

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Google LLC,
Petitioner,

v.

Withrow Networks Inc.,
Patent Owner

Case No. IPR2025-00775
U.S. Patent No. 10,771,849

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
2001	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Complaint file May 24, 2024 (D.I. 1) (“Complaint”)
2002	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Order Denying Motion to Dismiss dated January 21, 2025 (D.I. 44) (“Order Denying Motion to Dismiss”)
2003	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Answer filed February 4, 2025 (D.I. 48) (“Answer”)
2004	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), the parties’ Joint Case Management Statement dated February 7, 2025 (D.I. 48) (“Joint Case Management Statement”)
2005	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Motion to Stay Case Pending the Resolution of Petition for <i>Inter Partes</i> Review dated March 25, 2025 (D.I. 60) (“Motion to Stay”)
2006	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Opposition to Motion to Stay dated April 8, 2025 (D.I. 63) (“Opposition to Motion to Stay”).
2007	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Reply Re Motion to Stay Case Pending the Resolution of Petition for <i>Inter Partes</i> Review dated April 15, 2025 (D.I. 70) (“Reply re Motion to Stay”)
2008	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Stipulation and Order re Electronically Stored Information dated March 24, 2025 (D.I. 59) (“ESI Order”)
2009	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Order re Dispute re Proposed

Exhibit No.	Description
	Protective Order dated March 28, 2025 (“Order on Discovery Letter Brief”).
2010	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), Stipulated Protective Order dated April 10, 2025 (“SPO”)
2011	Judge P. Casey Pitts Standing Order for Civil Cases (Aug. 2024)
2012	Exhibit 0 to Invalidity Contentions Served in NDCA Litigation
2013	<i>Withrow Networks, Inc. v. Google, LLC and YouTube, LLC</i> , No. 5:24-cv-03203-PCP (NDCA), The Parties’ Joint Claim Construction and Prehearing Statement dated June 23, 2025 (D.I. 92, 92-1) (“JCCPS”)

I. INTRODUCTION

Patent Owner Withrow Networks Inc. (“Withrow” or “Patent Owner”) developed and patented a novel system for multimedia transmission and playback for mobile clients. Withrow’s innovative technology provided smooth streaming video to mobile devices across the internet using dynamic adaptation of different media quality levels, providing an improved picture even in the presence of fluctuating conditions. While Withrow had several early successes—including joint demonstrations of the technology with major players like Qualcomm and Spring—it was ultimately unable to successfully market its technology in the wake of rampant infringement.

Withrow’s U.S. Patent No. 10,771,849 (“the ‘849 Patent”) (Ex.1001) is directed to methods and systems for efficiently transmitting and playing back multimedia content on mobile devices with limited hardware capabilities. The claimed systems and devices include a unique combination of features unknown in the art at the time, including creating a streaming data structure that joins multimedia segments with metadata describing the video streams, allowing client devices to account for their diverse capabilities and tell the server how to send the data. An important feature of the Patent Owner’s invention is that it includes a novel multimedia player that plays multimedia objects in a sequence so that fluidity, video quality and audio quality are maintained. The multimedia player

does so by performing several operations within the client device itself, including the use of optimized decoding processes. The Patent Office agreed, awarding Withrow the '849 Patent.

Petitioner Google LLC's ("Google" or "Petitioner") purported invalidity grounds in the Petition ("Pet.") rely primarily on Carmel (Ex.1003) in combination with a variety of additional references that are intended to fill holes in Carmel's disclosure. None of these references disclose, alone or in combination, important limitations of claim 1 of the '849 Patent. Petitioner's challenges to the other claims of the patent in each ground rise and fall with claim 1—claims 2-5 and 8-9 depend from claim 1 and the Petition admits independent claims 6-7 are "materially the same as claim 1" (claims 1-9, collectively, the "Challenged Claims")—and thus fail for the same reasons.

More specifically, Petitioner's Carmel (Ex.1003) and Mattavelli (Ex.1004) combination (Ground 1) fails because the references, alone or in combination, do not disclose "utilizing optimized decoding processes to maintain quality playback," as required by the claims. Petitioner concedes Carmel does not disclose this limitation. And regardless of whether or not Mattavelli discloses "optimized decoding processes," Mattavelli's approach does not "maintain quality playback"—in fact, it does the opposite. Mattavelli is explicit that the intended result of its decoding approach is *poorer quality*. Petitioner's Ground 1 thus does

not demonstrate a reasonable likelihood that any of the Challenged Claims are unpatentable.

Petitioner’s Carmel (Ex.1003) and Wang (Ex.1007) combination (Ground 2) is deficient for similar reasons to its Ground 1 challenge because neither Carmel nor Wang, alone or in combination, disclose “utilizing optimized decoding processes to maintain quality playback.” Petitioner relies on Wang for this limitation, but Wang never mentions “quality” in the context of its platform-based decoder and its intent is improving throughput, not “maintain[ing] quality playback.” Moreover, the architecture of the systems and devices disclosed in Carmel and Wang are such that a person of ordinary skill in the art would not have combined them in the manner proposed by Petitioner. As such, Petitioner’s Ground 2 likewise fails.

Petitioner’s other attacks fare no better. Ground 3—based on a combination of Carmel (Ex.1003), Wang (Ex.1007), and Wolters (Ex.1041)—simply adds Wolters to Petitioner’s Ground 2 challenge, but Wolters does not cure the deficiencies of its prior ground and fails for the same reasons. Grounds 4 and 5 further incorporate several additional references—Guo (Ex.1051), Yu (Ex.1061), and Forecast (Ex.1016)—into Petitioner’s previous Grounds 1-3, but Petitioner does not rely on these references for the limitations missing in the combinations set forth in its other grounds. These deficiencies therefore doom Grounds 4-5, as well.

All told, none of Petitioner’s Grounds 1-5 demonstrate a reasonable likelihood that any of the Challenged Claims of the ‘849 Patent are unpatentable under 35 U.S.C. § 314(a). Accordingly, the Board should respectfully deny institution of this proceeding.

II. THE ‘849 PATENT

A. Overview of the ‘849 Patent

The ‘849 Patent is directed to “methods of multimedia transmission and playback for mobile clients.” Ex.1001, 1:6-8. More specifically, the patent relates to efficiently transmitting and playing back multimedia content on mobile devices with limited hardware capabilities.

Prior to the inventions disclosed in the ‘849 Patent before 2005, methods of distributing multimedia data over the wireless internet to mobile clients were “constrained by existing wireless bandwidth, and the real-time decoding, processing and displaying of multimedia content with limited hardware capabilities. These hardware limitations include slow CPUs, high memory latencies, slow drawing capabilities and the absence of YUV to RGB conversion [*i.e., i.e.*, transforming color information from one color space to another] in the hardware.” *Id.*, 1:13-20. Most mobile devices could not support multimedia playback, and even on those that could, video was limited to low frame rates and suffered from minimal bandwidth. *Id.*, 1:33-48. Decoders for complex video (*e.g.*,

MPEG4) and audio (*e.g.*, AAC) were known but “require[d] multiple parallel processes and fast processing,” which were not available on mobile devices at the time. *Id.*, 1:49-60. While Java players for cell phones had been developed, “implementations of true, platform independent, MPEG4 Java decoders that will play video on cell phones [were] not known” and “no Java players [were] known that will play AAC.” *Id.*, 2:4-18. And although streaming technologies were in development, they did “not address specific continuity and deployment issues for wireless multimedia transmission and concurrent playback on a limited-tasking cell phone handsets.” *Id.*, 2:19-43.

These limitations rendered conventional streaming technologies inadequate, often resulting in poor video and audio quality or preventing playback altogether. The inventors of the ’849 Patent sought to address these limitations by expanding and improving on prior methods for multimedia transmission and mobile playback, enabling fluid playback of high-quality video and audio on constrained mobile devices. *Id.*, 2:44-46.

The ’849 Patent discloses a comprehensive solution comprising several interrelated aspects. The patent explains:

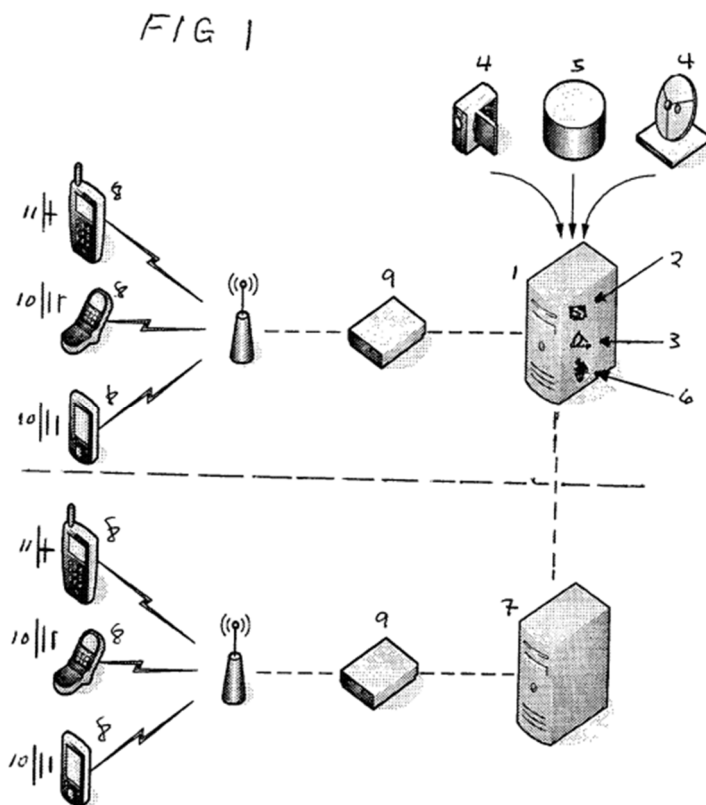
In a ***first aspect*** the invention provides a method of efficient multimedia object creation. In a ***second aspect*** the invention deployment addresses the limitations of large-scale multimedia transmission on cellular networks to wireless clients. In a ***third aspect***,

the invention relates to methods of decoding of video, sufficiently optimized to be played on a limited wireless client. In a *fourth aspect*, the invention relates to methods of decoding of audio, sufficiently optimized to be played on a limited wireless client. In a *fifth aspect*, the limited mobile handset multimedia object player, for both MPEG4 video decoding and AAC audio decoding, is implemented as a device-hardware-independent java (J2ME) applet.

Id., 2:50-63 (emphasis added). These novel features were not previously known in the art and contributed to solving the problems with conventional methods for multimedia transmission and playback on mobile devices.

1. The '849 Patent's "Distributed Network System for Multimedia-on-Demand"

As shown below, Figure 1 of the '849 Patent discloses a "distributed network system for multimedia-on-demand." *Id.*, 4:66-5:7, Fig.1.



The system includes a centralized content server (1) with a transcoder (2) and multimedia object creator (3) that creates multimedia objects from live broadcasts (4) or archived multimedia files (5). The centralized content server (1) includes an indexing host system (6) to deploy multimedia objects to content servers (7) and wireless clients (8). Proxy cellular network http servers (9) cache multimedia objects for efficient delivery to wireless clients (8), which run novel multimedia object java applets (10) or embedded/downloaded multimedia players (11). *See id.*, 4:66-5:7, 6:18-31.

2. The '849 Patent Teaches a Novel Multimedia Player that Maintains Fluidity, Video Quality and Audio Quality

The system disclosed in the '849 Patent provides technological advantages over prior approaches by employing a novel multimedia player that maintains fluidity and quality by selecting multimedia objects that reflect available network bandwidth, autonomously adjusting selection and playback according to multimedia object parameters and supplied path identification, and using optimized decoding processes to maintain quality playback. *See, e.g., id.*, cls. 1, 6, 7. These operations are performed together and all are performed at the mobile client itself, rather than being handled at the server or network level. *Id.* This local control allows for adaptation to the device's processing capacity and network conditions, ensuring that video and audio playback remain synchronized and of acceptable quality.

Moreover, the decoder optimizations and strategies used by the multimedia player allow playback of live music and video on limited mobile devices:

In FIG. 1 the multimedia object player 10 is a downloadable Java (J2M2) applet and *the described audio and video decoder optimizations and strategies, FIGS. 7-13 and FIGS. 15-20, as applied to standard MPEG4 and AAC decoding make it possible for the multimedia object player 10 to playback live music and video, at acceptable frame rates (5-15 fps), on limited, cell phone handsets.* Java cannot take advantage of hardware capabilities in processing the

huge number of calculations and variables required for either MPEG4 decoding or AAC decoding.

Id., 18:64-19:9 (emphasis added). These optimizations “permit the playback of AAC and MPEG4 on current mobile client hardware” and “are a source of technological innovation and advance.” *Id.*; *see also id.*, 4:44-57.

The patent discloses a number of novel optimized decoding processes for video and audio decoding on limited mobile devices. *Id.*, 4:7-43. With respect to optimized video decoding, the patent describes, for example, optimized Huffman codebook methods for video decoding, texture buffering, motion compensation without bilinear interpolation, optimized pixel processing and dequantization, novel uses of Chen’s algorithm, novel YUV to RGB conversions, and decoding shortcuts. *Id.*, Figs.7-13; *see also generally id.*, 11:28-14:60. The patent further describes optimized audio decoding processes, including for instance optimized Huffman codebook methods for audio decoding, optimized IMDCT implementation, input short-cut processes specific to AAC Low Complexity (LC) audio decoding profile, IMDCT short window processing, and low energy gap timing. *Id.*, Figs.15-20; *see also generally id.*, 15:12-18:63.

In sum, the ’849 Patent describes a coordinated solution that overcomes the technical challenges of multimedia playback on mobile clients with constrained resources. Its combination of multimedia object transmission, content delivery, and

sophisticated multimedia player that employs decoding optimizations implemented entirely within the client itself represented a significant advance over the prior art at the time of the invention in 2005.

B. Claims

Independent claims 1, 6, and 7 (and claims dependent therefrom) of the ‘849 Patent all require a “multimedia player” that plays multimedia objects in a sequence “such that fluidity, video quality and audio quality are maintained.”

Claim 1 is representative:

A method comprising:

receiving audio and video segments encoded in a digital encoding format and with an encoding rate; wherein, said audio and video segments are associated with object parameters and supplied host path identification to form multimedia objects;

requesting by a multimedia player, transmission of said multimedia objects; wherein said multimedia objects are located using http and received by said multimedia player from servers using a wireless connection;

playing back received multimedia objects by the multimedia player, wherein the multimedia player is configured to play multimedia objects in a sequence such that fluidity, video quality and audio quality are maintained by

selecting a plurality of said multimedia objects that reflect available network bandwidth,

autonomously adjusting said selection and playback according to the multimedia object parameters and supplied host path identification, and by

utilizing optimized decoding processes to maintain quality playback.

* * *

The “playing back” limitation requires a multimedia player that maintains fluidity, video quality and audio quality by performing three operations— “selecting...,” “autonomously adjusting...,” and “utilizing optimized decoding processes.” Each operation is controlled by the multimedia player in order to maintain fluidity, video quality and audio quality.

C. Prosecution History

The ‘849 Patent issued from U.S. App. No. 16/181,285 (“the ‘285 Application”), filed on November 5, 2018. Ex.1001 at [21-22]. Following several rounds of rejections by the USPTO Examiner and claim amendments by the applicant, the ‘285 Application received a Notice of Allowance on July 2, 2020. According to the Examiner:

Independent claim 33 [which issued as claim 1] recites the following limitation: “wherein the multimedia player is configured to play multimedia objects in a sequence such that fluidity, video quality and

audio quality are maintained by selecting a plurality of said multimedia objects that reflect available network bandwidth, autonomously adjusting said selection and playback according to the multimedia object parameters and supplied host path identification”. This limitation of independent claim 1 in combination with the other limitations recited in the claim is the reason for allowance.

Ex.1008 at 589. Thus, the claimed “multimedia player,” in combination with the other claim elements, was identified as the “reason for allowance.” *Id.*

As explained below, these features (*e.g.*, the “multimedia player” that “is configured to play multimedia objects in a sequence such that fluidity, video quality and audio quality are maintained” by “selecting...,” “autonomously adjusting...,” and “utilizing optimized decoding processes to maintain quality playback”) of the invention disclosed and claimed in the ‘849 Patent distinguish it from the prior art relied upon by Petitioner in this proceeding.

D. Priority Date

The ‘849 Patent is a continuation of U.S. App. No. 15/016,821, filed on February 5, 2016, which published as U.S. Patent No. 10,171,873. Ex.1001, [63]. The ‘821 Application is a continuation of U.S. App. No. 11/107,952, filed on April 18, 2005, which is abandoned. *Id.* The earliest effective filing date of the claims of the ‘849 Patent is therefore April 18, 2005. Petitioners do not challenge the April 18, 2005 earliest effective filing date in the Petition. *See* Pet. at 6.

E. Person of Ordinary Skill in the Art (“POSA”)

The level of ordinary skill in the art as of the priority date for the inventions claimed in the ‘849 Patent is a person with a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and two to three years of experience in the design or development of (1) video processing systems, audio processing systems, and/or the equivalent; and (2) networking and communications systems, or the equivalent. Additional graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

III. CLAIM CONSTRUCTION

For purposes of solely this Preliminary Response, the Board need not construe any terms of the ‘849 Patent. Petitioner does not contend any terms require express construction. *See* Pet. at 6.

It should be noted, however, that the parties have offered proposed constructions for certain claim terms in the parallel district court litigation. Patent Owner submits the parties’ proposed constructions as Ex.2013 to ensure the Board has all relevant information. *See* Ex.2013 at 6-15 (listing parties’ proposed constructions). Nonetheless, because none of the prior art references relied on in the Petition disclose the limitations of independent claims 1, 6, and 7 (or claims dependent therefrom) under any reasonable construction of the terms, the Board

need not provide explicit constructions of any term for purposes of determining whether or not to institute IPR. Patent Owner reserves the right to provide its own constructions of the claim terms if IPR is instituted and/or in any other proceeding.

IV. SUMMARY OF REFERENCES RELIED ON BY PETITIONER

A. Carmel (Ex.1003)

Carmel relates to “real-time multimedia broadcasting over a network.” Ex.1003 at 1:11-13. More specifically, Carmel discloses systems for real-time broadcasting of multimedia data from a transmitting computer to one or more clients (*e.g.*, conventional personal computers or workstations) over a network. *Id.* at 2:1-21. The system divides a data stream into a sequence of “slices,” which are encoded and uploaded as files to a server. *Id.* Clients download the files and use file indices to maintain synchronization of the playback. *Id.*

B. Mattavelli (Ex.1004)

Mattavelli discloses “the Computational Graceful Degradation (CGD) approach for the implementation of video decoding.” Ex.1004 at 1. According to Mattavelli, “[t]he main rationale of the Computational Graceful Degradation (CGD) approach is to *provide results of poorer quality when the results of the desirable quality cannot be obtained* in real time.” Ex.1004 at 1 (emphasis added).

According to Mattavelli, the CGD approach results in “lower,” “poorer,” and “degraded” quality video. *See id.* at 1 (“The goal is to *provide results of possibly lower visual quality*, but respecting the real-time constraints, when the required

processing needs exceed the available processing resources.”) (emphasis added), 1 (“When the complexity of the task exceeds the available processing power, real-time services, possibly of *degraded quality*, are nevertheless guaranteed respecting all real-time constraints.”) (emphasis added), 1 (“In our case, the goal is to guarantee real-time video decoding with possible *degradation of the image quality, i.e. reduction of the peak signal to noise ratio (PSNR)*, without losing [sic] parts of the image content.”) (emphasis added), 4 (“Obviously, the execution of any f_i^{CGD} may *produce PSNR degradations in the reconstruction of some image parts....*”) (emphasis added).

C. Wang (Ex.1007)

Wang discloses a “baseline MPEG-4 AVC (Advanced Video Coding) decoder *based on an optimized platform-based design methodology*” that “*jointly optimize[s] the software and hardware design* of the decoder.” Ex.1007 at 1 (emphasis added). According to Wang, such a platform-based design “has multiple advantages including efficient system-level design methodology, short time-to-market, reusability of software and hardware IP blocks, feasible chip integration, etc. *Thus, the platform-based design methodology is adopted for this project.*” *Id.* at 2 (emphasis added). Wang summarizes the platform-based decoder as follows:

To address the problems of extended design cycle and less performance in the case of general purpose processor, *we propose an optimized platform-based architecture with macroblock (MB) level*

pipelining to implement a baseline MPEG-4 A VC decoder. On this platform, *a general purpose processor controls the decoding processes and dedicated acceleration modules are used to speed up the computationally intensive tasks.* The accelerators are realized with programmable logic modules to retain the flexibility. In addition, a specific system bus is used to remove the bottleneck for data communications between modules. Subsequently, the proposed architecture is evaluated on an ARM966 platform. Our results show that the optimized software without hardware acceleration can achieve a decoding rate up to 5 frames per second (fps) for the video sequences in QCIF resolution. *With the new dedicated accelerators, the decoding throughput is increased by about 30% to reach 6.6 fps on the average and is up to 10.3 fps for slow motion video sequences.*

Id. at 1 (emphasis added).

D. Wolters (Ex.1041)

Wolters relates to an audio compression standard called High-Efficiency Advanced Audio Coding (HE AAC). Ex.1041 at 1. Wolters “provides an implementation guideline and provides an overview of the technologies and system integration aspects of HE AAC.” *Id.* at 2.

E. Guo (Ex.1051), Yu (Ex.1061), and Forecast (Ex.1016)

Petitioner relies on Guo, Yu, and Forecast in Grounds 4 and 5. Specifically, Petitioner relies on: (1) Guo for “teachings on the use of multiple servers to serve multimedia segments ((possibly) recited in claim element 1[b.ii])”; (2) Yu for

“teachings regarding transcoding (recited in claims 3 & 8)”; and (3) Forecast for “teachings regarding splitting a video stream at an I-frame (recited in claims 4 & 5).” *See* Pet. at 78, 86. Petitioner does not rely on Guo, Yu, or Forecast for disclosures regarding the “playing back” (claim 1), “plays back” (claim 6), or “play back” (claim 7) limitations of the independent claims that are missing from Petitioner’s primary references (Carmel, Mattavelli, Wang, and Wolters), discussed below.

Given that Petitioner’s primary references (Carmel, Mattavelli, Wang, and Wolters) fail to disclose key elements of the independent claims and further that Petitioner does not attempt to argue that Guo, Yu, or Forecast supply those missing claim elements, Guo, Yu, and Forecast are inconsequential for purposes of determining whether to institute the Petition.

V. THE BOARD SHOULD DENY INSTITUTION OF THE PETITION¹

The Petition fails to establish a reasonable likelihood that any of challenged claims 1-9 of the ‘849 Patent are unpatentable based on any of Petitioner’s

¹ For purposes of this POPR, Patent Owner will address only the most glaring omissions in Petitioner’s purported invalidity grounds. The missing claim elements cannot be remedied by Petitioner’s expert’s conclusory statements that in many cases merely copy the Petition. The Petition for IPR should be denied.

Grounds 1-5. As explained further below, Petitioner’s challenge to independent claim 1 in each ground fails because the cited references do not disclose all limitations of the claim and a POSA would not have combined the teachings of certain references as suggested by Petitioner. Because claims 2-5 and 8-9 are dependent on claim 1 and include all of claim 1’s limitations, Petitioner’s invalidity attacks to those claims in each ground are deficient for the same reasons. And, with regard to independent claims 6-7, the Petition contends those claims are “materially the same as claim 1” and relies on the analysis of claim 1 for purported invalidity in each ground. *See* Pet. at 65-66. Petitioner’s challenges to independent claims 6-7 in each ground therefore also fail for the same reasons as claim 1.

As such, Patent Owner’s arguments in this Preliminary Response focus on independent claim 1 in each ground. Because the deficiencies identified below in Petitioner’s invalidity challenges to claim 1 are dispositive of all challenged claims in each ground, the Board can dispense with the Petition in its entirety.

A. Petitioner Fails to Establish a Reasonable Likelihood That Any of the Challenged Claims Are Obvious Over Carmel and Mattavelli (Ground 1)

1. The Carmel-Mattavelli combination does not disclose “utilizing optimized decoding processes to maintain quality playback”

Petitioner’s Carmel-Mattavelli combination fails because the references do not teach or suggest, alone or in combination, the “and by utilizing optimized

decoding processes to maintain quality playback” limitation of claim 1. According to Petitioner, “Carmel in view of Mattavelli teaches and renders obvious configuring [] Carmel’s multimedia player to utilize optimized decoding processes to play multimedia objects in a sequence such that fluidity and video and audio quality playback are maintained.” Pet. at 45. Not so.

As an initial matter, Petitioner concedes Carmel does not disclose “optimized decoding processes” that “maintain quality playback.” The Petition relies exclusively on Mattavelli for this limitation and does not identify any disclosure in Carmel that purportedly teaches or suggests this limitation. Pet. at 45-50. Nor could it. Carmel relates to real-time multimedia broadcasting over a network. Ex.1003 at 1:11-13. According to Carmel, clients “download and decode (decompress) files.” *Id.* at 10:46-47. There is, however, no disclosure in Carmel of specific decoding processes, let alone “optimized decoding processes” that “maintain quality playback.” Petitioner does not contend otherwise.

Given that Carmel is silent on “optimized decoding processes,” Petitioner attempts to rely on Mattavelli for this limitation, but its arguments miss the mark. *See* Pet. at 45-50. Mattavelli discloses a “Computational Graceful Degradation (CGD) approach for the implementation of video decoding.” Ex.1004 at 1. According to Petitioner, Mattavelli teaches “several decoding processes that can be simplified to save computational resources when needed” and “strategies for

determining when (and to what extent) such CGD techniques should be employed.” Pet. at 47.

Crucially, however, Mattavelli’s CGD approach for video decoding ***necessarily results in lower video quality***. According to Mattavelli, “[t]he main rationale of the Computational Graceful Degradation (CGD) approach is to ***provide results of poorer quality when the results of the desirable quality cannot be obtained*** in real time.” Ex.1004 at 1 (emphasis added). This is because Mattavelli’s process is explicitly designed to prioritize providing real-time services at the expense of visual quality. *See, e.g., id.* at 1 (“This approach enables the correct scheduling of real-time tasks even when the computational system load fluctuates above the system capabilities.”), 4 (“CGD features . . . guarantee real-time performance in presence of peaks of decoding complexity or as a way to ease the scheduling problems given by temporary fluctuations of the available processing power”). Mattavelli repeatedly states that the CGD approach results in “lower,” “poorer,” and “degraded” quality video:

- “The goal is to ***provide results of possibly lower visual quality***, but respecting the real-time constraints, when the required processing needs exceed the available processing resources.” *Id.* (emphasis added).

- “When the complexity of the task exceeds the available processing power, real-time services, possibly of *degraded quality*, are nevertheless guaranteed respecting all real-time constraints.” *Id.* (emphasis added).
- “In our case, the goal is to guarantee real-time video decoding with possible *degradation of the image quality, i.e. reduction of the peak signal to noise ratio (PSNR)*, without loosing [sic] parts of the image content.” *Id.* (emphasis added).
- “Obviously, the execution of any f_i^{CGD} may *produce PSNR degradations in the reconstruction of some image parts....*” *Id.* at 4 (emphasis added).

Mattavelli’s simulation results likewise demonstrated that use of CGD processes resulted in minimal—but some—image degradations. *Id.* at 4. Thus, it is clear from Mattavelli the CGD approach to decoding video invariably results in lower video quality.

This deficiency in Mattavelli is fatal to Petitioner’s argument. Claim 1 of the ‘849 Patent requires “utilizing optimized decoding processes to maintain quality playback.” Setting aside whether or not Mattavelli’s CGD approach is an “optimized decoding process,” the CGD process does not “maintain quality playback” as required by the claim. As explained above, Mattavelli is explicit that the intended result of decoding video using the CGD approach is lower quality.

E.g., id. at 1 (“[t]he main rationale . . . is to provide results of ***poorer quality***”) (emphasis added).

Petitioner does not address this fatal flaw in Mattavelli. For example, Petitioner never explains how a decoding process that is explicitly designed to result only in lower visual quality could “maintain quality playback” as claimed. Rather, Petitioner acts as though Mattavelli’s explicit statements on this point are irrelevant to the “maintain quality playback” portion of the claim limitation. Indeed, according to Petitioner, Mattavelli “teaches and renders obvious . . . maintaining the quality and fluidity of playback,” yet curiously cites a portion of Mattavelli that indicates decoding results in some degradation in the video/audio content. *See* Pet. at 48 (“respect[ing] the real-time constraints with the lowest degradation in the video/audio content”). Moreover, in summarizing Mattavelli, Petitioner acknowledges that “Mattavelli teaches CGD methods . . . ***where the visual quality of the video output is possibly temporarily degraded.***” *See* Pet. at 46 (emphasis added). Petitioner cannot escape Mattavelli’s explicit teachings by simply ignoring what they mean in the context of the claim language. *See, e.g., In re Wesslau*, 353 F.2d 238, 241 (CCPA 1965) (“It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill

in the art.”); *Axalta Coating Sys., LLC v. PPG Industries Ohio, Inc.*, IPR2022-00676, Paper 10 at 18-19 (PTAB Sept. 12, 2022) (denying institution in part because Petitioner failed to explain why a POSA would rely on certain teachings of a reference “in isolation” from reference’s other requirements).

Moreover, even if Mattavelli’s CGD approach could somehow be said to be an “optimized decoding processes to maintain quality playback,” the Carmel-Mattavelli combination still does not disclose all limitations of claim 1. As explained above, the “utilizing optimized decoding processes” limitation in claim 1 is one of three necessary operations controlled by the multimedia player “***such that fluidity, video quality and audio quality are maintained.***” *See supra*, §II.B. Thus, even if Mattavelli’s CGD approach somehow meets the “optimized decoding processes to maintain quality playback” limitation, Mattavelli’s CGD approach still must be used in the Carmel-Mattavelli combination to maintain “fluidity, video quality and audio quality.” But as explained above, Mattavelli’s approach does not maintain video quality—it does the exact opposite. Moreover, Mattavelli does not disclose audio decoding processes, so likewise does not maintain audio

quality.² Thus, the Carmel-Mattavelli combination cannot meet the “fluidity, video quality and audio quality are maintained” limitation of claim 1.

In summary, Carmel and Mattavelli do not teach or suggest the “optimized decoding processes to maintain quality playback” limitation of claim 1. Carmel is silent on “optimized decoding processes” (as Petitioner concedes) and Mattavelli’s CGD approach, if it is an “optimized decoding process” at all, does not “maintain quality playback.” And even if it is somehow found that Mattavelli does meet this limitation, the Carmel-Mattavelli combination does not meet the “fluidity, video quality and audio quality are maintained” limitation of claim 1. Accordingly, Petitioner’s Ground 1 fails.

B. Petitioner Fails to Establish a Reasonable Likelihood That Any of the Challenged Claims Are Obvious Over Carmel and Wang (Ground 2)

1. The Carmel-Wang combination does not disclose “utilizing optimized decoding processes to maintain quality playback”

Petitioner’s Carmel-Wang combination fails for the same reason as the Carmel-Mattavelli combination—neither Carmel nor Wang teaches or suggests,

² Petitioner’s conclusory argument—which fails to explain how Mattavelli’s video decoding processes could somehow be used to decode audio—relates to the “optimized decoding processes” limitation, not the “fluidity, video quality and audio quality are maintained” limitation.

alone or in combination, the “and by utilizing optimized decoding processes to maintain quality playback” limitation of claim 1. According to the Petition, “Ground 2 incorporates Ground 1’s analysis of Carmel’s teachings and adds Wang’s teachings” for certain elements of claim 1, including the “utilizing optimized decoding processes to maintain quality playback” limitation. *See* Pet. at 70, 72-73. In particular, Petitioner erroneously contends that “Carmel in view of Wang teaches and renders obvious utilizing optimized decoding processes to maintain quality playback.” *Id.* at 73.

Petitioner’s cursory, superficial argument that the Carmel-Wang combination discloses the “utilizing optimized decoding processes to maintain quality playback” is pasted below in its entirety:

Wang teaches a “platform-based MPEG-4 Advanced Video Coding (AVC) decoder” that optimizes the decoding hardware and software so that resource-constrained mobile devices can decode MPEG-4 AVC encoded data fast enough to utilize this compression standard and benefit from the higher image quality it can provide. (Wang, 51.) Wang provides that to address constraints from “the low computation power and small memory for mobile devices” it adopts a “platform[-] based design method to increase overall throughput.” (*Id.*) Wang repeatedly states that its proposed decoder has “optimized” the decoding processes that it uses to achieve this goal of increased throughput/decoding speed of the AVC codec. (E.g., Wang 51 (“[W]e optimize the decoder software by enhancing the frame buffer

management, boundary padding, and content aware inverse transform.”), 52 (describing “an optimized AVC decoder”), 53-54 (“Software Optimization” section 4.3).) Accordingly, Carmel in view of Wang teaches and renders obvious utilizing optimized decoding processes to maintain quality playback. (Polish, ¶¶279-281.)

Pet. at 72-73. As explained below, Petitioner’s argument is plainly insufficient to establish a reasonable likelihood that the claims are unpatentable.

As is clear from the quoted portion of the Petition above, Petitioner again admits Carmel does not disclose “optimized decoding processes” that “maintain quality playback.” Petitioner never contends that Carmel discloses any aspect of this limitation. Rather, Petitioner attempts to rely on Wang alone for these elements. *Id.* at 70, 72-73.

The Petition does not, however, demonstrate that Wang discloses “utilizing optimized decoding processes to maintain quality playback.” Setting aside whether or not Wang’s platform-based decoder is an “optimized decoding processes,” Wang does not disclose “utilizing optimized decoding processes to ***maintain quality playback***,” as required by the claim. Petitioner ignores the “maintain quality playback” portion of the claim limitation entirely. As shown above, beyond a conclusory statement in the last sentence, Petitioner does not mention the phrase “maintain quality playback” in this portion of its meager argument. *See id.* at 72-73. Nor does it even attempt to identify any teachings in Wang related to

maintaining quality playback. Instead, the portions of Wang cited in the Petition make clear that *Wang's decoder is intended to improve throughput/decoding speed, not maintain quality playback*. See *id.* at 72 (“platform [-] based design method *to increase overall throughput*”), 72 (“its proposed decoder has ‘optimized’ the decoding processes that it uses *to achieve this goal of increased throughput/decoding speed* of the AVC codec”). Petitioner never contends that improving throughput/decoding speed is somehow equivalent to maintaining quality playback. Because Ground 2 of the Petition fails to address this element, it necessarily cannot show a reasonable likelihood the claim is invalid.

Nor does Wang itself indicate that its platform-based decoder “maintain[s] quality playback.” Wang consistently explains that the decoder attempts to increase throughput. See, e.g., Ex.1007 at 1 (“With this methodology, we jointly optimize the software and hardware design of the decoder. *Overall decoding throughput is increased* by synchronizing the software and the dedicated co-processors.”) (emphasis added), 1 (“With the new dedicated accelerators, *the decoding throughput is increased* by about 30% to reach 6.6 fps on the average and is up to 10.3 fps for slow motion video sequences.”) (emphasis added), 4 (summarizing experimental results related exclusively to “Decoding Throughput”), 4 (“The application specific circuit design methodology includes the task partitioning and scheduling in the MB-level to *enhance the overall decoding throughput*.”)

(emphasis added). The only time Wang even mentions “quality” is in the introduction in relation to MPEG-4 Advanced Video Coding (*see id.* at 1)—“quality” is never discussed in relation to Wang’s decoder, let alone that the decoder “maintains quality playback,” as claimed. Because Wang does not disclose this limitation and Petitioner never even argues otherwise, Ground 2 fails.

Moreover, even if Wang’s platform-based decoder could somehow be said to be an “optimized decoding processes to maintain quality playback,” the Carmel-Wang combination still does not disclose all limitations of claim 1. As explained above, the “utilizing optimized decoding processes” limitation in claim 1 is one of three necessary operations controlled by the multimedia player “***such that fluidity, video quality and audio quality are maintained.***” *See supra*, §II.B. Thus, even if Wang’s platform-based decoder somehow meets the “optimized decoding processes to maintain quality playback” limitation, Wang’s decoder still must be used in the Carmel-Wang combination to maintain “fluidity, video quality and audio quality.” But as explained above, Wang’s decoder does not maintain video quality—it attempts to improve throughput and decoding speed. Moreover, Wang does not disclose audio decoding processes, so likewise does not maintain audio quality. Thus, the Carmel-Wang combination cannot meet the “fluidity, video quality and audio quality are maintained” limitation of claim 1.

At bottom, Petitioner’s sparse, superficial argument on this limitation in Ground 2 is insufficient to demonstrate a reasonable likelihood of invalidating any of the challenged claims. Simply put, Carmel and Wang do not teach or suggest the “optimized decoding processes to maintain quality playback” limitation of claim 1. Petitioner concedes Carmel does not teach this limitation. And Wang’s platform-based decoder does not “utiliz[e] optimized decoding processes to maintain quality playback.” These deficiencies are fatal to Petitioner’s Ground 2.

2. A POSA would not have been motivated to combine Carmel and Wang

Setting aside the fact that the Carmel-Wang combination does not disclose all elements of claim 1, Petitioner’s Ground 2 fails for another reason—a POSA would not have been motivated to combine the teachings of these references.

Carmel relates to systems for real-time multimedia broadcasting over a network. Ex.1003 at 1:11-13. According to Carmel, an object of the invention is to “provide substantially continuous, high-bandwidth data streaming over a network using common, existing server and network infrastructure.” *Id.* at 1:51-54. Clients in Carmel’s system “preferably comprise conventional personal computers or workstations.” *Id.* at 6:38-40. By contrast, Wang relates to a platform-based decoder that relies on improved hardware and software. Ex.1007 at 1.

Petitioner’s proposed Carmel-Wang combination is fundamentally incompatible with the teachings and goals of Carmel. A person of ordinary skill in

the art would recognize that incorporating Wang’s hardware-dependent decoder into Carmel’s system would defeat one of the primary purposes of Carmel—namely, enabling seamless streaming to diverse client devices (*i.e.*, ***conventional*** personal computers or workstations). *See, e.g., Deere & Co. v. David’s Dozer V-Loc System, Inc.*, IPR2024-01442, Paper 10 at 28-30 (PTAB March 18, 2025) (denying institution where proposed combination rendered reference’s system “inoperable for its intended purpose”).

There is no logical reason why an ordinarily skilled artisan would look to modify Carmel’s system for broadly compatible streaming over common infrastructure by requiring clients to obtain and install Wang’s specific platform-based decoder in order to receive streamed multimedia. Petitioner’s conclusory assertions that Wang’s “optimized decoding software and hardware design to decode AVC-encoded data” could simply be integrated into client devices in Carmel’s system ignore the realities of what the references teach and the goals and purposes of each. Its arguments thus fail to articulate any reasoned basis why such a combination would have been desirable or obvious at the time of the invention. Accordingly, because a POSA would not have combined the teachings of Carmel and Wang, Ground 2 of the Petition fails.

C. Petitioner Fails to Establish a Reasonable Likelihood That Any of the Challenged Claims Are Obvious Over Carmel, Wang, and Wolters (Ground 3)

Although Petitioner’s Ground 3 “incorporates the analysis in Grounds 1 and 2 of Carmel and Wang’s teachings” and adds Wolters’s teachings for the “optimized decoding processes” limitation of claim 1 (*see* Pet. at 78), the outcome is the same—Ground 3 does not demonstrate a reasonable likelihood that any of the challenged claims are invalid. In Ground 3, Petitioner specifically contends that “to the extent that ‘optimized decoding processes’ is interpreted to require use of both optimized video and audio decoding processes, this element is rendered obvious by the combined teachings of Carmel, Wang, and Wolters.” *Id.* at 79. Petitioner is wrong.

As explained above, the “playing back” limitation of independent claim 1 (and the corresponding limitations of independent claims 6 and 7) require, among other things, a “multimedia player” that is “configured to play multimedia objects in a sequence such that fluidity, video quality and audio quality are maintained” by controlling each of the “selecting,” “autonomously adjusting,” and “utilizing optimized decoding processes” limitations. The plain language of the claim therefore requires that both “video quality” and “audio quality” are maintained. Because each of the “selecting,” “autonomously adjusting,” and “utilizing optimized decoding processes” limitations are performed to “maintain” “video

quality” and “audio quality,” “optimized decoding processes” must include both optimized video and audio decoding processes.

Given that both optimized video and audio decoding processes are required, Ground 3 is deficient for the same reasons discussed above for Ground 2. More particularly, Ground 3 purports to incorporate Wolters teachings regarding audio decoding processes. Petitioner identifies nothing in Wolters related to optimized video decoding processes. *See* Pet. at 78-80. Therefore, the addition of Wolters in Ground 3 does not resolve the deficiencies identified above regarding Ground 2—namely, Carmel and Wang’s failure to disclose the “utilizing optimized decoding processes to maintain quality playback” with respect to video decoding and the lack of motivation to combine those references. As such, Ground 3 fails for the same reasons discussed above regarding Ground 2.

D. Petitioner Fails to Establish a Reasonable Likelihood That Any of the Challenged Claims Are Obvious Over Carmel, Wang, Wolters, Guo, Yu, and Forecast (Ground 4) or Carmel, Mattavelli, Guo, Yu, and Forecast (Ground 5)

Grounds 4 and 5—six and five reference combinations, respectively—simply incorporate additional references to attempt to fill holes in the Petition’s other deficient grounds. Namely, Ground 4 “incorporates the analysis of Carmel, Wang, and Wolters in Grounds 1-3” and adds Guo for the “wherein said multimedia objects are located using http and received by said multimedia player from servers using a wireless connection” limitation of claim 1, Yu for dependent

claims 3 and 8, and Forecast for dependent claims 4 and 5. *See* Pet. at 80. Ground 5 “incorporates the analysis of Carmel and Mattavelli in Ground 1” and adds Guo, Yu, and Forecast for the same reasons. *Id.* at 86.

Petitioner does not rely on the teachings of Guo, Yu, or Forecast to address any of the missing limitations of independent claim 1 identified above with regard to Grounds 1-3. Therefore, Grounds 4 and 5 are deficient for the same reasons discussed above.

VI. CONCLUSION

Patent Owner respectfully submits that the evidence presented in the Petition fails to establish a reasonable likelihood Petitioner will prevail in establishing that any of the Challenged Claims of the ‘849 Patent are unpatentable under 35 U.S.C. § 314(a). Patent Owner therefore respectfully requests that the Board deny the Petition in its entirety.

Dated: July 17, 2025

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that the foregoing Patent Owner's Preliminary Response complies with the type-volume limitations of 37 C.F.R. §42.24 because it contains 6,700 words (as determined by the Microsoft Word word-processing system used to prepare the Petition), excluding the parts of the Petition exempted by 37 C.F.R. §42.24.

Dated: July 17, 2025

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served on the date below via email to the following email addresses:

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