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Paper 17
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DUODECAD IT SERVICES LUXEMBOURG S.À.R.L.,
FRIENDFINDER NETWORKS INC., AND
STREAMRAY INC.,
Petitioner,

v.

WAG ACQUISITION, LLC,
Patent Owner.

Case IPR2015-01036
Patent 8,364,839 B2

Before GLENN J. PERRY, TREVOR M. JEFFERSON, and BRIAN J. McNAMARA, *Administrative Patent Judges*.

PERRY, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

This is a Final Written Decision entered in an *inter partes* review instituted pursuant to 35 U.S.C. § 314. For reasons discussed below, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 3, 4, 6, 8, 10, 11, 13, 15, 17, 18, and 20 of U.S. Patent No. 8,364,839 B2 (Ex. 1001, "the '839 patent") are unpatentable. However, Petitioner has not established by a preponderance of evidence that claims 7, 14, and 21 are unpatentable.

A. Procedural History

Duodecad IT Services Luxembourg S.à r.l., Friendfinder Networks Inc., and Streamray Inc., (collectively, "Duodecad" or "Petitioner") filed a Petition (Paper 2, "Pet."), to institute an *inter partes* review of claims 1–21 (the "challenged claims") of U.S. Patent No. 8,364,839 ("the '839 patent"). 35 U.S.C. § 311. WAG Acquisition, LLC ("WAG" or "Patent Owner") timely filed a Preliminary Response (Paper 6, "Prelim. Resp.") contending that the petition should be denied as to all challenged claims. We instituted an *inter partes* review of claims 1, 3, 4, 6–8, 10, 11, 13–15, 17, 18, 20 and 21 of the '839 patent.

After institution of trial, Patent Owner timely filed a Patent Owner Response (Paper 11, "Resp.") and Petitioner filed a Reply (Paper 13, "Reply"). We heard oral argument on July 18, 2016. A transcript of the argument was entered into the record. Paper 16 ("Tr.").

B. Real Parties in Interest

Petitioner identifies the following real parties-in-interest: Docler USA, LLC, Duodecad IT Services Luxembourg S.à r.l., Docler Holding S.à r.l., Gattyàn Family Irrevocable Trust (including Mr. György Gattyàn in his capacity as Grantor and Investment Advisor), Duodecad IT Services Hungary KFT, Gattyàn Group S.à r.l., FriendFinder Networks Inc., StreamRay Inc., WMM, LLC, WMM Holdings, LLC, Multi Media LLC, Various, Inc., Interactive Network, Inc., Data Tech Global, LLC, and DataTech Systems, LLC. Pet. 2. Patent Owner does not challenge Petitioner's statement of real parties in interest.

C. Related Matters

Petitioner states that Patent Owner asserted the '839 patent in eight pending litigations: *WAG Acquisition, LLC v. Sobonito Investments, Ltd.*, Case No. 2:14-cv-1661-ES-JAD (D.N.J.); *WAG Acquisition, LLC v. Multi Media, LLC*, Case No. 2:14-cv-2340-ES-JAD (D.N.J.); *WAG Acquisition, LLC v. Data Conversions, Inc.*, Case No. 2:14-cv-2345-ES-JAD (D.N.J.); *WAG Acquisition, LLC v. Flying Crocodile, Inc.*, Case No. 2:14-cv-2674-ES-MAH (D.N.J.); *WAG Acquisition, LLC v. Gattyàn Group S.à r.l.*, Case No. 2:14-cv-2832-ES-JAD (D.N.J.); *WAG Acquisition, LLC v. MFCXY, Inc.*, Case No. 2:14-cv-3196-ES-MAH (D.N.J.); *WAG Acquisition, LLC v. FriendFinder Networks Inc.*, Case No. 2:14-cv-3456-ES-JAD (D.N.J.); and *WAG Acquisition, LLC v. Vubeology, Inc.*, Case No. 2:14-cv-04531-ES-JAD (D.N.J.). Pet. 2.

In addition to this *inter partes* review, Petitioner filed petitions for *inter partes* reviews of U.S. Patent No. 8,185,611 ("the '611 patent"), U.S.

Patent No. 8,122,141 and U.S. Patent No. 8,327,011. The '839 patent states on its face that it is a continuation of the '611 patent, involved in IPR2015-01035. Prelim. Resp. 13, Ex. 1001. Petitions in related *inter partes* reviews IPR2015-01033 (U.S. Patent No. 8,327,011), IPR2015-01035 (U.S. Patent No. 8,185,611), and IPR2015-01037 (U.S. Patent No. 8,122,141) were denied.

D. The '839 Patent

1. Described Invention

The '839 patent, titled "Streaming Media Delivery System," issued on January 29, 2013. It describes users viewing or listening to streaming content over Internet connections encounter interruptions ("drops outs") due to transmission delays and losses. Ex. 1001, 2:16–23. The '839 patent addresses a "need for improved systems and methods for delivering streaming content over the Internet or other communications medium, which facilitate continuous transmission of streaming content, respond on demand without objectionable buffering delay, and perform without disruption or dropouts." *Id.* at 3:24–29.

The '839 patent tells us that Internet streaming, as practiced in the prior art, relied on a server transmitting streaming media continuously at the playback rate of the media, where the playback rate corresponds to the frames-per-second at which the media was encoded for playback at normal speed. *Id.* at 1:30–2:15. Data in each frame can be encoded using Constant Bit Rate (CBR) or Variable Bit Rate (VBR) encoding. *Id.*

A client device for receiving and playing a streamed transmission (e.g., a computer running media player software) typically used a playback

buffer (user buffer) for collecting frames of data being streamed. The client would not begin playback until the user buffer was filled to a specified level. The user buffer thus provided a reservoir of data available in the event of packet loss or delay, corresponding to the playback time of the amount of media initially buffered. If losses or delays occurred during transmission, the content of the user buffer (reservoir of data) would shrink as playback continued during the period of such losses or delays. See, e.g. Ex. 1001, 2:16−38. Because playback continued at the playback rate, the buffer did not refill after depletion, other than by suspending playback and waiting for it to refill. Startup of playback always had to wait for the user buffer initially to accumulate data to a specified level, which required a noticeable startup delay.

The '839 patent approach uses the server's built-in transport mechanism, e.g., the server's TCP stack, as a control mechanism. *Id.* at 8:9–13. The server buffer sends data, via the transport mechanism, to the user buffer. At any time, the connection between the server and user buffers, as moderated by the server's transport mechanism, sends as much data as the transport mechanism will accept, and sends the data as fast as the connection will allow. *Id.* at 10:24–33.

The server buffer is pre-filled before a user joins the stream and transmission starts. *Id.* at 8:31–44. Pre-filling of the server buffer can be rapid if the data comes from disk storage. If joining a live (real time) transmission in progress, the server buffer is already filled at the time the user joins the stream. Once the server buffer is sufficiently full, the server buffer sends its contents, as fast as the connection will support, to the user

system, to rapidly fill the "user buffer" (the playback buffer at the client). The user system can then start playing almost instantaneously. *Id.*

After initial fast transfer of the server buffer contents when the user connects, the system enters a steady state in which (1) the server buffer continues to fill at the playback frame rate, and (2) the server buffer effectively runs at "empty" in this steady state, because all data going into it is sent immediately to the client as fast as possible by the transport mechanism. In the steady state condition, because data elements inserted into the buffer from the source are sent immediately out to the client, the transmission speed from the server buffer matches the constant fill rate of the server buffer. *Id.* at 7:65–8:4. The user buffer continues to be filled at the playback rate while playing out at the same rate, and thus it remains full.

During steady state, Transmission Control Protocol (TCP) senses if a transmission interruption or delay occurs and temporarily stops accepting data, causing data to "back up" in the server buffer and correspondingly to deplete in the user buffer. *Id.* at 8:4–8. When the interruption or delay clears, the "backed up" data is sent to the client side as fast as the connection will support, emptying the accumulated data in the server buffer, restoring the user buffer, and resuming the steady state operation. *Id.* at 10:24–33.

For multiple user streaming, the '839 patent describes that a "unique pointer," assigned to each user, identifies by "serial number" either the last data element that was sent to that user, or the next data element to be sent. Ex. 1001, 11:16–18.

2. Illustrative Claim

Claim 1 is illustrative:

1. A method for distributing streaming media via the Interact [sic] to at least one user system of at least one user, the streaming media comprising a plurality of sequential media data elements for a digitally encoded audio or video program encoded for playback at a playback rate, the user system being assumed to have a user buffer for receiving media data and facilities to play back the streaming media at the playback rate for viewing or listening by said at least one user, from a server having a server buffer for buffering sequential media data elements, said method comprising:

loading the server buffer with streaming media data elements;

sending an initial amount of streaming media data elements to the user system at an initial sending rate more rapid than the playback rate; and

thereafter, sending further streaming media data elements to the user system at about the playback rate and filling the server buffer or moving a data window through the server buffer at about the playback rate;

wherein the initial amount of streaming media data elements, and the initial sending rate, are sufficient for the user system to begin playing back the streaming media while the user buffer continues to fill;

wherein the further streaming media data elements are received at about the playback rate by the user system if there are no interruptions in the transmission of streaming media data elements between the server and the user system; and

wherein said method further comprises detecting if any interruptions in the transmission of streaming media data elements between the server and the user system have occurred such that streaming media data elements that have been sent by the server to the user system have been delayed or not received by the user system.

E. Instituted Challenges

We instituted *inter partes* review the grounds as set forth in the following table:

Reference(s)	Basis	Claim(s) challenged
Chen[1] and Chen File History ("FH")[2]	35 U.S.C. § 103	1, 4, 6–8, 11, 13–15, 18, 20, and 21
Chen, Chen FH, and ISO-11172[3]	35 U.S.C. § 103	3, 10, and 17

II. DISCUSSION

A. Claim Interpretation

The Board interprets unexpired claims using the "broadest reasonable construction in light of the specification of the patent in which [they] appear[]." 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard as the claim interpretation standard to be applied in *inter partes* reviews). Under this standard, we interpret claim terms using "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). We presume that claim terms have their ordinary and customary meaning.

[1] U.S. Patent 5,822,524, issued October 13, 1998 (Ex. 1004, "Chen").
[2] File History of U.S. Application 505,488 (Ex. 1005, "Chen FH").
[3] International Standard Reference number ISO/IEC 11172-1:1993(E) (Ex. 1006, "ISO-11172").

See Trivascular, Inc. v. Samuels, 812 F.3d 1056, 1062 (Fed. Cir. 2016) ("Under a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history."); *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) ("The ordinary and customary meaning is the meaning that the term would have to a person of ordinary skill in the art in question." (internal quotation marks omitted)). A patentee, however, may rebut this presumption by acting as his or her own lexicographer, providing a definition of the term in the specification with "reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

In our Decision to Institute, we made preliminary constructions of the following claim terms/phrases: "playback rate," "at about the playback rate" "the initial amount of streaming media data elements, and the initial sending rate, are sufficient for the user system to begin playing back the streaming media while the user buffer continues to fill," "sending to the user system [the] unsent streaming media elements in the server buffer at a sending rate more rapid than the playback rate," and "provided from a live broadcast;" and "for each of the plurality of user systems, maintaining a record of the last streaming media data element that had been sent to the user system."

The parties have not further argued claim construction and we hereby adopt our preliminary constructions as final along with our reasoning expressed in our Decision to Institute.

B. Overview of the References

1. Overview of Chen (Ex. 1004)

Chen describes a system for the "just-in-time" retrieval of multimedia files over a computer network. Ex. 1004, [54]. Figure 1 of Chen is reproduced below.

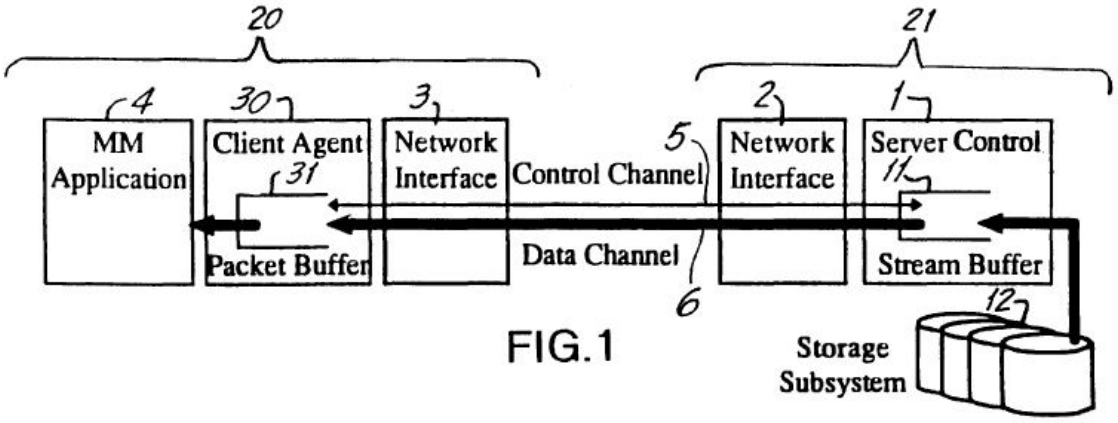

FIG.1

Figure 1 is a schematic illustration showing client machine 20 receiving data streamed from server machine 21 over a network. Data packets are loaded into a "server control stream buffer" 1 for streaming over data channel 6. Streamed packets are accumulated in "client agent packet buffer" 31 for playback. *Id.* at 4:21, 4:65−5:44, Fig. 1.

Chen describes "normal," "rush," and "pause" transmission modes for streaming from a server to a user. *Id.* at 6:1−15 (emphasis omitted). It describes a "water mark" model for buffering streaming content. *Id.* at 6:16−54. The server buffer is like a water bucket having high and low "water marks." *Id.* Water exits the bucket through a spout similar to data exiting a packet buffer as its content is delivered to a user. *Id.* When water in the bucket is at a level between the water marks, transmission occurs in the normal mode. *Id.* The normal mode carries out frame level pacing, i.e.,

transmission at the playback rate. *Id.* at 10:3−4. When the amount of data falls below the low mark, the transmission mode changes to "rush." *Id.* at 6:42−47 (emphasis omitted). In rush mode, frame level pacing is ignored and data is transmitted as fast as possible. *Id.* at claims 18, 29; Figure 6.

2. Overview of Chen FH (Ex. 1005)

Chen FH shows that during prosecution of the application eventually issuing as Chen, patent applicant submitted a Declaration in accordance with 37 C.F.R. § 1.131 for the purpose of predating ("swearing behind") a cited reference. Ex. 1005, 77−79. That Declaration references a "Quick Video Server" ("QVS Sever") exhibit document alleged to describe a commercial embodiment of Chen. *Id.* at 77. The Declaration includes a claim chart mapping the technical documents provided for the QVS server to the then-pending claims. *Id.* at 112–119. Page 86 of the Chen FH describes a protocol used by the QVS server and is reproduced below.

QVS Client Server Protocol

1. MMIO Procedure

Player	Client Agent (CA)	Server Control (SC)	Comments
Open File →	Relay the command	Admissible? • Server B/W? • File permission?	If ACK, • Establish Qs • Read data from disk and rush them to CA
return code ←	← ACK or NACK	← ACK or NACK	
Close File →	Relay the command	Consistency check?	• Take down Qs • Update control blocks
return code ←	← ACK or NACK	← ACK or NACK	
Read →	• If data in Q_{CA}, reply with the data and the return code • Otherwise, wait for the data and then reply		
return code ←			
Seek →	(Refer to the QVS Seek Processing description)		
return code ←			
Write	Not supported initially		

2. Client Server Pacing

- Server Control (SC) transmits data in three modes:
  1. Rush mode: transmit data as fast as possible, subject to the Round-Robin sharing with other active streams
  2. Normal mode: transmit data according to time and player's playout rate
  3. Pause model: temporarily halt the transmission

- Client Agent (CA) determines the appropriate mode based on its buffer status. It changes mode when its buffer size crosses certain thresholds as follows:

Client Agent Q_{CA} Size	Mode Change
Crossing γ_{RN} from below	Switch from RUSH to NORMAL
Crossing γ_{NP} from below	Switch from NORMAL to PAUSE
Crossing γ_{PN} from above	Switch from PAUSE to NORMAL
Crossing γ_{NR} from above	Switch from NORMAL to RUSH

The values of the thresholds, i.e., γ_{RN}, γ_{NP}, γ_{PN}, and γ_{NR} are critical to the performance of the system. The traditional way of setting these values are based on

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The QVS Server Protocol describes "pause," "normal," and "rush" transmission modes. Rush mode is described as "transmit data as fast as possible, subject to the Round-Robin sharing with other active streams." Ex. 1005, 86.

3. Overview of ISO-11172 (Ex. 1006)

ISO-11172 is a standard published by the International Organization for Standardization ("ISO") describing coding of moving pictures and associated audio for digital storage media (MPEG-1). Petitioner relies upon ISO-11172 only to the extent that this standard describes encoding at a "constant bit rate" or at a "variable bit rate." Pet. 60.

C. Availability of Chen FH as Prior Art

1. Petitioner's Contentions

The Petition states that Chen FH was publicly available upon grant of Chen, and thus was publicly available as of October 13, 1998. Pet. 14−15. Per 37 C.F.R. § 1.11(a), as of the date the Chen patent issued, the file history of Chen became "open to inspection by the public, and copies [thereof could] be obtained upon the payment of the [prescribed] fee." *Id.* As such, Chen FH would be prior art under at least 35 U.S.C. § 102(b).

According to Petitioner, "[t]he person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art." *Custom Accessories, Inc. v. Jeffrey-Allan Indus.*, 807 F.2d 955, 962 (Fed. Cir. 1986). According to Dr. Polish, Petitioner's Declarant, the Chen File History was publicly available upon grant of Chen, and thus was publicly available as of October 13, 1998. Ex. 1003 ¶ 46. Thus, according to Petitioner, the Chen FH was "otherwise made available" and qualifies as a publically accessible prior art publication. Reply 3.

Petitioner also argues that Chen FH was "disseminated," even though it is sufficient that the Chen FH was "otherwise made available." Thus,

according to Petitioner, Chen FH qualifies as a publically accessible prior art publication. Reply 3–4.

Petitioner also argues that Chen provides a "roadmap" to the Chen FH. Reply 4. According to Petitioner, the Chen FH would be found by persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence. The proper inquiry is whether such a person—after finding and recognizing the clear relevance of Chen to the subject matter of the '839 patent—would look to Chen's file history.

Petitioner argues that, framed properly, such a person is faced with just one file history to consider. According to Petitioner, exercising reasonable diligence includes looking at a single file history of the subject patent. Petitioner relies upon the Federal Circuit's endorsement of one of ordinary skill's use of the file history to understand the scope of an issued patent. *Takeda Pharm. Co. v. Teva Pharm. USA, Inc.*, 668 F. Supp. 2d 614, 621 n.16 (D. Del. 2009). "The prosecution history constitutes a public record of the patentee's representations concerning the scope and meaning of the claims, and competitors are entitled to rely on those representations when ascertaining the degree of lawful conduct, such as designing around the claimed invention." *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 957 (Fed. Cir. 2000).

Dr. Polish states that one of ordinary skill reading Chen would reasonably look to Chen's file history. Ex. 1015 at 47:8–11 ("[Y]ou would be motivated to look to that file history for a clarification of how the startup would be.") Pet. 22 (discussing motivation); Ex. 1003 ¶ 55.

Petitioner argues that Patent Owner misreads the Federal Circuit precedent when it suggests that there must be something "in Chen to indicate

that someone should look further, beyond the disclosure[.]" Resp. 9. Petitioner argues that Patent Owner would require Chen to include a statement explicitly referencing that more information is available in the file history. Petitioner argues that Patent Owner's position is unreasonable. Petitioner argues that the specific information that eventually becomes part of a file wrapper is not known at the time the specification is written—therefore such a specific reference cannot be made in the specification. According to Petitioner, in general, all file histories include additional information about their resultant patents; requiring generic boiler plate statements in all specifications that the patent has a file history would be unnecessarily stating the obvious.

Petitioner relies further upon *Bruckelmyer v. Ground Heaters, Inc.*, 445 F.3d 1374, 1379 (Fed. Cir. 2006) holding that a person of ordinary skill in the art would have located a Canadian patent application (its file history) because an issued patent (of that application) had the same subject matter of interest. Petitioner argues that in *Bruckelmyer*, it was the subject matter of the disclosure in the prior art patent and the patent-at-issue (thawing frozen ground) that was found to be the "roadmap to the application file" that included the additional disclosure not found in the prior art patent. *Id.* Petitioner argues that no express suggestion to search the file history was present in the issued patent or necessary to the holding in *Bruckelmyer*. According to Petitioner, the simple fact that the prior art patent disclosed subject matter of interest was found to be sufficiently pertinent to "conclude that no reasonable trier of fact could find that a person of ordinary skill in the art interested in the subject matter of the patents in suit and exercising reasonable diligence could not locate the [] application." *Id.*

Similarly here, Petitioner argues, the Chen issued patent discloses the same subject matter as the '839 patent. Petitioner argues that a person of ordinary skill in the art working in Chen's field (i.e., the field of the '839 patent) would have located the related Chen FH. Petitioner argues to conclude otherwise would, as noted by the *Bruckelmyer* Court, be "inconsistent" with the "[c]ontrolling" decision in *In re Wyer*, 655 F.2d 221, 226 (CCPA 1981). *Bruckelmyer*, 445 F.3d at 1379. In *Wyer*, Petitioner argues, the court held that a person of ordinary skill in the art would have located "a foreign patent application" based only on "information in a published abstract." *Bruckelmyer*, 445 F.3d at 1378-1379 (citing to *Wyer*, 655 F.2d at 222). Petitioner argues that, like *Bruckelmyer*, there is no dispute here that the Chen patent was classified and indexed, and the information provided in the Chen patent goes well beyond that of the abstract of *Wyer* found to be a sufficient "roadmap." Thus, Petitioner concludes, a person of ordinary skill in the art exercising reasonable diligence could locate the Chen FH. Reply 4–7.

Petitioner further argues that Patent Owner misunderstands the role of the Examiner. Reply 7. According to Petitioner, without any of its own evidence of one of ordinary skill in the art, Patent Owner resorts to a straw man argument as to whether a Patent Examiner is required to "indiscriminately review the file history of every potential Section 102 or 103 patent reference uncovered in a search." Resp. 7–8. Petitioner argues that Patent Owner wrongly contends that examiners do not review file histories for prior art. *Id.* at 8.

Section 901 of the MPEP, titled "Prior Art," expressly provides that "[i]n the examination of an application, it is sometimes necessary to inspect

the application papers of some previously abandoned application (provisional or non-provisional) or granted patent." MPEP 901.01(a). "[M]atter canceled from the application file wrapper of a U.S. patent or U.S. application publication may be used as prior art as of the patent or publication date, respectively, in that it then constitutes prior public knowledge or prior public availability under pre-AIA 35 U.S.C. 102(a) or 35 U.S.C. 102(a)(1)." MPEP 901.01 (emphasis added); *see also* MPEP 2127 ("Domestic and Foreign Patent Applications as Prior Art."). The MPEP goes on to instruct examiners how to obtain application papers to inspect them for use as prior art. *See* MPEP 901.01(a). A Patent Examiner may be considered to be one of ordinary skill in the art. *See St. Clair Intellectual Prop. Consultants, Inc. v. Canon Inc.*, 412 Fed. Appx. 270, 276 (Fed. Cir. 2011); *In re Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002). And, an Examiner has reason to look to application papers for prior art, as evidenced by the MPEP discussed above.

2. Patent Owner's Contentions

Patent Owner admits that "[i]t is undisputed that the Chen FH was available from the PTO on request." Resp. 6. Although Patent Owner acknowledges (Resp. 3) that Chen FH could be requested from the PTO as of the date of issuance of the Chen patent, Patent Owner argues that Chen FH is not a "printed publication" pursuant to 35 U.S.C. § 102(b). Resp. 3–10. According to Patent Owner, the law requires that a purported printed publication be either "disseminated" or "otherwise made available" to the extent that a person of ordinary skill in the art exercising reasonable diligence could locate it. Resp. 4–5.

According to Patent Owner, reasonable diligence at the time of the invention would not have led to Chen FH because there is no indication, whether in the abstract or elsewhere in the Chen patent, of the existence of the reference subject matter in Chen FH. Resp. 9. Patent Owner argues that there is nothing in Chen to indicate that someone should look further, beyond the disclosure in the specification itself, to review the file history for some additional information underlying the patent application. *Id.* According to Patent Owner, a researcher would have no way of knowing to look for such additional disclosure and nothing in the Chen patent, whether in the abstract or elsewhere provides any clue, much less a "roadmap" to such additional disclosure. *Id.* Patent Owner argues that a researcher exercising reasonable diligence would have no reason based on what is in the Chen reference itself, to look behind the patent specification in the reasonable expectation of finding additional relevant disclosure. *Id.* Patent Owner also contends that Examiners do not review file histories for prior art. Resp. 8.

3. Analysis

The Chen patent issued prior to the development of electronic "image file wrapper" retrieval through the USPTO's online PAIR system (USPTO's online file history retrieval system), and indeed to this day Chen FH is not accessible through PAIR.

A given reference is publicly accessible upon a satisfactory showing that such document has been [1] disseminated, or [2] otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it. *SRI Int'l, Inc. v. Internet Sec. Sys., Inc.*, 511 F.3d 1186, 1194–95 (Fed. Cir. 2008.

Even though Chen issued prior to the USPTO PAIR system, Chen FH was and remains easily requisitioned by any interested person from the USPTO by making the appropriate request and paying the appropriate fee.

Petitioner states, without contradiction, that when one orders the file history of the Chen patent, the paper describing rush mode (page 86 of the FH) automatically comes with the file history. There is nothing extra to order. It is an actual part of the file history that anyone ordering the file history automatically receives.

File histories are commonly ordered by those performing reasonable diligence who have an interest in a patent. Chen describes subject matter that is close enough to the challenged patent that one interested in the subject matter of the '839 patent would, in the exercise of due diligence, locate the Chen patent and be interested in its file history. We agree with Patent Owner that nothing in Chen specifically points to its file history. However, we find that test to be inappropriately limiting. It is undisputed that Chen FH was fully available to anyone who ordered it. We find that one of ordinary skill, being aware of Chen, would consult its file history. We conclude, based on the record as fully developed, that Chen FH is available as prior art against the challenged claims.

D. Starting Operation of Chen in "Rush" Mode

1. Petitioner's Contentions Regarding Rush Mode

Petitioner provides a detailed "read" of claims 1, 2, 4, 6–9, 11, 13–16, 18, 20, and 21 on Chen and Chen FH, relying on the supporting declaration of Nathaniel Polish, Ph.D. (Ex. 1003). Pet. 21–38. For all instituted challenges (including this one), Petitioner asserts that Chen meets certain of the claim limitations if the arrangement described by Chen is initially

operated in "rush" mode; and it would have been obvious to do so in light of Chen FH, which describes initial operation in rush mode.

Petitioner notes that during prosecution of the application leading to the Chen Patent, the applicant submitted a Section 131 declaration to predate a cited reference. The included technical documents relate to a "QVS server," which applicant declared was the reduction to practice of the claimed invention. Ex. 1005. The Declaration of Mon-Song Chen under 37 C.F.R. § 1.131 (Ex. 1005 at 77–79) included a claim chart mapping the technical documents provided for the QVS server to the pending claims. Ex. 1005, 112–119. Petitioner argues that one of ordinary skill would therefore have been motivated to combine the teachings of Chen with the teachings of the Chen FH regarding the QVS server – the stated commercial implementation of the teachings of Chen – to arrive at a complete embodiment that provides for, *inter alia*, selecting the mode when a file is opened. Pet. 22 (citing Ex. 1003 ¶ 55).

Petitioner notes that the Chen FH discloses three transmission modes, and notes that data is "rushed" to the client upon opening of a multimedia file. Pet. 23 (citing Ex. 1005, 86). Chen further describes that the normal mode is used most of the time for transmission of data. Ex. 1004, 6:16–39. As described in the Chen FH, in the normal mode, data is transmitted according to time and the "player's playout rate." Pet. 23 (citing Ex. 1005, 86).

Petitioner argues that Chen teaches that the mode that is used at the start of transmission is the rush mode. At this stage, the buffer will be empty – i.e., below the watermark – and Chen teaches using the rush mode in those conditions. Although Chen does not include an explicit disclosure as to

which of the modes is used when a transmission is started, one of ordinary skill in the art would have selected the rush mode for the common sense reason of selecting the one of the two disclosed modes that minimizes start delay. Pet. 23 (citing Ex. 1003 ¶ 58).

According to Petitioner, this is the mode chosen in Chen's commercial embodiment. Pet. 24 (citing Ex. 1005, 86). Petitioner concludes that one of ordinary skill would have been particularly motivated to select this mode to arrive at a complete implementation and to minimize start delay. Pet. 24 (citing Ex. 1003 ¶ 59).

Petitioner points to Chen's server including a stream buffer. Chen, Ex. 1004 at 5:17–34. In the embodiment claimed, the stream buffer is small, having only 1–5 frames. *Id.* at claims 16, 27, and 42. Thus, in the normal mode where transmission is paced at the playback rate and the stream buffer is therefore filling and emptying at about the playback rate, the stream buffer fills at "about" the playback rate to avoid overflow or underflow conditions. Ex. 1003 ¶ 60.

Petitioner notes that Chen describes two processes for keeping track of the last packet transmitted. In a first process, interruptions in transmission are detected by assessing whether any packets have been lost. Ex. 1004, 7:24–32. According to Petitioner, Chen describes a register maintaining the last packet sequence number that has arrived in order to assess whether the next packet received is sequential. *Id.* If not, then the system of Chen detects a packet loss. *Id.* In a second process, the server paces transmission in normal mode such that the client agent is not required to send periodic feedback to the server control. *Id.* at 6:32–39. Thus, according to Petitioner, in this mode, Chen's server necessarily tracks the

last element sent so as to be able to send the next sequential element without client feedback. Ex. 1003 ¶ 61. Accordingly, Petitioner argues, Chen in combination with the Chen FH disclose each element of claim 1 of the '839 patent.

Petitioner argues that Patent Owner's hypothetical thrashing, discussed further below as switching between "rush" and "normal" mode with the amount of data in the user buffer remaining at or around the low water mark, will not occur. Reply 15−16. According to Petitioner, frames can have many hundreds of packets and transitions occur between frames. Ex. 1004, Chen at Fig. 4; Ex. 1016, Patel Tr. At 35:5–12; *see also* Reply at 12–16.

Petitioner argues that with respect to the dependent claims, Chen also discloses the use of a "lost packet request" to request specified lost packets and to "retransmit them as soon as possible." Ex. 1004, 10:42–46. The rush mode described in Chen may be used to quickly transmit unsent data packets. *Id.* at 6:1–15; Ex. 1005, 86. Accordingly, Petitioner argues, Chen in combination with the Chen FH further discloses the elements of claim 2. Chen further discloses the use of a variable bit rate to encode multimedia data (claims 4, 11, 18). For example, Chen discloses that frames may have different sizes, such as 10K bits or 25K bits. Ex. 1004, 8:43–54. Chen further describes providing multimedia data from a file local to the server (claims 6, 13, 20) by pointing to Exhibit 1004 at 9:6–14, describing a storage subsystem 12 of the server), as well as sending multimedia data to a plurality of users and maintaining a record of the last element that has been sent (claims 7, 14, 21). *Id.* at 1:62–64 (describing a "plurality of users" that receive videos); 6:32–39, 7:24–32 (describing client and server processes

that maintain a record of the last element). With respect to claim 14, Petitioner argues that it would have been obvious to implement maintaining the record of the last element in the server as an alternative to in the client to simplify the client application. Ex. 1003 ¶ 66.

Petitioner provides, at Petition pages 26–38, a claim chart showing where Chen and the Chen FH expressly disclose all the limitations of claims 1, 2, 4, 6–9, 11, 13–16, 18 and 20–21 of the '839 patent.

2. Patent Owner's Contentions Regarding Rush Mode

Patent Owner argues that Chen cannot be started in rush mode and that doing so would alter the principle of operation of Chen and render it incapable of achieving "frame level pacing." Resp. 10.

Patent Owner argues that if Chen is initially operated in rush mode it would cause problems with the mechanisms described in Chen. *Id.* According to Patent Owner's Declarant, Dr. Ketan Mayer-Patel (Ex. 2005), starting Chen in "rush mode" would cause Chen to oscillate, or "thrash" between "rush" and "normal" mode contrary to its own teachings. Resp. 11 (citing Ex. 2005 ¶¶ 7–14).

Patent Owner explains this thrashing with reference to the "water mark" model of the "client agent" described in Chen. Resp. 11 (citing Ex. 1004, 6:16–54). The model includes a "high" water mark used for transition between "normal" and "pause" modes, and a "low" water mark, used for transition between "normal" and "rush" modes. *Id.*

According to Patent Owner, Chen describes how the Chen server transitions between the different modes, "pause," "normal" and "rush." Resp. 11 (citing Ex. 1004, 9:7–10:50). Patent Owner explains that at the start of transmission in Chen, the buffer of the Chen client would be empty.

If the Chen server begins a session by sending data in "rush" mode, it would send data until the buffer on the client side increased to just over the low water mark. *Id.* After reaching a level of one packet over the low water mark (a packet generally being a unit of data smaller than a frame), the Chen client would send a "rush-to-normal" command to the server. Resp. 11–12 (citing Ex. 1004, 6:52–55; Ex. 2005 ¶ 9).

Patent Owner argues that when the Chen server receives the "rush-to-normal" command, it enters "normal" mode. In "normal" mode, the Chen server will either (i) send the remainder of a frame if it is already in the process of sending that frame (Ex. 1004, 10:12–13), or else (ii) wait until the time associated with the next scheduled frame before sending more data. Resp. 12 (citing Ex. 1004, 10:16–18; Ex. 2005 ¶ 10).

Patent Owner argues that as a result of the initial rush transmission, the Chen client is just over the low water mark, its buffer would, in the normal course, fall again below the low water mark, as the client plays media while the server is waiting for the next scheduled frame transmission time. Resp. 12 (citing Ex. 2005 ¶ 11). According to Patent Owner, the next frame transmission time will not have occurred at this point, because the schedule is based on frame time intervals (Ex. 1004, 9:52–59) and the initial data was rushed to get to the client in advance of those intervals. Resp. 12 (citing Ex. 2005 ¶ 11). Patent Owner argues that this puts the server in a waiting situation, and while the server is waiting, the Chen client buffer will fall just below the low water mark, causing it to send another "normal-to-rush" command to the server. Resp. 12 (citing Ex. 1004, 6:45–47; Ex. 2005 ¶ 11). Patent Owner argues that the Chen server will then again enter "rush" mode. Since the Chen client is just below its low water mark, the process

described above would repeat, ad infinitum. Resp. 12–13 (citing Ex. 2005 ¶ 12).

Further, according to Patent Owner, the "rush" mode would send one frame each time it is entered, causing the client to cross just above the low water mark, issuing the "rush-to-normal" command, the server going to "normal" mode and waiting for the scheduled time to send data, during which point the client buffer would then fall back below the low water mark again, which would cause a transition to rush mode. Patent Owner argues that this would go on and on. Resp. 13.

Thus, according to Patent Owner, starting Chen in "rush" mode would cause Chen to thrash constantly between "rush" and "normal" mode with the amount of data in the client buffer remaining at or around the low water mark. Resp. 13 (citing Ex. 2005 ¶ 13). According to Patent Owner, Chen would never send any data in "normal" mode, because, while in "normal" mode in this state, the Chen server is only waiting for the next scheduled frame, which would never occur before a new rush command came in. Resp. 13 (citing Ex. 2005 ¶ 11). Only when the Chen client switches to "rush" mode will data be sent. Resp. 13.

Patent Owner argues that Chen specifically teaches that "normal" should be the transmission mode used in most circumstances, in which the server executes "frame level pacing" and which is preferable to other modes or transitioning because limited interaction is needed between the client and server. Chen at 10:1–6. Indeed, according to Patent Owner, Chen expressly teaches that "transmission should be in normal mode most of the time." Resp. 13 (citing Ex. 1004, 6:31–32). Therefore, Patent Owner concludes that altering Chen with the teachings of the Chen FH so that Chen starts in

"rush" mode would change the principle of operation of the Chen patent. Moreover, according to Patent Owner, it would render the Chen server incapable of reaching an operating state in the normal mode in which it could do frame-level pacing. Resp. 13.

In summary, Patent Owner argues that Chen would not properly operate if started in rush mode. Starting in rush mode, Chen would never to reach the normal operating mode specified by Chen itself. The Chen client would be constantly cycling about the low water mark, and the Chen server would be constantly changing between the "rush" and "normal" modes. The Chen server would never send any data in "normal" mode. Its buffer would always be in a near-empty condition, at or below the threshold of having to send repeated rush commands to the server. Patent Owner argues that Petitioner's proposed modification, which would actually send data only in "rush" mode, would add the overhead of constantly sending messages to the server to switch between "rush" and "normal" mode. Patent Owner argues that Chen expressly teaches away from an operating mode that requires "the client agent (30) to send periodic feedback requests to the server." Resp. 14–15 (citing Ex. 1004, 6:37–39).

Patent Owner argues that because claims 10–11, 13–14, 17–18, 20 and 21 depend from claims 8 and 15, they are patentable over Chen for at least this reason.

3. Analysis Regarding Rush Mode

The essence of Petitioner's challenge to claims 1, 2, 4, 6–9, 11, 13–16, 18, 20, and 21 is that the defined combinations would be met by one of ordinary skill starting operation of the Chen device in "rush" mode as

described by page 86 of the Chen FH, and that it would have been obvious to do so.

The ’839 patent acknowledges that a number of elements were known in the prior art regarding streaming media over a network. For example, the ’839 admits that sending audio and video files via a network was known and that it was known for media frames stored in a server buffer to be sent over networks at timing controlled by a user to assure a continuous stream of video. Ex. 1001, 1:50–64.

The ’839 patent further admits that it was known to use pre-buffering so that the video can be played with a minimum of dropouts, and admits that it was known to transmit video at the rate it is to be played back. *Id.* at 2:24–27.

The ’839 patent states that the invention involves coordinating the server and the user sides of the transmission by sending initial streaming media data elements to the user system at a rate more rapid than the playback rate to fill the buffer, and, after the user buffer has been filled, sending further streaming media data elements to the user system at about the playback rate. *Id.* at 3:38–43.

Patent Owner’s Declarant, Dr. Mayer-Patel, conceded at deposition that the elements of the claims for which Patent Owner presented argument are disclosed by Chen. Tr. 4. Dr. Mayer-Patel agreed that Chen discloses nearly every element in the independent claims. For the single element of claim 1 that Dr. Patel said was “less clear” he admitted that the Chen file history supports Petitioner’s expert’s testimony and he finds that support reasonable. Ex. 1016, 56–63.

Claim 1 of the '839 patent requires 1) loading a server buffer with streaming media data elements, 2) sending an initial amount of streaming media data elements to the user system at an initial sending rate more rapid than the playback rate, and 3) thereafter sending media data elements at about the playback rate. Ex. 1001, 15:58–16:25.

Chen explains how the device operates by referring to the water mark model. *Id.* at 6:16-54. The model draws a parallel between the client agent buffer and a water bucket with a spout at the bottom through which the water exits the bucket. The bucket has high and low water marks. When the amount of data falls below the water marks, the transmission occurs when the amount of data falls between the water marks, the transmission occurs in normal mode, which is what happens most of the time. Chen explains that the client agent buffer will normally store one to five frames of video.

When the amount of data exceeds the high water mark, there will be a pause in the transmission mode. When the amount of data falls below the low water mark, i.e., there is not enough data in the client agent buffer, then the transmission occurs in the rush mode.

Thus, the client agent sends a normal to rush when the amount of data falls below the low water mark. Similarly, the client agent sends a normal to pause command if the amount of data increases above the high water mark.

Patent Owner's Declarant, Dr. Mayer-Patel, indicates on cross-examination that, "I think Dr. Polish's support for why he believes Chen starts in rush mode is reasonable." Ex. 1016, 63:1–18; Reply 8–9. According to Petitioner, both Chen and Chen FH disclose that transmission starts in rush mode. Transmission occurs in rush mode when the amount of data falls below the lower water mark, i.e., there is not enough data in the

client agent packet buffer (33). Ex. 1003 ¶ 58; Ex. 1004, 6:43–45; Ex. 1005, 86; Pet. 23–24; Reply 12–16.

We are not persuaded by Patent Owner's argument that initially operating Chen in rush mode would cause unstable operation. The only evidence Patent Owner has presented is the declaration testimony of Dr. Mayer-Patel, which was weakened as a result of cross-examination. For example, Dr. Mayer-Patel admitted that simply setting the water marks to different values would avoid the potential hysteresis instability. *See* Ex. 1016, pp. 64−66.

Further, both Chen and Chen FH disclose that transmission starts in rush mode. Chen states: "transmission occurs in rush mode when the amount of data falls below the lower water mark, i.e., there is not enough data in the client agent packet buffer (33)." Ex. 1004, 6:43–45. Chen FH states at page 86 in the "open file" line: "read data from disk and *rush* them to CA" (emphasis added). We credit Dr. Polish's testimony that "Chen and the Chen File History teach that the mode that is used at the start of transmission is the rush mode." Ex. 1003 ¶ 58.

Dr. Mayer-Patel was cross-examined regarding "thrashing." When asked about setting gamma levels to achieve a stable system, Dr. Mayer-Patel answered that he would set the gammas to different levels for transitioning from rush to normal modes than for transitioning from normal to rush modes. Ex. 1016, 66:9–18; *see* Ex. 1005, 86–87 (discussing gamma values); Reply 14 n.2 (discussing hysteresis). Based on the testimony of Dr. Mayer-Patel and the evidence cited by Petitioner (Reply 14–15), we conclude that one of ordinary skill would have known how to set gamma levels defining mode transitions to provide the appropriate amount of

hysteresis to prevent thrashing, e.g., in the manner that a thermostat hysteresis is set to avoid too rapid a cycling of a furnace.

We find that if Chen were operated initially in "rush" mode, it would meet the limitations of the challenged claims. Further, we find that Petitioner has shown by a preponderance of evidence that the claims (except for claims 7, 14, and 21, discussed below) are unpatentable as obvious in view of Chen and Chen FH.

E. Arguments Specific to Claims 8, 15 and Dependents

Claims 8 and 15, and their dependent claims, include an additional limitation describing that the server buffer is reloaded after an interruption.

1. Petitioner's Contentions

Petitioner argues that with respect to the additional limitations required by independent claims 8 and 15, Chen discloses the transmission of a lost packet request in the event there is an interruption. Ex. 1004 at 10:40–50. In this regard, Petitioner argues that Chen discloses reloading the server buffer if the lost packets are not already in the server buffer at the time of request. Pet. 7–12.

Claim 8 requires certain components of a server, including a data storage device, memory, a central processing unit, an operating system, a connection to the Internet and a communications system – components that Petitioner argues would be common to any server as of the filing date of the application leading to the '839 patent, such as the IBM PC Server disclosed in Chen. Pet. 25, Claim 8, Ex. 1004, 5:8–11; Ex. 1003 ¶ 63.

2. Patent Owner's Contentions

Patent Owner makes additional arguments with respect to independent claims 8 and 15, which recite the following limitation:

> if such an interruption is detected, the server buffer is reloaded with a specified amount of the streaming media data elements, or a pointer to the server buffer is adjusted to point to a location therein, beginning sequentially from the first of the streaming media data elements so determined to have been delayed or not received, the specified amount of streaming media data elements being sufficient for the user system to continue playing back the streaming media at the playback rate, while the user buffer continues to refill.

Patent Owner argues that Chen does not "reload" the server buffer with streaming media data elements that are delayed or not received. Resp. 15. Patent Owner argues that it also does not disclose or suggest adjusting a pointer to the server buffer. *Id.* Petitioner relies on the "lost packet" mechanism of Chen regarding the claimed server buffer reload. Reply 16–17. Patent Owner submits that there is no disclosure of what Chen does with data after reading it from storage and before transmitting it, and describes no technical necessity of loading these packets into the server buffer in order to send them. *Id*. (citing Ex. 2005 ¶ 20).

According to Patent Owner, Chen's description of its lost packet mechanism does not explicitly state or suggest that data from storage is "reloaded" into the server buffer. *Id.* Rather, according to Patent Owner, Chen stresses that data should be sent as soon as possible. *Id.* Thus, according to Patent Owner, Chen's server buffer merely "stores data awaiting transmission." *Id*. (citing Ex. 1004, 9:23–24). Patent Owner

argues that storing lost packet data to await transmission would not be sending it as soon as possible. *Id.*

Patent Owner argues that in Chen, "maintain[ing] the stream buffer (18)," the transmission scheduler "schedules the data execution path, by considering the timing specification in the multimedia files and the timing requirements of the applications." Resp. 17 (citing Ex. 1004, 9:25–29).

Patent Owner argues that this is unnecessary for lost packet transmissions, which are not scheduled or delayed, but sent as soon as possible. *Id*. (citing Ex. 2005 ¶ 20. According to Patent Owner, Chen's lost packets are read from the storage subsystem and transmitted immediately, and there is no technical need for those packets to be stored on the server. *Id*. Patent Owner also argues that Chen's description of its lost packet mechanism does not disclose or suggest that this data is stored on the server between being read from the storage subsystem and being transmitted to the user, and certainly does not disclose or suggest that the data is "reloaded" into the server buffer, even if it is stored at all. *Id*.

Patent Owner further argues that the Chen server does not detect interruptions. Resp. 17–20.

According to Patent Owner, both claims 8 and 15 require detecting interruptions to be performed on the server. Claim 8 reads in part:

> a machine-readable, executable routine stored in said memory, containing instructions to cause the server to detect if any interruptions in the transmission of streaming media data elements between the server and the user system have occurred such that streaming media data elements that have been sent by the server to the user system have been delayed or not received by the user system.

Claim 8. Claim 15 is directed to "[a] non-transitory machine-readable medium on which there has been recorded a computer program for use in operating a server for distributing streaming media." Claim 15, Preamble. Petitioner points to the lost packet mechanism in Chen as disclosing the claimed interruption detection feature.

According to Patent Owner, the Chen client system – not the server – detects interruptions. Chen states that "[t]he client agent (30) has the primary responsibility of retrieving from the server control (1) the right set of multimedia data at the right time to satisfy the needs of the multimedia application (4)." Resp. 18 (citing Ex. 1004, 5:17–20). Patent Owner argues that the Chen client, and not its server, is responsible for requesting elements and tracking what has been received, and the client is also responsible for detecting lost packets and requesting that they are re-sent. According to Patent Owner, Chen describes that the client determines if a packet has been lost and sends a retransmission request to the server:

> To detect lost packets, in an error-free embodiment, the client agent (30) uses a register to maintain a variable Last Pkt. Seq. No. (51), which is the packet sequence number of the last received packet. If the Pkt. Seq. No. of the newly arriving packet denoted as New Pkt Seq No differs from (Last Pkt. Seq. No. +1), then a packet loss has occurred. Specifically, the packets with Pkt. Seq. No.'s from (Last Pkt. Seq. No. +1) to (New Pkt. Seq. No. -1) have been lost.

Resp. 19 (citing Ex. 1004, 7:24–32). This is the passage that the Petitioner cites for limitations 8l and 15k. *Id.* (citing Pet. 35, 37). Patent Owner interprets this passage as stating that the client detects interruptions, and not the server. Patent Owner points to the following passage:

> To deal with packet loss, the client agent (30) maintains a list of lost packets (56) in a linked list or other data structure. That list

> records the two most important pieces of information about the lost packet, namely, its Pkt. Seq. No. and Time Out Value (57). When the client agent (30) sends the "retransmission request" for lost packets to the server control (1) the Time Out Value is set. If the missing data packet arrives correctly before the Time Out Value expires, this removes that data packet from the list. If not, the client agent (30) (i) either sends another "retransmission request" to the server control (1) or (ii) gives up on obtaining the missing data packet and removes its number from the lost packet list.

Resp. 19–20 (citing Ex. 1004, 7:33–44). Patent Owner asserts it is clear that the Chen client is the instrumentality that performs the function of detecting interruptions in the transmission of data from the server to the client. *Id.* (citing Ex. 2005 ¶ 24).

Thus, Patent Owner argues that there is no disclosure or suggestion in there is a packet loss or interruption and assigns sequential numbers to each packet, thereby tracking the last packet sent.

3. Analysis

With respect to claims 8 and 15, Dr. Mayer-Patel, on cross-examination, agreed that the server in Chen, using TCP, detects interruptions and tracks the last element sent. He further answered that TCP has been known since the "mid-'70s." Ex. 1016, 45:23–46:2, 75:3–5.

Dr. Polish testified that Chen describes "one possible implementation" using TCP protocol line for channel control. Ex. 1015, 88:19–89:12. According to Dr. Polish, the Chen server alone or using TCP detects when there is a packet loss or interruption and assigns sequential numbers to each packet, thereby tracking the last packet sent.

Patent Owner's argument that the server buffer or the stream buffer, as it is referred to in Chen, is not reloaded overlooks Chen's teachings that

the stream buffer loads data from the storage subsystem and transmits it before transmitting it to the client, whether or not the data is a lost packet. We are therefore not persuaded by Patent Owner's arguments specific to claims 8, 15 and their respective dependent claims. We agree with and adopt Petitioner's arguments as outlined above.

Based on the foregoing, we conclude that Petitioner has established by a preponderance of evidence that claims 8, 15 and their respective dependent claims are unpatentable.

F. Claims 3, 10, and 17

Dependent claims 3, 10, and 17 require that data elements be encoded at a constant bit rate (CBR). To meet this added limitation, Petitioner relies upon to ISO-11172 in combination with Chen and the CFH. Pet. 38–39.

ISO-11172 is a standard relating to CBR encoding. According to Petitioner, it would have been obvious to adapt Chen for packets encoded at a CBR. Petitioner argues that the adaptation would have been "a minor, obvious variation" to operate Chen at a constant bit rate as required by claims 3, 10, and 17 given ISO-11172. Pet. 38–39 (citing Ex. 1003 ¶¶ 68–70).

We find that ISO-11172 would have been well known to those of ordinary skill. It was at the time of the '839 patent already published and utilized. ISO-11172 demonstrates that it was known to encode frames at constant and variable bit rates. We are not persuaded that Chen's focus on variable bit rates teaches away from the use of either constant or variable bit rates. The fact that a standard, published before Chen, describes the use of both in detail suggests that it was well known to those of ordinary skill in the

art. We therefore conclude that Petitioner has established by a preponderance of evidence of record that Chen describes the constant bit rate feature of claims 3, 10 and 17. We find that Petitioner has produced sufficient evidence to establish that claims 3, 10, and 17 are unpatentable over Chen, Chen FH, and ISO-11172. *See* Pet. 38–39 (citing Ex. 1003 ¶¶ 68–70).

Petitioner contends that claims 3, 10 and 17 are unpatentable under 35 U.S.C. § 103(a) as obvious over Chen, Chen FH, and ISO-11172. Pet. 38–39. These three dependent claims require that media data elements be encoded at a "constant bit rate." Petitioner argues that it was well known at the time of the '839 invention that multimedia data could be encoded at either a constant bit rate or a variable bit rate. Pet. 39 (citing Ex. 1003 ¶ 68). Petitioner admits that neither Chen nor Chen FH explicitly disclose encoding multimedia at a constant bit rate. Petitioner argues that Chen discloses the MPEG-1 standard in its Summary of the Invention as one standard for providing the building blocks of the multimedia data stream. ISO-11172 is the MPEG-1 standard and discloses both a constant bit rate and a variable bit rate. Pet. 39 (citing ISO-11172-1, Ex. 1006, 22; ISO-11172-2, Ex. 1007, 27 (discussing flags having differently defined values for fixed/constant bit rate operation and variable/non-constant bit rate operation)); Ex. 1003 ¶ 68. Thus, Petitioner argues, one of ordinary skill would have been motivated to look to ISO-11172 to modify the teachings of Chen to support one of the well-known options of MPEG-1 for the purposes of supporting a wider variety of media data. Pet. 39 (citing Ex. 1003 ¶¶ 69–70). Petitioner argues that such a modification would be a mere design choice and within the skill of a person of ordinary skill in the art. *Id.* (citing Ex. 1003 ¶ 70).

Patent Owner does not make technical arguments specific to claims 3, 10 and 17 in its Response.

We agree with Petitioner's argument regarding claims 3, 10, and 17. Chen specifically mentions ISO-11172, which supports Petitioner's contention that this standard was known to those of ordinary skill in the art. We therefore conclude that Petitioner has established by a preponderance of evidence that claims 3, 7 and 10 are unpatentable.

G. Arguments Specific to Claims 7, 14, and 21

1. What the claims require

Claims 7, 14, and 21 recite streaming media to multiple users. These claims require providing a mechanism for keeping track of each user's position in the program. Claim 7 provides:

> 7. The method of claim 1, wherein the streaming media is distributed to a plurality of user systems, further comprising, for each of the plurality of user systems, maintaining a record of the last streaming media data element that had been sent to the user system, and using the record to identify the next streaming media data element to be sent to the user system.

2. Petitioner's Contentions

Petitioner provides a claim chart for claims 7 (Pet. 33–34), 14 (Pet. 37), and 21 (Pet. 38). The chart entries for claims 14 and 21 refer to the chart entries for claim 7. The chart for claim 7 relies upon Chen's lost packet description as follows:

> [Chen] 7:25–32: "To detect lost packets, in an error-free embodiment, the 25 client agent (30) uses a register to maintain a variable Last Pkt. Seq. No. (51), which is the packet sequence number of the last received packet. If the Pkt. Seq. No. of the

> newly arriving packet denoted as New Pkt Seq No differs from (Last Pkt. Seq. No. +1), then a packet loss has occurred. Specifically, the packets with Pkt. Seq. No.'s from (Last Pkt. Seq. No. +1) to (New Pkt. Seq. No. -1) have been lost."
>
> 10:42–45: "The client agent also transmits a "lost packet request" to request the transmission scheduler (13) to obtain the specified "lost"" packets and to retransmit them as soon as possible."
>
> 6:32–39: "In this mode the server (1) paces its transmission so that the data for a 35 single video frame is transmitted in the time of a single video frame (normally lho second), as FIG. 6 will discuss in detail. Transmission occurs very efficiently in this normal mode because no need exists for the client agent (30) to send periodic feedback to the server control (1).

Pet. 33–34.

Petitioner argues that Chen's server maintains a record of the last element sent. Reply 22. Petitioner relies on the TCP and UDP protocols disclosed in Chen that "include an acknowledgment message that is sent from the client to the server upon successful receipt of a message." Reply 22–23 (citing Ex. 1003 ¶ 66).)Petitioner argues that Chen's server assigns sequence numbers to each packet sent to the client and thereby would have to keep track of the last packet sent so it knows the next packet to send. Pet. 24–25 (citing Ex. 1004, claims 31, 35; Ex. 1005 at 113).

Petitioner argues that "maintaining a record of the last received message *could* be done in the server by monitoring the acknowledgement message." *Id.* (italics added). Reply 23 (citing Ex. 1003 ¶ 66). This "simple modification to reduce the complexity of the client application and reduce the computational demands of the client application . . . would allow broader application of the client application to devices with fewer resources." *Id.*

Petitioner further argues that Patent Owner has not responded to and therefore waives opposition to Petitioner's argument that "it would have been obvious to implement maintaining the record of the last element in the server as an alternative to in the client to simplify the client application." Reply 22 (citing Pet. 26; Ex. 1003 ¶ 66).

3. Patent Owner's Contentions

Patent Owner contends with respect to claims 7, 14, and 21 that the Chen server does not maintain a record of the last element sent and does not use any such record to determine the next element to send. Resp. 21.

According to Patent Owner, claims 7, 14 and 21 each require distribution to multiple users and further require that "for each of the plurality of user systems, maintain[ing] a record of the last streaming media data element that had been sent to the user system, and us[ing] the record to identify the next streaming media data element to be sent to the user system." This facility must be on the server for all three of claims 7, 14 and 21. Resp. 21. Patent Owner argues that the Chen *client*, and not its *server*, is responsible for tracking data received. *Id.*

3. Analysis

We read claim 7 as requiring that a record must be kept that specifies the last streaming media data element sent to each user and using that record to identify the next streaming media data element to be sent to each user system. Only the server can track the last streaming media data element that had been "sent." An individual client device would have no way of tracking what the server has sent to other client devices. Claims 14 and 21 are similar to claim 7 and specifically require the "server" to maintain the record as to each user receiving the streaming media. Claims 14 and 21 specifically

recite that "the instructions cause the server" to maintain the record in question for each user.

The '839 patent describes that a "unique pointer," assigned to each user, identifies by "serial number" either the last data element that was sent to that user, or the next data element to be sent. Ex. 1001, 11:16–18.

We find that Chen does not describe how to accomplish this claim-required functionality. Chen states: "A plurality of users may simultaneously retrieve their preferred video features at their selected viewing times." Ex. 1004, 1:62–64. However, Chen does not state that its server keeps track of the last packet received by each of multiple users and then uses a record of those last packets to control next content sent to each such user. Chen does not state that its "scheduler" fulfills this role.

Chen states that "client agent (30) uses a register to maintain a variable Last Pkt. Seq. No. (51), which is the packet sequence number of the last received packet." Ex. 1004, 7:25–27; Ex. 2005 ¶ 27. We do not find any disclosure in Chen that the server tracks the element sent.A "scheduler" component in the Chen server loads the transmission buffer from data storage. Ex. 1004, 9:44–47. Registers used by the scheduler track the start time for transmitting a frame, time between frames, and whether a full frame has been sent, and use that information, plus the mode requested by the client, to control sending. *Id.* at 9:49–10:11. There is no disclosure that any of these mechanisms track the last element sent. Rather, they are used to schedule the time at which the next element will be sent (without regard to which particular client it is being sent to). There is no disclosure of any record kept by the Chen server of the last data element sent by the server to a

particular client, nor of using any such record to determine the next data element to send, as required by claims 7, 14 and 21. Ex. 2005 ¶ 29.

The Chen patent provides no details on the data structure of the server buffer and whether it is, e.g., a queue, linked list, or another mechanism. *Id.*

Although Petitioner argues that this modification *could have been made* by one of ordinary skill, there is nothing in the combination of references to suggest that such modification be made or how it would be made.

Dr. Polish testifies for Petitioner that the server would maintain a record of the last element sent. Ex. 1015, 106:18–107:9. However, Dr. Polish does not state that records are kept on a client by client basis. Chen's server also tracks the last element sent by it through the use of TCP. Ex. 1015 at 103:19–104:2. Dr. Polish explains that TCP keeps track of sequence numbers. Prof. Patel similarly agrees that TCP "on the server side" assigns sequential numbers to each packet and tracks its "last known position." However, there is no testimony that packets are tracked and records maintained per client.

We discussed above that Chen describes two processes for keeping track of the last packet transmitted. In a first process, interruptions in transmission are detected by assessing whether any packets have been lost. Ex. 1004, 7:24–32. A register maintains the last packet sequence number that has arrived in order to assess whether the next packet received is sequential. *Id.* If not, then the system of Chen detects a packet loss. *Id.* In a second process, the server paces transmission in normal mode such that the client agent is not required to send periodic feedback to the server control. *Id.* at 6:32–39. According to Dr. Polish, in this mode, Chen's server

necessarily tracks the last element sent so as to be able to send the next sequential element without client feedback. Ex. 1003 ¶ 61. Neither of these processes describes keeping track separately of media data elements sent to each of plural clients.

It is Petitioner's burden to establish by a preponderance of evidence that the functions set forth in claims would be obvious from the references. Petitioner's reliance on TCP is to no avail. TCP is a protocol that applies to all packets sent from one computer to another. There is no evidence of record suggesting that TCP keeps track of which packet has been sent to each user receiving the same streaming content from one server buffer. The evidence suggests only that TCP keeps track of its packets without regard to where they originate. Although it is true that the '839 patent uses the TCP stack to communicate packets from the server to each client, the '839 patent describes use of a "unique pointer." Nothing equivalent is described by Chen.

The portion of Chen referenced in Petitioner's claim chart describes a general process for keeping track of packets without regard to the status of each of a plurality of users.

We are not persuaded by Petitioner's argument that Patent Owner waived its argument with respect to claims 7, 14, and 21. In an inter partes review, Petitioner has the burden of establishing unpatentability of a patent claim. For claims 7, 14, and 21, the Petition and evidence of record does not establish that Chen discloses how the claimed function is or could be carried out at the server "for each" of a plurality of clients, as it must to meet the limitations of these claims. Thus, Petitioner has not established by a preponderance of evidence that claims 7, 14 and 21 are unpatentable.

III. CONCLUSION

For the reasons set forth above and on this record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 4, 6, 8, 11, 13, 15, 18, and 20 of the '839 patent are unpatentable as obvious based on Chen and Chen FH.

For the reasons set forth above and on this record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claims 3, 10, and 17 of the '839 patent are unpatentable as obvious based on Chen, Chen FH, and ISO-11172.

For reasons indicated, Petitioner has not demonstrated by a preponderance of evidence that claims 7, 14, and 21 are unpatentable as obvious.

IV. ORDER

For reasons given, it is

ORDERED that claims 1, 4, 6, 8, 11, 13, 15, 18, and 20 of the '839 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Chen and Chen FH;

FURTHER ORDERED that claims 3, 10, and 17 of the '839 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over Chen, Chen FH, and ISO-11172;

FURTHER ORDERED that because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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