Report-2023.pdf>; *Innovation Momentum 2024: The Global Top 100*, LEXISNEXIS (Jan.
26 2024), <https://go.lexisnexisip.com/hubfs/LexisNexis-Innovation-Momentum-Report-2024.pdf?hsCtaTracking=b73d2358-7d13-4732-afc6-e8a25be14c30%7C0b8f3fb0-888a-43b3-b2f6-70a6a3d96d87>.
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1 technological advancement in multiple industry segments, including in video coding,
2 to fund its ongoing work breaking new ground for implementers and consumers alike.

3
4 30. InterDigital has a portfolio of over 33,000 patent assets, with a strong
5 emphasis on wireless and video technologies. More specifically, InterDigital has
6 approximately 6,800 patents in its video portfolio, with over 3,500 patents and
7 applications relating to current and developing codec technologies such as AVC,
8 HEVC, VP9, AV1, and VVC.¹⁷ InterDigital also has a portfolio of video-related
9 patents including those related to improved dynamic range, “trick play” operations,
10 and many other improvements to the user video experience.
11
12

13 **B. Video Coding Technology**

14 31. Video coding technology refers to encoding video into a compressed
15 form and decoding video so that it can be displayed and viewed by a user. This
16 technology allows efficient transmission of video while at the same time maximizing
17 quality.
18

19
20 32. In digital video, video content is represented by a series of images (called
21 “frames”), which are displayed in sequence one after another to produce the illusion of
22 motion. A frame is composed of many picture elements (“pixels”), which represent
23 the smallest addressable unit of a digital video. These pixels are arranged in a grid, the
24 resolution of which is expressed in terms of the number of pixels in the horizontal and
25

26
27 ¹⁷ InterDigital was recently ranked as a top ten video codec patent owner by LexisNexis. *See Who is*
28 *Leading the VVC Patent Race?*, LEXISNEXIS (June 2024), <https://www.lexisnexisip.com/wp-content/uploads/2024/08/LexisNexis-VVC-Report-2024.pdf?hsCtaAttrib=171211671835>.

1 vertical directions for each frame. For example, video with frames 1,920 pixels wide
2 by 1,080 pixels high may be referred to as 1920x1080 or “1080p.”

3
4 33. A pixel indicates the color of the portion of the frame it represents in
5 terms of three color components. For example, a pixel may encode the red, green, and
6 blue (“RGB”) values of a unit of a frame or, equivalently, may encode the luminance,
7 blue chrominance, and red chrominance (“YCbCr”) components of a unit of a frame.
8 Each of these components can be expressed as a collection of bits. For example, in 8-
9 bit video each color component can take a value from 0 to 255 (*i.e.*, from 0 to 2^8-1)
10 with 0 indicating the minimum amount of that component and 255 indicating the
11 maximum. Thus, a black pixel would have the color components [0, 0, 0] and a white
12 pixel would have the components [255, 255, 255]. Higher bit-depths, *e.g.*, 10-bit
13 video, allow a wider range of colors to be represented—but require commensurately
14 greater information per pixel.
15
16
17

18 34. Modern digital video typically consists of frames displayed at a rate of
19 around 30 frames per second (“fps”), allowing the total amount of data required for a
20 single second of video to be calculated. For an 8-bit 1080p video at 30 fps, each pixel
21 requires 24 bits (3 components x 8 bits), and each frame consists of 1920x1080 or
22 2,073,600 pixels, representing a total of 49,766,400 bits. Given a frame rate of 30 fps,
23 just one second of raw video would require transmitting or storing nearly 1.5 *billion*
24 bits, or about 187 megabytes of data. The large amount of information required to
25 store or transmit digital video is a fundamental problem, which experts in the field
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28

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1 have aimed to solve by introducing a range of video encoders and decoders, often
2 referred to as a “codecs” (“coder/decoder”), which allow video to be compressed prior
3 to storage and transmission then later decompressed prior to display. Video codecs
4 take advantage of mathematical and statistical techniques to eliminate redundancy in
5 digital video and reduce the amount of information that must be stored and transmitted
6 to reproduce its content. Modern video codecs are very efficient, allowing consumers
7 of digital video to store many hours of content on disk or to stream digital video
8 directly to their TVs, computers, tablets, smartphones, and other devices over the
9 internet.
10
11
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13 35. One example of modern video coding is Advanced Video Coding
14 (“AVC”), also referred to as H.264.¹⁸ AVC describes a format for decompressing
15 video data that attempts to maximize both efficiency and quality. AVC takes
16 advantage of many different techniques for removing redundant information, allowing
17 digital video to be represented using significantly less information than would be
18 required for raw video as discussed above. AVC can achieve a compression ratio of
19 1000:1, meaning that an AVC-encoded video may require only a thousandth as much
20 information relative to a raw, uncompressed, video sequence. AVC is widely used
21 today, with the majority of video streamed on the internet being transmitted in an
22 AVC-compliant bitstream.
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28 ¹⁸ This nomenclature comes from AVC being part of the “H-Series Recommendations” of MPEG-4 Part 10, which are subcategorized into H.200 through H.499.

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LOS ANGELES, CA

1 36. Another modern video codec is High Efficiency Video Coding
2 (“HEVC”), the successor to AVC. HEVC, also referred to as H.265, takes advantage
3 of many similar concepts to AVC and includes numerous advancements upon the
4 prior technology, which allow for even more significant compression of digital video.
5 HEVC can achieve 25-50% more compression than AVC without sacrificing video
6 quality. As consumers of digital video come to expect higher resolution video at
7 greater bit-depths, HEVC has steadily gained traction in the market as producers of
8 digital video adopt the more efficient compression techniques that it enables.
9
10

11 37. InterDigital is one of the top technological contributors to video coding
12 standards such as AVC and HEVC. For example, InterDigital’s foundational
13 contributions to HEVC have been adopted in technologies covering important
14 elements of the decoding standard, including HEVC core, HEVC High Level Syntax,
15 scalable coding, supplemental enhancement information messaging, and screen
16 content coding.
17
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19 38. By way of useful context, absent InterDigital’s foundational
20 contributions to the video coding technology used by today’s video streaming
21 services, an uncompressed 4K movie with a run time of 130 minutes would take over
22 *four and one half days* to download at modern internet download speeds. In terms of
23 raw data, this uncompressed 130-minute film roughly translates to 11,600 GB of data.
24 Utilizing the advanced video codecs that implement and rely upon InterDigital’s
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1 innovations, this same 130-minute film can be reduced to approximately 14 GB—and
2 can be downloaded in a matter of minutes.

3
4 **C. Defendants’ Infringing Streaming Services**

5 39. The streaming services that collectively infringe the Asserted Patents (as
6 set forth in detail below) are Disney+, Hulu, Hulu Live (sometimes referred to as Hulu
7 + Live TV), and ESPN+. These may sometimes be referred to herein as the Accused
8 Instrumentalities.
9

10 40. Disney+ is a standalone service for streaming on-demand media content
11 from Disney, Pixar, Marvel, Star Wars, and National Geographic. The Disney+
12 service also provides access to certain on-demand media content from Hulu for
13 certain subscribers. A Disney+ subscription includes access to the Disney+ content
14 available in the subscriber’s geographic region and personalized recommendations.
15 There are over 500 films, 15,000 episodes, and 80 Disney+ “Originals” available on
16 Disney+.¹⁹ The subscription allows users to stream across multiple supported devices
17 at once.²⁰ Disney+ supports streaming on web browsers, mobile devices, tablets,
18 streaming sticks, gaming consoles, smart TVs, and set-top boxes.²¹
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26 ¹⁹ See *Getting started with Disney+*, DISNEY+ HELP CENTER,
27 <https://help.disneyplus.com/article/disneyplus-en-us-introduction>.

28 ²⁰ *Id.*

²¹ *Id.*

McKool Smith, P.C.
Los Angeles, CA

1 41. Disney+ uses AVC and HEVC to stream video²² and to deliver 3D
2 movies. Disney+ uses multiple content delivery networks (“CDN”).
3

4 42. For example, the following HTTP request & response captured during
5 Disney+ viewing include HTTP headers that indicate use of the BAMTech Media
6 platform and the Amazon Web Services (“AWS”) CloudFront CDN.
7

```
8 POST https://disney.playback.edge.bamgrid.com/widevine/v1/obtain-license HTTP/1.1
9 Host: disney.playback.edge.bamgrid.com
10 Connection: keep-alive
11 Content-Length: 4205
12 sec-ch-ua: "Chromium";v="128", "Not;A=Brand";v="24", "Microsoft Edge";v="128"
13 sec-ch-ua-platform: "Windows"
14 X-BAMSDK-Client-ID: disney-svod-3d9324fc
15 X-Application-Version: 1.1.2
16 sec-ch-ua-mobile: ?0
17 Authorization: Bearer
18 eyJ6aXAiOiJERUYiLCJraWQiOiJ0Vy10M2ZQUTJEN2Q0Y1BWTU1rSkd4dkJlZ0ZXQkdXek5KcFFt0GRJMWYwI
19 <truncated for brevity>
20 X-BAMSDK-Platform: javascript/chromium/edge
21 X-BAMSDK-Version: 28.4
22 X-Request-ID:
23 X-DSS-Edge-Accept: vnd.dss.edge+json; version=2
24 Accept: */*
25 Origin: https://www.disneyplus.com
26 Sec-Fetch-Site: cross-site
27 Sec-Fetch-Mode: cors
28 Sec-Fetch-Dest: empty
Referer: https://www.disneyplus.com/
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9

HTTP/1.1 200 OK
Content-Type: application/octet-stream
Connection: keep-alive
Date: Wed, 18 Sep 2024 15:52:52 GMT
x-bamtech-widevine-was-proxied: false
X-BAMTECH-MDRM-TRANSACTION-ID: 5686152028378383882
x-datadog-trace-id: 5686152028378383882
vary: origin, access-control-request-headers
access-control-allow-origin: https://www.disneyplus.com
access-control-allow-methods: GET, POST, PUT, PATCH, DELETE, OPTIONS
```

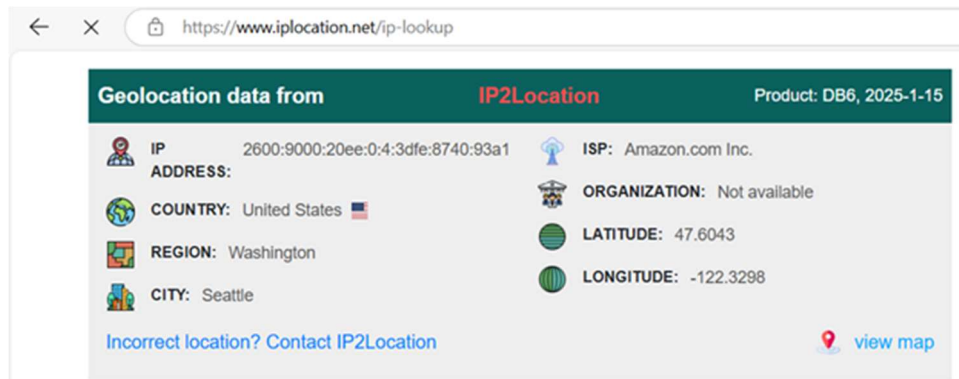
26 ²² Google, Netflix & YouTube to require AV1 video decoding support, FLATPANELSHD (Feb. 11,
27 2021),
28 <https://www.flatpanelshd.com/news.php?subaction=showfull&id=1613043929#:~:text=AV1%20is%20gaining%20momentum,under%20'OS%20&%20features'>.

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```

1 access-control-allow-credentials: true
2 access-control-expose-headers: x-request-id, x-bamtech-region, date
3 access-control-max-age: 600
4 x-bamtech-region: us-east-1
5 cache-control: no-store
6 X-Cache: Miss from cloudfront
7 Via: 1.1 80246b01173b7304bbc7804bfe173f32.cloudfront.net (CloudFront)
8 X-Amz-Cf-Pop: BOS50-C2
9 X-Amz-Cf-Id: dYqC_wDLTJ8fQZImvZBTzE1wgTrIg-gSiiwQgQaMRzkZ-2XxIGxhQ==
10 Content-Length: 647
    
```

43. The IP address for host “disney.playback.edge.bamgrid.com” resolved to IPV6 address 2600:9000:20ee:0:4:3dfe:8740:93a1, confirmed to be an Amazon network address with iplocation.net.



44. As another example, the following HTTP request & response captured during VOD viewing for the same content item include HTTP headers that indicate use of the AWS CloudFront CDN with an S3 bucket origin.

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```

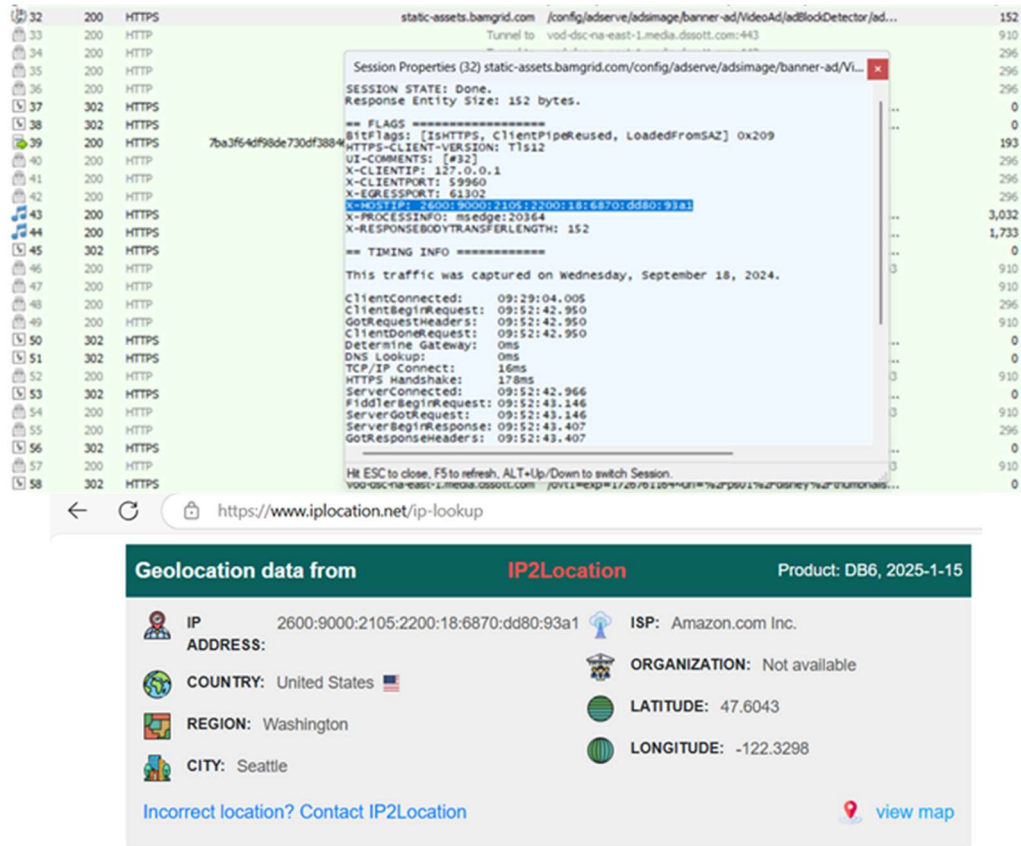
GET https://static-assets.bamgrid.com/config/adserve/adsimage/banner-
ad/VideoAd/adBlockDetector/ads.c9b27fd9a37506f0a7de49b2c12ee4b1.json?1024251
HTTP/1.1
Host: static-assets.bamgrid.com
Connection: keep-alive
sec-ch-ua: "Chromium";v="128", "Not;A=Brand";v="24", "Microsoft Edge";v="128"
sec-ch-ua-mobile: ?0
Accept: */*
Origin: https://www.disneyplus.com
Sec-Fetch-Site: cross-site
Sec-Fetch-Mode: cors
Sec-Fetch-Dest: empty
Referer: https://www.disneyplus.com/
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
HTTP/1.1 200 OK
Content-Type: application/json
Content-Length: 152
Connection: keep-alive
Access-Control-Allow-Origin: *
Access-Control-Allow-Methods: HEAD, GET
Access-Control-Max-Age: 3000
x-amz-replication-status: COMPLETED
Last-Modified: Wed, 28 Aug 2024 21:28:03 GMT
x-amz-server-side-encryption: AES256
x-amz-version-id: G1xg7pW2ypARe4_h35xA621qBJ1sCZ3E
Accept-Ranges: bytes
Server: AmazonS3
Date: Wed, 18 Sep 2024 15:51:31 GMT
Cache-Control: max-age=300
ETag: "c9b27fd9a37506f0a7de49b2c12ee4b1"
Vary: Accept-Encoding,Origin,Access-Control-Request-Headers,Access-Control-
Request-Method
X-Cache: Hit from cloudfront
Via: 1.1 0a84f3fd72c51aed32833055c4b982d2.cloudfront.net (CloudFront)
X-Amz-Cf-Pop: BOS50-C3
X-Amz-Cf-Id: 40Vu74LjNjzWx3YSFp-QRd-IZKvSKxbtY5bA5UJQzW1vx685hScB7w==
Age: 75
Timing-Allow-Origin: *

```

45. The IP address for host “static-assets.bamgrid.com” resolved to IPV6 address 2600:9000:2105:2200:18:6870:dd80:93a1, confirmed to be an Amazon network address with iplocation.net.

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46. As another example, the following HTTP request & response for a media segment captured during VOD viewing for the same content item show the host name of “vod-ftp-na-east-1.media.dssott.com,” which resolved to IP address 2a04:4e42:400::446 in the Fastly CDN.

```
GET https://vod-ftp-na-east-1.media.dssott.com/dvt1-exp=1726761164~url=%2Fps01%2Fdisney%2F9840c959-0358-42d9-99ef-28dd6b203104%2F~psid=9fc43352-fa30-48c6-8084-054d1646121f~aid=1cc37dd4-c033-4cef-bd0c-6b59e0e4469c~did=86fc37c8-81a8-4384-a0b9-a9334d05e962~kid=k01~hmac=776e55434d8544280996b9a91cda205b880c28aa84d4ab48ce6b9985bc98062d/ps01/disney/9840c959-0358-42d9-99ef-28dd6b203104/r/2bb19660-d7fc-44da-bb37-29ef0680c226/22f7-MAIN/02/2400K/00/00/00_000.mp4?CMCD=b1%3D3000%2Cbr%3D0%2Cd%3D8000%2Cd1%3D2999%2Cnr%3D%22%2Fps01%2Fdisney%2F9840c959-0358-42d9-99ef-28dd6b203104%2Fr%2F2bb19660-d7fc-44da-bb37-29ef0680c226%2F22f7-MAIN%2F02%2F2400K%2F00%2F00%2F08_000.mp4%22%2Cot%3Dv%2Cpr%3D1%2Csf%3Dh%2Cst%3Dv%2Csu%3Dfalse HTTP/1.1
Host: vod-ftp-na-east-1.media.dssott.com
Connection: keep-alive
sec-ch-ua: "Chromium";v="128", "Not;A=Brand";v="24", "Microsoft Edge";v="128"
sec-ch-ua-mobile: ?0
Accept: */*
Origin: https://www.disneyplus.com
```

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1 Sec-Fetch-Site: cross-site
2 Sec-Fetch-Mode: cors
3 Sec-Fetch-Dest: empty
4 Referer: <https://www.disneyplus.com/>
5 Accept-Encoding: gzip, deflate, br, zstd
6 Accept-Language: en-US,en;q=0.9

7 **HTTP/1.1 200 OK**
8 Connection: keep-alive
9 Content-Length: 1044642
10 Content-Type: video/mp4
11 Expires: Fri, 08 Nov 2024 15:45:46 GMT
12 Last-Modified: Fri, 02 Aug 2024 02:01:27 GMT
13 X-MinIO-Node: 10.166.100.117:9000
14 x-dss-orig-etag: "583fb47d7a35267940c5d3c1caf08a42"
15 Etag: "583fb47d7a35267940c5d3c1caf08a42"
16 X-backend: D+
17 X-DSS-EXT-LB: lb04-ext01-gv-las1.prod.dssinfra.com
18 x-dss-int-os: varnish09-vod01-gen MISS (REQ-ID: 291174574 CLIENT-ID: 10.166.96.4)
19 x-dss-precached: true
20 x-dss-precache: duration: 1209600s, grace: 399168.000, ttl: 787152.375
21 x-dss-cr-status: (hit)
22 x-dss-debug-cr-status: (varnish14.c03.mt.gen.lax1.prod.dssott.net)(hit)
23 x-dss-ttl: 473083.790
24 x-dss-grace: 399168.000
25 x-dss-keep: 0.000
26 Cache-Control: max-age=5184000, s-maxage=86400
27 x-dss-s-maxage: 86400
28 x-dss-store: size
29 x-dss-media-id: 9840c959-0358-42d9-99ef-28dd6b203104
30 x-dss-property: DIS-VOD-SHIELD
31 X-ds-cache: pass (edge:varnish01.c03.mt.gen.lax1.prod.dssott.net) 5
32 (shield:varnish14.c03.mt.gen.lax1.prod.dssott.net)
33 X-ds-hits: 5
34 x-dss-tracing: varnish14.c03.mt.gen.lax1.prod.dssott.net/404558194
35 113733765,varnish01.c03.mt.gen.lax1.prod.dssott.net/298400186
36 Via: 1.1 varnish, 1.1 varnish, 1.1 varnish
37 Accept-Ranges: bytes
38 Age: 30319
39 Date: Wed, 18 Sep 2024 15:52:47 GMT
40 X-Served-By: cache-dca-kcgs7200228-DCA, cache-iad-kiad7000093-IAD, cache-bos4630-
41 BOS
42 X-Cache: MISS, HIT, HIT
43 X-Cache-Hits: 0, 13, 0
44 X-Timer: S1726674767.402340,VS0,VE1
45 access-control-allow-methods: GET, HEAD, OPTIONS
46 access-control-allow-credentials: true
47 access-control-allow-headers: Origin, X-Requested-With, Content-Type,
48 Authorization, Accept, Range, X-Dss-Baseurl
49 access-control-expose-headers: X-Dss-Baseurl
50 access-control-max-age: 600
51 access-control-allow-origin: <https://www.disneyplus.com>

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47. As another example, the following HTTP request & response for a media segment captured during live viewing of the Disney Channel stream include HTTP headers that indicate use of the Akamai CDN.

```
GET https://linear-akc-na-east-1.media.dssott.com/clt2/va01/disneyplus/channel/54e6f1c0-2e4a-4dee-83ba-b6690163c574-1726093874063/cmef-cenc-ctr-1200K/262/15/55/45_807.mp4?CMCD=b1%3D0%2Cbr%3D0%2Cbs%2Cd%3D5005%2Cd1%3D0%2Cnor%3D%22%2Fclt2%2Fva01%2Fdisneyplus%2Fchannel%2F54e6f1c0-2e4a-4dee-83ba-b6690163c574-1726093874063%2Fcmef-cenc-ctr-1200K%2F262%2F15%2F55%2F50_812.mp4%22%2Cot%3Dv%2Cpr%3D0%2Csf%3Dh%2Cst%3Dv%2Csu HTTP/1.1
Host: linear-akc-na-east-1.media.dssott.com
Connection: keep-alive
sec-ch-ua: "Chromium";v="128", "Not;A=Brand";v="24", "Microsoft Edge";v="128"
sec-ch-ua-mobile: ?0
Accept: */*
Origin: https://www.disneyplus.com
Sec-Fetch-Site: cross-site
Sec-Fetch-Mode: cors
Sec-Fetch-Dest: empty
Referer: https://www.disneyplus.com/
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
```

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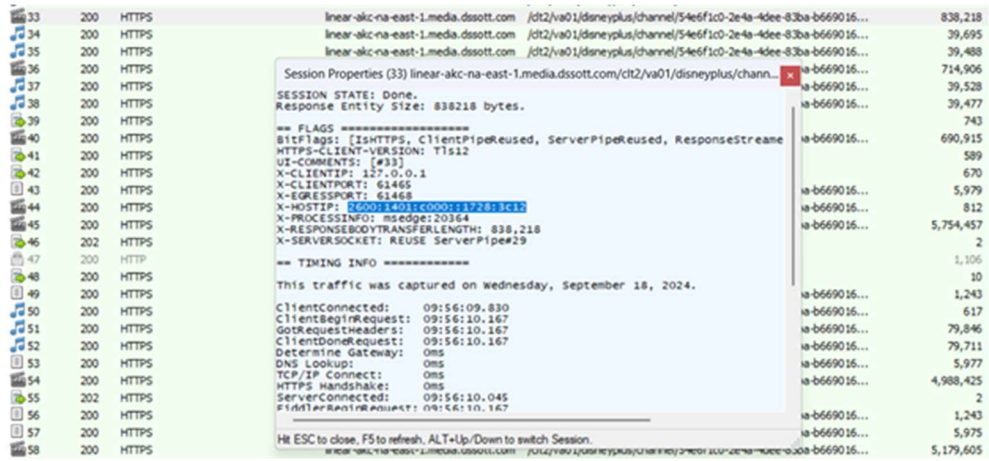
HTTP/1.1 200 OK
Content-Length: 838218
Last-Modified: Wed, 18 Sep 2024 15:55:53 GMT
Expires: Wed, 25 Sep 2024 15:55:54 GMT
Cache-Control: max-age=604800
x-dss-orig-etag: "66eaf809-cca4a"
ETag: "66eaf809-cca4a"
x-dss-int-ws: nginx04.live01.hls.star.clt2.prod.bamtech.co
x-dss-int-os: varnish12.live01.hls.star.clt2.prod.bamtech.co MISS (REQ-ID:
478384431 CLIENT-ID: 10.36.223.250)
x-dss-int-lb: lb04.ext01.inf.star.clt2.prod.bamtech.co
x-dss-int-ws-lb: lb04.ext01.inf.star.clt2.prod.bamtech.co
Accept-Ranges: bytes
x-dss-ttl: 205630.450
x-dss-grace: 399168.000
x-dss-keep: 0.000
x-dss-debug-origin-tag: clt2
url: /clt2/va01/disneyplus/channel/54e6f1c0-2e4a-4dee-83ba-b6690163c574-
1726093874063/cmef-cenc-ctr-1200K/262/15/55/45_807.mp4
X-Varnish: 1620959028
x-dss-media-id:
x-dss-property: DIS-LINEAR
x-dss-tracing: 1:varnish06.c02.mt.gen.ewr1.prod.dssott.net/1380135048
1378189309, varnish10.c02.mt.gen.ewr1.prod.dssott.net/1620959028
Date: Wed, 18 Sep 2024 15:56:12 GMT
Connection: keep-alive
Akamai-Request-BC:
[a=23.40.60.14,b=344061720,c=g,n=US_MA_BILLERICA,o=20940],[c=c,n=US_MA_BOSTON,o=2
0940]
Akamai-Mon-Iucid-Del: 1637893
X-Forward-Proto: http
CDN-Origin-Protocol: HTTP
Content-Type: video/mp4
Access-Control-Allow-Origin: https://www.disneyplus.com
Access-Control-Max-Age: 600
Access-Control-Allow-Methods: GET,HEAD,OPTIONS
Access-Control-Allow-Credentials: true
Access-Control-Allow-Headers: Origin, X-Requested-With, Content-Type,
Authorization, accessToken, Accept, Range, X-Dss-Baseurl, CMCD-Request, CMCD-
Object, CMCD-Status, CMCD-Session
Access-Control-Expose-Headers: X-Dss-Baseurl, Akamai-Mon-Iucid-Ing, Akamai-Mon-
Iucid-Del, Akamai-Request-BC
Akamai-GRN: 0.0e3c2817.1726674972.1481f718

```

48. The IP address for host “linear-akc-na-east-1.media.dssott.com” resolved to IPV6 address 2600:1401:c000::1728:3c12, confirmed to be an Akamai network address with iplocation.net.

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49. Hulu is a streaming service that offers both live and on-demand content.

Hulu provides access to television shows from every major U.S. broadcast network, libraries of television series and films—including Hulu Originals and other content available exclusively on Hulu. Hulu supports streaming on web browsers, mobile devices, tablets, streaming sticks, gaming consoles, smart TVs, and set-top boxes.²³ Hulu offers a Live TV component to its subscriptions that includes access to 90+ live television channels. Hulu Live subscribers can watch live sports, breaking news, awards shows, primetime dramas, daytime soaps, local teams and weather forecasts,

²³ See *About Hulu*, HULU PRESS, <https://press.hulu.com/corporate/>.

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1 the latest Hulu Originals, and thousands of shows and movies in the Hulu streaming
2 library.²⁴

3
4 50. Hulu uses AVC and HEVC for at least some of its streaming²⁵ and
5 employs multiple content delivery networks.

6 51. For example, the following HTTP request & response captured during
7
8 Hulu VOD viewing include HTTP headers that indicate use of the BAMTech Media
9 platform and the AWS CloudFront CDN.

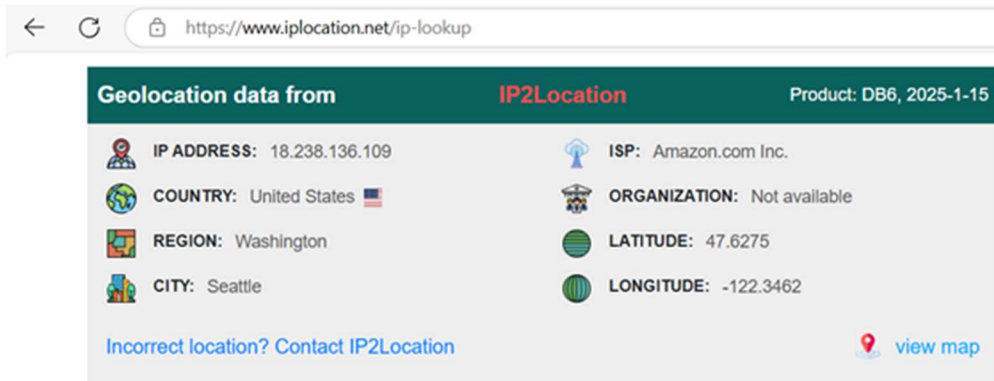
10 POST [https://hulu.playback.edge.bamgrid.com/widevine-hulu/v1/hulu/vod/obtain-
license/61664796?deejay_device_id=214&nonce=207618731&signature=1730281218_e954ea
741ec58901f9baf6f71b6b6b86113cb9d7](https://hulu.playback.edge.bamgrid.com/widevine-hulu/v1/hulu/vod/obtain-
11 license/61664796?deejay_device_id=214&nonce=207618731&signature=1730281218_e954ea
12 741ec58901f9baf6f71b6b6b86113cb9d7) HTTP/1.1
Host: hulu.playback.edge.bamgrid.com

13 HTTP/1.1 200 OK
14 Content-Type: application/octet-stream
Connection: keep-alive
Date: Tue, 29 Oct 2024 23:40:19 GMT
15 cache-control: no-store
X-BAMTECH-MDRM-TRANSACTION-ID: 1110317887226113915
16 x-datadog-trace-id: 1110317887226113915
x-request-id: 8bee0462beea579b3a2dc349086c316e
17 vary: origin, access-control-request-headers
access-control-allow-origin: <https://www.hulu.com>
18 access-control-allow-methods: GET, POST, PUT, PATCH, DELETE, OPTIONS
access-control-allow-credentials: true
19 access-control-expose-headers: x-request-id, x-bamtech-region, date
access-control-max-age: 600
x-bamtech-region: us-west-2
20 X-Cache: Miss from cloudfront
Via: 1.1 2a3bfb7cad3003297b11ce744cb58fa.cloudfront.net (CloudFront)
21 X-Amz-Cf-Pop: DEN53-P1
X-Amz-Cf-Id: yYJxnEPiq41YQA094_KRknRERv3l3dU8uR_UC62mrD1qHu0hmAcrA==
22 Content-Length: 703

23
24 ²⁴ See *Hulu + Live TV Plans*, HULU HELP CENTER, <https://help.hulu.com/article/hulu-what-is-hulu-live-tv>.

25 ²⁵ *What Are HEVC and AVC? H.265 and H.264 Video Codecs Explained*, TOM’S HARDWARE (DEC.
26 23, 2020), <https://www.tomshardware.com/reference/h264-h265-hevc-codec-definition>; *New Report
27 Highlights Impact of HEVC Codec on Streaming Industry*, INTERDIGITAL, INC. (Dec. 6, 2023),
28 <https://ir.interdigital.com/news-events/press-releases/news-details/2023/New-Report-Highlights-Impact-of-HEVC-Codec-on-Streaming-Industry/default.aspx>.

1 52. The IP address for host “hulu.playback.edge.bamgrid.com” resolved to
 2 IP address 18.238.136.109, confirmed to be an Amazon network address with
 3
 4 iplocation.net.



15 53. As another example, the following HTTP request & response for a
 16 DASH manifest captured during VOD viewing for the same content item show the
 17 host name of “dynamic-manifest.hulustream.com,” which resolved to IP address
 18 52.35.57.186 in the Amazon network.

19
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 25
 26 GET https://dynamic-manifest.hulustream.com/hulu/v1/vod/dash/58bfa434-f289-469a-
 27 042471f04f53/525726182935732727/manifest.mpd?boundary signaling=hulu segment type
 28 &break audio=3&break dr=1&break video=1&breaks=ChgSchDc5YLizOrQugcSchDb9oDQotPMug
 cSEAgAEgxczAxL2Rpc25leS8%3D&cdn=ak%2Cfoa&cluster=green&content audio=3&content
 dr=1&content video=1&drm=6&h264=HD_60&max bl=2000000&min bl=250000&path prefix=p

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s01%2Fdisney%2F&prefer text roles=true&strip locale=true&user id=207618731&auth=1730331618_a87b0671b607a063b73f131e82b96892 HTTP/1.1

Host: dynamic-manifest.hulustream.com
<truncated for brevity>

HTTP/1.1 200 OK

date: Tue, 29 Oct 2024 23:40:18 GMT
content-type: application/dash+xml
access-control-allow-origin: <https://www.hulu.com>
content-encoding: gzip
vary: Origin,Accept-Encoding
x-envoy-upstream-service-time: 10
x-diproton-route: Envoy
server: envoy
transfer-encoding: chunked

Session Properties (238) dynamic-manifest.hulustream.com/hulu/v1/vod/dash/58bfa434-f289-469a-9649-042471f04f53/5257... 3,558

SESSION STATE: Done.
Response Entity Size: 3558 bytes.

== FLAGS ==
BitFlags: [ISHTTPS, ClientPipeReused, ServerPipeReused, LoadedFromSAZ]
HTTPS-CLIENT-VERSION: T1S12
UI-COMMENTS: [#238]
X-CLIENTIP: 52.35.57.186
X-CLIENTPORT: 57361
X-EGRESSPORT: 57365
X-HOSTIP: 52.35.57.186
X-PROCESSINFO: msedge:33868
X-RESPONSEBODYTRANSFERLENGTH: 3,558
X-SERVERSOCKET: REUSE ServerPipe#210
X-SUPPORTED-CLIENT-ALPN: h2, http/1.1
X-SUPPORTED-CLIENT-TLS-PROTOCOLS: 15360

== TIMING INFO ==
This traffic was captured on Tuesday, October 29, 2024.

ClientConnected: 17:40:19.815
ClientBeginRequest: 17:40:20.065
GotRequestHeaders: 17:40:20.065
ClientDoneRequest: 17:40:20.065
Determine Gateway: 0ms
DNS Lookup: 0ms
TCP/IP Connect: 0ms
HTTPS Handshake: 0ms
ServerConnected: 17:40:19.913

Geolocation data from IP2Location Product: DB6, 2025-1-15

IP ADDRESS: 52.35.57.186
COUNTRY: United States
REGION: Oregon
CITY: Boardman
ISP: Amazon Technologies Inc.
ORGANIZATION: Not available
LATITUDE: 45.8399
LONGITUDE: -119.7006

Incorrect location? Contact IP2Location view map

54. As another example, the following HTTP request & response for a media segment captured during VOD viewing for the same content item includes HTTP headers that indicate use of the Akamai CDN and the AWS CloudFront CDN with an S3 bucket origin.

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1 GET https://vod-hulu-akc-
2 na.media.dssott.com/dvt1=exp=1730331618~url=%2Fps01%2Fdisney%2Fda81d9ed-3f68-
3 465e-b28d-a544f10ec454%2Fr%2Ff8e38256-c71d-4011-aa50-9429271948ba%2F4be7-
4 MAIN%2F03~kid=k01~hmac=7bafaa1ddaaefd18ab6f920e9b642eb21ae981b71744b62a50e9d7d38b
5 faad64/ps01/disney/da81d9ed-3f68-465e-b28d-a544f10ec454/r/f8e38256-c71d-4011-
6 aa50-9429271948ba/4be7-MAIN/03/H264_1_CMAF_1200K/da35d08b-50bc-443e-9e9a-
7 31ed1b95e794/pts_0.mp4 HTTP/1.1
8 Host: vod-hulu-akc-na.media.dssott.com
9 <truncated for brevity>
10
11 HTTP/1.1 200 OK
12 Last-Modified: Mon, 08 Apr 2024 17:46:34 GMT
13 ETag: "f3f851b2ef4fb7464ab1943b9b8d6ef5"
14 x-amz-server-side-encryption: AES256
15 Expires: Mon, 15 Apr 2024 17:46:33 GMT
16 X-Amz-Cf-Pop: EWR50-C1
17 X-Amz-Cf-Id: 2Ve1Sv1HW68Lg8D9vyNuDH_KV1_YmytxcKYRh0ijv3hRxy1V4SV7FQ==
18 x-dss-store: size
19 x-dss-media-id: da81d9ed-3f68-465e-b28d-a544f10ec454
20 x-dss-property: HULU-VOD
21 X-ds-cache: 2 (shield:varnish01.c01.mt.gen.jfk3.qa.dssott.net)
22 X-ds-hits: 2
23 x-dss-cr-status: (hit)
24 x-dss-debug-cr-status: (varnish01.c01.mt.gen.jfk3.qa.dssott.net)(hit)
25 x-dss-ttl: 492628.848
26 x-dss-grace: 1710720.000
27 x-dss-keep: 0.000
28 Cache-Control: max-age=2592000, s-maxage=86400
x-dss-s-maxage: 86400
x-dss-tracing: varnish01.c01.mt.gen.jfk3.qa.dssott.net/500462567 495616244
Accept-Ranges: bytes
Content-Length: 726086
Date: Tue, 29 Oct 2024 23:40:19 GMT
Connection: keep-alive
Akamai-Request-BC: [a=23.47.56.122,b=63649943,c=g,n=US_TX_DALLAS,o=20940]
Akamai-Mon-Iucid-Del: 1628770
X-Forward-Proto: http
CDN-Origin-Protocol: HTTP
Content-Type: video/mp4
Access-Control-Allow-Origin: https://www.hulu.com
Access-Control-Expose-Headers: X-Dss-Baseurl,Akamai-Mon-Iucid-Ing,Akamai-Mon-
Iucid-Del,Akamai-Request-BC
Access-Control-Max-Age: 600
Access-Control-Allow-Headers: Origin, X-Requested-With, Content-Type,
Authorization, Accept, Range, X-Dss-Baseurl,CMCD-Request,CMCD-Object,CMCD-
Status,CMCD-Session
Access-Control-Allow-Credentials: true
Access-Control-Allow-Methods: GET,HEAD,OPTIONS

55. The IP address for host “vod-hulu-akc-na.media.dssott.com” resolved
to IP address 23.47.51.122, confirmed to be an Akamai network address with
iplocation.net.

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The screenshot shows a list of network traffic entries on the left, with a detailed view of session properties for entry 279 on the right. The session properties include:

- SESSION STATE: Done.
- Response Entity Size: 726086 bytes.
- === FLAGS ===
- BITFlags: [ISHTTPS, ClientPipeReused, ServerPipeReused, ResponseStreamed]
- HTTPS-CLIENT-VERSION: TLS12
- UI-COMMENTS: [#279]
- X-CLIENTIP: 127.0.0.1
- X-CLIENTPORT: 57375
- X-EGRESSPORT: 57379
- X-HOSTIP: 23.47.51.122
- X-PROCESSINFO: msedge:33868
- X-RESPONSEBODYTRANSFERLENGTH: 726,086
- X-SERVERSOCKET: REUSE ServerPipe#259
- X-SUPPORTED-CLIENT-ALPN: h2, http/1.1
- X-SUPPORTED-CLIENT-TLS-PROTOCOLS: 15360
- === TIMING INFO ===
- This traffic was captured on Tuesday, October 29, 2024.
- ClientConnected: 17:40:20.199

The screenshot shows a web browser displaying the IP geolocation page for IP address 23.47.51.122. The data provided is as follows:

- IP ADDRESS:** 23.47.51.122
- COUNTRY:** United States
- REGION:** Texas
- CITY:** Dallas
- ISP:** Akamai Technologies Inc.
- ORGANIZATION:** Not available
- LATITUDE:** 32.7831
- LONGITUDE:** -96.8065

Additional text on the page includes "Incorrect location? Contact IP2Location" and a "view map" link.

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56. ESPN+ is a streaming service that allows users to stream live sports from the best leagues in the world and original series from the biggest names in sports. An ESPN+ subscription provides users with access to thousands of live events from UFC, NFL, NHL, FA Cup, MLB, Grand Slam tennis, PGA TOUR LIVE, LaLiga, Top Rank Boxing, and more—plus a variety of college sports, including football, basketball, baseball, and lacrosse, from over 20 conferences.²⁶ ESPN+ supports streaming on web

²⁶ See, e.g., *Getting Started With ESPN+*, ESPN SUPPORT, <https://support.espn.com/hc/en-us/articles/13617221045652-Getting-Started-With-ESPN>.

1 browsers, mobile devices, tablets, streaming sticks, gaming consoles, smart TVs, and
2 set-top boxes.²⁷

3
4 57. Upon information and belief, ESPN+ uses AVC and multiple content
5 delivery networks.

6 58. For example, the following HTTP request & response captured during
7 ESPN+ live stream viewing include HTTP headers that indicate use of the BAMTech
8 Media platform and the AWS CloudFront CDN.

```
10 POST https://playback.svcs.plus.espn.com/events/f1111d0c-7df7-4f18-be93-  
11 dd64202807c0/media/ea481eaa-b490-4855-a973-9820749d2b7b/scenarios/silk-regular  
12 HTTP/1.1  
Host: playback.svcs.plus.espn.com  
<truncated for brevity>  
13 GvT8C3Pv3s1oe9Y0ICro3QaJkFo4JAimvhbVKuNOwgcNKuv5cncvONbqVyP89FqZY3Xk.VI2S69SglAitx  
npR_VyN6g  
sec-ch-ua-platform: "Windows"  
14 sec-ch-ua: "Chromium";v="130", "Microsoft Edge";v="130", "Not?A_Brand";v="99"  
15 x-bamsdk-client-id: espn-a9b93989  
x-bamsdk-version: 29.0  
16 sec-ch-ua-mobile: ?0  
x-bamsdk-platform: javascript/chromium/edge  
content-type: application/json  
17 Origin: https://plus.espn.com  
Sec-Fetch-Site: same-site  
18 Sec-Fetch-Mode: cors  
Sec-Fetch-Dest: empty  
19 Referer: https://plus.espn.com/  
Accept-Encoding: gzip, deflate, br, zstd  
20 Accept-Language: en-US,en;q=0.9  
  
21 HTTP/1.1 200 OK  
Content-Type: application/vnd.media-service+json; version=5  
22 Connection: keep-alive  
Date: Mon, 04 Nov 2024 21:26:56 GMT  
23 cache-control: no-store  
vary: origin, access-control-request-headers  
24 access-control-allow-origin: https://plus.espn.com  
access-control-allow-methods: GET, POST, PUT, PATCH, DELETE, OPTIONS  
25 access-control-allow-credentials: true  
access-control-expose-headers: x-request-id, x-bamtech-region, date  
26 access-control-max-age: 600  
x-request-id: 967ec71c-1c30-47e3-bc4d-6d4e7bdb52a7
```

27
28 ²⁷ *Id.*

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x-bamtech-region: us-west-2
 X-Cache: Miss from cloudfront
 Via: 1.1 056799adad256ab111ed778c35e4393a.cloudfront.net (CloudFront)
 X-Amz-Cf-Pop: DEN52-P1
 X-Amz-Cf-Id: fjNXXK19Hj0F1gyP6eQZmiobFUqVAZBK2GncyjjBHphVRnq-MSI-bvQ==
 Content-Length: 4942

59. The IP address for host “playback.svcs.plus.espn.com” resolved to IP address 108.156.201.124, confirmed to be an Amazon network address with iplocation.net.



60. As another example, the following HTTP request & response for an HLS manifest captured during live stream viewing for the same live stream include HTTP headers that indicate use of the Akamai CDN and show the host name of “live-ak-na-

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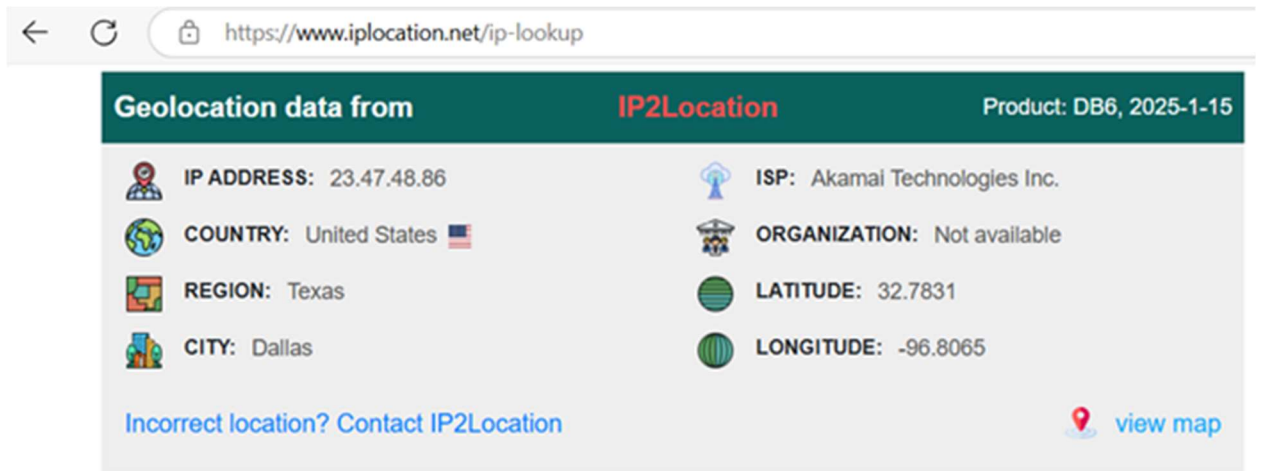
1 west-1.media.plus.espn.com,” which resolved to IP address 23.47.48.86 in the Akamai
2 network.

3
4 GET https://live-akc-na-west-
1.media.plus.espn.com/hdnts=exp=1730842016~acl=/*~id=3a2c763e-d861-4d10-afe3-
95d6237fa12a~data=ea481eaa-b490-4855-a973-
5 9820749d2b7b~hmac=0f2a20bb600a1a901385673a00e7fb927cb1a8947f4cd620122575e36978473
7/14887fd72eb70588d2c2314ade05b8ad/las1/va01/espn/event/2024/11/04/Penn State Yor
6 k vs UMBC 20241104 1730748657018/1800K/1800 complete aeng.m3u8 HTTP/1.1
Host: live-akc-na-west-1.media.plus.espn.com
7 <truncated for brevity>

8 HTTP/1.1 200 OK
9 Last-Modified: Mon, 04 Nov 2024 21:26:55 GMT
Expires: Mon, 04 Nov 2024 21:27:00 GMT
10 Cache-Control: max-age=4
X-MinIO-Node: 10.166.161.68:80
11 x-dss-orig-etag: "67293c1f-f9b6"
x-dss-int-ws: web07-deslive-las1.prod.dssinfra.com
12 x-dss-int-os: varnish11-deslive-las1.prod.dssinfra.com PASS (REQ-ID: 231863108
CLIENT-ID: 10.166.96.8)
13 x-dss-int-lb: lb02-ext01-gl-las1.prod.dssinfra.com
ETag: W/"67293c1f-f9b6"
14 x-dss-ttl: 0.680
x-dss-grace: 1.320
15 x-dss-keep: 0.000
x-dss-debug-origin-tag: las1
16 url:/las1/va01/espn/event/2024/11/04/Penn_State_York_vs_UMBC_20241104_17307486570
18 18/1800K/1800_complete_aeng.m3u8
X-Varnish: 454426775
19 x-dss-media-id:
x-dss-property: ESPN-LIVE
20 x-dss-tracing:
varnish13.c03.mt.gen.lax1.prod.dssott.net/429308372, varnish16.c03.mt.gen.lax1.pro
21 d.dssott.net/454426775
Vary: Accept-Encoding
22 Content-Encoding: gzip
Date: Mon, 04 Nov 2024 21:26:58 GMT
23 Transfer-Encoding: chunked
Connection: keep-alive
24 Connection: Transfer-Encoding
Akamai-Request-BC:
25 [a=23.47.53.86,b=58640542,c=g,n=US_TX_DALLAS,o=20940],[c=c,n=US_TX_DALLAS,o=20940
26]
Akamai-Mon-Iucid-Del: 1221951
27 Content-Type: application/x-mpegURL
Accept-Ranges: bytes
28 Access-Control-Allow-Origin: https://plus.espn.com
Access-Control-Max-Age: 600
Access-Control-Allow-Methods: GET,HEAD,OPTIONS
Access-Control-Allow-Credentials: true
Access-Control-Allow-Headers: Origin, X-Requested-With, Content-Type,
Authorization, Accept, Range, ssess, X-Dss-Baseurl,CMCD-Request,CMCD-Object,CMCD-
Status,CMCD-Session

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Access-Control-Expose-Headers: X-Dss-Baseurl,Akamai-Mon-Iucid-Ing,Akamai-Mon-Iucid-Del,Akamai-Request-BC,Content-Length,Content-Range,Content-Encoding,Accept-Ranges
 Akamai-GRN: 0.56352f17.1730755618.37ec89e



61. As another example, the following HTTP request & response for a content segment captured during live stream viewing for the same live stream include HTTP headers that indicate use of the Akamai CDN and show the host name of “live-akc-na-west-1.media.plus.espn.com,” which resolved to IP address 23.47.48.86 in the Akamai network as shown above.

Session #122, live-akc-na-west-1.media.plus.espn.com, content segment, Akamai headers, Akamai IP (same as above):

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1 GET https://live-akc-na-west-
2 1.media.plus.espn.com/hdnts=exp=1730842016~acl=/*~id=3a2c763e-d861-4d10-afe3-
3 95d6237fa12a~data=ea481eaa-b490-4855-a973-
4 9820749d2b7b~hmac=0f2a20bb600a1a901385673a00e7fb927cb1a8947f4cd620122575e36978473
5 7/14887fd72eb70588d2c2314ade05b8ad/las1/va01/espn/event/2024/11/04/Penn_State_Yor
6 k_vs_UMBC_20241104_1730748657018/7000K/309/21/26/47_154.ts HTTP/1.1

7 Host: live-akc-na-west-1.media.plus.espn.com

8 <truncated for brevity>

9 HTTP/1.1 200 OK

10 Content-Length: 4243552

11 Last-Modified: Mon, 04 Nov 2024 21:26:55 GMT

12 Expires: Mon, 11 Nov 2024 21:26:56 GMT

13 Cache-Control: max-age=604800

14 X-MinIO-Node: 10.166.161.62:80

15 x-dss-orig-etag: "67293c1f-40c060"

16 ETag: "67293c1f-40c060"

17 x-dss-int-ws: web01-deslive-las1.prod.dssinfra.com

18 x-dss-int-os: varnish05-deslive-las1.prod.dssinfra.com MISS (REQ-ID: 851728518

19 CLIENT-ID: 10.166.96.9)

20 x-dss-int-lb: lb03-ext01-gl-las1.prod.dssinfra.com

21 Accept-Ranges: bytes

22 x-dss-ttl: 205632.000

23 x-dss-grace: 399168.000

24 x-dss-keep: 0.000

25 x-dss-debug-origin-tag: las1

26 url:/las1/va01/espn/event/2024/11/04/Penn_State_York_vs_UMBC_20241104_17307486570
27 18/7000K/309/21/26/47_154.ts

28 X-Varnish: 496665858

x-dss-media-id:

x-dss-property: ESPN-LIVE

x-dss-tracing:

0:varnish01.c02.mt.gen.ord1.prod.dssott.net/548640615,varnish05.c02.mt.gen.ord1.p
rod.dssott.net/496665858

Date: Mon, 04 Nov 2024 21:26:59 GMT

Connection: keep-alive

Akamai-Request-BC:

[a=23.47.53.86,b=58641551,c=g,n=US_TX_DALLAS,o=20940],[c=c,n=US_TX_DALLAS,o=20940
]

Akamai-Mon-Iucid-Del: 1221951

Content-Type: video/MP2T

Access-Control-Allow-Origin: https://plus.espn.com

Access-Control-Max-Age: 600

Access-Control-Allow-Methods: GET,HEAD,OPTIONS

Access-Control-Allow-Credentials: true

Access-Control-Allow-Headers: Origin, X-Requested-With, Content-Type,
Authorization, Accept, Range, ssess, X-Dss-Baseurl,CMCD-Request,CMCD-Object,CMCD-
Status,CMCD-Session

Access-Control-Expose-Headers: X-Dss-Baseurl,Akamai-Mon-Iucid-Ing,Akamai-Mon-
Iucid-Del,Akamai-Request-BC,Content-Length,Content-Range,Content-Encoding,Accept-
Ranges

Akamai-GRN: 0.56352f17.1730755619.37ecc8f

62. As another example, the following HTTP request & response for an
HLS manifest captured during VOD viewing for a content item show the host name of

1 “pvod-ftp-las1.media.plus.espn.com,” which resolved to IP address 151.101.69.190 in
2 the Fastly network.

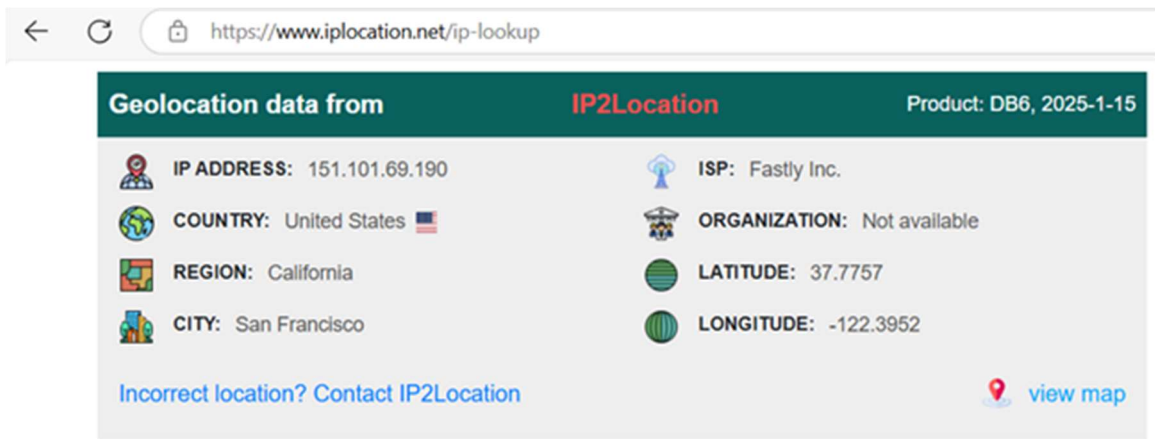
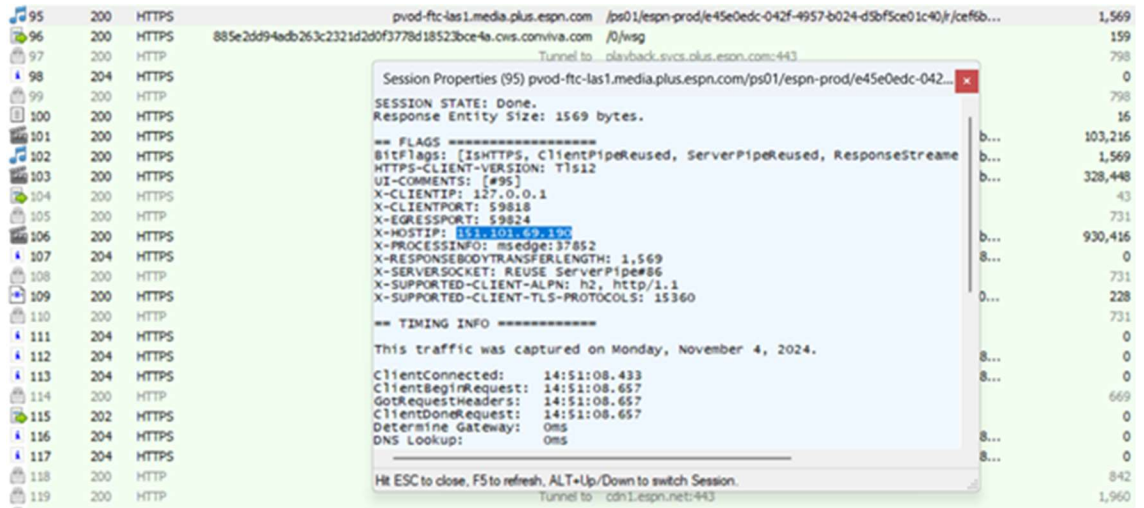
3
4 GET https://pvod-ftp-las1.media.plus.espn.com/ps01/espn-prod/e45e0edc-042f-4957-b024-d5bf5ce01c40/r/cef6b8c9-023a-40e9-8a88-533a60763b2a/1517-MAIN/09/800K/800_complete.m3u8 HTTP/1.1

5 Host: pvod-ftp-las1.media.plus.espn.com
6 <truncated for brevity>

7 HTTP/1.1 200 OK

8 Connection: keep-alive
9 Content-Length: 1569
10 Server: nginx
11 Content-Type: audio/mpegurl
12 Cache-Control: max-age=5184000
13 Last-Modified: Thu, 24 Oct 2024 22:20:45 GMT
14 Expires: Wed, 01 Jan 2025 19:19:18 GMT
15 X-MinIO-Node: 10.167.100.151:9000
16 x-dss-orig-etag: "a6b1ee16a984fc4bbf4282f3b364b646"
17 Etag: "a6b1ee16a984fc4bbf4282f3b364b646"
18 X-DSS-INT-OS: varnish14-vod01-gen MISS (REQ-ID: 988244753 CLIENT-ID: 10.167.96.3)
19 X-backend: E+
20 X-DSS-INT-LB: lb03-ext01-gv-iad1.prod.dssinfra.com
21 Content-Encoding: gzip
22 Via: 1.1 varnish, 1.1 varnish
23 Accept-Ranges: bytes
24 Age: 181910
25 Date: Mon, 04 Nov 2024 21:51:07 GMT
26 X-Served-By: cache-iad-kcgs7200160-IAD, cache-den8242-DEN
27 X-Cache: HIT, HIT
28 X-Cache-Hits: 11, 0
X-Timer: S1730757068.757798,VS0,VE1
Vary: Accept-Encoding
access-control-allow-methods: GET, HEAD, OPTIONS
access-control-allow-credentials: true
access-control-allow-headers: Origin, X-Requested-With, Content-Type, Authorization, Accept, Range, X-Dss-Baseurl
access-control-expose-headers: X-Dss-Baseurl
access-control-max-age: 600
access-control-allow-origin: <https://plus.espn.com>

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63. As another example, the following HTTP request & response captured during VOD viewing for the same content item include HTTP headers that indicate use of the BAMTech Media platform and the AWS CloudFront CDN and show the host name of “playback.svcs.plus.espn.com,” which resolved to IP address 108.156.201.94 in the Amazon network.

```
GET https://playback.svcs.plus.espn.com/silk/v1/obtain-license/05a01523-2857-4dbe-882d-5ad2bb3c595b HTTP/1.1
Host: playback.svcs.plus.espn.com
Connection: keep-alive
sec-ch-ua-platform: "Windows"
Authorization: eyJ6aXAiOiJERUYiLCJraWQoIjIjZHRlcVJ2R04yTDg3dW50M2g5QzdReF9MUGNRdGN4VTZZNnk5UjF4eHBFiwiY3R5IjojSldUIiwiZW5jIjojQzIwUCIsImFsZyI6ImRpciJ9..n47NV11TEL5V58WH.vw8t-
<truncated for brevity>
sKYVNXsRiVZiXTHM3ZfkEEiAYb0ZVCZB1vysL1Cehf-
cLoVv_AdJpUdvFGFMxOuxXb6xM0T0XP.eieQh6roFsrJe81VEUSRgg
```

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```

Accept: */*
Origin: https://plus.espn.com
Sec-Fetch-Site: same-site
Sec-Fetch-Mode: cors
Sec-Fetch-Dest: empty
Referer: https://plus.espn.com/
Accept-Encoding: gzip, deflate, br, zstd
Accept-Language: en-US,en;q=0.9
<truncated for brevity>

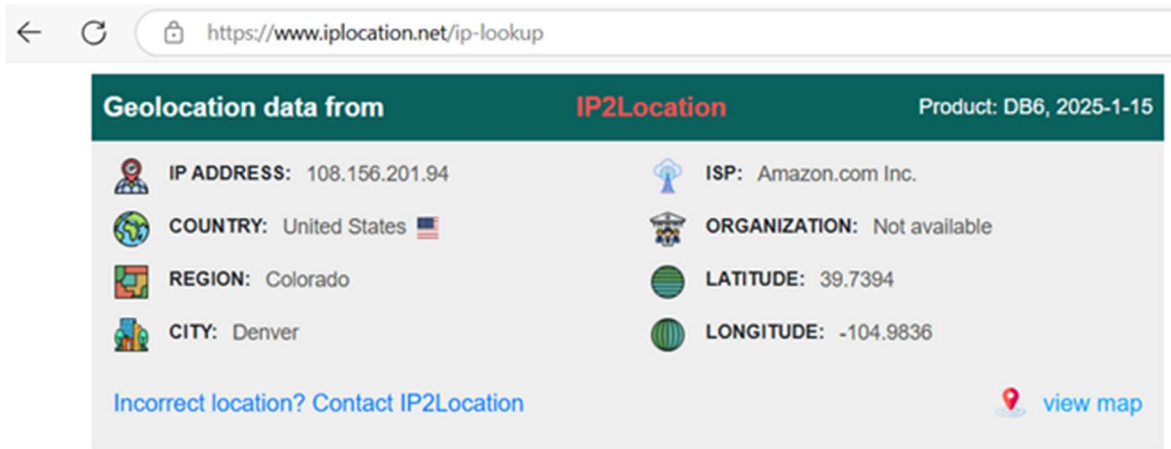
HTTP/1.1 200 OK
Content-Type: application/octet-stream
Content-Length: 16
Connection: keep-alive
Date: Mon, 04 Nov 2024 21:51:08 GMT
Cache-Control: no-store
X-BAMTECH-MDRM-TRANSACTION-ID: 7075372951441525041
x-datadog-trace-id: 7075372951441525041
x-request-id: c82a45fb24f513142abe121a973a3415
access-control-allow-origin: https://plus.espn.com
access-control-allow-methods: GET, POST, PUT, PATCH, DELETE, OPTIONS
access-control-allow-credentials: true
access-control-expose-headers: x-request-id, x-bamtech-region, date
access-control-max-age: 600
x-bamtech-region: us-west-2
Vary: origin,access-control-request-headers
X-Cache: Miss from cloudfront
Via: 1.1 96b078df4a5d96ad3cc52cfe9d984774.cloudfront.net (CloudFront)
X-Amz-Cf-Pop: DEN52-P1
X-Amz-Cf-Id: SVLKTm0C-yihs0qLD02kiI8j6fuyR5NsWef8rBB8kLhCitYdoAJECg==

```

The screenshot displays a network traffic analysis tool interface. On the left, a list of network sessions is shown with columns for sequence number, local port, remote port, protocol, and IP addresses. The main window shows the details for session 100, which is an HTTPS request to playback.svcs.plus.espn.com. The session state is 'Done' with a response entity size of 16 bytes. The response headers include:

- == FLAGS ==
- BitFlags: [ISHTTPS, ClientPipeReused, ServerPipeReused, LoadedFromSAZ]
- HTTP-CLIENT-VERSION: T1512
- UI-COMMENTS: [#100]
- X-CLIENTIP: 127.0.0.1
- X-CLIENTPORT: 59830
- X-EGRESSPORT: 59831
- X-HOSTIP: 100.15.99.201
- X-PROCESSINFO: msedge:37852
- X-RESPONSEBODYTRANSFERLENGTH: 16
- X-SERVERSOCKET: REUSE ServerPipe#99
- X-SUPPORTED-CLIENT-ALPN: h2, http/1.1
- X-SUPPORTED-CLIENT-TLS-PROTOCOLS: 15360

 The 'TIMING INFO' section indicates the traffic was captured on Monday, November 4, 2024, with various timestamps for client connection, request start, and request completion. The bottom of the window shows the tunnel information: 'Tunnel to pvod-ftc-las1.media.plus.espn.com:443'.



64. The Walt Disney Company manages and directs the operations of Disney+.

65. The Walt Disney Company manages and directs the operations of Hulu.

66. The Walt Disney Company manages and directs the operations of Hulu Live.

67. The Walt Disney Company manages and directs the operations of ESPN+.

68. The Walt Disney Company employs and controls executives or other employees responsible for Disney+.

69. The Walt Disney Company employs and controls executives or other employees responsible for Hulu.

70. The Walt Disney Company employs and controls executives or other employees responsible for Hulu Live.

71. The Walt Disney Company employs and controls executives or other employees responsible for ESPN+.

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1 72. Disney Media and Entertainment Distribution LLC manages and operates
2 Disney+.

3
4 73. Disney Media and Entertainment Distribution LLC manages and operates
5 Hulu.

6 74. Disney Media and Entertainment Distribution LLC manages and
7
8 operates Hulu Live.

9 75. Disney Media and Entertainment Distribution LLC manages and operates
10 ESPN+.

11
12 76. Disney Media and Entertainment Distribution LLC is responsible for the
13 profit and loss management and distribution, operations, sales, advertising, data, and
14 technology functions for Disney+.

15
16 77. Disney Media and Entertainment Distribution LLC is responsible for the
17 profit and loss management and distribution, operations, sales, advertising, data, and
18 technology functions for Hulu.

19
20 78. Disney Media and Entertainment Distribution LLC is responsible for the
21 profit and loss management and distribution, operations, sales, advertising, data, and
22 technology functions for Hulu Live.

23
24 79. Disney Media and Entertainment Distribution LLC is responsible for the
25 profit and loss management and distribution, operations, sales, advertising, data, and
26 technology functions for ESPN+.

27
28

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1 80. Disney Platform Distribution, Inc. manages third-party media sales
2 efforts for distribution, affiliate marketing, and affiliate-related business operations
3 for Disney+.
4

5 81. Disney Platform Distribution, Inc. manages third-party media sales
6 efforts for distribution, affiliate marketing, and affiliate-related business operations
7 for Hulu.
8

9 82. Disney Platform Distribution, Inc. manages third-party media sales
10 efforts for distribution, affiliate marketing, and affiliate-related business operations
11 for Hulu Live.
12

13 83. Disney Platform Distribution, Inc. manages third-party media sales
14 efforts for distribution, affiliate marketing, and affiliate-related business operations
15 for ESPN+.
16

17 84. Disney Platform Distribution, Inc. negotiates contracts for the
18 distribution of content for Disney+.
19

20 85. Disney Platform Distribution, Inc. negotiates contracts for the
21 distribution of content for Hulu.
22

23 86. Disney Platform Distribution, Inc. negotiates contracts for the
24 distribution of content for Hulu Live.
25

26 87. Disney Platform Distribution, Inc. negotiates contracts for the
27 distribution of content for ESPN+.
28

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1 88. Disney Platform Distribution, Inc. procures content delivery network and
2 cloud computing services for Disney+.

3
4 89. Disney Platform Distribution, Inc. procures content delivery network and
5 cloud computing services for Hulu.

6 90. Disney Platform Distribution, Inc. procures content delivery network and
7 cloud computing services for Hulu Live.

8
9 91. Disney Platform Distribution, Inc. procures content delivery network and
10 cloud computing services for ESPN+.

11
12 92. Disney Streaming Services LLC provides finance and marketing
13 functions for Disney+.

14 93. Disney Streaming Services LLC provides finance and marketing
15 functions for Hulu.

16
17 94. Disney Streaming Services LLC provides finance and marketing functions
18 for Hulu Live.

19
20 95. Disney Streaming Services LLC provides finance and marketing
21 functions for ESPN+.

22 96. Disney Entertainment & Sports LLC designs and maintains the front-end
23 and back-end infrastructure of Disney+.

24
25 97. Disney Entertainment & Sports LLC designs and maintains the front-end
26 and back-end infrastructure of Hulu.

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1 98. Disney Entertainment & Sports LLC designs and maintains the front-end
2 and back-end infrastructure of Hulu Live.

3
4 99. Disney Entertainment & Sports LLC designs and maintains the front-end
5 and back-end infrastructure of ESPN+.

6 100. Disney Entertainment & Sports LLC builds and maintains critical
7 back-end services responsible for supporting streaming media subscriptions on
8 Disney+.

9
10 101. Disney Entertainment & Sports LLC builds and maintains critical
11 back-end services responsible for supporting streaming media subscriptions on Hulu.

12
13 102. Disney Entertainment & Sports LLC builds and maintains critical
14 back-end services responsible for supporting streaming media subscriptions on Hulu
15 Live.

16
17 103. Disney Entertainment & Sports LLC builds and maintains critical
18 back-end services responsible for supporting streaming media subscriptions on
19 ESPN+.

20
21 104. Disney Entertainment & Sports LLC is responsible for end-to-end
22 development for Disney+.

23
24 105. Disney Entertainment & Sports LLC is responsible for end-to-end
25 development for Hulu.

26
27 106. Disney Entertainment & Sports LLC is responsible for end-to-end
28 development for Hulu Live.

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1 107. Disney Entertainment & Sports LLC is responsible for end-to-end
2 development for ESPN+.

3
4 108. Disney Entertainment & Sports LLC provides the technological
5 backbone and product development for Disney+.

6
7 109. Disney Entertainment & Sports LLC provides the technological
8 backbone and product development for Hulu.

9
10 110. Disney Entertainment & Sports LLC provides the technological
11 backbone and product development for Hulu Live.

12
13 111. Disney Entertainment & Sports LLC provides the technological
14 backbone and product development for ESPN+.

15
16 112. Disney DTC LLC is responsible for content management and planning for
17 Disney+.

18
19 113. Disney DTC LLC is responsible for content management and planning
20 for Hulu.

21
22 114. Disney DTC LLC is responsible for content management and planning
23 for Hulu Live.

24
25 115. Disney DTC LLC is responsible for content management and planning for
26 ESPN+.

27
28 116. Disney DTC LLC manages third-party media sales efforts for distribution,
affiliate marketing, and affiliate-related business operations for Disney+.

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1 117. Disney DTC LLC manages third-party media sales efforts for distribution,
2 affiliate marketing, and affiliate-related business operations for Hulu.

3
4 118. Disney DTC LLC manages third-party media sales efforts for distribution,
5 affiliate marketing, and affiliate-related business operations for Hulu Live.

6
7 119. Disney DTC LLC manages third-party media sales efforts for distribution,
8 affiliate marketing, and affiliate-related business operations for ESPN+.

9
10 120. Disney DTC LLC negotiates contracts for the distribution of content for
11 Disney+.

12
13 121. Disney DTC LLC negotiates contracts for the distribution of content for
14 Hulu.

15
16 122. Disney DTC LLC negotiates contracts for the distribution of content for
17 Hulu Live.

18
19 123. Disney DTC LLC negotiates contracts for the distribution of content for
20 ESPN+.

21
22 124. Disney DTC LLC procures content delivery network and cloud computing
23 services for Disney+.

24
25 125. Disney DTC LLC procures content delivery network and cloud computing
26 services for Hulu.

27
28 126. Disney DTC LLC procures content delivery network and cloud computing
services for Hulu Live.

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1 127. Disney DTC LLC procures content delivery network and cloud computing
2 services for ESPN+.

3
4 128. BAMTech, LLC develops and maintains ESPN+.

5 129. BAMTech, LLC designs and maintains the front-end and back-end
6 infrastructure for ESPN+.

7
8 130. BAMTech, LLC builds and maintains critical back-end services
9 responsible for supporting streaming media subscriptions for ESPN+.

10 131. BAMTech, LLC is responsible for end-to-end development for ESPN+.

11
12 132. BAMTech, LLC provides the technological backbone and product
13 development for ESPN+.

14 133. BAMTech, LLC develops and maintains Disney+.

15
16 134. BAMTech, LLC designs and maintains the front-end and back-end
17 infrastructure for Disney+.

18 135. BAMTech, LLC builds and maintains critical back-end services
19 responsible for supporting streaming media subscriptions for Disney+.

20 136. BAMTech, LLC is responsible for end-to-end development for Disney+.

21
22 137. BAMTech, LLC provides the technological backbone and product
23 development for Disney+.

24
25 138. Hulu, LLC develops and maintains Hulu.

26 139. Hulu, LLC develops and maintains Hulu Live.
27
28

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1 140. Hulu, LLC designs and maintains the front-end and back-end
2 infrastructure for Hulu.

3
4 141. Hulu, LLC designs and maintains the front-end and back-end
5 infrastructure for Hulu Live.

6 142. Hulu, LLC builds and maintains critical back-end services
7 responsible for supporting streaming media subscriptions for Hulu.

8
9 143. Hulu, LLC builds and maintains critical back-end services
10 responsible for supporting streaming media subscriptions for Hulu Live.

11
12 144. Hulu, LLC is responsible for end-to-end development for Hulu.

13 145. Hulu, LLC is responsible for end-to-end development for Hulu Live.

14 146. Hulu, LLC provides the technological backbone and product development
15 for Hulu.

16
17 147. Hulu, LLC provides the technological backbone and product development
18 for Hulu Live.

19
20 148. Hulu, LLC is responsible for financing and marketing functions for Hulu.

21 149. ESPN, Inc. manages and operates ESPN+.

22 150. ESPN, Inc. is responsible for content management and planning for
23 ESPN+.

24
25 151. ESPN, Inc. is responsible for financing and marketing functions for
26 ESPN+.

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1 152. Disney Streaming Technology LLC (now known as Disney Entertainment
2 & Sports LLC) is a party to the terms of use of a Disney Streaming technology blog
3 hosted on the Medium website, titled “The Art of Possible,” which displays the Hulu,
4 Disney+, and ESPN+ logos next to the Disney Streaming logo at the top of the page.²⁸

6 153. Disney Platform Distribution, Inc. is a party to the subscriber agreement
7 for Disney+.²⁹

9 154. BAMTech, LLC is a party to the subscriber agreement for ESPN+.³⁰

10 155. Hulu, LLC is a party to the subscriber agreement for Hulu and Hulu
11 Live.³¹

13 156. When an ESPN+ subscriber is logged in, the “Manage Your Account”
14 page on the ESPN+ website lists the subscriber’s account as a “MyDisney” account.
15 The subscriber agreement link at the bottom of this page on the ESPN+ website links
16 to a subscriber agreement webpage hosted on the Disney+ website. The ESPN+
17 website provides a link for the subscriber to manage his or her MyDisney account,
18 which links to a page on a Disney website (my.disney.com).

21 157. Disney+ and ESPN+ share a subscriber agreement that is hosted on the
22 Disney+ website.

25 ²⁸ See *The Art of Possible*, MEDIUM, <https://medium.com/disney-streaming>.

26 ²⁹ See *Disney+, ESPN+, and Hulu Subscriber Agreement*, DISNEY+ (Jan. 27, 2025),
<https://www.disneyplus.com/legal/subscriber-agreement>.

27 ³⁰ *Id.*

28 ³¹ *Disney+, ESPN+, and Hulu Subscriber Agreement*, HULU (Jan. 27, 2025),
https://www.hulu.com/subscriber_agreement.

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1 158. When a Hulu subscriber is logged in, the “Manage Your Account” page
2 on the Hulu website lists the subscriber’s account as a “MyDisney” account. The Hulu
3 website provides a link for the subscriber to manage his or her MyDisney account,
4 which links to a page on a Disney website (my.disney.com).
5

6 159. When a Disney+ subscriber is logged in, the “Manage Your Account”
7 page on the Disney+ website lists the subscriber’s account as a “MyDisney” account.
8 The Disney+ website provides a link for the subscriber to manage his or her
9 MyDisney account, which links to a page on a Disney website (my.disney.com).
10

11 160. Subscriptions to Disney+, Hulu, and ESPN+ are offered for sale on the
12 Disney+ website.
13

14 161. Subscriptions to Disney+, Hulu, and ESPN+ are sold through the Disney+
15 website.
16

17 162. Subscriptions to Disney+, Hulu, Hulu Live, and ESPN+ are offered for
18 sale on the Hulu website.
19

20 163. Subscriptions to Disney+, Hulu, Hulu Live, and ESPN+ are sold through
21 the Hulu website.
22

23 164. Subscriptions to ESPN+ are offered for sale on the ESPN+ website.

24 165. Subscriptions to ESPN+ are sold through the ESPN+ website.

25 166. Subscriptions to Hulu Live include subscriptions to Disney+ and ESPN+.

26 167. The Disney+ website directs users to the Hulu website to sign up for
27 subscriptions to Hulu Live.
28

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1 168. The ESPN+ website directs users to the Disney+ or Hulu websites to sign
2 up for subscriptions to Disney+, Hulu, and Hulu Live.

3
4 169. Executives and/or employees of one or more Defendants are shared
5 among one or more of the other Defendants.

6 170. Technology infrastructure of one or more Defendants is shared among one
7 or more of the other Defendants.

8
9 171. Technology resources of one or more Defendants are shared among one or
10 more of the other Defendants.

11
12 172. One or more Defendants promote advertising and marketing for Hulu,
13 Disney+, and ESPN+.

14 173. Advertising and marketing for Hulu, Disney+, and ESPN+ refers to
15 bundle subscriptions to two or three of the services.

16
17 174. Advertising and marketing for Hulu, Disney+, and ESPN+ encourages
18 users to purchase a bundle subscription of two or three of the services.

19
20 175. The streaming services and/or Defendants share back-end technology.

21 176. For example, according to Disney, “several shared-service organizations
22 across the company . . . support both Disney Entertainment and ESPN, facilitating
23 company-wide efficiencies and creating a more cost-effective, coordinated, and
24 streamlined approach to operations. These include Product and Technology.”³²
25

26
27

³² *The Walt Disney Company Announces Strategic Restructuring, Restoring Accountability To*
28 *Creative Businesses*, THE WALT DISNEY COMPANY (Feb. 9, 2023),

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1 177. As another example, the Disney Entertainment & ESPN Technology
2 business “design[s] and build[s] the infrastructure that [powers] Disney’s media,
3 advertising, and distribution businesses,” including products and platforms “from
4 Disney+ and Hulu, to ABC News and Entertainment, to ESPN and ESPN+, and much
5 more.”³³
6

7
8 178. Furthermore, “Disney Entertainment and ESPN Technology (DE&E
9 Technology) provides the technological backbone and product development for
10 Disney’s two media business units,” which include Disney+, Hulu, and ESPN+.³⁴
11

12 179. As another example, “[t]he Product & Data Engineering team is
13 responsible for end to end development for Disney’s world-class consumer-facing
14 products, including streaming platforms Disney+, Hulu, and ESPN+.”³⁵
15

16 180. As another example, “BAMTech technology powers Disney+, Hulu and
17 Disney’s other offerings.”³⁶
18
19
20

21 <https://thewaltdisneycompany.com/the-walt-disney-company-announces-strategic-restructuring-restoring-accountability-to-creative-businesses/>.

22 ³³ *Sr. Software Engineer (Rust Engineering)*, DISNEY CAREERS (Jan. 7, 2025),
23 <https://www.disneycareers.com/en/job/santa-monica/sr-software-engineer-rust-engineering/391/72468085792>.

24 ³⁴ *Id.*

25 ³⁵ *Senior Data Engineer – Identity Data*, DISNEY CAREERS (Dec. 18, 2024),
<https://www.disneycareers.com/en/job/new-york/senior-data-engineer-identity-data/391/71800273968>.

26 ³⁶ Alex Werpin, *Disney Pays \$900M for MLB’s Remaining Stake in Streaming Company*
27 *BAMTech*, HOLLYWOOD REP. (Nov. 29, 2022),
28 <https://www.hollywoodreporter.com/business/digital/disney-pays-900m-for-bamtech-1235271788/>.

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1 181. The streaming services and/or Defendants share advertising and sales
2 functions.

3
4 182. For example, according to Disney, “several shared-service organizations
5 across the company [] support both Disney Entertainment and ESPN, facilitating
6 company-wide efficiencies and creating a more cost-effective, coordinated, and
7 streamlined approach to operations. These include . . . Advertising Sales.”³⁷
8

9 183. The streaming services and/or Defendants share platform distribution
10 functions.

11
12 184. For example, according to Disney, “several shared-service organizations
13 across the company [] support both Disney Entertainment and ESPN, facilitating
14 company-wide efficiencies and creating a more cost-effective, coordinated, and
15 streamlined approach to operations. These include . . . Platform Distribution.”³⁸
16

17 185. The streaming services and/or Defendants share executives and/or
18 employees.

19
20 186. For example, Aaron LaBerge served as the President and Chief
21 Technology Officer of Disney Entertainment and ESPN.³⁹
22

23
24 ³⁷ *The Walt Disney Company Announces Strategic Restructuring, Restoring Accountability To*
25 *Creative Businesses*, THE WALT DISNEY COMPANY (Feb. 9, 2023),
<https://thewaltdisneycompany.com/the-walt-disney-company-announces-strategic-restructuring-restoring-accountability-to-creative-businesses/>.

26 ³⁸ *Id.*

27 ³⁹ Harry McCracken, *Why Disney Plus’s new Hulu integration was such a huge, high-stakes*
28 *challenge*, FAST COMPANY (Dec. 7, 2023), <https://www.fastcompany.com/90993539/disney-plus-hulu-integration-beta>.

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1 187. The Walt Disney Company’s Disney Entertainment segment houses
2 Disney+ and Hulu. The Walt Disney Company’s ESPN segment houses ESPN+.⁴⁰

3
4 188. As another example, Justin Connolly is the “President of Disney Platform
5 Distribution,” where he “oversees all third-party media sales efforts for distribution,
6 distribution strategy, affiliate marketing and affiliate-related business operations for
7 all of [The Walt Disney Company’s] direct-to-consumer services.”⁴¹

8
9 189. As another example, “Joe Earley is the President of Direct-to-Consumer,
10 Disney Entertainment, where he leads efforts to expand the company’s best-in-class
11 streaming services,” including “Disney+ and Hulu.”⁴²

12
13 190. As another example, April Carretta, “[a]s SVP of Communications for
14 Direct-To-Consumer, Platform Distribution & Technology, . . . leads the team
15 responsible for all communication efforts in support of Disney Entertainment’s
16 portfolio of direct-to-consumer businesses.”⁴³

17
18
19
20
21 ⁴⁰ *The Walt Disney Company Announces Strategic Restructuring, Restoring Accountability To*
22 *Creative Businesses*, THE WALT DISNEY COMPANY (Feb. 9, 2023),
<https://thewaltdisneycompany.com/the-walt-disney-company-announces-strategic-restructuring-restoring-accountability-to-creative-businesses/>.

23 ⁴¹ *Justin Connolly*, THE ORG, <https://theorg.com/org/disney/org-chart/justin-connolly>. *See also The*
24 *Walt Disney Company Announces Strategic Restructuring, Restoring Accountability To Creative*
25 *Businesses*, THE WALT DISNEY COMPANY (Feb. 9, 2023), <https://thewaltdisneycompany.com/the-walt-disney-company-announces-strategic-restructuring-restoring-accountability-to-creative-businesses/> (“Effective immediately, several shared-service organizations across the company will support both Disney Entertainment and ESPN, facilitating company-wide efficiencies and creating a more cost-effective, coordinated, and streamlined approach to operations. These include . . . Platform Distribution led by Justin Connolly.”).

26
27 ⁴² *Our Executive Team*, HULU PRESS, <https://press.hulu.com/executives/>.

28 ⁴³ *Id.*

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1 191. As another example, Alisa Bowen is or was the President of Disney+.
 2 According to the Disney+ website, “Bowen has led global business operations for
 3 Disney’s streaming platforms, including Disney+, since its launch in 2019. . . .
 4 Bowen will work closely with key leaders across The Walt Disney Company to drive
 5 continued focus on innovation, including the forthcoming launch of the advertising-
 6 supported tier, as well as multi-channel promotional support for Disney+ and its robust
 7 content slate. . . . She most recently served as EVP of Global Business Operations for
 8 Disney Streaming, overseeing global content and business operations for the
 9 Company’s direct-to-consumer video streaming businesses, Disney+, Hulu, ESPN+,
 10 and Star+.”⁴⁴

14 192. As another example, Michael Paull is the former President of Disney
 15 Streaming, where he was “responsible for Disney+, Hulu, [and] ESPN+.”⁴⁵

17 193. Many Defendants also share facilities and places of business.

18 194. For example, The Walt Disney Company, Disney Media and
 19 Entertainment Distribution LLC, Disney DTC LLC, Disney Streaming Services LLC,
 20 Disney Platform Distribution, Inc., and BAMTech, LLC have a place of business at
 21 500 South Buena Vista Street, Burbank, California 91521.
 22

25 _____
 26 ⁴⁴ *Alisa Bowen Named President Of Disney+*, DISNEY+ PRESS (Sept. 29, 2022),
<https://press.disneyplus.com/news/alisa-bowen-named-president-of-disney-plus>.

27 ⁴⁵ Megan duBois, *Disney Announces Executives For Its Disney Media And Entertainment Segment*,
 28 FORBES (Jan. 21, 2022), <https://www.forbes.com/sites/megandubois/2022/01/20/disney-announces-executives-for-its-disney-media-and-entertainment-segment/?sh=49a43e8c41f7>.

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1 195. The privacy policy for each Accused Instrumentalities’ website is a link
2 to The Walt Disney Company website’s privacy policy,
3 <https://privacy.thewaltdisneycompany.com/en/>.⁴⁶
4

5 196. The Walt Disney Company’s website also includes job posting for its
6 subsidiaries, including Defendants.
7

8 197. For example, The Walt Disney Company’s website posted the following
9 job application for a Senior Analyst for Hulu Subscriber Planning, which states, “This
10 position is with Hulu, LLC.”⁴⁷
11

12 198. As another example, The Walt Disney Company’s website posted the
13 following job application for a Sr. Manager, Software Engineering, which states,
14 “This position is with Disney Streaming Technology LLC.”⁴⁸
15

16 **D. Certain Defendants Are Agents of One Another**

17 199. Disney Media and Entertainment Distribution LLC is an agent of The
18 Walt Disney Company.
19

20 200. Disney Platform Distribution, Inc. is an agent of The Walt Disney
21 Company.
22

23 ⁴⁶ See generally ESPN+, <https://plus.espn.com/> (scroll to the bottom of the page and click “Privacy
24 Policy”); Disney+, <https://www.disneyplus.com/> (scroll to the bottom of the page and click “Privacy
25 Policy”); Hulu, <https://www.hulu.com/welcome> (scroll to the bottom of the page and click “Privacy
26 Policy”).

27 ⁴⁷ *Senior Analyst, Hulu Subscriber Planning*, DISNEY CAREERS (Dec. 19, 2024),
[https://www.disneycareers.com/en/job/santa-monica/senior-analyst-hulu-subscriber-
28 planning/391/74783297328](https://www.disneycareers.com/en/job/santa-monica/senior-analyst-hulu-subscriber-planning/391/74783297328).

⁴⁸ *Sr. Manager, Software Engineering*, DISNEY CAREERS (Jan. 23, 2025),
[https://www.disneycareers.com/en/job/new-york/sr-manager-software-
engineering/391/76050096368](https://www.disneycareers.com/en/job/new-york/sr-manager-software-engineering/391/76050096368).

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1 201. Disney Streaming Services LLC is an agent of The Walt Disney
2 Company.

3 202. Disney Entertainment & Sports LLC is an agent of The Walt Disney
4 Company.
5

6 203. Disney DTC LLC is an agent of The Walt Disney Company.
7

8 204. BAMTech, LLC is an agent of The Walt Disney Company.

9 205. Hulu, LLC is an agent of The Walt Disney Company.

10 206. ESPN, Inc. is an agent of The Walt Disney Company.
11

12 207. Disney Platform Distribution, Inc. is an agent of Disney Media and
13 Entertainment Distribution LLC.

14 208. Disney Streaming Services LLC is an agent of Disney Media and
15 Entertainment Distribution LLC.
16

17 209. Disney Entertainment & Sports LLC is an agent of Disney
18 Media and Entertainment Distribution LLC.
19

20 210. Disney DTC LLC is an agent of Disney Media and Entertainment
21 Distribution LLC.

22 211. BAMTech, LLC is an agent of Disney Media and Entertainment
23 Distribution LLC.
24

25 212. Hulu, LLC is an agent of Disney Media and Entertainment Distribution
26 LLC.
27
28

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1 213. ESPN, Inc. is an agent of Disney Media and Entertainment Distribution
2 LLC.

3
4 214. Disney Platform Distribution, Inc. is an agent of Disney Streaming
5 Services LLC.

6 215. Disney Entertainment & Sports LLC is an agent of Disney Streaming
7 Services.

8
9 216. Disney DTC LLC is an agent of Disney Streaming Services LLC.

10 217. BAMTech, LLC is an agent of Disney Streaming Services LLC.

11
12 218. Hulu, LLC is an agent of Disney Streaming Services LLC.

13 219. ESPN, Inc. is an agent of Disney Streaming Services LLC.

14 220. Disney Platform Distribution, Inc. is an agent of Disney Entertainment
15 & Sports.

16
17 221. Disney DTC LLC is an agent of Disney Entertainment & Sports LLC.

18 222. BAMTech, LLC is an agent of Disney Entertainment & Sports LLC.

19
20 223. Hulu, LLC is an agent of Disney Entertainment & Sports LLC.

21 224. ESPN, Inc. is an agent of Disney Entertainment & Sports LLC.

22 225. BAMTech, LLC is an agent of ESPN, Inc.

23
24 **E. The Walt Disney Company's Vicarious Liability**

25 226. The Walt Disney Company directs and controls the actions and
26 performance of Disney Media and Entertainment Distribution LLC, including those
27 related to infringement of the Asserted Patents.
28

1 227. The Walt Disney Company conditions benefits derived by Disney
2 Media and Entertainment Distribution LLC on the performance of activities, including
3 those related to infringement of the Asserted Patents.
4

5 228. The Walt Disney Company specifies the timing and manner of the
6 performance of activities by Disney Media and Entertainment Distribution LLC,
7 including those related to infringement of the Asserted Patents.
8

9 229. The Walt Disney Company profits from the activities of Disney Media
10 and Entertainment Distribution LLC.
11

12 230. The Walt Disney Company has the rights, powers, or abilities to cause
13 Disney Media and Entertainment Distribution LLC to stop or limit its infringing
14 activities.
15

16 231. The Walt Disney Company has not exercised its rights, powers, or
17 abilities to cause Disney Media and Entertainment Distribution LLC to stop or limit its
18 infringing activities.
19

20 232. The Walt Disney Company is vicariously liable for the infringing
21 activities of Disney Media and Entertainment Distribution LLC.
22

23 233. The Walt Disney Company directs and controls the actions and
24 performance of Disney Platform Distribution, Inc., including those related to
25 infringement of the Asserted Patents.
26
27
28

McKool Smith, P.C.
Los Angeles, CA

McKool Smith, P.C.
Los Angeles, CA

1 234. The Walt Disney Company conditions benefits derived by Disney
2 Platform Distribution, Inc. on the performance of activities, including those related to
3 infringement of the Asserted Patents.
4

5 235. The Walt Disney Company specifies the timing and manner of the
6 performance of activities by Disney Platform Distribution, Inc., including those
7 related to infringement of the Asserted Patents.
8

9 236. The Walt Disney Company profits from the activities of Disney
10 Platform Distribution, Inc.
11

12 237. The Walt Disney Company has the rights, powers, or abilities to cause
13 Disney Platform Distribution, Inc. to stop or limit its infringing activities.
14

15 238. The Walt Disney Company has not exercised its rights, powers, or
16 abilities to cause Disney Platform Distribution, Inc. to stop or limit its infringing
17 activities.
18

19 239. The Walt Disney Company is vicariously liable for the infringing
20 activities of Disney Platform Distribution, Inc.
21

22 240. The Walt Disney Company directs and controls the actions and
23 performance of Disney Streaming Services LLC, including those related to
24 infringement of the Asserted Patents.
25

26 241. The Walt Disney Company conditions benefits derived by Disney
27 Streaming Services LLC on the performance of activities, including those related to
28 infringement of the Asserted Patents.

McKool Smith, P.C.
Los Angeles, CA

1 242. The Walt Disney Company specifies the timing and manner of the
2 performance of activities by Disney Streaming Services LLC, including those related
3 to infringement of the Asserted Patents.
4

5 243. The Walt Disney Company profits from the activities of Disney
6 Streaming Services LLC.
7

8 244. The Walt Disney Company has the rights, powers, or abilities to cause
9 Disney Streaming Services LLC to stop or limit its infringing activities.
10

11 245. The Walt Disney Company has not exercised its rights, powers, or
12 abilities to cause Disney Streaming Services LLC to stop or limit its infringing
13 activities.
14

15 246. The Walt Disney Company is vicariously liable for the infringing
16 activities of Disney Streaming Services LLC.
17

18 247. The Walt Disney Company directs and controls the actions and
19 performance of Disney Entertainment & Sports LLC, including those related to
20 infringement of the Asserted Patents.
21

22 248. The Walt Disney Company conditions benefits derived by Disney
23 Entertainment & Sports LLC on the performance of activities, including those related
24 to infringement of the Asserted Patents.
25

26 249. The Walt Disney Company specifies the timing and manner of the
27 performance of activities by Disney Entertainment & Sports LLC, including those
28 related to infringement of the Asserted Patents.

McKool Smith, P.C.
Los Angeles, CA

1 250. The Walt Disney Company profits from the activities of Disney
2 Entertainment & Sports LLC.

3
4 251. The Walt Disney Company has the rights, powers, or abilities to
5 cause Disney Entertainment & Sports LLC to stop or limit its infringing activities.

6 252. The Walt Disney Company has not exercised its rights, powers, or
7 abilities to cause Disney Entertainment & Sports LLC to stop or limit its infringing
8 activities.

9
10 253. The Walt Disney Company is vicariously liable for the infringing
11 activities of Disney Entertainment & Sports LLC.

12
13 254. The Walt Disney Company directs and controls the actions and
14 performance of Disney DTC LLC, including those related to infringement of the
15 Asserted Patents.

16
17 255. The Walt Disney Company conditions benefits derived by Disney DTC
18 LLC on the performance of activities, including those related to infringement of the
19 Asserted Patents.

20
21 256. The Walt Disney Company specifies the timing and manner of the
22 performance of activities by Disney DTC LLC, including those related to
23 infringement of the Asserted Patents.

24
25 257. The Walt Disney Company profits from the activities of Disney DTC
26 LLC.

27
28

MCKOOL SMITH, P.C.
LOS ANGELES, CA

1 258. The Walt Disney Company has the rights, powers, or abilities to cause
2 Disney DTC LLC to stop or limit its infringing activities.

3
4 259. The Walt Disney Company has not exercised its rights, powers, or
5 abilities to cause Disney DTC LLC to stop or limit its infringing activities.

6 260. The Walt Disney Company is vicariously liable for the infringing
7 activities of Disney DTC LLC.

8
9 261. The Walt Disney Company directs and controls the actions and
10 performance of BAMTech, LLC, including those related to infringement of the
11 Asserted Patents.

12
13 262. The Walt Disney Company conditions benefits derived by BAMTech,
14 LLC on the performance of activities, including those related to infringement of the
15 Asserted Patents.

16
17 263. The Walt Disney Company specifies the timing and manner of the
18 performance of activities by BAMTech, LLC, including those related to infringement
19 of the Asserted Patents.

20
21 264. The Walt Disney Company profits from the activities of BAMTech,
22 LLC.

23
24 265. The Walt Disney Company has the rights, powers, or abilities to cause
25 BAMTech, LLC to stop or limit its infringing activities.

26 266. The Walt Disney Company has not exercised its rights, powers, or
27 abilities to cause BAMTech, LLC to stop or limit its infringing activities.
28

McKool Smith, P.C.
Los Angeles, CA

1 267. The Walt Disney Company is vicariously liable for the infringing
2 activities of BAMTech, LLC.

3
4 268. The Walt Disney Company directs and controls the actions and
5 performance of Hulu, LLC, including those related to infringement of the Asserted
6 Patents.

7
8 269. The Walt Disney Company conditions benefits derived by Hulu,
9 LLC on the performance of activities, including those related to infringement of the
10 Asserted Patents.

11
12 270. The Walt Disney Company specifies the timing and manner of the
13 performance of activities by Hulu, LLC, including those related to infringement of the
14 Asserted Patents.

15 271. The Walt Disney Company profits from the activities of Hulu, LLC.

16
17 272. The Walt Disney Company has the rights, powers, or abilities to cause
18 Hulu, LLC to stop or limit its infringing activities.

19
20 273. The Walt Disney Company has not exercised its rights, powers, or
21 abilities to cause Hulu, LLC to stop or limit its infringing activities.

22 274. The Walt Disney Company is vicariously liable for the infringing
23 activities of Hulu, LLC.

24
25 275. The Walt Disney Company directs and controls the actions and
26 performance of ESPN, Inc., including those related to infringement of the Asserted
27 Patents.
28

McKool Smith, P.C.
Los Angeles, CA

1 276. The Walt Disney Company conditions benefits derived by ESPN,
2 Inc. on the performance of activities, including those related to infringement of the
3 Asserted Patents.
4

5 277. The Walt Disney Company specifies the timing and manner of the
6 performance of activities by ESPN, Inc., including those related to infringement of the
7 Asserted Patents.
8

9 278. The Walt Disney Company profits from the activities of ESPN, Inc.

10 279. The Walt Disney Company has the rights, powers, or abilities to cause
11 ESPN, Inc. to stop or limit its infringing activities.
12

13 280. The Walt Disney Company has not exercised its rights, powers, or
14 abilities to cause ESPN, Inc. to stop or limit its infringing activities.
15

16 281. The Walt Disney Company is vicariously liable for the infringing
17 activities of ESPN, Inc.
18

19 282. The Walt Disney Company directs and controls the actions and
20 performance of third parties AWS, Fastly, and Akamai (collectively, “the Third
21 Parties”),⁴⁹ including those related to the direct infringement of the Asserted Patents.⁵⁰
22

23 ⁴⁹ See *supra* ¶¶ 40-62.

24 ⁵⁰ AWS is used by Disney+, Hulu, Hulu Live, and ESPN+. See *Walt Disney Company Confirms*
25 *AWS As Preferred Cloud Partner for Disney+ Streaming Service*, COMPUTERWEEKLY.COM (Apr. 29,
26 2021), [https://www.computerweekly.com/news/252499973/Walt-Disney-Company-confirms-AWS-](https://www.computerweekly.com/news/252499973/Walt-Disney-Company-confirms-AWS-as-preferred-cloud-partner-for-Disney-streaming-service)
27 *as-preferred-cloud-partner-for-Disney-streaming-service* (“The Walt Disney Company has
28 confirmed that Amazon Web Services (AWS) powered the global roll-out of its Disney+ streaming
service.”); *Streaming Success: How Disney+ Scaled Rapidly with AWS Cloud Services*, QSS
TECHNOSOFT (Oct. 14, 2024), [https://www.qsstechnosoft.com/blog/streaming-success-how-disney-](https://www.qsstechnosoft.com/blog/streaming-success-how-disney-scaled-rapidly-with-aws-cloud-)
scaled-rapidly-with-aws-cloud-

McKool Smith, P.C.
Los Angeles, CA

1 **F. Disney Media and Entertainment Distribution LLC's Vicarious Liability**

2 289. Disney Media and Entertainment Distribution LLC directs and controls
3 the actions and performance of Disney Platform Distribution, Inc., including those
4 related to infringement of the Asserted Patents.
5

6 290. Disney Media and Entertainment Distribution LLC conditions benefits
7 derived by Disney Platform Distribution, Inc. on the performance of activities,
8 including those related to infringement of the Asserted Patents.
9

10 291. Disney Media and Entertainment Distribution LLC specifies the timing
11 and manner of the performance of activities by Disney Platform Distribution, Inc.,
12 including those related to infringement of the Asserted Patents.
13

14 292. Disney Media and Entertainment Distribution LLC profits from the
15 activities of Disney Platform Distribution, Inc.
16

17 293. Disney Media and Entertainment Distribution LLC has the rights,
18 powers, or abilities to cause Disney Platform Distribution, Inc. to stop or limit its
19 infringing activities.
20

21 294. Disney Media and Entertainment Distribution LLC has not exercised its
22 rights, powers, or abilities to cause Disney Platform Distribution, Inc. to stop or limit
23 its infringing activities.
24

25 295. Disney Media and Entertainment Distribution LLC is vicariously liable
26 for the infringing activities of Disney Platform Distribution, Inc.
27
28

McKool Smith, P.C.
Los Angeles, CA

1 296. Disney Media and Entertainment Distribution LLC directs and controls
2 the actions and performance of Disney Streaming Services LLC, including those
3 related to infringement of the Asserted Patents.
4

5 297. Disney Media and Entertainment Distribution LLC conditions benefits
6 derived by Disney Streaming Services LLC on the performance of activities, including
7 those related to infringement of the Asserted Patents.
8

9 298. Disney Media and Entertainment Distribution LLC specifies the timing
10 and manner of the performance of activities by Disney Streaming Services LLC,
11 including those related to infringement of the Asserted Patents.
12

13 299. Disney Media and Entertainment Distribution LLC profits from the
14 activities of Disney Streaming Services LLC.
15

16 300. Disney Media and Entertainment Distribution LLC has the rights,
17 powers, or abilities to cause Disney Streaming Services LLC to stop or limit its
18 infringing activities.
19

20 301. Disney Media and Entertainment Distribution LLC has not exercised its
21 rights, powers, or abilities to cause Disney Streaming Services LLC to stop or limit its
22 infringing activities.
23

24 302. Disney Media and Entertainment Distribution LLC is vicariously liable
25 for the infringing activities of Disney Streaming Services LLC.
26
27
28

McKool Smith, P.C.
Los Angeles, CA

1 303. Disney Media and Entertainment Distribution LLC directs and controls
2 the actions and performance of Disney Entertainment & Sports LLC, including those
3 related to infringement of the Asserted Patents.
4

5 304. Disney Media and Entertainment Distribution LLC conditions benefits
6 derived by Disney Entertainment & Sports LLC on the performance of activities,
7 including those related to infringement of the Asserted Patents.
8

9 305. Disney Media and Entertainment Distribution LLC specifies the timing
10 and manner of the performance of activities by Disney Entertainment & Sports LLC,
11 including those related to infringement of the Asserted Patents.
12

13 306. Disney Media and Entertainment Distribution LLC profits from the
14 activities of Disney Entertainment & Sports LLC.
15

16 307. Disney Media and Entertainment Distribution LLC has the rights,
17 powers, or abilities to cause Disney Entertainment & Sports LLC to stop or limit its
18 infringing activities.
19

20 308. Disney Media and Entertainment Distribution LLC has not exercised its
21 rights, powers, or abilities to cause Disney Entertainment & Sports LLC to stop or
22 limit its infringing activities.
23

24 309. Disney Media and Entertainment Distribution LLC is vicariously liable
25 for the infringing activities of Disney Entertainment & Sports LLC.
26
27
28

McKool Smith, P.C.
Los Angeles, CA

1 310. Disney Media and Entertainment Distribution LLC directs and controls
2 the actions and performance of Disney DTC LLC, including those related to
3 infringement of the Asserted Patents.
4

5 311. Disney Media and Entertainment Distribution LLC conditions benefits
6 derived by Disney DTC LLC on the performance of activities, including those related
7 to infringement of the Asserted Patents.
8

9 312. Disney Media and Entertainment Distribution LLC specifies the timing
10 and manner of the performance of activities by Disney DTC LLC, including those
11 related to infringement of the Asserted Patents.
12

13 313. Disney Media and Entertainment Distribution LLC profits from the
14 activities of Disney DTC LLC.
15

16 314. Disney Media and Entertainment Distribution LLC has the rights,
17 powers, or abilities to cause Disney DTC LLC to stop or limit its infringing activities.
18

19 315. Disney Media and Entertainment Distribution LLC has not exercised its
20 rights, powers, or abilities to cause Disney DTC LLC to stop or limit its infringing
21 activities.
22

23 316. Disney Media and Entertainment Distribution LLC is vicariously liable
24 for the infringing activities of Disney DTC LLC.
25

26 317. Disney Media and Entertainment Distribution LLC directs and controls
27 the actions and performance of BAMTech, LLC, including those related to
28 infringement of the Asserted Patents.

McKool Smith, P.C.
Los Angeles, CA

1 318. Disney Media and Entertainment Distribution LLC conditions benefits
2 derived by BAMTech, LLC on the performance of activities, including those related
3 to infringement of the Asserted Patents.
4

5 319. Disney Media and Entertainment Distribution LLC specifies the timing
6 and manner of the performance of activities by BAMTech, LLC, including those
7 related to infringement of the Asserted Patents.
8

9 320. Disney Media and Entertainment Distribution LLC profits from the
10 activities of BAMTech, LLC.
11

12 321. Disney Media and Entertainment Distribution LLC has the rights,
13 powers, or abilities to cause BAMTech, LLC to stop or limit its infringing activities.
14

15 322. Disney Media and Entertainment Distribution LLC has not exercised its
16 rights, powers, or abilities to cause BAMTech, LLC to stop or limit its infringing
17 activities.
18

19 323. Disney Media and Entertainment Distribution LLC is vicariously liable
20 for the infringing activities of BAMTech, LLC.
21

22 324. Disney Media and Entertainment Distribution LLC directs and controls
23 the actions and performance of Hulu, LLC, including those related to infringement of
24 the Asserted Patents.
25

26 325. Disney Media and Entertainment Distribution LLC conditions benefits
27 derived by Hulu, LLC on the performance of activities, including those related to
28 infringement of the Asserted Patents.

McKool Smith, P.C.
Los Angeles, CA

1 326. Disney Media and Entertainment Distribution LLC specifies the timing
2 and manner of the performance of activities by Hulu, LLC, including those related to
3 infringement of the Asserted Patents.
4

5 327. Disney Media and Entertainment Distribution LLC profits from the
6 activities of Hulu, LLC.
7

8 328. Disney Media and Entertainment Distribution LLC has the rights,
9 powers, or abilities to cause Hulu, LLC to stop or limit its infringing activities.
10

11 329. Disney Media and Entertainment Distribution LLC has not exercised
12 its rights, powers, or abilities to cause Hulu, LLC to stop or limit its infringing
13 activities.
14

15 330. Disney Media and Entertainment Distribution LLC is vicariously
16 liable for the infringing activities of Hulu, LLC.
17

18 331. Disney Media and Entertainment Distribution LLC directs and controls
19 the actions and performance of ESPN, Inc., including those related to infringement of
20 the Asserted Patents.
21

22 332. Disney Media and Entertainment Distribution LLC conditions benefits
23 derived by ESPN, Inc. on the performance of activities, including those related to
24 infringement of the Asserted Patents.
25

26 333. Disney Media and Entertainment Distribution LLC specifies the timing
27 and manner of the performance of activities by ESPN, Inc., including those related to
28 infringement of the Asserted Patents.

McKool Smith, P.C.
Los Angeles, CA

1 334. Disney Media and Entertainment Distribution LLC profits from the
2 activities of ESPN, Inc.

3
4 335. Disney Media and Entertainment Distribution LLC has the rights,
5 powers, or abilities to cause ESPN, Inc. to stop or limit its infringing activities.

6
7 336. Disney Media and Entertainment Distribution LLC has not exercised
8 its rights, powers, or abilities to cause ESPN, Inc. to stop or limit its infringing
9 activities.

10
11 337. Disney Media and Entertainment Distribution LLC is vicariously
12 liable for the infringing activities of ESPN, Inc.

13
14 338. Disney Media and Entertainment Distribution LLC directs and
15 controls the actions and performance of the Third Parties, including those related to
16 the direct infringement of the Asserted Patents.⁵¹

17
18 339. Disney Media and Entertainment Distribution LLC conditions benefits
19 derived by the Third Parties on the performance of activities, including those related to
20 the direct infringement of the Asserted Patents.

21
22 340. Disney Media and Entertainment Distribution LLC specifies the
23 timing and manner of the performance of activities by the Third Parties, including
24 those related to the direct infringement of the Asserted Patents.

25
26 341. Disney Media and Entertainment Distribution LLC profits from the
27 activities of the Third Parties.

28 ⁵¹ See *supra* ¶¶ 40-62.

1 342. Disney Media and Entertainment Distribution LLC has the rights,
2 powers, or abilities to cause the Third Parties to stop or limit its infringing activities.

3
4 343. Disney Media and Entertainment Distribution LLC has not exercised
5 its rights, powers, or abilities to cause the Third Parties to stop or limit its infringing
6 activities.

7
8 344. Disney Media and Entertainment Distribution LLC is vicariously
9 liable for the infringing activities of the Third Parties.

10 **G. Disney Streaming Services LLC's Vicarious Liability**

11
12 345. Disney Streaming Services LLC directs and controls the actions and
13 performance of Disney Platform Distribution, Inc., including those related to
14 infringement of the Asserted Patents.

15
16 346. Disney Streaming Services LLC conditions benefits derived by Disney
17 Platform Distribution, Inc. on the performance of activities, including those related to
18 infringement of the Asserted Patents.

19
20 347. Disney Streaming Services LLC specifies the timing and manner of the
21 performance of activities by Disney Platform Distribution, Inc., including those
22 related to infringement of the Asserted Patents.

23
24 348. Disney Streaming Services LLC profits from the activities of Disney
25 Platform Distribution, Inc.

26
27 349. Disney Streaming Services LLC has the rights, powers, or abilities to
28 cause Disney Platform Distribution, Inc. to stop or limit its infringing activities.

McKool Smith, P.C.
Los Angeles, CA

1 350. Disney Streaming Services LLC has not exercised its rights, powers, or
2 abilities to cause Disney Platform Distribution, Inc. to stop or limit its infringing
3 activities.
4

5 351. Disney Streaming Services LLC is vicariously liable for the infringing
6 activities of Disney Platform Distribution, Inc.
7

8 352. Disney Streaming Services LLC directs and controls the actions and
9 performance of Disney Entertainment & Sports LLC, including those related to
10 infringement of the Asserted Patents.
11

12 353. Disney Streaming Services LLC conditions benefits derived by Disney
13 Entertainment & Sports LLC on the performance of activities, including those related
14 to infringement of the Asserted Patents.
15

16 354. Disney Streaming Services LLC specifies the timing and manner of the
17 performance of activities by Disney Entertainment & Sports LLC, including those
18 related to infringement of the Asserted Patents.
19

20 355. Disney Streaming Services LLC profits from the activities of Disney
21 Entertainment & Sports LLC.
22

23 356. Disney Streaming Services LLC has the rights, powers, or abilities to
24 cause Disney Entertainment & Sports LLC to stop or limit its infringing activities.
25

26 357. Disney Streaming Services LLC has not exercised its rights, powers, or
27 abilities to cause Disney Entertainment & Sports LLC to stop or limit its infringing
28 activities.

McKool Smith, P.C.
Los Angeles, CA

1 358. Disney Streaming Services LLC is vicariously liable for the infringing
2 activities of Disney Entertainment & Sports LLC.

3
4 359. Disney Streaming Services LLC directs and controls the actions and
5 performance of Disney DTC LLC, including those related to infringement of the
6 Asserted Patents.

7
8 360. Disney Streaming Services LLC conditions benefits derived by Disney
9 DTC LLC on the performance of activities, including those related to infringement of
10 the Asserted Patents.

11
12 361. Disney Streaming Services LLC specifies the timing and manner of the
13 performance of activities by Disney DTC LLC, including those related to
14 infringement of the Asserted Patents.

15
16 362. Disney Streaming Services LLC profits from the activities of Disney
17 DTC LLC.

18
19 363. Disney Streaming Services LLC has the rights, powers, or abilities to
20 cause Disney DTC LLC to stop or limit its infringing activities.

21 364. Disney Streaming Services LLC has not exercised its rights, powers, or
22 abilities to cause Disney DTC LLC to stop or limit its infringing activities.

23
24 365. Disney Streaming Services LLC is vicariously liable for the infringing
25 activities of Disney DTC LLC.

McKool Smith, P.C.
Los Angeles, CA

1 366. Disney Streaming Services LLC directs and controls the actions and
2 performance of BAMTech, LLC, including those related to infringement of the
3 Asserted Patents.
4

5 367. Disney Streaming Services LLC conditions benefits derived by
6 BAMTech, LLC on the performance of activities, including those related to
7 infringement of the Asserted Patents.
8

9 368. Disney Streaming Services LLC specifies the timing and manner of the
10 performance of activities by BAMTech, LLC, including those related to infringement
11 of the Asserted Patents.
12

13 369. Disney Streaming Services LLC profits from the activities of
14 BAMTech, LLC.
15

16 370. Disney Streaming Services LLC has the rights, powers, or abilities
17 to cause BAMTech, LLC to stop or limit its infringing activities.
18

19 371. Disney Streaming Services LLC has not exercised its rights, powers, or
20 abilities to cause BAMTech, LLC to stop or limit its infringing activities.
21

22 372. Disney Streaming Services LLC is vicariously liable for the infringing
23 activities of BAMTech, LLC.
24

25 373. Disney Streaming Services LLC directs and controls the actions and
26 performance of Hulu, LLC, including those related to infringement of the Asserted
27 Patents.
28

McKool Smith, P.C.
Los Angeles, CA

1 374. Disney Streaming Services LLC conditions benefits derived by Hulu,
2 LLC on the performance of activities, including those related to infringement of the
3 Asserted Patents.
4

5 375. Disney Streaming Services LLC specifies the timing and manner of the
6 performance of activities by Hulu, LLC, including those related to infringement of the
7 Asserted Patents.
8

9 376. Disney Streaming Services LLC profits from the activities of Hulu,
10 LLC.
11

12 377. Disney Streaming Services LLC has the rights, powers, or abilities to
13 cause Hulu, LLC to stop or limit its infringing activities.
14

15 378. Disney Streaming Services LLC has not exercised its rights, powers, or
16 abilities to cause Hulu, LLC to stop or limit its infringing activities.
17

18 379. Disney Streaming Services LLC is vicariously liable for the infringing
19 activities of Hulu, LLC.
20

21 380. Disney Streaming Services LLC directs and controls the actions and
22 performance of ESPN, Inc., including those related to infringement of the Asserted
23 Patents.
24

25 381. Disney Streaming Services LLC conditions benefits derived by ESPN,
26 Inc. on the performance of activities, including those related to infringement of the
27 Asserted Patents.
28

McKool Smith, P.C.
Los Angeles, CA

1 382. Disney Streaming Services LLC specifies the timing and manner of the
2 performance of activities by ESPN, Inc., including those related to infringement of the
3 Asserted Patents.
4

5 383. Disney Streaming Services LLC profits from the activities of ESPN,
6 Inc.
7

8 384. Disney Streaming Services LLC has the rights, powers, or abilities to
9 cause ESPN, Inc. to stop or limit its infringing activities.
10

11 385. Disney Streaming Services LLC has not exercised its rights, powers, or
12 abilities to cause ESPN, Inc. to stop or limit its infringing activities.
13

14 386. Disney Streaming Services LLC is vicariously liable for the infringing
15 activities of ESPN, Inc.
16

17 387. Disney Streaming Services LLC directs and controls the actions and
18 performance of the Third Parties, including those related to the direct infringement of
19 the Asserted Patents.⁵²
20

21 388. Disney Streaming Services LLC conditions benefits derived by the
22 Third Parties on the performance of activities, including those related to the direct
23 infringement of the Asserted Patents.
24

25 389. Disney Streaming Services LLC specifies the timing and manner of the
26 performance of activities by the Third Parties, including those related to the direct
27 infringement of the Asserted Patents.
28

⁵² See *supra* ¶¶ 40-62.

1 390. Disney Streaming Services LLC profits from the activities of the Third
2 Parties.

3
4 391. Disney Streaming Services LLC has the rights, powers, or abilities to
5 cause the Third Parties to stop or limit its infringing activities.

6 392. Disney Streaming Services LLC has not exercised its rights, powers, or
7
8 abilities to cause the Third Parties to stop or limit its infringing activities.

9 393. Disney Streaming Services LLC is vicariously liable for the infringing
10 activities of the Third Parties.

11
12 **H. Disney Entertainment & Sports LLC's Vicarious Liability**

13 394. Disney Entertainment & Sports LLC directs and controls the actions
14 and performance of Disney Platform Distribution, Inc., including those related to
15 infringement of the Asserted Patents.

16
17 395. Disney Entertainment & Sports LLC conditions benefits derived by
18 Disney Platform Distribution, Inc. on the performance of activities, including those
19 related to infringement of the Asserted Patents.

20
21 396. Disney Entertainment & Sports LLC specifies the timing and manner of
22 the performance of activities by Disney Platform Distribution, Inc., including those
23 related to infringement of the Asserted Patents.

24
25 397. Disney Entertainment & Sports LLC profits from the activities of
26 Disney Platform Distribution, Inc.

McKool Smith, P.C.
Los Angeles, CA

27
28

McKool Smith, P.C.
Los Angeles, CA

1 398. Disney Entertainment & Sports LLC has the rights, powers, or abilities
2 to cause Disney Platform Distribution, Inc. to stop or limit its infringing activities.

3
4 399. Disney Entertainment & Sports LLC has not exercised its rights, powers,
5 or abilities to cause Disney Platform Distribution, Inc. to stop or limit its infringing
6 activities.

7
8 400. Disney Entertainment & Sports LLC is vicariously liable for the
9 infringing activities of Disney Platform Distribution, Inc.

10 401. Disney Entertainment & Sports LLC directs and controls the actions
11 and performance of Disney DTC LLC, including those related to infringement of the
12 Asserted Patents.

13
14 402. Disney Entertainment & Sports LLC conditions benefits derived by
15 Disney DTC LLC on the performance of activities, including those related to
16 infringement of the Asserted Patents.

17
18 403. Disney Entertainment & Sports LLC specifies the timing and manner of
19 the performance of activities by Disney DTC LLC, including those related to
20 infringement of the Asserted Patents.

21
22 404. Disney Entertainment & Sports LLC profits from the activities of
23 Disney DTC LLC.

24
25 405. Disney Entertainment & Sports LLC has the rights, powers, or abilities
26 to cause Disney DTC LLC to stop or limit its infringing activities.

MCKOOL SMITH, P.C.
LOS ANGELES, CA

1 406. Disney Entertainment & Sports LLC has not exercised its rights, powers,
2 or abilities to cause Disney DTC LLC to stop or limit its infringing activities.

3
4 407. Disney Entertainment & Sports LLC is vicariously liable for the
5 infringing activities of Disney DTC LLC.

6 408. Disney Entertainment & Sports LLC directs and controls the actions
7 and performance of BAMTech, LLC, including those related to infringement of the
8 Asserted Patents.

9
10 409. Disney Entertainment & Sports LLC conditions benefits derived by
11 BAMTech, LLC on the performance of activities, including those related to
12 infringement of the Asserted Patents.

13
14 410. Disney Entertainment & Sports LLC specifies the timing and manner of
15 the performance of activities by BAMTech, LLC, including those related to
16 infringement of the Asserted Patents.

17
18 411. Disney Entertainment & Sports LLC profits from the activities of
19 BAMTech, LLC.

20
21 412. Disney Entertainment & Sports LLC has the rights, powers, or abilities
22 to cause BAMTech, LLC to stop or limit its infringing activities.

23
24 413. Disney Entertainment & Sports LLC has not exercised its rights, powers,
25 or abilities to cause BAMTech, LLC to stop or limit its infringing activities.

26
27 414. Disney Entertainment & Sports LLC is vicariously liable for the
28 infringing activities of BAMTech, LLC.

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1 415. Disney Entertainment & Sports LLC directs and controls the actions
2 and performance of Hulu, LLC, including those related to infringement of the
3 Asserted Patents.
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5 416. Disney Entertainment & Sports LLC conditions benefits derived by
6 Hulu, LLC on the performance of activities, including those related to infringement of
7 the Asserted Patents.
8

9 417. Disney Entertainment & Sports LLC specifies the timing and manner of
10 the performance of activities by Hulu, LLC, including those related to infringement of
11 the Asserted Patents.
12

13 418. Disney Entertainment & Sports LLC profits from the activities of Hulu,
14 LLC.
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16 419. Disney Entertainment & Sports LLC has the rights, powers, or abilities
17 to cause Hulu, LLC to stop or limit its infringing activities.
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19 420. Disney Entertainment & Sports LLC has not exercised its rights, powers,
20 or abilities to cause Hulu, LLC to stop or limit its infringing activities.
21

22 421. Disney Entertainment & Sports LLC is vicariously liable for the
23 infringing activities of Hulu, LLC.
24

25 422. Disney Entertainment & Sports LLC directs and controls the actions
26 and performance of ESPN, Inc., including those related to infringement of the
27 Asserted Patents.
28

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Los Angeles, CA

1 423. Disney Entertainment & Sports LLC conditions benefits derived by
2 ESPN, Inc. on the performance of activities, including those related to infringement of
3 the Asserted Patents.
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5 424. Disney Entertainment & Sports LLC specifies the timing and manner of
6 the performance of activities by ESPN, Inc., including those related to infringement of
7 the Asserted Patents.
8

9 425. Disney Entertainment & Sports LLC profits from the activities of
10 ESPN, Inc.
11

12 426. Disney Entertainment & Sports LLC has the rights, powers, or abilities
13 to cause ESPN, Inc. to stop or limit its infringing activities.

14 427. Disney Entertainment & Sports LLC has not exercised its rights, powers,
15 or abilities to cause ESPN, Inc. to stop or limit its infringing activities.
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17 428. Disney Entertainment & Sports LLC is vicariously liable for the
18 infringing activities of ESPN, Inc.
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20 429. Disney Entertainment & Sports LLC directs and controls the actions
21 and performance of the Third Parties, including those related to the direct
22 infringement of the Asserted Patents.⁵³
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24 430. Disney Entertainment & Sports LLC conditions benefits derived by
25 the Third Parties on the performance of activities, including those related to the direct
26 infringement of the Asserted Patents.
27

28 ⁵³ See *supra* ¶¶ 40-62.

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1 431. Disney Entertainment & Sports LLC specifies the timing and manner
2 of the performance of activities by the Third Parties, including those related to the
3 direct infringement of the Asserted Patents.
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5 432. Disney Entertainment & Sports LLC profits from the activities of the
6 Third Parties.
7

8 433. Disney Entertainment & Sports LLC has the rights, powers, or
9 abilities to cause the Third Parties to stop or limit its infringing activities.
10

11 434. Disney Entertainment & Sports LLC has not exercised its rights,
12 powers, or abilities to cause the Third Parties to stop or limit its infringing activities.
13

14 435. Disney Entertainment & Sports LLC is vicariously liable for the
15 infringing activities of the Third Parties.
16

17 **I. ESPN, Inc.'s Vicarious Liability**

18 436. ESPN, Inc. directs and controls the actions and performance of
19 BAMTech, LLC, including those related to infringement of the Asserted Patents.
20

21 437. ESPN, Inc. conditions benefits derived by BAMTech, LLC on the
22 performance of activities, including those related to infringement of the Asserted
23 Patents.
24

25 438. ESPN, Inc. specifies the timing and manner of the performance of
26 activities by BAMTech, LLC, including those related to infringement of the Asserted
27 Patents.
28

439. ESPN, Inc. profits from the activities of BAMTech, LLC.

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1 440. ESPN, Inc. has the rights, powers, or abilities to cause BAMTech, LLC
2 to stop or limit its infringing activities.

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4 441. ESPN, Inc. has not exercised its rights, powers, or abilities to cause
5 BAMTech, LLC to stop or limit its infringing activities.

6 442. ESPN, Inc. is vicariously liable for the infringing activities of
7
8 BAMTech, LLC.

9 443. ESPN, Inc. directs and controls the actions and performance of the
10 Third Parties, including those related to the direct infringement of the Asserted
11 Patents.⁵⁴

12
13 444. ESPN, Inc. conditions benefits derived by the Third Parties on the
14 performance of activities, including those related to the direct infringement of the
15 Asserted Patents.

16
17 445. ESPN, Inc. specifies the timing and manner of the performance of
18 activities by the Third Parties, including those related to the direct infringement of the
19 Asserted Patents.

20
21 446. ESPN, Inc. profits from the activities of the Third Parties.

22 447. ESPN, Inc. has the rights, powers, or abilities to cause the Third
23 Parties to stop or limit its infringing activities.

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25 448. ESPN, Inc. has not exercised its rights, powers, or abilities to cause the
26 Third Parties to stop or limit its infringing activities.

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28 ⁵⁴ See *supra* ¶¶ 40-62.

1 449. ESPN, Inc. is vicariously liable for the infringing activities of the
2 Third Parties.

3
4 **J. Defendants' Actions to Directly Infringe**

5 450. The Walt Disney Company directly infringes the claims of the Asserted
6 Patents by making, using, selling, and/or offering to sell the Accused Instrumentalities
7 that encode video with technology covered by the Asserted Patents.
8

9 451. Disney Media and Entertainment Distribution LLC directly infringes
10 the claims of the Asserted Patents by making, using, selling, and/or offering to sell the
11 Accused Instrumentalities that encode video with technology covered by the Asserted
12 Patents.
13

14 452. Disney Platform Distribution, Inc. directly infringes the claims of the
15 Asserted Patents by making, using, selling, and/or offering to sell the Accused
16 Instrumentalities that encode video with technology covered by the Asserted Patents.
17

18 453. Disney Streaming Services LLC directly infringes the claims of the
19 Asserted Patents by making, using, selling, and/or offering to sell the Accused
20 Instrumentalities that encode video with technology covered by the Asserted Patents.
21

22 454. Disney Entertainment & Sports LLC directly infringes the claims of the
23 Asserted Patents by making, using, selling, and/or offering to sell the Accused
24 Instrumentalities that encode video with technology covered by the Asserted Patents.
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1 455. Disney DTC LLC directly infringes the claims of the Asserted Patents
2 by making, using, selling, and/or offering to sell the Accused Instrumentalities that
3 encode video with technology covered by the Asserted Patents.
4

5 456. BAMTech, LLC directly infringes the claims of the Asserted Patents by
6 making, using, selling, and/or offering to sell the Accused Instrumentalities that
7 encode video with technology covered by the Asserted Patents.
8

9 457. Hulu, LLC directly infringes the claims of the Asserted Patents by
10 making, using, selling, and/or offering to sell the Accused Instrumentalities that
11 encode video with technology covered by the Asserted Patents.
12

13 458. ESPN, Inc. directly infringes the claims of the Asserted Patents by
14 making, using, selling, and/or offering to sell the Accused Instrumentalities that
15 encode video with technology covered by the Asserted Patents.
16

17 459. The Walt Disney Company took the above actions intending to infringe
18 and/or cause infringing acts by others.
19

20 460. Disney Media and Entertainment Distribution LLC took the above
21 actions intending to infringe and/or cause infringing acts by others.
22

23 461. Disney Platform Distribution, Inc. took the above actions intending to
24 infringe and/or cause infringing acts by others.
25

26 462. Disney Streaming Services LLC took the above actions intending to
27 infringe and/or cause infringing acts by others.
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1 463. Disney Entertainment & Sports LLC took the above actions intending
2 to infringe and/or cause infringing acts by others.

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4 464. Disney DTC LLC took the above actions intending to infringe and/or
5 cause infringing acts by others.

6 465. BAMTech, LLC took the above actions intending to infringe and/or
7
8 cause infringing acts by others.

9 466. Hulu, LLC took the above actions intending to infringe and/or cause
10 infringing acts by others.

11
12 467. ESPN, Inc. took the above actions intending to infringe and/or cause
13 infringing acts by others.

14 **COUNT 1: INFRINGEMENT OF U.S. PATENT NO. 8,406,301**

15
16 468. InterDigital incorporates the allegations of all of the foregoing
17 paragraphs as if fully restated herein.

18
19 469. U.S. Patent No. 8,406,301 (“the ’301 Patent”) entitled “Adaptive
20 Weighting of Reference Pictures in Video Encoding,” was issued on March 26, 2013,
21 and names Jill MacDonald Boyce as the inventor. The ’301 Patent is attached as
22 Exhibit A.1.

23
24 470. InterDigital VC Holdings, Inc. owns all rights, title, and interest in the
25 ’301 Patent, and holds all substantial rights pertinent to this suit, including the right to
26 sue and recover for all past, current, and future infringement.
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1 471. The '301 Patent is valid and enforceable and directed to patentable
2 subject matter.

3
4 **The '301 Patent**

5 472. The '301 Patent concerns video encoders and encoding methods where
6 a reference picture weighting factor is associated with a particular reference picture
7 index. *See* Ex. A.1 at Cl. 1-12. As the '301 Patent explains, “[t]he more closely that
8 the prediction is correlated with the current picture, the fewer bits that are needed to
9 compress that picture, thereby increasing the efficiency of the process.” Ex. A.1 at
10 1:32-35. The '301 Patent states that, in video compression, “a motion compensated
11 version of a previous reference picture is used as a prediction for the current picture,
12 and only the difference between the current picture and the prediction is coded.” Ex.
13 A.1 at 1:39-43.

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17 473. Weighting factor transmission methods such as those used before the
18 innovation taught in the '301 Patent were inflexible and inefficiently communicated
19 weighting factors, which led to higher bandwidth requirements. *See* Ex. A.1 at 1:37-
20 51, 2:42-46. “Two methods have been proposed for indication of weighting factors.”
21 Ex. A.1 at 3:17-18. In the first method, “if the ref_idx_10 index is less than or equal to
22 ref_idx_11, weighting factors of (1/2, 1/2) are used, otherwise (2, -1) factors are
23 used.” Ex. A.1 at 3:18-22. “In the second method offered, any number of weighting
24 factors is transmitted for each slice.” Ex. A.1 at 3:23-24. “Then a weighting factor
25 index is transmitted for each motion block or 8x8 region of a macroblock that uses
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1 bidirectional prediction.” Ex. A.1 at 3:24-26, *see also* Ex. A.1 at 3:26-31. “In some
2 video sequences, in particular those with fading, the current picture or image block to
3 be coded is more strongly correlated to a reference picture scaled by a weighting
4 factor than to the reference picture itself.” Ex. A.1 at 2:42-46. “These and other
5 drawbacks and disadvantages of the prior art are addressed by a system and method
6 for adaptive weighting of reference pictures in video coders and decoders.” Ex. A.1 at
7 1:55-57; *see also* Ex. A.1 at 1:37-51.

10 474. The ’301 Patent’s advancement “dramatically reduces the amount of
11 overhead in the transmitted bitstream [when utilizing] adaptive weighting of reference
12 pictures.” Ex. A.1 at 7:67-8:2. “The weighting factor adapts for individual motion
13 blocks within a picture, based on the reference picture index that is used for that
14 motion block.” Ex. A.1 at 8:59-61. “Because the reference picture index is already
15 transmitted in the compressed video bitstream, the additional overhead to adapt the
16 weighting factor on a motion block basis is dramatically reduced.” Ex. A.1 at 8:62-65.
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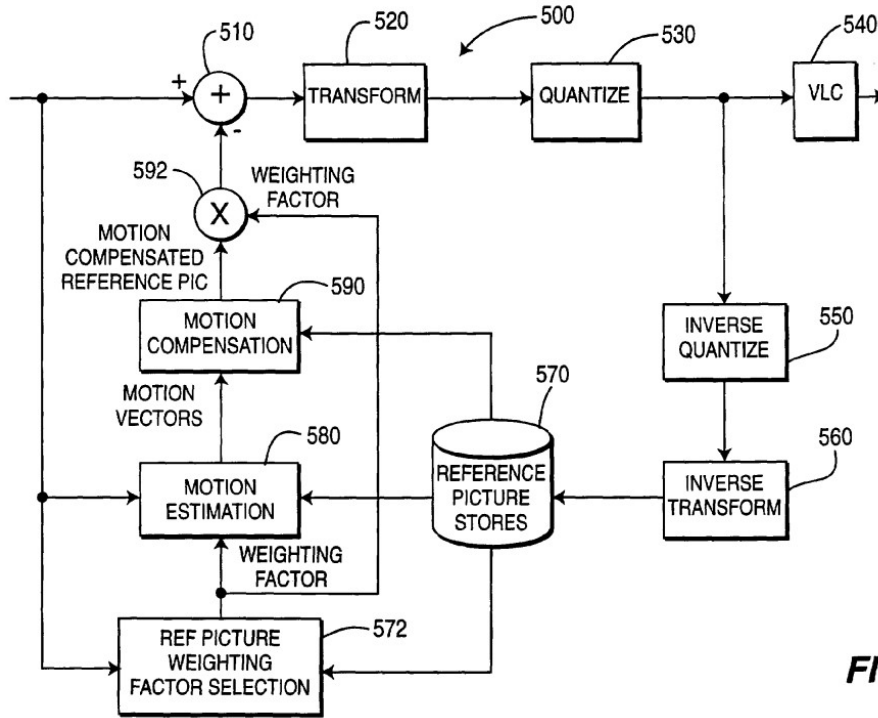


FIG. 5

Ex. A.1 at Fig. 5; *see also* Ex. A.1 at 5:57-6:32 (discussing encoder operation and structure).

475. Figure 5 of the ‘301 Patent, which is reproduced above, is a block diagram for a video encoder with reference picture weighting. Ex. A.1 at 2:29-31, 5:57-59. The patent describes this block diagram: “A first output of the reference picture store **570** is connected in signal communication with a first input of a reference picture weighting factor assignor **572**.” Ex. A.1 at 6:6-8. “The input to the encoder **500** is further connected in signal communication with a second input of the reference picture weighting factor assignor **572**.” Ex. A.1 at 6:8-11. “The output of the reference picture weighting factor assignor **572**, which is indicative of a weighting factor, is connected in signal communication with a first input of a motion estimator **580**.” Ex. A.1 at 6:11-14. “A second output of the reference picture store **570** is connected in

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1 signal communication with a second input of the motion estimator **580.**” Ex. A.1 at
2 6:14-16.

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4 476. “The input to the encoder **500** is further connected in signal
5 communication with a third input of the motion estimator **580.**” Ex. A.1 at 6:17-19.
6 “The output of the motion estimator **580**, which is indicative of motion vectors, is
7 connected in signal communication with a first input of a motion compensator **590.**”
8 Ex. A.1 at 6:19-21. “A third output of the reference picture store **570** is connected in
9 signal communication with a second input of the motion compensator **590.**” Ex. A.1 at
10 6:21-24. “The output of the motion compensator **590**, which is indicative of a motion
11 compensated reference picture, is connected in signal communication with a first input
12 of a multiplier **592.**” Ex. A.1 at 6:24-27. “The output of the reference picture
13 weighting factor assignor **572**, which is indicative of a weighting factor, is connected
14 in signal communication with a second input of the multiplier **592.**” Ex. A.1 at 6:26-
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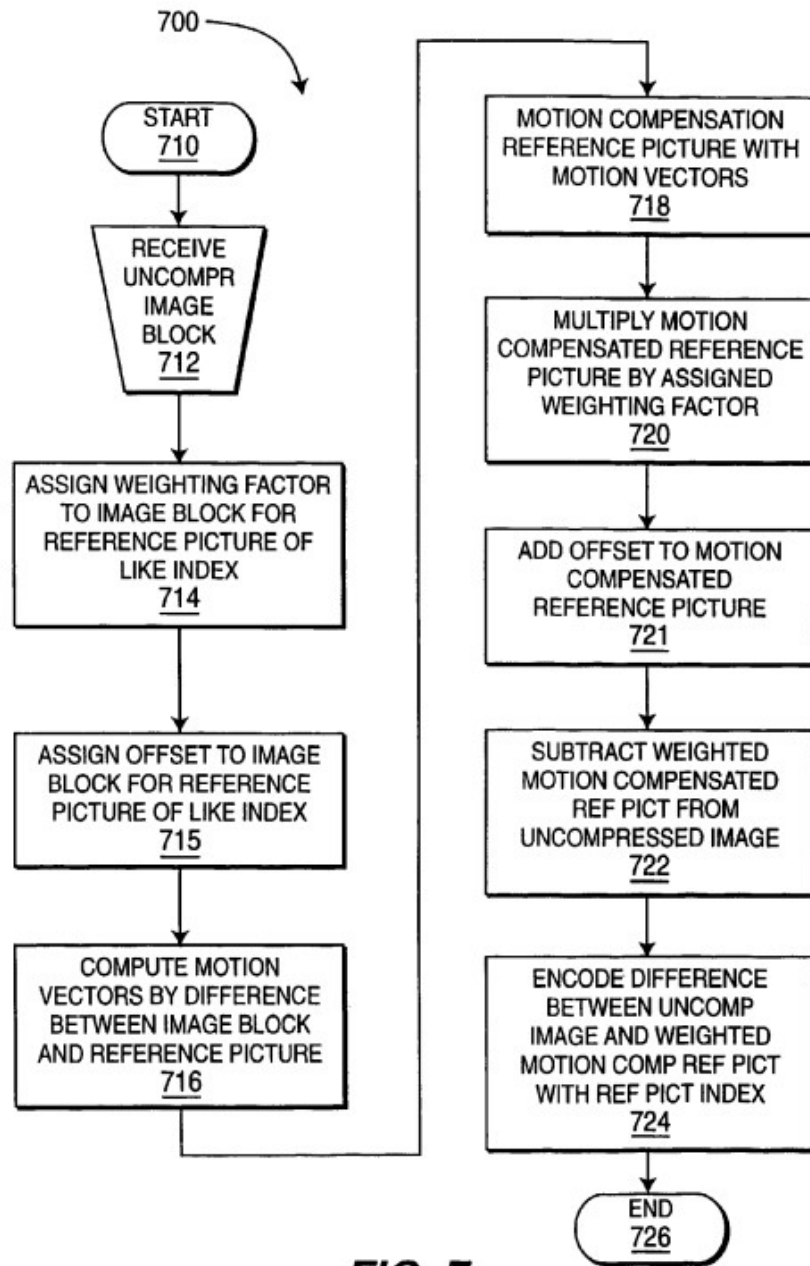


FIG. 7

Ex. A.1 at Fig. 7.

477. The '301 Patent explains illustrative steps through which an encoder can implement adaptive reference picture weighting. Ex. A.1 at 2:34-35. For example, the '301 Patent describes the following steps from Figure 7 (reproduced above):

The input block **712** receives substantially uncompressed image block data, and passes control to a function block

1 714. The function block 714 assigns a weighting factor for
2 the image block corresponding to a particular reference
3 picture having a corresponding index. The function block
4 714 passes control to an optional function block 715. The
5 optional function block 715 assigns an offset for the image
6 block corresponding to a particular reference picture having
7 a corresponding index. The optional function block 715
8 passes control to a function block 716, which computes
9 motion vectors corresponding to the difference between the
10 image block and the particular reference picture, and passes
11 control to a function block 718. The function block 718
12 motion compensates the particular reference picture in
13 correspondence with the motion vectors, and passes control
14 to a function block 720. The function block 720, in turn,
15 multiplies the motion compensated reference picture by the
16 assigned weighting factor to form a weighted motion
17 compensated reference picture, and passes control to an
18 optional function block 721. The optional function block
19 721, in turn, adds the motion compensated reference picture
20 to the assigned offset to form a weighted motion
21 compensated reference picture, and passes control to a
22 function block 722. The function block 722 subtracts the
23 weighted motion compensated reference picture from the
24 substantially uncompressed image block, and passes control
25 to a function block 724. The function block 724, in turn,
26 encodes a signal with the difference between the
27 substantially uncompressed image block and the weighted
28 motion compensated reference picture along with the
 corresponding index of the particular reference picture, and
 passes control to an end block 726.

Ex. A.1 at 6:61-7:28.

478. The '301 Patent notes that “it will be appreciated by those skilled in the art that the block diagrams herein represent conceptual views of illustrative circuitry embodying the principles of the invention.” Ex. A.1 at 3:51-54. The '301 Patent states that “[t]he functions of the various elements shown in the figures may be provided through the use of dedicated hardware as well as hardware capable of executing

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1 software in association with appropriate software.” Ex. A.1 at 3:60-63, *see also* Ex.
2 A.1 at 3:63-4:13.

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4 479. These advances are also reflected in the claims of the ’301 Patent. *See*,
5 *e.g.*, Ex. A.1 at Claims 8-12. Accordingly, the claims of the ’301 Patent recite one or
6 more inventive concepts rooted in computerized technology and overcome technical
7 problems in that field. A person of ordinary skill in the art reading the ’301 Patent and
8 its claims would understand that the Patent’s disclosure and claims are drawn to
9 solving specific, technical problems arising in video coding systems/methods and
10 provide for advancements in the field that were not routine, well-understood or
11 conventional. Accordingly, the claims of the ’301 Patent recite a combination of
12 elements sufficient to ensure that the claims in practice amount to significantly more
13 than a patent claiming an abstract concept. A person of ordinary skill in the art would
14 understand that the ordered combination of claim elements is inventive. Further, the
15 claimed improvements over prior art video coding systems are concrete and improve
16 the capabilities of existing video coding translation systems/methods.

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18 480. A person of ordinary skill in the art reviewing the specification of the
19 ’301 Patent would understand that the inventor had possession of the claimed subject
20 matter and would know how to practice the claimed invention without undue
21 experimentation.

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26 **The ’301 Patent Allegations**
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1 481. The Accused Instrumentalities practice one or more claims of the '301
2 Patent by making, using, selling and/or offering to sell the Accused Instrumentalities
3 in this District and elsewhere in the United States, and/or importing the Accused
4 Instrumentalities into this District and elsewhere in the United States.
5

6 482. InterDigital provides the following explanation of infringement with
7 regard to an exemplary claim compared to exemplary functionality. InterDigital
8 reserves the right to present additional or alternative explanations of infringement for
9 the claim and functionalities identified below and for other claims and functionalities
10 of the services.
11

12 483. As illustrated in Exhibit A.2, Defendants infringe at least one method
13 claim of the '301 Patent, including at least Claims 8-12, by encoding the Accused
14 Instrumentalities' content.
15

16 484. Defendants took the above actions intending to infringe and/or cause
17 infringing acts by others.
18

19 485. Accordingly, Defendants have directly infringed at least one method
20 claim of the '301 Patent, including at least Claims 8-12.
21

22 486. Defendants' acts of infringement have caused damage to InterDigital.
23 InterDigital is entitled to recover from Defendants the damages sustained by
24 InterDigital as a result of their wrongful acts in an amount subject to proof at trial.
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1 encoded pixels above or to the left of the current block are used as its predictors,
2 which may be quite far from the bottom right pixels to be predicted.” Ex. B.1 at 1:24-
3 36, *see also* Ex. B.1 at 2:63-66.
4

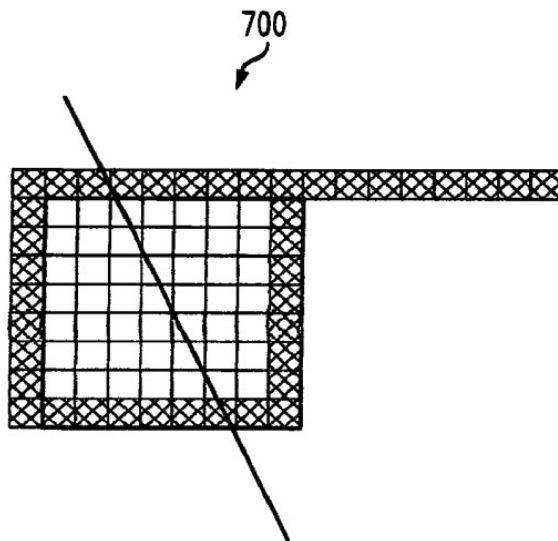
5 492. “As a natural affect of redundancy likely existing due to spatial
6 proximity, the prediction accuracy in such schemes is normally limited, and the
7 prediction accuracy of the bottom right pixels may be limited.” Ex. B.1 at 1:36-39, *see*
8 *also* Ex. B.1 at 2:66-3:3. “With a large spatial distance, the correlation between pixels
9 can be low, and the residue signals can be large after prediction, which affects the
10 coding efficiency.” Ex. B.1 at 3:3-6. “In addition, extrapolation is used instead of
11 interpolation because of the limitation of causality.” Ex. B.1 at 1:39-41, *see also* Ex.
12 B.1 at 3:3-6.
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15 493. “When a macroblock is coded in planar mode, its bottom-right sample
16 is signaled in the bitstream, the rightmost and bottom samples of the macroblock are
17 linearly interpolated, and the middle samples are bi-linearly interpolated from the
18 border samples.” Ex. B.1 at 3:11-16. “Although the new planar prediction method
19 exploits some spatial correlation with the bottom-right sample, the prediction accuracy
20 of the right and bottom pixels are still quite limited.” Ex. B.1 at 3:23-26. “These and
21 other drawbacks and disadvantages of the prior art are addressed by the” ’610 Patent.
22 Ex. B.1 at 3:30-33.
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FIG. 7



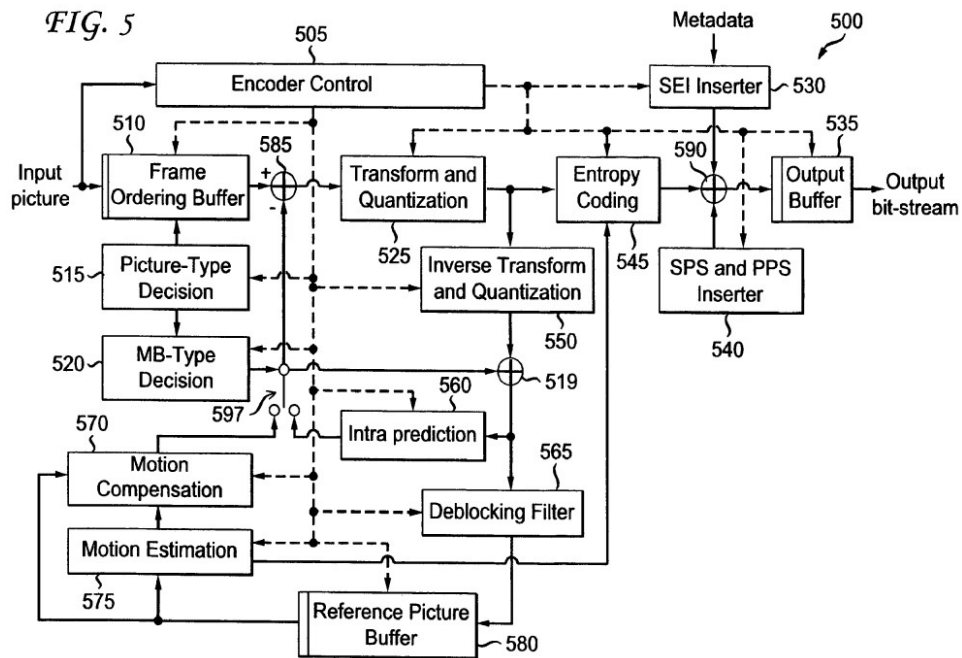
Ex. B.1 at Figure 7.

494. Figure 7 (reproduced above) “is a diagram showing an exemplary grouping of pixels within a block.” Ex. B.1 at 4:30-32. “In an embodiment, for an intra block, we divide pixels within the block into at least two groups.” Ex. B.1 at 8:19-20. “One of the groups of pixels in the block is encoded.” Ex. B.1 at 8:19-20. “For the first group of pixels, the encoder generates the prediction based on neighboring encoded pixels using the DC/plane prediction method or some directional prediction methods, and then calculates the prediction residue.” Ex. B.1 at 9:16-19. “The reconstructed pixels are then considered together with the pixels in the neighboring blocks that are already encoded to predict pixels in the second group.” Ex. B.1 at 8:24-26, *see also* Ex. B.1 at 9:30-37. “[M]ore than two groups of pixels within a block may also be used in accordance with the teachings of the present

1 principles.” Ex. B.1 at 8:58-63. “[T]he groups of pixels within the block may be
 2 divided in any manner desired and found to be effective.” Ex. B.1 at 9:7-9.

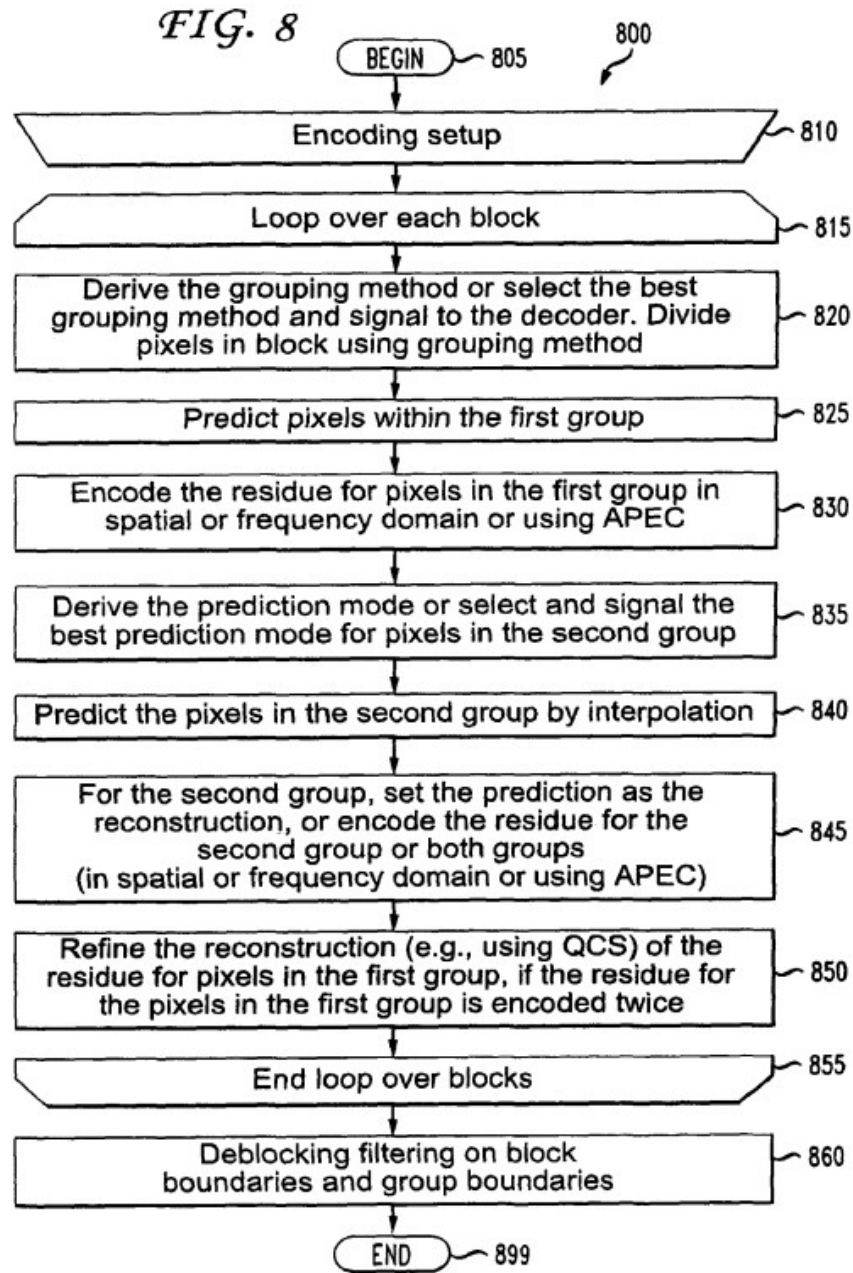
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 4 495. “With a larger set of predictor pixels existing in more directions, the
 5 prediction of the second group of pixels is improved and so is the coding efficiency.”
 6 Ex. B.1 at 8:26-29. “[T]he prediction accuracy of the second group can be improved,
 7 as the pixels serving as predictors (called predictor pixels) for the second group
 8 include reconstructed pixels of the first group, which are of shorter spatial distances
 9 from the pixels being predicted.” Ex. B.1 at 8:31-36. “In addition, we improve coding
 10 efficiency by using interpolation instead of extrapolation.” Ex. B.1 at 8:29-30, *see also*
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 13 Ex. B.1 at 9:37-40.

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Ex. B.1 at Figure 5, *see also* Exhibit B.1 at 6:23-7:37.

1 496. Figure 5 (reproduced above) “is a block diagram showing an exemplary
 2 video encoder.” Ex. B.1 at 4:24-26. The encoder has the structure described at 6:23-
 3 7:37 of Exhibit B.1, which is incorporated here as if fully stated herein.
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26 Ex. B.1 at Figure 8.
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1 497. Figure 8 (reproduced above) “is a flow diagram showing an exemplary
2 method for intra coding a block having pixels assigned to groups.” Ex. B.1 at 4:33-36.

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4 For example, the '610 Patent describes the following steps from Figure 8:

5 The method **800** includes a start block **805** that passes
6 control to a function block **810**. The function block **810**
7 performs an encoding setup, and passes control to a loop
8 limit block **815**. The loop limit block **815** loops over each
9 block (e.g., in a current picture being encoded), and passes
10 control to a function block **820**. The function block **820**
11 derives the grouping method or selects the best grouping
12 method, signals the grouping method to the decoder, and
13 passes control to a function block **825**. The function block
14 **825** predicts pixels within the first group, and passes control
15 to a function block **830**. The function block **830** encodes the
16 residue for pixels in the first group in the spatial domain or
17 the frequency domain or using adaptive prediction error
18 coding (APEC), and passes control to a function block **835**.
19 The function block **835** derives the prediction mode or
20 selects and signals the best prediction mode for pixels in the
21 second group, and passes control to a function block **840**.
22 The function block **840** predicts pixels in the second group,
23 and passes control to a function block **845**. The function
24 block **845**, for the second group, sets the prediction as the
25 reconstruction or encodes the residue for the second group
26 or both groups (in the spatial domain or the frequency
27 domain or using APEC), and passes control to a function
28 block **850**. The function block **850** refines the reconstruction
(e.g., using a quantization constraint set (QCS)) if the residue
for pixels in the first group is encoded twice, and passes
control to a loop limit block **855**. The loop limit block **855**
ends the loop over the blocks, and passes control to a
function block **860**. The function block **860** performs
deblocking filtering on block boundaries and group
boundaries, and passes control to an end block **899**.

Ex. B.1 at 10:3-34.

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1 498. The '610 Patent notes that “it will be appreciated by those skilled in the
2 art that the block diagrams presented herein represent conceptual views of illustrative
3 circuitry embodying the present principles.” Ex. B.1 at 4:64-67. The '610 Patent states
4 that “it will be appreciated that any flow charts, flow diagrams, state transition
5 diagrams, pseudocode, and the like represent various processes which may be
6 substantially represented in computer readable media and so executed by a computer
7 or processor, whether or not such computer or processor is explicitly shown.” Ex. B.1
8 at 4:67-5:5. The '610 Patent explains that “[t]he functions of the various elements
9 shown in the figures may be provided through the use of dedicated hardware as well
10 as hardware capable of executing software in association with appropriate software.”
11 Ex. B.1 at 5:6-9.

12 499. These advances are also reflected in the claims of the '610 Patent. *See*,
13 *e.g.*, Ex. B.1 at Claims 6-10 and 16-20. Accordingly, the claims of the '610 Patent
14 recite one or more inventive concepts rooted in computerized technology and
15 overcome technical problems in that field. A person of ordinary skill in the art reading
16 the '610 Patent and its claims would understand that the Patent's disclosure and
17 claims are drawn to solving specific, technical problems arising in video coding
18 systems/methods and provide for advancements in the field that were not routine,
19 well-understood or conventional. Accordingly, the claims of the '610 Patent recite a
20 combination of elements sufficient to ensure that the claims in practice amount to
21 significantly more than a patent claiming an abstract concept. A person of ordinary
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1 skill in the art would understand that the ordered combination of claim elements is
2 inventive. Further, the claimed improvements over the prior art are concrete and
3 improve the capabilities of existing video coding systems/methods.
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5 500. A person of ordinary skill in the art reviewing the specification of the
6 '610 Patent would understand that the inventor had possession of the claimed subject
7 matter and would know how to practice the claimed invention without undue
8 experimentation.
9

10 **The '610 Patent Allegations**

11
12 501. The Accused Instrumentalities practice one or more claims of the '610
13 Patent by making, using, selling and/or offering to sell the Accused Instrumentalities
14 in this District and elsewhere in the United States, and/or importing the Accused
15 Instrumentalities into this District and elsewhere in the United States.
16

17 502. InterDigital provides the following explanation of infringement with
18 regard to an exemplary claim compared to exemplary functionality. InterDigital
19 reserves the right to present additional or alternative explanations of infringement for
20 the claim and functionalities identified below and for other claims and functionalities
21 of the services.
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23
24 503. As illustrated in Exhibit B.2, Defendants infringe at least one method
25 claim of the '610 Patent, including at least Claims 6-10, by encoding the Accused
26 Instrumentalities' content.
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Los Angeles, CA

1 504. Defendants took the above actions intending to infringe and/or cause
2 infringing acts by others.

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4 505. Accordingly, Defendants have directly infringed at least one method
5 claim of the '610 Patent, including at least Claims 6-10.

6 506. Defendants' acts of infringement have caused damage to InterDigital.
7 InterDigital is entitled to recover from Defendants the damages sustained by
8 InterDigital as a result of their wrongful acts in an amount subject to proof at trial.

9
10 **COUNT 3: INFRINGEMENT OF U.S. PATENT NO. 11,381,818**

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12 507. InterDigital incorporates the allegations of all of the foregoing
13 paragraphs as if fully restated herein.

14 508. U.S. Patent No. 11,381,818 ("the '818 Patent") entitled "Methods and
15 Apparatus for Determining Quantization Parameter Predictors from a Plurality of
16 Neighboring Quantization Parameters," was issued on July 5, 2022, and names
17 Xiaoan Lu, Joel Sole, Peng Yin, Qian Xu, and Yunfei Zheng as inventors. The '818
18 Patent is attached as Exhibit C.1.

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20
21 509. InterDigital VC Holdings, Inc. owns all rights, title, and interest in the
22 '818 Patent, and holds all substantial rights pertinent to this suit, including the right to
23 sue and recover for all past, current, and future infringement.

24
25 510. The '818 Patent is valid and enforceable and directed to patentable
26 subject matter.

27
28 **The '818 Patent**

1 511. The '818 Patent is directed to novel improvements in the field of video
2 coding. Specifically, the '818 Patent is directed to improved systems and methods for
3 determining quantization parameters in video coding. As the '818 Patent explains,
4 quantization is a means by which “a video encoder controls the number of encoded
5 bits and the quality” of a bitstream. Ex. C.1 at 1:62-35. This type of adjustment is
6 required for a video coding system to achieve “the highest possible perceptual quality
7 for a given set of bit rate constraints.” Ex. C.1 at 1:25-26. Video coding systems use
8 quantization to adjust the number of coded bits and quality through adjusting
9 quantization parameter values. As the '818 Patent explains, in the prior art,
10 “quantization parameters can be adjusted on a slice or macroblock (MB) level.” Ex.
11 C.1 at 2:5-7. While this level of adjustment provides the video coding system with
12 sufficient control over the quality and size of the bitstream, it also “requires an
13 overhead cost.” Ex. C.1 at 2:9-10.

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18 512. Prior art methods attempted to improve the coding efficiency of
19 quantization parameters using quantization predictors and quantization offset values.
20 For example, in one prior art approach, the quantization predictor “is the quantization
21 parameter of the previous macroblock in the decoding order.” Ex. C.1 at 2:25-31. In
22 another prior art approach, “single QP, namely the slice QP (SliceQP_Y), is used as the
23 predictor for the QP to be encoded.” Ex. C.1 at 4:29-30. These prior art methods
24 would send a quantization delta to indicate the offset between the quantization
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1 predictor and the actual quantization parameter to be used for a block. Ex. C.1 at 4:37-
2 40.

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4 513. The '818 Patent improves on these prior art methods through the use of
5 a system wherein “the quantization parameter predictor is determined using multiple
6 quantization parameters from previously coded neighboring portions.” Ex. C.1 at 5:3-
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8 8. This provides the benefit of “the reduction of overhead needed for signaling
9 quantization parameters to the decoder.” Ex. C.1 at 10:45-47.

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11 514. Generally, when considering quantization parameter adjustment, it is
12 advantageous to “assign lower QPs to the regions of interest to improve the perceptual
13 quality and higher QPs to other areas to reduce the number of bits.” Ex. C.1 at 11:49-
14 52. Typically, “picture content has great continuity” so that the “QPs for neighboring
15 coding units are often correlated.” Ex. C.1 at 11:52-54. Prior art systems attempted to
16 exploit this correlation by using the slice and/or previously coded macroblock as a QP
17 predictor. Ex. C.1 at 11:54-55. However, prior art systems failed to utilize the
18 correlation between neighboring blocks aside from the previously coded block. The
19 '818 Patent teaches that “[s]ince the QP can also correlate to QPs from other
20 neighboring blocks, [the '818 Patent] improve[s] the QP predictor by considering
21 more QPs.” Ex. C.1 at 11:55-58. The use of additional QPs to determine the QP
22 predictor allows for a more accurate QP predictor to be established. This, in turn,
23 requires a smaller QP delta to be signaled, thus reducing bitstream overhead resulting
24 in greater overall efficiency. The '818 Patent also teaches that, where the neighboring
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Los Angeles, CA

1 coding units are unavailable, the Slice level QP can be used instead. Ex. C.1 at 12:13-
2 19. This allows for the same QP predictor determination method to be used for all
3 blocks in an image.
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5 515. These advances are also reflected in the claims of the '818 Patent. *See*
6 *e.g.*, Ex. C.1 at Claims 1-4. Accordingly, the claims of the '818 Patent recite one or
7 more inventive concepts rooted in computerized technology and overcome technical
8 problems in that field. A person of ordinary skill in the art reading the '818 Patent and
9 its claims would understand that the Patent's disclosure and claims are drawn to
10 solving specific, technical problems arising in video coding systems/methods and
11 provide for advancements in the field that were not routine, well-understood or
12 conventional. Accordingly, the claims of the '818 Patent recite a combination of
13 elements sufficient to ensure that the claims in practice amount to significantly more
14 than a patent claiming an abstract concept. A person of ordinary skill in the art would
15 understand that the ordered combination of claim elements is inventive. Further, the
16 claimed improvements over prior art video coding systems are concrete and improve
17 the capabilities of existing video coding systems/methods.
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20 516. A person of ordinary skill in the art reviewing the specification of the
21 '818 Patent would understand that the inventor had possession of the claimed subject
22 matter and would know how to practice the claimed invention without undue
23 experimentation.
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28 **The '818 Patent Allegations**

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Los Angeles, CA

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517. The Accused Instrumentalities practice one or more claims of the '818 Patent by making, using, selling and/or offering to sell the Accused Instrumentalities in this District and elsewhere in the United States, and/or importing the Accused Instrumentalities into this District and elsewhere in the United States.

518. InterDigital provides the following explanation of infringement with regard to an exemplary claim compared to exemplary functionality. InterDigital reserves the right to present additional or alternative explanations of infringement for the claim and functionalities identified below and for other claims and functionalities of the services.

519. As illustrated in Exhibit C.2, Defendants infringe at least one method claim of the '818 Patent, including at least Claims 1-4, by encoding the Accused Instrumentalities' content.

520. Defendants took the above actions intending to infringe and/or cause infringing acts by others.

521. Accordingly, Defendants have directly infringed at least one method claim of the '818 Patent, including at least Claims 1-4.

522. Defendants' acts of infringement have caused damage to InterDigital. InterDigital is entitled to recover from Defendants the damages sustained by InterDigital as a result of their wrongful acts in an amount subject to proof at trial.

1 prevalent among consumers of motion picture content.” Ex. D.1 at 1:24-25. “When
2 editing the colors of a picture on a display with a reference color gamut other than the
3 color gamut of the target display, the resultant colors may look dissatisfying on the
4 target display.” Ex. D.1 at 1:26-29. Two such non-limiting cases are described below:

6 The first case relates to consumer displays having color
7 gamuts roughly the same size as the reference display, but
8 the display primaries are not equal to the display primaries
9 of the reference display during content creation. In such
10 circumstances, it is desirable to ensure that the colors can be
accurately represented on the consumer displays.

11 The second case relates to the current existence of wide
12 gamut color displays being utilized in the field. In such
13 circumstances, no methods exist to color correct consumer
14 displays with respect to these wide gamut color displays. For
15 example, such consumer displays may use a different
16 reference color gamut but may or may not be capable of
even displaying colors in accordance with the wide gamut
color standards.

17 Ex. D.1 at 1:31-44.

18 528. “The color gamut of a display is determined by the display technology
19 chosen.” Ex. D.1 at 1:60-61, 2:50-51 (“[T]here is significant variation in the color
20 gamuts used in various displays currently available.”); *see also* Ex. D.1 at 2:58-60
21 (noting significant display technology gamut differences illustrated in Figure 1,
22 reproduced below). “[A] consumer has the choice between the following technologies
23 . . . including, for example, liquid crystal display (LCD), Plasma, cathode ray tube
24 (CRT), digital light processing (DLP), and silicon crystal reflective display (SXRD).”
25 Ex. D.1 at 1:61-66. “However, there can be significant differences between different
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Los Angeles, CA

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display technologies, as well as between two representatives of the same display technology.” Ex. D.1 at 1:66-2:1; *see, e.g.*, Ex. D.1 at 2:1-4 (discussing color gamut depending on LCD lighting sources); Ex. D.1 at 2:10-13 (noting wide gamut cold cathode fluorescent lights have larger color gamut); Ex. D.1 at 2:13-18 (noting impact of LCD color filters on color gamut); Ex. D.1 at 2:21-28 (discussing color gamut of DLP and SXRD displays). A “trend is that LCD display’s CCFL back light units (BLU’s) get replaced by RGB LED (Light Emitting Diodes) BLU’s with an even higher color gamut.” Ex. D.1 at 2:18-20. In “FIG. 1, color gamut measurements of currently available displays are indicated.” Ex. D.1 at 2:56-58. “It is to be noted that none of the color gamuts of the various available displays are equal to the reference color gamut of the source material which, in this example, corresponds to ITU-R Bt. 709.” Ex. D.1 at 2:60-63.

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Los Angeles, CA

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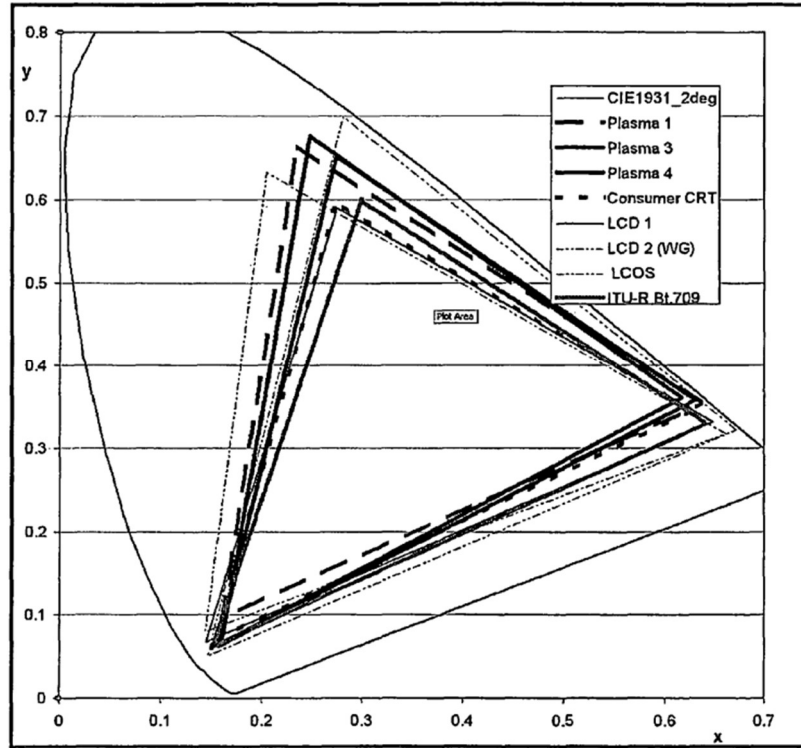


FIG. 1

Ex. D.1 at Figure 1.

529. “The current video content on digital video disks (DVD’s), television broadcasts, and/or via video over Internet Protocol (VoIP), are encoded in a color space with a reference color gamut and, thus, follow the rules that were set many years ago when wide gamut color display was not feasible.” Ex. D.1 at 2:31-36. “In fact, until recently it was difficult to achieve a reproduction even of the current reference color gamut.” Ex. D.1 at 2:36-37. “With the advent of wide gamut displays, it has become possible to display a wider range of colors than was previously

1 possible.” Ex. D.1 at 2:29-31. “An extended color gamut is feasible and there is a
2 desire to utilize the wider color gamut.” Ex. D.1 at 2:38-40.

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4 530. “Additionally, current displays seem to simply replace the reference
5 color primaries specified by the applicable standard by the color primaries
6 corresponding to the respective display.” Ex. D.1 at 3:1-6. “As a consequence, colors
7 do not appear as they should.” Ex. D.1 at 3:6-7; *see, e.g.*, Ex. D.1 at 3:7-10.
8 “However, mapping primaries is the most primitive and cheapest way of gamut
9 mapping.” Ex. D.1 at 3:10-11. “In the case of wide gamut material on a wide gamut
10 display, there still is a problem where colors may be displayed incorrectly due to the
11 color gamut of the wide gamut material being different than the color gamut of the
12 wide gamut display.” Ex. D.1 at 3:12-15. “[B]y using . . . unrestrictive color standards
13 . . . , it is always possible that a color gets transmitted that cannot be displayed on one
14 or more particular wide gamut displays.” Ex. D.1 at 3:15-20.

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18 531. “[C]olor correction’ refers to a creative procedure to manually choose
19 the right (preferred) colors on the content creation side (versus the consumer
20 consumption side).” Ex. D.1 at 8:10-13. “One method for color correction involves
21 3×3 matrixing the source primaries to the display primaries.” Ex. D.1 at 3:21-23.
22 “This solution has problems when colors are transmitted that are beyond the color
23 gamut of the display color gamut” (*e.g.*, “color may be out of the display range”). Ex.
24 D.1 at 3:23-29. “The typical result of such a situation is that the color to be displayed
25 may get clipped to their respective maximum ranges.” Ex. D.1 at 3:29-31. “The
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1 problem will manifest in a wrong color reproduction, in a hue, saturation, and also
2 brightness error.” Ex. D.1 at 3:31-33; *see, e.g.*, Ex. D.1 at 3:39-53, Figure 3. “The
3 detrimental affect will be even worse if the color appears in a gradation (*e.g.*, as seen
4 most often in animated movies), as a false contour will also appear.” Ex. D.1 at 3:33-
5 35.
6

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8 532. Figure 4 (reproduced below) is “an exemplary high-level diagram
9 showing the workflow for color correction using a display having a reference color
10 gamut for content that may be subsequently displayed on a display with a different
11 color gamut than the reference color gamut.” Ex. D.1 at 4:1-6. “The undesirable result
12 of the color correction workflow . . . is that when color correcting on a display with a
13 reference color display (RCG), the colors on a display with a second color gamut or
14 color gamut 2 (CG2) will be reproduced incorrectly.” Ex. D.1 at 4:7-11. “A RCG
15 display 482 is used on the content creation side 480.” Ex. D.1 at 4:13-14. “A RCG
16 display 492 and a CG2 display 494 are used on the content consumer side 590.” Ex.
17 D.1 at 4:14-16.
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Los Angeles, CA

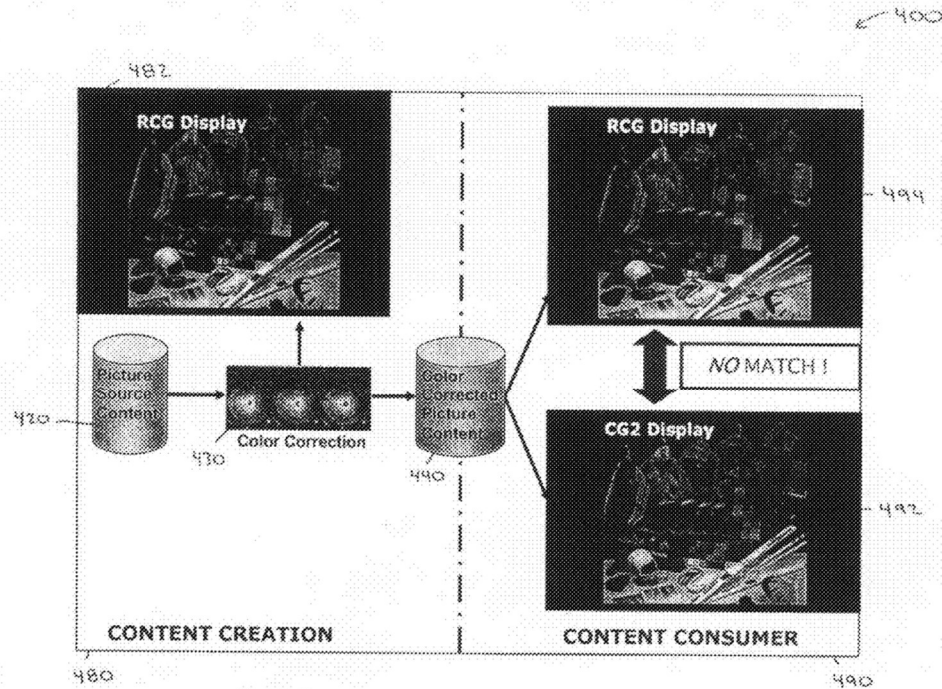


FIG. 4

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Los Angeles, CA

Ex. D.1 at Figure 4.

533. “The picture source content may be stored, for example, in a picture source content store 420.” Ex. D.1 at 4:17-18. “The color corrected picture content may be stored, for example, in a color corrected picture content store 440.” Ex. D.1 at 4:18-20. “A color correction module 430 generates the content that only looks correct on a display of the same type and with the same color gamut.” Ex. D.1 at 4:21-23. “Thus, the colors on the CG2 display will not look the same as the colors that were color corrected on the RCG display.” Ex. D.1 at 4:23-25. “It is very likely that at least some of the colors on the RCG2 display will be clipped and at least some will be displayed with the wrong hue.” Ex. D.1 at 4:25-27; *see, e.g.*, Ex. D.1 at 4:28-36.

1 534. “It is therefore essential that a proper way of color gamut mapping is
 2 used for rendering colors on the display used.” Ex. D.1 at 3:54-55. “The present
 3 principles are directed to methods and systems for color correcting to provide
 4 predictable results on displays with different color gamuts.” Ex. D.1 at 6:3-5; *see also*
 5 Ex. D.1 at 8:25-27.
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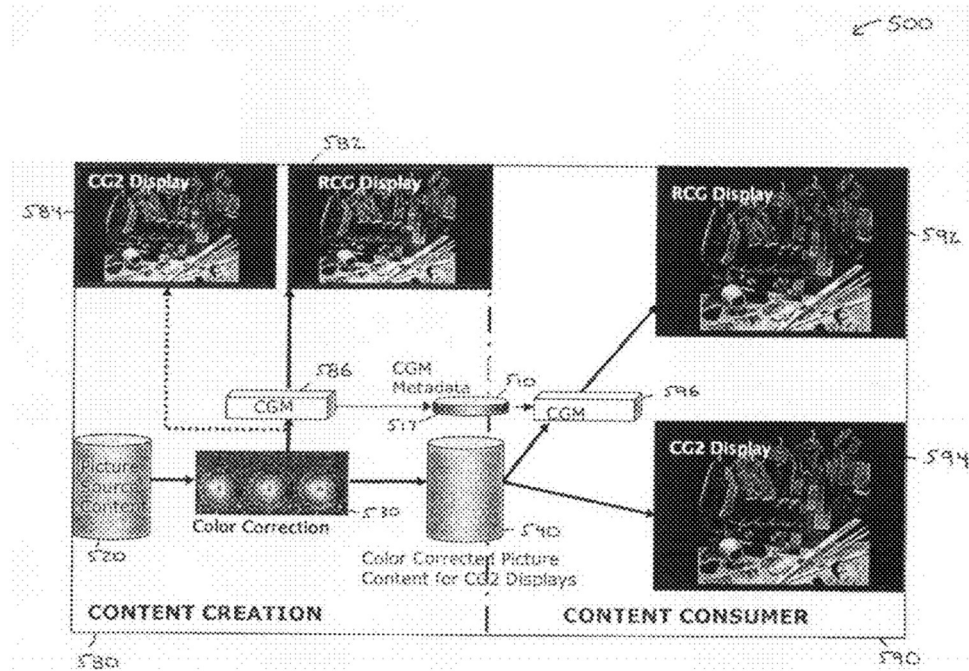


FIG. 5

17 Ex. D.1 at Figure 5.

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 22 535. “[T]he present principles may be used to address an exemplary problem
 23 where color correction is to be performed on a display with a reference color gamut,
 24 however, the corrected colors are to be displayed on a display with a different color
 25 gamut than the reference color gamut used for color correction.” Ex. D.1 at 8:36-41.
 26 Figure 5 (reproduced above) is “a high-level diagram showing the exemplary
 27 workflow for color correction to obtain a master for CG2 displays and metadata for
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 Los Angeles, CA

McKool Smith, P.C.
Los Angeles, CA

1 RCG displays.” Ex. D.1 at 8:42-45. The ’268 Patent describes the color correction
2 workflow of Figure 5 as the following:

3
4 The color correction workflow **500** involves a content
5 creation side **580** and a content consumer side **590**. The
6 color correction **530** is done based on a color gamut for CG2
7 displays. A CG2 display **584** shall be directly attached to the
8 color correction tool. A CGM **586** is used to map the content
9 from a color gamut for display on CG2 display **584** to a
10 color gamut for display on RCG display **582**, and the
11 resultant picture content is then used for distribution/storage
12 in color corrected picture content store **540**. An RCG display
13 **592** and a CG2 display **594** are used on the content
14 consumer side **590**.

15
16 In the embodiment, the use of the present principles
17 provides a controllable color difference between the content
18 displayed on the RCG display **592** and the CG2 display **594**
19 on the content consumer side **590**. As noted above, the
20 embodiment involves the use of a master, i.e., one version of
21 mastered content, for (use by) CG2 displays and metadata
22 **510** for (use by) RCG displays.

23
24 The metadata **510** describes a transformation of color
25 corrected picture content for CG2 displays, into colors
26 intended for RCG displays. Thus, the metadata **510** may
27 describe, for example, the difference between the colors for
28 a CG2 display and a RCG display.

The picture source content may be stored, for example, in a
picture source content store **520**. The color corrected picture
content may be stored, for example, in a color corrected
picture content store **540**. The metadata **510** may be stored,
for example, in a metadata store **517**.

A color correction module **530** is used to create the CG2
master by choosing the right colors. This may be done by a
colorist in a Digital Intermediates facility.

On the content creation side **580**, the CG2 mastered content
and the metadata for the RCG displays is applied to a CGM

McKool Smith, P.C.
Los Angeles, CA

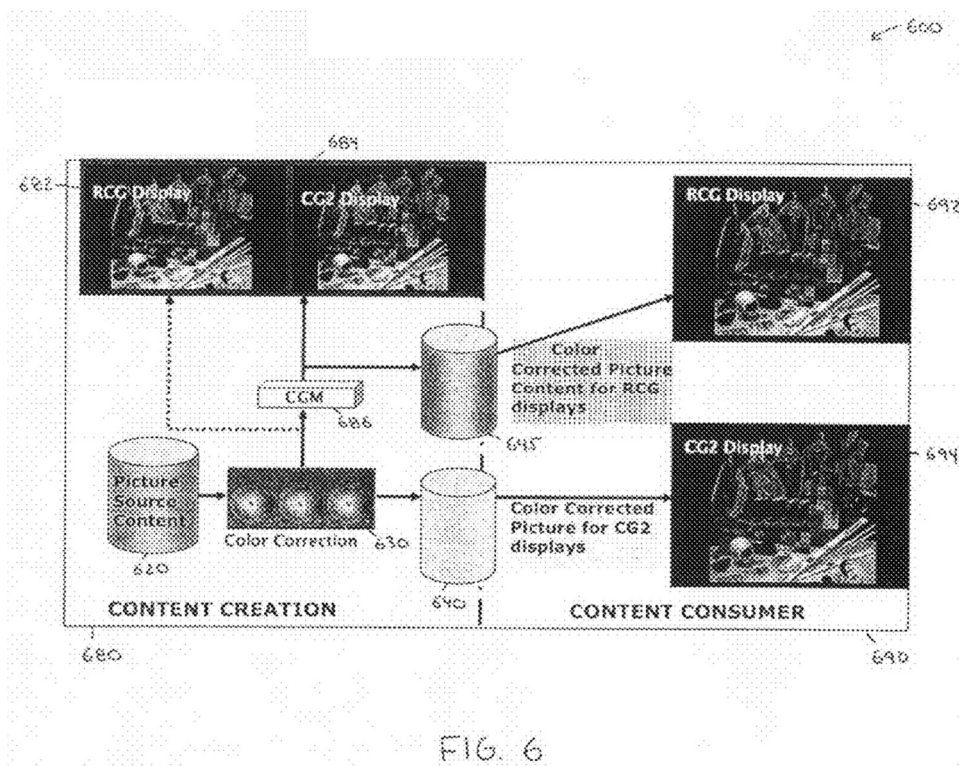
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module **586** that performs a color gamut mapping so that the CG2 mastered content is color corrected for display on the RCG display **582**.

On the content consumer side **590**, the CG2 mastered content and the metadata **510** for the RCG displays is applied to a CGM module **596** that performs a color gamut mapping so that the CG2 mastered content is color corrected for display on the RCG display **592**. The CGM module **596** receives information about a transformation specification by means of metadata **510**. This metadata **510** is derived from the transform specification used in the CGM **586** on the content creation side.

Moreover, on the content consumer side **590**, the CG2 mastered content is provided directly to the CG2 display **594** without the use or need of the metadata **510** or a color gamut mapping.

Ex. D.1 at 8:46-9:27.



Ex. D.1 at Figure 6.

1 536. Figure 6 (reproduced above) is “a high-level diagram showing the
2 exemplary workflow for color correction to obtain a master for CG2 displays and one
3 master for RCG displays.” Ex. D.1 at 9:28-31. The ’268 Patent describes the color
4 correction workflow of Figure 6 as the following:
5

6 The color correction workflow **600** involves a content
7 creation side **680** and a content consumer side **690**. A RCG
8 display **682** is used on the content creation side **680**. In
9 addition, a CG2 display **684** shall be used on the content
10 creation side **580** for proof viewing the content meant for
11 consumer RCG displays. A RCG display **692** and a CG2
12 display **694** are used on the content consumer side **690**.

13 In an embodiment, the color correction will result in a
14 master for CG2 displays (such as CG2 display **694**), and a
15 master for RCG displays (such as RCG display **692**). In an
16 embodiment, the master for the RCG displays would be a
17 derivative of the master for CG2 displays. The approach of
18 FIG. 6 provides a controlled color difference between a
19 consumer CG2 display and a RCG display **590** as the
20 distinctive feature. The quality of the color accuracy is
21 subject to the CG2 specifications used for color correction
22 matching those used in the field, or the display in the field
23 being calibrated to the specification used for color
24 correction.

25 The picture source content may be stored, for example, in a
26 picture source content store **620**. The color corrected picture
27 content for RCG displays, i.e., the master for RCG displays,
28 may be stored, for example, in a color corrected picture
content store **645**. The color corrected picture content for
CG2 displays, i.e., the master for CG2 displays, may be
stored, for example, in a color corrected picture content store
640.

On the content creation side, a color correction module **630**
generates the CG2 master. Moreover, on the content creation
side **680**, the CG2 mastered content is applied to a CGM
module **686** that performs a color gamut mapping to

generate the RCG master, so that the CG2 mastered content is color corrected for display on the RCG display **682**.

On the content consumer side **690**, the RCG mastered content is provided directly to the RCG display **692** without the need for a color gamut mapping, and the CG2 mastered content is provided directly to the CG2 display **694** without the need for a color gamut mapping.

Ex. D.1 at 9:32-67.

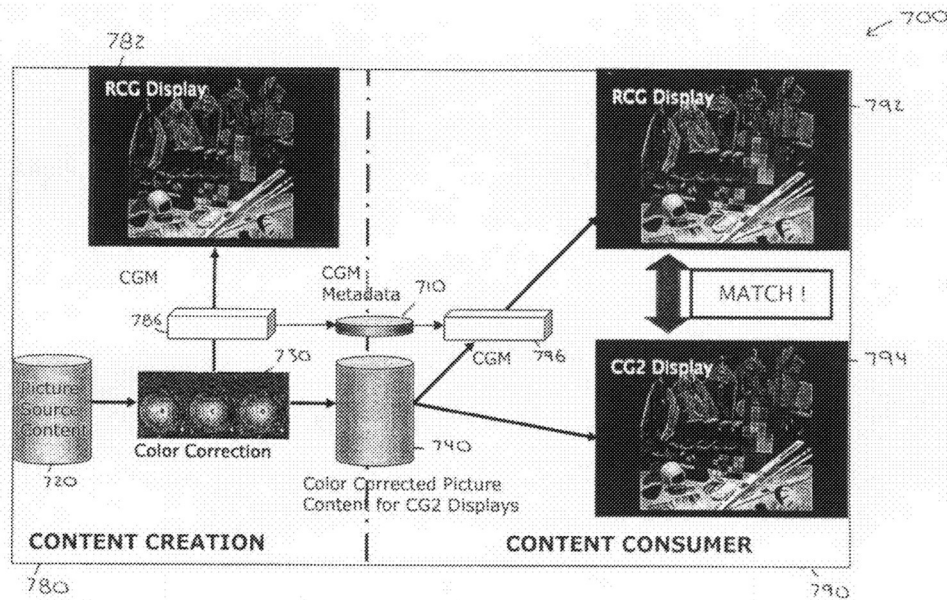


FIG. 7

Ex. D.1 at Figure 7.

537. Figure 7 (reproduced above) is “a high-level diagram showing the exemplary workflow for color correction to obtain a master for CG2 displays and metadata for RCG displays.” Ex. D.1 at 10:13-16. The '268 Patent describes the color correction workflow of Figure 7 as the following:

The color correction workflow **700** involves a content creation side **780** and a content consumer side **790**. A RCG display **782**, using CG2 simulation via a CGM module **786**, is used on the content creation side **780**. Alternatively or in

McKool Smith, P.C.
Los Angeles, CA

McKool Smith, P.C.
Los Angeles, CA

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addition, a CG2 display may be used on the content creation side **780**. A RCG display **792** and a CG2 display **794** are used on the content consumer side **790**.

In the embodiment, the use of the present principles provides a substantial color match between the content displayed on the RCG display **792** and the CG2 display **794** on the content consumer side **790**. As noted above, the embodiment involves the use of a master, i.e., one version of mastered content, for (use by) CG2 displays and metadata **710** for (use by) RCG displays.

The metadata **710** describes a transformation of picture source content into color corrected picture content. The picture source content relates to colors for CG2 displays and the color corrected picture content relates to colors for RCG displays. Thus, the metadata **710** may describe, for example, the difference between the colors for a CG2 display and a RCG display.

The picture source content may be stored, for example, in a picture source content store **720**. The color corrected picture content may be stored, for example, in a color corrected picture content store **740**. The metadata **710** may be stored, for example, in a metadata store **717**.

A color correction module **730** generates the CG2 master and the metadata for RCG displays.

On the content creation side **780**, the CG2 mastered content and the metadata for the RCG displays is applied to a CGM module **786** that performs a color gamut mapping so that the CG2 mastered content is color corrected for display on the RCG display **782**.

On the content consumer side **790**, the CG2 mastered content and the metadata **710** for the RCG displays is applied to a CGM module **796** that performs a color gamut mapping so that the CG2 mastered content is color corrected for display on the RCG display **792**.

Moreover, on the content consumer side 790, the CG2 mastered content is provided directly to the CG2 display 794 without the use or need of the metadata 510 or a color gamut mapping.

Ex. D.1 at 10:17-58.

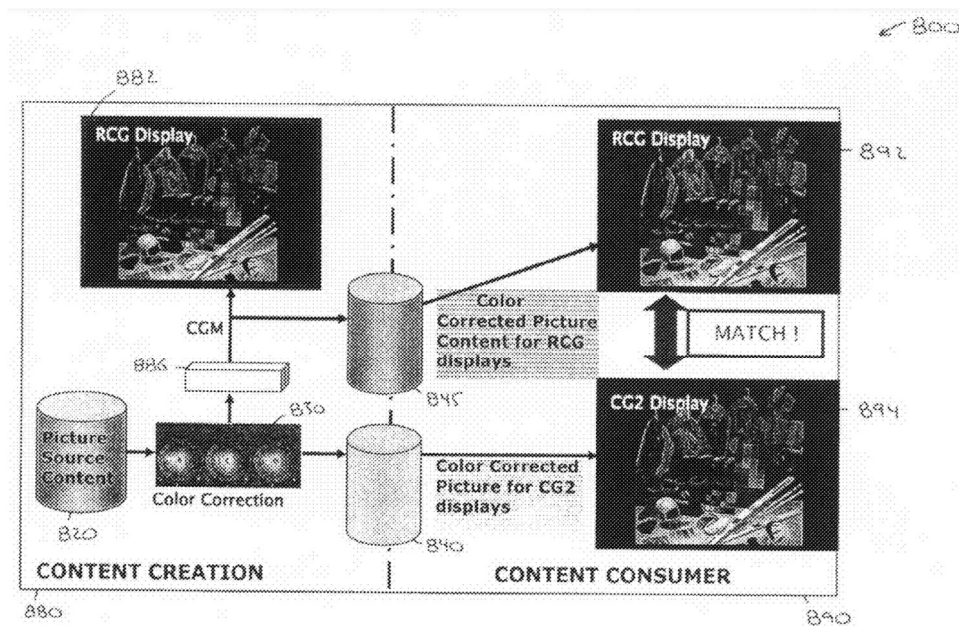


FIG. 8

Ex. D.1 at Figure 8.

538. Figure 8 (reproduced above) is “a high-level diagram showing the exemplary workflow for color correction to obtain a master for CG2 displays and one master for RCG displays.” Ex. D.1 at 10:13-16. The '268 Patent describes the color correction workflow of Figure 8 as the following:

The color correction workflow 800 involves a content creation side 880 and a content consumer side 890. A RCG display 882 is used on the content creation side 880. A RCG display 892 and a CG2 display 894 are used on the content consumer side 890.

In an embodiment, the color correction will result in a master for CG2 displays (such as CG2 display 894), and a

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Los Angeles, CA

1 master for RCG displays (such as RCG display **892**). In an
2 embodiment, the master for the RCG displays would be a
3 derivative of the master for CG2 displays. The approach of
4 FIG. 8 provides a match between a consumer CG2 display
5 and a RCG display. The quality of the match is subject to the
6 CG2 specifications used for color correction matching those
7 used in the field, or the display in the field being calibrated
8 to the specification used for color correction.

7 The picture source content may be stored, for example, in a
8 picture source content store **820**. The color corrected picture
9 content for RCG displays, i.e., the master for RCG displays,
10 may be stored, for example, in a color corrected picture
11 content store **845**. The color corrected picture content for
12 CG2 displays, i.e., the master for CG2 displays, may be
13 stored, for example, in a color corrected picture content store
14 **840**.

13 On the content creation side, a color correction module **830**
14 generates the CG2 master. Moreover, on the content creation
15 side **880**, the CG2 mastered content is applied to a CGM
16 module **886** that performs a color gamut mapping to
17 generate the RCG master, so that the CG2 mastered content
18 is color corrected for display on the RCG display **882**.

18 On the content consumer side **890**, the RCG mastered
19 content is provided directly to the RCG display **892** without
20 the need for a color gamut mapping, and the CG2 mastered
21 content is provided directly to the CG2 display **894** without
22 the need for a color gamut mapping.

22 Ex. D.1 at 10:63-11:29.

23 539. “In some circumstances, the color correction process may be a bit
24 cumbersome since the colors are being modified with a non-linear mapping between
25 the color correction and the reference display.” Ex. D.1 at 10:4-8, 11:33-37. “Some
26 colors may not change as initially expected by the colorist.” Ex. D.1 at 10:8-9, 11:37-
27 38. “However, there will be no colors in the master that cannot be displayed by a
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1 display with CG2, nor will there be a color that cannot be displayed by a RCG
2 display.” Ex. D.1 at 10:9-12, 11:38-41. “This is a real benefit of this approach.” Ex.
3 D.1 at 10:12, 11:41. “On the content consumer side, circuitry will be provided that
4 connects the signal source with a CG2 display. This circuitry can be implemented in
5 hardware and/or in software, and provides the signal transform to generate the CG2
6 version needed out of the picture for RCG displays.” Ex. D.1 at 11:42-46.
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9 540. The '268 Patent discloses that “the block diagrams presented herein
10 represent conceptual views of illustrative circuitry.” Ex. D.1 at 6:25-28. The '268
11 Patent states that “functions of the various elements shown in the figures may be
12 provided through the use of dedicated hardware as well as hardware capable of
13 executing software in association with appropriate software.” Ex. D.1 at 6:34-37; *see*
14 *also* Ex. D.1 at 11:53-12:2. “The present principles correct differences in colors
15 between different target displays.” Ex. D.1 at 8:27-29.
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18 541. These advances are also reflected in the claims of the '268 Patent. *See*,
19 *e.g.*, Ex. D.1 at Claims 1-11. Accordingly, the claims of the '268 Patent recite one or
20 more inventive concepts rooted in computerized technology and overcome technical
21 problems in that field. A person of ordinary skill in the art reading the '268 Patent and
22 its claims would understand that the Patent’s disclosure and claims are drawn to
23 solving specific, technical problems arising in video transmission of improved
24 dynamic color range systems/methods and provide for advancements in the field that
25 were not routine, well-understood or conventional. Accordingly, the claims of the
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McKool Smith, P.C.
Los Angeles, CA

1 '268 Patent recite a combination of elements sufficient to ensure that the claims in
2 practice amount to significantly more than a patent claiming an abstract concept. A
3 person of ordinary skill in the art would understand that the ordered combination of
4 claim elements is inventive. Further, the claimed improvements over prior art dynamic
5 range improvement systems are concrete and improve the capabilities of existing
6 video color scheme translation systems/methods.
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9 542. A person of ordinary skill in the art reviewing the specification of the
10 '268 Patent would understand that the inventor had possession of the claimed subject
11 matter and would know how to practice the claimed invention without undue
12 experimentation.
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14 **The '268 Patent Allegations**

15
16 543. The Accused Instrumentalities practice one or more claims of the '268
17 Patent by making, using, selling and/or offering to sell the Accused Instrumentalities
18 in this District and elsewhere in the United States, and/or importing the Accused
19 Instrumentalities into this District and elsewhere in the United States.
20

21 544. InterDigital provides the following explanation of infringement with
22 regard to an exemplary claim compared to exemplary functionality. InterDigital
23 reserves the right to present additional or alternative explanations of infringement for
24 the claim and functionalities identified below and for other claims and functionalities
25 of the services.
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LOS ANGELES, CA

1 545. As illustrated in Exhibit D.2, Defendants infringe at least one method
2 claim of the '268 Patent, including at least Claims 1-11, by encoding the Accused
3 Instrumentalities' content.
4

5 546. Defendants took the above actions intending to infringe and/or cause
6 infringing acts by others.
7

8 547. Accordingly, Defendants have directly infringed at least one method
9 claim of the '268 Patent, including Claims 1-11.
10

11 548. Defendants' acts of infringement have caused damage to InterDigital.
12 InterDigital is entitled to recover from Defendants the damages sustained by
13 InterDigital as a result of their wrongful acts in an amount subject to proof at trial.
14

15 **COUNT 5: INFRINGEMENT OF U.S. PATENT NO. 8,085,297**

16 549. InterDigital incorporates the allegations of all of the foregoing
17 paragraphs as if fully restated herein.
18

19 550. U.S. Patent No. 8,085,297 ("the '297 Patent") entitled "Method for
20 Modifying a User Interface of a Consumer Electronic Apparatus, Corresponding
21 Apparatus, Signal and Data Carrier," was issued on December 27, 2011, and names
22 Harald Schiller as the inventor. The '297 Patent is attached as Exhibit E.1.
23

24 551. InterDigital CE Patent Holdings, SAS owns all rights, title, and interest
25 in the '297 Patent, and holds all substantial rights pertinent to this suit, including the
26 right to sue and recover for all past, current, and future infringement.
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1 552. The '297 Patent is valid and enforceable and directed to patentable
2 subject matter.

3
4 **The '297 Patent**

5 553. "In general terms a user interface (UI) includes all aspects of an
6 apparatus or a program, which are used for an interaction with a user." Ex. E.1 at
7 1:15-17. "This includes commands and mechanisms, which the user utilizes to control
8 the operation of the apparatus or program and to input data but also an output by the
9 apparatus or program, which can be seen or heard or otherwise perceived by the user."
10 Ex. E.1 at 1:17-21. "Especially for consumer electronic apparatuses and computer
11 systems a wide range of user interfaces has been developed and implemented." Ex.
12 E.1 at 1:22-24.

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15 554. The application that became the '297 patent was filed in 2002. At that
16 time, "[a] very simple and today in many areas outdated user interface requires the
17 user to type textual commands by using a keyboard and produces a single stream of
18 text as output." Ex. E.1 at 1:24-27. "More comfortable are graphical user interfaces,
19 which use for the output displayed windows, pictures or icons and for the input and
20 control a cursor moved over the display using 'up'- and 'down'-keys or a pointing
21 device such as a mouse, a trackball or a touch-pad." Ex. E.1 at 1:27-31. "Even more
22 sophisticated is a voice-controlled user interface based on speech recognition." Ex.
23 E.1 at 1:31-33. "However, a drawback of these user interfaces is that they are defined
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Los Angeles, CA

1 and fixed once the respective apparatus has left the factory which means that no
 2 extensions or corrections are possible.” Ex. E.1 at 1:33-36.

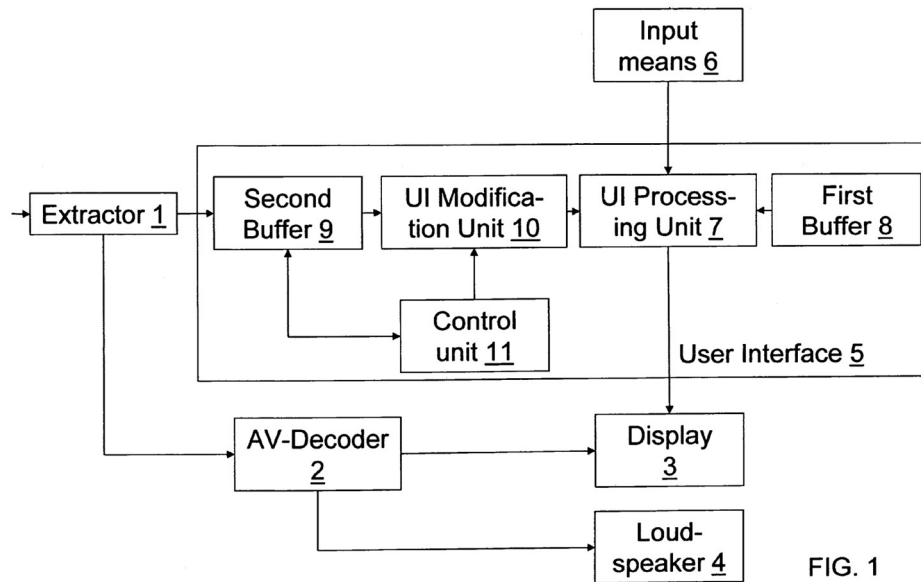


FIG. 1

14 Ex. E.1 at Figure 1.

15 555. The '297 Patent “disclose[s] a method for modifying a user interface of
 16 a consumer electronic apparatus, which can be used for example to update a given
 17 basic UI functionality or to temporarily implement isolated, dedicated UI sub-
 18 domains.” Ex. E.1 at 1:39-43. Figure 1 (reproduced above) “illustrates a block
 19 diagram of an embodiment of the present invention.” Ex. E.1 at 2:8-9. “A received
 20 signal consisting of main data and embedded side information is supplied to an
 21 extractor 1.” Ex. E.1 at 2:9-10. “After separation of the side information from the
 22 main data the main data are forwarded to suited processing means 2, e.g. an MPEG-2
 23 decoder, and are finally played-back using a display 3 and/or one or more
 24 loudspeakers 4.” Ex. E.1 at 2:21-25.

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 Los Angeles, CA

McKool Smith, P.C.
Los Angeles, CA

1 556. “A user interface unit 5 controls the interaction between the user and
2 the apparatus, e.g. the display of a graphical UI and the input of commands by the user
3 using a mouse-controlled cursor.” Ex. E.1 at 2:26-29. “The user interface unit 5
4 comprises user command input means 6 for receiving the user inputs, a processing
5 unit 7 for handling the commands and mechanisms of the UI and a first buffer 8 for
6 the permanent storage of parameters for UI parts, which shall be kept unaltered.” Ex.
7 E.1 at 2:29-33.

10 557. “Furthermore, a second buffer 9, a modification unit 10 and a control
11 unit 11 are implemented for the purpose of modifying the UI according to the
12 invention.” Ex. E.1 at 2:33-36. “The second buffer 9 receives from the extractor 1 the
13 side information comprising side information components for controlling the user
14 interface and validity information defining the validity start and/or end time of said
15 side information components, which both are stored in the buffer 9.” Ex. E.1 at 2:36-
16 41. “The side information components and validity information are fed to the
17 modification unit 10, which processes these data and modifies the UI when the start
18 time of the respective side information component is signaled by the control unit 11,
19 possibly together with the processing unit 7.” Ex. E.1 at 2:41-45. “When the end time
20 of the side information component is reached, this is also signalled by the control unit
21 11 and the modification is reversed.” Ex. E.1 at 2:45-48. “In a further embodiment the
22 side information is written into the first buffer 8 and kept there for the duration of the
23 UI modification instead of writing the side information into the second buffer 9.” Ex.
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Los Angeles, CA

1 E.1 at 2:49-52. “In this way the costs for the additional buffer 9 can be saved.” Ex. E.1
2 at 2:52-53.

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4 558. “The side information can be used to modify the visual appearance of
5 the UI, e.g. to insert additional buttons with a new functionality or to create new
6 subdirectories with additional commands.” Ex. E.1 at 2:57-60. “In case of voice
7 control, the additional user commands are new keywords to be recognized by the
8 speech recognition algorithm, which may be stored as pieces of PCM waveform or in
9 a time-parameter domain.” Ex. E.1 at 2:60-63. “Also, for a user interface including
10 voice synthesis the side information can be used to alter the parameter sets for the
11 voice synthesis, e.g. to add new speech keywords or to change the sound of the
12 voice.” Ex. E.1 at 2:63-67.

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16 559. “The side information can be received together with AV data,
17 especially embedded into AV data, from a broadcasting station.” Ex. E.1 at 3:1-3.
18 “However, the AV data and the side information can also be supplied by a data
19 carrier, e.g. an optical storage disc like a DVD disc.” Ex. E.1 at 3:3-5. “Furthermore,
20 the side information can also be received on a separate input channel, e.g. a telephone
21 line.” Ex. E.1 at 3:5-6.

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24 560. “The main data may be AV data or pure video or audio data, either in
25 analog or digital form, e.g. compressed according to the MPEG-2 standard.” Ex. E.1
26 at 2:11-13. “In the case of an analog TV signal the side information can be received
27 embedded in the vertical blanking interval and can be separated by a suited data slicer,
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1 which may also be used for the separation of other VBI data like teletext, VPS or
2 closed caption.” Ex. E.1 at 2:13-17. “For a digital TV signal the side information may
3
4 be embedded in a corresponding data channel, e.g. in not used user-data and can be
5 separated by a suited demultiplexer.” Ex. E.1 at 2:17-20.

6 561. These advances are also reflected in the claims of the '297 Patent. *See*,
7
8 *e.g.*, Ex. E.1 at Claims 1-12. Accordingly, the claims of the '297 Patent recite one or
9 more inventive concepts rooted in computerized technology and overcome technical
10 problems in that field. These inventive concepts, set forth in the claims of the '297
11 Patent are directed to concrete, technological solutions to problems arising in the field
12 rather than an abstract idea, law of nature, or natural phenomenon. More specifically,
13 a person of ordinary skill in the art reading the '297 Patent and its claims would
14 understand that the Patent's disclosure and claims are drawn to solving specific,
15 technical problems arising in video transmission graphical user interface
16 systems/methods and provide for advancements in the field that were not routine,
17 well-understood or conventional. Accordingly, the claims of the '297 Patent recite a
18 combination of elements sufficient to ensure that the claims in practice amount to
19 significantly more than a patent claiming an abstract concept. A person of ordinary
20 skill in the art would understand that the ordered combination of claim elements is
21 inventive. The claims of the '297 Patent require detailed steps that are rooted in
22 computer processes that cannot be performed merely by mental processes. Further, the
23 claimed improvements over prior art video transmission graphical user interface
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1 systems are concrete and improve the capabilities of existing video transmission
2 graphical user interface systems/methods.

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4 562. A person of ordinary skill in the art reviewing the specification of the
5 '297 Patent would understand that the inventor had possession of the claimed subject
6 matter and would know how to practice the claimed invention without undue
7 experimentation.

8
9 **The '297 Patent Allegations**

10 563. The Accused Instrumentalities practice one or more claims of the '297
11 Patent by making, using, selling and/or offering to sell the Accused Instrumentalities
12 in this District and elsewhere in the United States, and/or importing the Accused
13 Instrumentalities into this District and elsewhere in the United States.

14
15
16 564. InterDigital provides the following explanation of infringement with
17 regard to an exemplary claim compared to exemplary functionality. InterDigital
18 reserves the right to present additional or alternative explanations of infringement for
19 the claim and functionalities identified below and for other claims and functionalities
20 of the services.

21
22 565. As illustrated in Exhibit E.2, Defendants infringe at least one method
23 claim of the '297 Patent, including at least Claims 1-12, by encoding the Accused
24 Instrumentalities' content.

25
26 566. Defendants took the above actions intending to infringe and/or cause
27 infringing acts by others.
28

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LOS ANGELES, CA

1 567. Accordingly, Defendants have directly infringed at least one method
2 claim of the '297 Patent, including at least Claims 1-12.

3
4 568. Defendants' acts of infringement have caused damage to InterDigital.
5 InterDigital is entitled to recover from Defendants the damages sustained by
6 InterDigital as a result of their wrongful acts in an amount subject to proof at trial.

7
8 **JURY DEMAND**

9 Plaintiffs hereby demand a trial by jury on all issues so triable.

10 **PRAYER FOR RELIEF**

11
12 WHEREFORE, Plaintiffs InterDigital, Inc., InterDigital VC Holdings, Inc.,
13 InterDigital Madison Patent Holdings, SAS, and InterDigital CE Patent Holdings,
14 SAS ask this Court for an order granting the following relief:

15
16 A. A judgment in favor of Plaintiffs that Defendants have infringed, either
17 literally and/or under the doctrine of equivalents, the '301, '610, '818, '268, and '297
18 Patents;

19
20 B. A judgment and order finding that Defendants' infringement has been
21 willful;

22
23 C. A permanent injunction prohibiting Defendants from further acts of
24 infringement;

25
26 D. A judgment and order requiring Defendants to pay Plaintiffs their
27 damages, costs, expenses, and any enhanced damages to which Plaintiffs are entitled
28 for Defendants' infringement;

MCKOOL SMITH, P.C.
LOS ANGELES, CA

1 E. A judgment and order requiring Defendants to provide an accounting
2 and to pay supplemental damages to Plaintiffs, including without limitation, pre-
3 judgment and post-judgment interest;
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5 F. A judgment and order finding that this is an exceptional case within the
6 meaning of 35 U.S.C. § 285 and awarding Plaintiffs their reasonable attorneys' fees
7 against Defendants; and
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9 G. Any and all other relief as the Court may deem appropriate and just
10 under the circumstances.
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McKool Smith, P.C.
Los Angeles, CA

MCKOOL SMITH, P.C.
LOS ANGELES, CA

1 Dated: February 2, 2025

Respectfully submitted,

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/s/ Alan P. Block
Alan P. Block
ablock@mckoolsmith.com
MCKOOL SMITH, P.C.
300 South Grand Avenue, Suite 2900
Los Angeles, California 90071
Telephone: (213) 694-1200
Facsimile: (213) 694-1234

Richard A. Kamprath*
rkamprath@mckoolsmith.com
Alexandra Easley*
aeasley@mckoolsmith.com
MCKOOL SMITH, P.C.
300 Crescent Court, Suite 1200
Dallas, Texas 75201
Telephone: (214) 978-4000
Facsimile: (214) 978-4044

Hannah Mirzoeff*
hmirzoeff@mckoolsmith.com
MCKOOL SMITH, P.C.
1301 Avenue of the Americas, 32nd Floor
New York, New York 10019
Telephone: (212) 402-9400
Facsimile: (212) 402-9444

Joshua W. Budwin*
jbudwin@mckoolsmith.com
MCKOOL SMITH, P.C.
303 Colorado Street, Suite 2100
Austin, Texas 78701
Telephone: (512) 692-8700
Facsimile: (512) 692-8744

Kevin Burgess*
kburgess@mckoolsmith.com
MCKOOL SMITH, P.C.
104 East Houston Street, Suite 300
Marshall, Texas 75670

McKool Smith, P.C.
Los Angeles, CA

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Telephone: (903) 923-9000
Facsimile: (903) 923-9099

**Pro Hac Vice Applications forthcoming*

*Attorneys for Plaintiffs InterDigital, Inc.,
InterDigital VC Holdings, Inc., InterDigital
Madison Patent Holdings, SAS, and
InterDigital CE Patent Holdings, SAS*