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Paper 38
Date: January 27, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

VIRENTEM VENTURES, LLC,
Patent Owner.

IPR2019-01241
Patent 7,683,903 B2

Before MEREDITH C. PETRAVICK, JENNIFER MEYER CHAGNON, and TERRENCE W. McMILLIN, *Administrative Patent Judges.*

McMILLIN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

A. Background and Summary

Google LLC ("Petitioner")[1] filed a petition to institute an *inter partes* review of claims 1–4, 7, 12–14, 17, and 22 of U.S. Patent No. 7,683,903 B2 (Ex. 1001, "the '903 patent") pursuant to 35 U.S.C. § 311 *et seq*. Paper 1 ("Petition" or "Pet."). Virentem Ventures, LLC ("Patent Owner") filed a Preliminary Response to the Petition. Paper 14 ("Prelim. Resp."). On February 21, 2020, we instituted trial. Paper 16 ("Inst. Dec."). Patent Owner filed a Response. Paper 26 ("PO Resp."). Petitioner filed a Reply. Paper 29 ("Pet. Reply"). Patent Owner filed a Sur-reply. Paper 34 ("PO Sur-reply"). An oral argument was held on November 18, 2020, and a transcript was entered into the record. Paper 37 ("Tr.").

We have jurisdiction to conduct this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1–4, 7, 12–14, 17, and 22 of the '903 patent are unpatentable.

B. Related Matters

The parties indicate that the '903 patent has been asserted in the following case filed in the United States District Court for the District of Delaware on November 9, 2018: *Virentem Ventures, LLC v. YouTube, LLC*, Case No. 1:18-cv-00917. Pet. 1; Paper 3, 1. The District Court case has been stayed through the issuance of final written decisions by the Board. Ex. 2033, 1.

[1] Petitioner identifies Google LLC and YouTube LLC as the real parties-in-interest to this proceeding. Pet. 1.

C. The '903 Patent

The '903 patent is titled, "Management of Presentation Time in a Digital Media Presentation System with Variable Rate Presentation Capability." Ex. 1001, code (54). By way of background, the '903 patent explains that traditional digital rendering systems, such as RealNetworks RealPlayer digital media players, maintain an internal variable during playback of media content that reflects a current presentation time, which is referred to as "Current Time." *Id.* at 1:23–27. Current Time reflects a current position in the media content, starting at zero at the beginning of the media content. *Id.* at 1:27–32. The '903 patent explains that Current Time conflates two different properties of media playback: (1) "Presentation Time," which is the time elapsed since the beginning of the media content presentation; and (2) "Content Time," which is the location in the media content stream that is currently being played. *Id.* at 1:50–66. The '903 patent also describes that "Data Time" is a time value associated with each content element "specifying how long it would take to reach that location, starting from the beginning of the media content, and playing at normal rate." *Id.* at 1:66–2:7.

The '903 patent explains that "Presentation Time and Data Time are identical in traditional players, because traditional players can only present media content at a fixed 'normal' rate." *Id.* at 2:8–10. In the case of media players enhanced with Time-Scale Modification (TSM) capability, the player can present media content at various rates, and thus Presentation Time and Data Time may diverge. *Id.* at 2:10–15. For example, a player with TSM functionality could play a 60-second clip in only 30 seconds if the content is presented at a fixed rate that is twice normal rate. *Id.* at 2:15–19. The '903 patent describes two problems resulting from the possible disparity

between Presentation Time and Data Time in media players with TSM functionality. *Id.* at 2:20–35. A first problem is that "the significance of the time value distributed to multiple objects is, in general, ambiguous." *Id.* at 2:27–30. A second problem "is that Data Time does not, in general, equal Presentation Time, and the calculation, storage, and distribution of a single time value is inadequate to specify both values." *Id.* at 2:30–35. In particular, the '903 patent explains that it is common for media players to rely on an audio renderer to calculate and update the Current Time value. *Id.* at 2:36–39. When "a media player does in fact acquire the Current Time value from the audio renderer, the value that the audio renderer will return to the system will typically be the Presentation Time." *Id.* at 2:49–52. This creates a problem in media players with TSM functionality because "most of the rest of the system needs Data Time," and thus "most of the rest of the system can no longer employ the value returned by the audio renderer object." *Id.* at 2:53–55.

The invention manages "Presentation Time in a digital rendering system for presentation of temporally-ordered data when the digital rendering system includes a Variable Rate Presentation capability." Ex. 1001, 2:62–65. Figure 1 of the '903 patent is reproduced below.

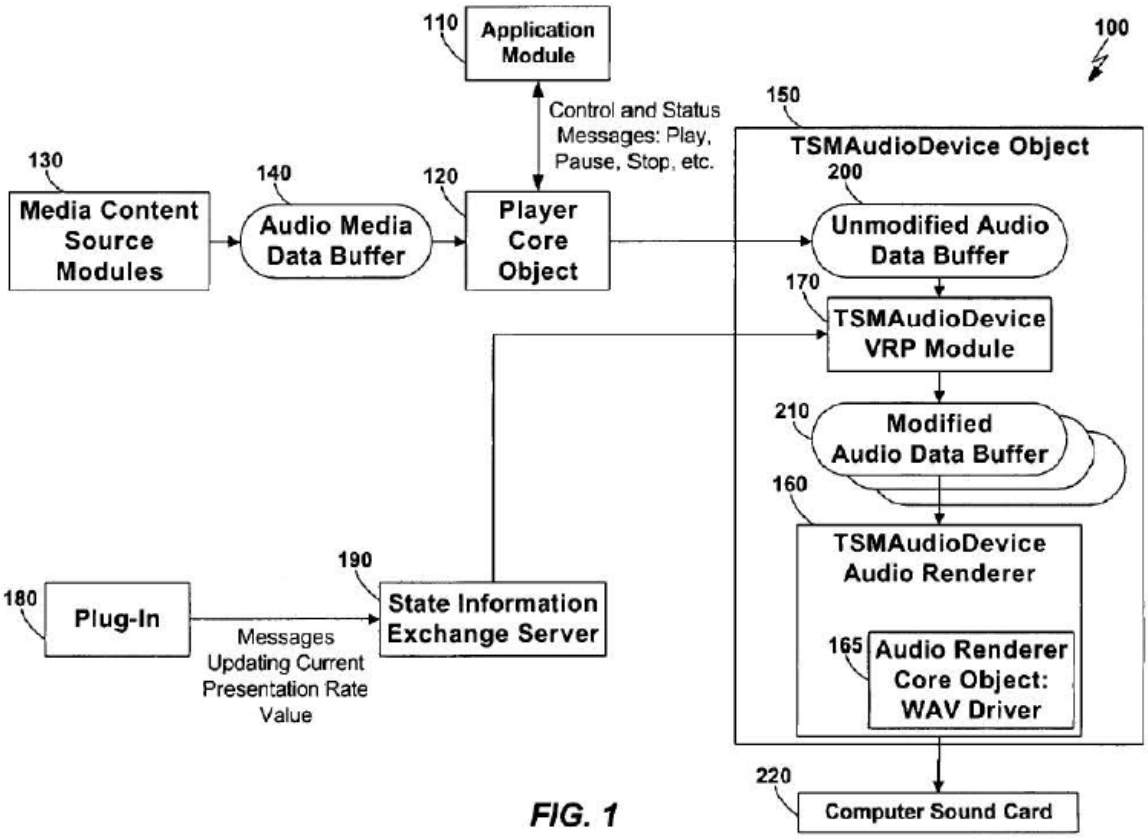


FIG. 1

Figure 1, above, depicts "a block diagram of a Presentation System embodied as a RealNetworks RealPlayer application running on a computer." *Id.* at 5:27–29. Presentation System 100 includes an application module 110 which communicates control and status messages (e.g., Play, Pause, Stop), to Player Core object 120. *Id.* at 6:4–7. "Temporal Sequence Presentation Data" or "Presentation Data" are embodied as streaming media content and are delivered to the RealPlayer application. *Id.* at 6:7–13. Presentation Data are received by media content source module(s) 130, and are placed in audio media data buffers 140. *Id.* at 6:13–18. TSMAudioDevice object 150 combines functions of the Renderer for audio data (TSMAudioDevice Audio Renderer 160) and a Variable Rate Presentation Module. *Id.* at 6:49–54. The '903 patent notes that although the RealNetworks RealPlayer application does not natively include support

for variable rate playback, plug-in 180 adds variable rate playback capability to the RealPlayer application. *Id.* at 6:58–66. Plug-in 180 communicates with TSMAudioDevice object 150 by sending messages that specify a desired playback or presentation rate through an object called State Information Exchange Server 190 ("SIX Server 190"). *Id.* at 7:1–11. TSMAudioDevice object 150 accepts messages from SIX Server 190 that specify a desired playback or presentation rate. *Id.* at 7:5–7. The '903 patent notes that Player Core object 120 of the RealPlayer application includes methods to query the Current Time, and Player Core object 120 interprets all returned times as Data Times. *Id.* at 7:50–62. In order to support the concept of Presentation Times that are different than Data Times, according to one embodiment of the '903 patent, TSMAudioDevice object 150 performs conversion of Presentation Time into Data Time (as needed by Player Core object 120). *Id.* at 7:62–67.

D. Challenged Claims

Petitioner challenges claims 1–4, 7, 12–14, 17, and 22 of the '903 patent. Pet. 2–3. Of the challenged claims, claims 1 and 12 are independent method claims and claims 13 and 22 are independent apparatus claims. Ex. 1001, 23:19–26:65. Claim 1 recites:

> 1. A method, performed by at least one machine, for rendering temporal sequence presentation data in a machine-implemented rendering system, the temporal sequence presentation data being tangibly stored in a first computer-readable medium, the method comprising steps of:
>
> (A) maintaining a value of a presentation time parameter tangibly stored in a second computer-readable medium and representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data;
>
> (B) providing the value of the presentation time parameter to a first component of the rendering system;

(C) maintaining a value of a data time parameter tangibly stored in a third computer-readable medium and representing an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate; and

(D) providing the value of the data time parameter to a second component of the rendering system;

wherein the value of the presentation time parameter is not equal to the value of the data time parameter.

Id. at 23:19–39. Claim 12 recites:

12. A method, performed by at least one machine, for rendering temporal sequence presentation data in a machine-implemented rendering system, the temporal sequence presentation data being tangibly stored in a first computer-readable medium, the method comprising steps of:

(A) receiving a request from a first component of the rendering system for a first current time;

(B) maintaining a value of a presentation time parameter tangibly stored in a second computer-readable medium and representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data by the rendering system;

(C) providing the value of the presentation time parameter to the first component in response to the request;

(D) receiving a request from a second component of the rendering system for a second current time;

(E) maintaining a value of a data time parameter tangibly stored in a third computer-readable medium and representing an amount of time required to render the portion of the temporal sequence presentation data at a default presentation rate; and

(F) providing the value of the data time parameter to the second component in response to the request;

wherein the value of the presentation time parameter is not equal to the value of the data time parameter.

Id. at 24:52–25:9. Claim 13 recites:

13. A device for rendering temporal sequence presentation data in a machine-implemented rendering system, the temporal

> sequence presentation data being tangibly stored in a first computer-readable medium, the device comprising at least one processor and at least one second computer-readable medium tangibly storing computer program instructions for:
>
> maintaining a value of a presentation time parameter tangibly stored in a third computer-readable medium and representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data by the rendering system;
>
> providing the value of the presentation time parameter to a first component of the rendering system;
>
> maintaining a value of a data time parameter that is not equal to the value of the presentation time parameter and which represents an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate, the data time parameter being tangibly stored in a fourth computer-readable medium; and
>
> providing the value of the data time parameter to a second component of the rendering system.

Id. at 25:10–31. Claim 22 recites:

> 22. A device for rendering temporal sequence presentation data in a machine-implemented rendering system, the temporal sequence presentation data being tangibly stored in a first computer-readable medium, the device comprising at least one processor and at least one second computer-readable medium tangibly storing computer program instructions for:
>
> receiving a request from a first component of the rendering system for a first current time;
>
> maintaining a value of a presentation time parameter tangibly stored in a third computer-readable medium and representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data by the rendering system;
>
> providing the value of the presentation time parameter to the first component in response to the request;
>
> receiving a request from a second component of the rendering system for a second current time;

> maintaining a value of a data time parameter that is not equal to the value of the presentation time parameter and which represents an amount of time required to render the portion of the temporal sequence presentation data at a default presentation rate, the data time parameter being tangibly stored in a fourth computer-readable medium; and
>
> providing the value of the data time parameter to the second component in response to the request.

Id. at 26:40–65. Although claim 1 is directed to a method and claim 13 is directed to a device, outside of the preambles, the claims recite the same method steps or elements. And, although claim 12 is directed to a method and claim 22 is directed to a device, outside of the preambles, the claims recite the same method steps or elements. The same is true of the challenged dependent claims.

E. The Asserted Grounds

Petitioner challenges claims 1–4, 7, 12–14, 17, and 22 of the '903 patent on the following grounds:

Claims Challenged	35 U.S.C. §[2]	Reference(s)/Basis
1–4, 12–14, 22	103(a)	Nelson[3]
7, 17	103(a)	Nelson, DeMoney[4]

Pet. 2–3.

[2] Because the application leading to the '903 patent was filed before March 16, 2013, patentability is governed by the version of 35 U.S.C. § 103 preceding the Leahy-Smith America Invents Act ("AIA"), Pub L. No. 112–29, 125 Stat. 284 (2011).

[3] US Patent No. 5,719,786 (Ex. 1006) filed Feb. 3, 1993; issued Feb. 17, 1998.

[4] US Patent No. 6,065,050 (Ex. 1012) filed June 5, 1996; issued May 16, 2000.

II. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) where in evidence, objective evidence of nonobviousness.[5] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Consideration of the Graham factors "helps inform the ultimate obviousness determination." *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1048 (Fed. Cir. 2016) (en banc).

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

[5] Neither party presents any argument relating to objective evidence of nonobviousness.

B. Level of Ordinary Skill in the Art

With regard to the level of ordinary skill in the art, Petitioner contends that a person of ordinary skill would have either "(a) a Master's or doctoral degree in computer science, electrical engineering, or a similar discipline" or "(b) a Bachelor's degree in computer science, electrical engineering, or a similar discipline and at least two years of work experience in content presentation systems, or a related area." Pet. 4 (citing Ex. 1002 (Schonfeld Decl.) ¶¶ 19–20). "Patent Owner accepts Petitioner's proffered level of ordinary skill in the art in analyzing Petitioner's allegations of obviousness." PO Resp. 19 (citing Ex. 2016 (Boncelet Decl.) ¶¶ 30–32). We find Petitioner's undisputed contention to be reasonable and we adopt the level of ordinary skill in the art as proposed by Petitioner.

C. Claim Construction

"[I]n an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340, 51,340, 51,358 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)).[6] In applying a district

[6] 37 C.F.R. § 42.100(b) also states that "Any prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the *inter partes* review proceeding will be considered." The

court-type claim construction, we are guided by the principle that the words of a claim "are generally given their ordinary and customary meaning," as understood by a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (citation omitted). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). There is a "heavy presumption," however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted).

We are also guided by the principle that we only construe claim terms if, and to the extent that, it is necessary for the purpose of the proceeding. *See, e.g.*, *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) ("[C]laim terms need only be construed 'to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

1. Petitioner's Proposed Constructions

Petitioner provides proposed constructions of the following claim terms: "temporal sequence presentation data," "rendering system," "tangibly stored in a . . . computer-readable medium"/"a computer-readable medium tangibly storing," and "current time." Pet. 13–19. Patent Owner contends that Petitioner's constructions are not proper or necessary and should not be

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District Court claim construction is of record in this proceeding. *See* Ex. 2005.

adopted. PO Resp. 29–30.[7] There is no dispute that requires that we construe "temporal sequence presentation data," "tangibly stored in a . . . computer-readable medium"/"a computer-readable medium tangibly storing," or "current time." Patent Owner does not dispute that the cited art teaches these elements in the context of the challenged claims. *See generally* PO Resp. Thus, we need not construe these terms for purposes of this Decision.

"rendering system"

The term "rendering system" is recited in challenged, independent claims 1, 12, 13, and 22 and in challenged, dependent claims 2 and 14. Ex. 1001, 23:19–26:65. In the Petition, Petitioner proposes a lengthy construction of "rendering system" based on what Petitioner describes as an express definition at column 8, lines 42–64, of the '903 patent. Pet. 16–17. Again, Patent Owner argues that construction is not necessary and Petitioner's construction should not be adopted. PO Resp. 29–30.[8] The District Court rejected Petitioner's proposed construction and determined

[7] In its Preliminary Response, Patent Owner also argued Petitioner's constructions were unnecessary and did not propose any constructions. Prelim Resp. 28–31. We determined that no explicit construction of any claim term was necessary in order to make the determination to institute *inter partes* review. Inst. Dec. 13.

[8] Patent Owner argues that Petitioner's proposed construction is incorrect but contends that the challenge to the claims should be rejected because Petitioner fails to show that Nelson meets the definition of "rendering system" that Petitioner proposes. PO Resp. 31–42. In reply, Petitioner argues that Patent Owner should not be allowed to take these inconsistent positions and that Patent Owner "does not dispute that Nelson discloses a 'rendering system' under the plain meaning of the term as adopted by the district court." Pet. Reply 10.

that the Specification of the '903 patent did not expressly define "rendering system." Ex. 2005, 3, 12–13. The District Court said:

> The seventh term is "rendering system" found in the '903 patent family. Plaintiff proposes that no construction is necessary. Defendants propose a lengthy construction that incorporates a number of limitations [*i.e.*, "A client system having the following characteristics: (a) the Renderer processes Temporal Sequence Presentation Data; (b) the Renderer processes data elements in an ordered sequence in which "earlier" elements are processed before "later" elements (the order may be determined by the order in which the elements are submitted to the Renderer, or by the Data Times of the elements, or by using other techniques); (c) processing a data element takes a finite amount of time (possibly but not typically zero) known as the Rendition Period of the data element; (d) processing a sequence of data elements takes a finite amount of time directly related to the sum of the Rendition Periods of the individual elements, and, potentially, some other factors (the amount of time required to process (render) a sequence of data elements is called a Cumulative Rendition Period for those elements); and (e) at least one instance of a Renderer (often associated with rendering of audio data) has a capability of reporting back to a module, for example, a Presentation System Control Module, upon request, a current value of the Cumulative Rendition Period (a Renderer that is consistently used by the Presentation System in this fashion is referred to as a Timing Renderer)."].
>
> Here I will construe the term to mean "a system for rendering temporal sequence presentation data."
>
> Defendants' proposal is based on the definition in the specification of a "Renderer." That is not a clear definition of "rendering system." Indeed, the specification uses the term "rendering system" repeatedly and uses the term "Renderer" with a capital R and it is not clear that the two are used interchangeably. And, in fact, it appears that the rendering systems in the specification have different characteristics than the characteristics as the Renderer as defined. . . . [I]t appears that a Renderer may be a component of the rendering system. But it is not itself a "rendering system."

Id. at 12–13 (bracketed material in original).[9] We agree with the District Court's reasoning and adopt the construction of "rendering system" adopted by the District Court. Accordingly, we construe "rendering system" as "a system for rendering temporal sequence presentation data."

2. Patent Owner's Proposed Constructions

In the "Claim Construction" section of its Response, Patent Owner addresses the following terms:

> *"maintaining a value of a presentation time parameter . . . representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data"*
>
> *"the portion of the temporal sequence presentation data"*
>
> *"presentation rate"*
>
> *"time-scale modification (TSM)"*[10]

PO Resp. 19–29. Petitioner asks us to reject Patent Owner's proposed constructions. Pet. Reply 1. After considering the presentations of the parties, and as discussed in more detail below, we determine that it is appropriate to use the plain and ordinary meanings of the first three terms in construing the challenged claims and that "time-scale modification (TSM)" should be construed as "speeding up or slowing down the playback rate."

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[9] Before the District Court, Patent Owner proposed that no construction of "rendering system" was necessary. Ex. 2005, 12.

[10] As discussed *infra*, "time-scale modification (TSM)" is not a term recited in any of the claims of the '903 patent. *See* Ex. 1001, 23:19–26:66. Patent Owner asks us to construe "[t]he term [time-scale modification] TSM [because it] is incorporated in all of the claims challenged here by virtue of the definition of presentation rate." PO Resp. 26.

"maintaining a value of a presentation time parameter . . . representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data"

This term is recited in challenged, independent claims 1, 12, 13, and 22. Ex. 1001, 23:19–26:65. Patent Owner requests that we give this term its plain meaning. PO Resp. 19 ("Patent Owner does not believe that this limitation requires construction apart from the plain meaning of the words of the claim."). Patent Owner states that it raised this term as a claim construction issue because it believes the Board misconstrued it in the Decision on Institution. *Id.* at 19–24. Patent Owner focuses its argument on the "during rendering" portion of the term and argues that the Board has read the term as if it said "during [and after] rendering." *Id.* at 21 ("[I]f the 'presentation time parameter' can represent time elapsed 'during [and after] rendering' instead of 'during rendering' as claimed, the 'during rendering' limitation is effectively read out of the claim." (second bracketed material in original)). Petitioner responds that Patent Owner's argument is based on a false premise and that the Board did not interpret the claims as suggested by Patent Owner. Pet. Reply 1 ("[N]either [Petitioner] nor the Board has interpreted the claim in this way. Rather, the real dispute centers on what 'during rendering' means."). Petitioner argues that, to the extent there is a dispute regarding the interpretation of this term, the dispute can be resolved by looking at the definition of "Presentation Time" as set forth in the Specification of the '903 patent. *Id.* at 1–2. We agree with Petitioner.

At column 1, lines 53–55, the '903 patent defines "Presentation Time" as "time elapsed since the beginning of the media content presentation" and provides this example: "if the media has been playing for one minute, the value of Presentation Time is 60,000 milliseconds." Ex. 1001, 1:55–57.

And, the '903 patent provides this further example in order to highlight the difference between "Presentation Time" and "Data Time:"

> Presentation Time and Data Time are identical in traditional players, because traditional players can only present media content at a fixed "normal" rate. However, when a player is enhanced with a Time-Scale Modification (TSM) capability, it can present media content at various rates. Because of this, Presentation Time and Data Time are no longer the same. For example, if a 60-second clip of media content is presented at a fixed rate that is twice normal rate, at the end of the clip the Data Time is 60,000 milliseconds, but the Presentation Time is 30,000 milliseconds. This is because it only takes 30 seconds to play the 60-second clip.

Ex. 1001, 2:8–19. In accordance with these passages, the District Court in the related district court proceeding, determined "[t]he specification . . . defines presentation time as 'time elapsed since the beginning of the media content presentation.'" Ex. 2005, 12.[11]

As requested by Patent Owner and not disputed by Petitioner, we give the term "maintaining a value of a presentation time parameter . . . representing an amount of time elapsed during rendering of the portion of the temporal sequence presentation data" its ordinary and customary meaning.[12] However, contrary to Patent Owner's interpretation, we

[11] During oral argument, Patent Owner's counsel acknowledged that the quoted passage was a definition of "presentation time." Tr. 45:8–13.

[12] In its Response, Patent Owner describes "presentation time" as "the length of time of the actual presentation" and "maintaining a value of a presentation time parameter" as "maintain[ing] the time value for rendering the media at a modified playback rate, presentation time." PO Resp. 1–2; *see also* Prelim. Resp. 8 ("'presentation time'. . . tracks the elapsed rendering time of [a] media presentation"), 13 ("the time elapsed during rendering the content [is] called 'Presentation Time.'").

determine that in the context of the claims and the '903 patent, the plain meaning of "during rendering" is the "time elapsed since the beginning of the presentation" of the portion or element of interest.

"the portion of the temporal sequence presentation data"

The term "the portion of the temporal sequence presentation data" is recited in challenged, independent claims 1, 12, 13, and 22. Ex. 1001, 23:19–26:66. Patent Owner contends "***a portion*** of the temporal sequence presentation data" of Elements 1(A), 12(B), 13(A), and 22(B) should be construed to be the same "portion of the temporal sequence presentation data" as recited in Elements 1(C), 12(E), 13(C), and 22(C). PO Resp. 25–26. Petitioner argues "such a construction is unnecessary as [Petitioner's] mapping does not differ from [Patent Owner's] proposal." Pet. Reply 5. We agree with Petitioner. We discern no dispute relating to this term as used in the challenged claims and we determine it is not necessary to construe explicitly this term.[13]

"presentation rate" & "time-scale modification (TSM)"

We analyze the terms "presentation rate" and "time-scale modification (TSM)" together. The term "presentation rate" is recited in challenged, independent claims 1, 12, 13, and 22. Ex. 1001, 23:19–26:65. The term "time-scale modification (TSM)" is not recited in any of the claims of the '903 patent. *Id.* As noted previously, Patent Owner asks us to construe "[t]he term [time-scale modification] TSM [because it] is incorporated in all

[13] Although not referenced by either party with regard to construction of the term "a portion of the temporal sequence presentation data," we note that the District Court in the related proceeding construed "portion(s)" to mean "a part of any whole, either separated from or integrated with it." Ex. 2005, 3, 13. Patent Owner proposed this definition in the District Court as the plain and ordinary meaning of "portion(s)." *See id.* at 13.

of the claims challenged here by virtue of the definition of presentation rate." PO Resp. 26.

Patent Owner contends that "presentation rate" means "the speed at which media is played back in a time-scale modification system" and that "time-scale modification (TSM)" means "speeding up and slowing down the perceived rate of speech while substantially preserving both intelligibility and the perceived pitch for audio and audio-visual media." PO Resp. 26–27. Petitioner argues that neither of Patent Owner's proposed constructions should be adopted. Pet. Reply 5–9.

Patent Owner argues that its proposed construction of "presentation rate" was agreed to by the parties in the District Court litigation[14] and adopted by the District Court and, "[t]herefore, the Board should construe the term 'presentation rate' here consistently with the parties' agreed-upon construction in the district court." PO Resp. 26. Patent Owner provides no additional reasoning or argument in support of its construction of "presentation rate." *Id.*

[14] Petitioner argues that it did not agree to construction of "presentation rate" as "the speed at which media is played back in a time-scale modification system." Pet. Reply 5 ("[A]s the district court observed, there was simply a lack of 'dispute' on the term in light of the court's construction of 'time-scale modification.'"). However, at the claim construction hearing, the District Court asked Petitioner's counsel if there was an agreement or a dispute as to the construction of "presentation rate." *See* Ex. 2004, 109:3–110:10. Although reluctant to agree to inclusion of "in a time-scale modification system" in the construction, Petitioner's counsel consented to the District Court construing "presentation rate" as "the speed at which media is played back in a time-scale modification system." *Id.* In light of this exchange with the District Court, we determine Petitioner agreed to the construction of "presentation rate" in the District Court case.

With regard to "time-scale modification (TSM)," Patent Owner proposes the same construction that it proposed in the District Court and that was rejected by the District Court. *See* Ex. 2005, 8–10. The District Court construed "time-scale modification/time-scale modified" as meaning "speeding up or slowing down the playback rate." *Id.* at 2. Patent Owner does not explain why we should adopt the District Court's construction of "presentation rate" and at the same time incorporate into the challenged claims a definition of "time-scale modification (TSM)" that the District Court rejected. Adopting the District Court's construction of "presentation rate," but also incorporating a definition of "time-scale modification (TSM)" that was rejected by the District Court into the challenged claims, would result in a construction inconsistent with the District Court.[15]

Petitioner's position on construction of "presentation rate" is inconsistent with the position taken by it before the District Court. In this proceeding, Petitioner argues, "[Patent Owner's] construction improperly incorporates limitations into the claims by requiring playback to occur 'in a timescale modification system.' Nothing in the record supports reading 'timescale modification system' into the claims." Pet. Reply 6. Despite the

[15] Patent Owner argues that the District Court's claim construction should not control and that the District Court "has already agreed that claim construction may need to be revisited to arrive at the correct construction following the IPR proceedings." PO Sur-reply 13 (citing Ex. 2033, 1–2); *see also* IPR2109-01244, Paper 29 (Patent Owner's Sur-reply), 14 ("The Delaware district court's ruling should not control because the district court has already agreed that claim construction may need to be revisited to arrive at the correct construction following the IPR proceedings, suggesting that the Board may likely reach a different conclusion.") (citing Ex. 2033, 1–2). Exhibit 2033 is an Order issued by the District Court that indicates that the litigation is stayed through issuance of final written decisions by the Board. Ex. 2033, 1.

inconsistencies in Petitioner's position, we agree with Petitioner that "time-scale modification" should not be read into the challenged claims through construction of "presentation rate."

We determine that "presentation rate" should be interpreted according to its ordinary and customary meaning of "the speed of presentation." This meaning is consistent with that portion of the District Court's construction of "presentation rate" as "the speed at which media is played back." As cited previously, there is a heavy presumption that a claim term has its ordinary and customary meaning. *CCS Fitness*, 288 F.3d at 1366. We have not been presented with any evidence to overcome that heavy presumption. Neither party directs our attention to any intrinsic or extrinsic evidence to support incorporating "in a time-scale modification system" into the construction of "presentation rate."[16,17] And, we determine that the ordinary and customary meaning of the term "presentation rate" is consistent with its use in the claims of the '903 patent. The term "presentation rate" is recited once in each of challenged, independent claims 1, 12, 13, and 22 as part of limitations which recite "maintaining a value of a data time parameter . . .

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[16] The only support Patent Owner cites in its Response for its construction of "presentation rate" besides the District Court's claim construction order (Ex. 2005, 2, 10) is paragraphs 61 and 62 of the Boncelet Declaration. PO Resp. 26. In paragraphs 61 and 62 of his Declaration (Ex. 2016), Dr. Boncelet does not refer to any intrinsic or extrinsic evidence in support of this construction but, instead, merely cites the District Court's claim construction order (Ex. 2005, 2, 10) and states, "I agree with this construction and have applied it in my analysis and opinions herein."

[17] Based on our independent analysis of the '903 patent and its file history, we do not discern any support for incorporating "in a timescale modification system" into the meaning of "presentation rate" as recited in the claims of the '903 patent or otherwise limiting the construction of "presentation rate" from its ordinary and customary meaning.

representing/which represents an amount of time required by the rendering system[18] to render the portion of the temporal sequence presentation data at a default ***presentation rate***."[19] Ex. 1001, 23:19–26:65 (emphasis added). As defined in the Specification, the "default rate" is the "normal" rate of presentation and does not involve "time-scale modification" or varying the rate of the presentation.[20] *See* Ex. 1001, 9:52–53. Stated differently, the

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[18] Claims 1 and 13 recite, "required by the rendering system to render" and claims 12 and 22 recite, "required to render." Ex. 1001, 23:33–34, 25:3, 25:25–26, 26:59.

[19] Patent Owner never explains how its construction of "presentation rate" with its incorporated construction of "time-scale modification" should be interpreted in the phrase "default presentation rate" or in the greater context of the "maintaining" limitations (A) of independent claims 1, 12, 13, and 22. If we construe "presentation rate" as proposed by Patent Owner and place it into the "maintaining" limitations of the challenged, independent claims, the limitation becomes "maintaining a value of a data time parameter . . . representing/which represents an amount of time required (by the rendering system) to render a portion of the temporal sequence presentation data at a default speed at which media is played back in a system speeding up or slowing down the perceived rate of speech while preserving both intelligibility and the perceived pitch for audio and audio-visual media." Patent Owner's construction which adds "speeding up or slowing down" conflicts with "default speed" and, thus, the recitation of "default presentation rate." The recitation of a "default presentation rate" does not require "speeding up or slowing down." Thus, Patent Owner's construction renders claims 1, 12, 13, and 22 inconsistent and confusing and is, at best, superfluous in the context of these claims.

[20] In a related proceeding, Patent Owner acknowledges that "[a] presentation rate or playback rate can include playing at 1[X] or normal, while a TSM rate involves speeding up or slowing down the audio or audio visual work using Time-Scale *Modification*" (IPR2019-01244, Paper 25 (Patent Owner's Response), 32) and "[p]laying at normal does not qualify as Time-Scale Modifying—it is normal" (*id.* at 55). *See also* IPR2019-01244, Paper 29 (Patent Owner's Sur-reply), 18 ("The parties agree that normal (1x) is a presentation rate.").

"default presentation rate" is the speed at which systems (including prior art systems such as the Real-Networks Real Player (*see* Ex. 1001, 1:23–32)) play back media without "time-scale modification." Adding "in a time-scale modification system" to the construction of "presentation rate" conflicts with the broader use of the term "presentation rate" in the independent claims and the Specification of the '903 patent.

We reject Patent Owner's proposed construction of "presentation rate," because it is not supported by the language of the claims or the Specification of the '903 patent. Thus, we construe the term "presentation rate" differently than the District Court, because the records in the District Court case and in this proceeding relating to construction of "presentation rate" are different. In the District Court proceeding, there was a construction of "presentation rate" that was agreed to by the parties. *See* Ex. 2004, 109:3–110:10. In this proceeding, there is a dispute between the parties as to the construction of "presentation rate." *Compare* PO Resp. 26, *with* Pet. Reply 5–6. However, our conclusion that the challenged claims of the '903 patent would have been unpatentable in view of the asserted art would not be different under either our construction or the District Court's construction of "presentation rate."

In any event, we also reject Patent Owner's proposed construction of "time-scale modification system," because we discern no basis for limiting the claims of the '903 patent to "speeding up and slowing down the perceived rate of speech while substantially preserving both intelligibility

and the perceived pitch for audio and audio-visual media" through recitation of "presentation rate" as requested by Patent Owner.[21] *See* PO Resp. 26–29.

As in the District Court, "[t]he dispute here is over [Patent Owner's] attempt to read in 'preserving both intelligibility and the perceived pitch.'" Ex. 2005, 8. However, as the District Court noted, "[t]he terms 'intelligibility' and 'pitch' do not appear in either the '903 or '228 patent family. In fact, the term 'pitch' does not appear in any of the asserted patent families." *Id*. The District Court said:

> I find that the construction of time-scale modification that does not require preservation of intelligibility and pitch is supported by the intrinsic evidence of the asserted patents here.
>
> For example, the description of "time-scale modification" at column 2, lines 24 through 28 of the '050 specification [in the '903 patent family] states that "Presentation Time and Data Time are identical in traditional players, because traditional players can only present media content at a fixed 'normal' rate. However, when a player is enhanced with a Time-Scale Modification (TSM) capability, it can present media content at various rates."[22]
>
> * * *
>
> None of these descriptions of time-scale modification mentions preservation of pitch or intelligibility.
>
> * * *

[21] Petitioner contends, "[t]o the extent ['time-scale modification'] is construed, . . . it should be construed to mean 'playback rate modification.' This is consistent with the specification, which explains that 'when a player is enhanced with a Time-Scale Modification (TSM) capability, it can present media content at **various rates**.'" Pet. Reply 6 (citing Ex. 1001, 1:63–2:12).

[22] The quoted '050 patent (US Patent No. 8,345,050) has the same Specification as the '903 patent. The quoted description appears at column 2, lines 8–13, of the '903 patent.

> Finally, I note that [Patent Owner's] construction is problematic insofar as it requires "substantially preserving pitch." It is wholly unclear what "substantially" means in the context of these patents.

Ex. 2005, 9–10 (first bracketed material in original).

In support of its position, Patent Owner cites the following passage from the Specification of the '903 patent:

> TSMAudioDevice VRP Module 170 processes buffers 200 through a library of signal processing routines, for example, a suitable library of signal processing routines called the Time Scale Tailor package is available from Enounce, Incorporated of Palo Alto, Calif. In accordance with this embodiment, this library carries out digital signal processing procedures on buffers 200 of audio samples that has the effect of reducing the number of samples in the buffer (when playing faster than real time) or increasing the number of samples in the buffer (when playing slower than real time), thereby effectively changing the playback rate. For example, in accordance with this embodiment, processing the buffer using the library decreases or increases the samples in a particular way ***so as to leave the perceptual and linguistic information in the buffers unchanged,*** but to change the duration of the buffers.

PO Resp. 28–29 (citing Ex. 1001, 7:21–36). However, this passage is explicitly designated as an example and as related to a commercial embodiment. And, the '903 patent states that the embodiments described in the Specification are not limiting. Ex. 1001, 22:28–31 ("It is to be understood that although the invention has been described above in terms of particular embodiments, the foregoing embodiments are provided as illustrative only, and do not limit or define the scope of the invention."). Furthermore, this passage does not specifically refer to "speeding up and slowing down the perceived rate of speech while substantially preserving both intelligibility and the perceived pitch for audio and audio-visual media"

and Patent Owner does not persuasively explain how or why this passage supports its proposed construction. *See* PO Resp. 28–29.

Accordingly, we determine that Patent Owner's proposed construction of "time-scale modification" is not supported. We agree with and adopt the District Court's reasoning and decision that the term "time-scale modification" means "speeding up or slowing down the playback rate" and does not include "preserving both intelligibility and the perceived pitch."[23,24] *See* Ex. 2005, 2, 8–10.

D. Ground Based on Nelson

Petitioner contends that claims 1–4, 12–14, and 22 would have been obvious in view of Nelson. Pet. 3, 19–64.

1. Nelson (Ex. 1006)

Nelson was filed on February 3, 1993, and issued on February 17, 1998. Ex. 1006, codes (22), (45). Nelson is prior art to the '903 patent under 35 U.S.C. § 102(b). *See* Pet. 3. Patent Owner does not contest the prior art status of Nelson. *See generally* PO Resp.

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[23] Patent Owner asserts that "resolution of the dispute regarding preservation of pitch need not be resolved," because "Petitioner's alleged grounds for obviousness fail even under Petitioner's own proposed construction of the term" "time-scale modification." PO Resp. 27 n.9.

[24] Except for those sections of its Response arguing the construction of "time-scale modification" and whether Nelson teaches "time-scale modification," Patent Owner adopts and uses this same construction of "time-scale modification" in its Response. PO Resp. 5 n.2 (referencing Sections IV.F. and V.G.) ("Aside from these two sections, however, Patent Owner applies the district court's construction of speeding up and slowing down playback rate to all other arguments in this response, which Patent Owner understands to be consistent with Petitioner's construction here: 'playback rate modification.'").

Nelson is titled, "Digital Media Data Stream Network Management System." Ex. 1006, code (54). Nelson is directed to a "computer-based media data processor for controlling transmission of digitized media data in a packet switching network." *Id*. at code (57) (Abstract). Nelson "relates to the management of digitized media stream data, e.g., digitized video, and particularly relates to the capture, storage, distribution, access and presentation of digital video within a network computing environment." *Id*. at 1:7–10. Nelson discloses a digital video management system (DVMS) that provides the ability to capture, store, transmit, access, process and present live or stored media stream data, independent of its capture or storage location, in either a stand-alone or a network environment. *Id.* at 5:45–50.

Figure 4 of Nelson is reproduced below.

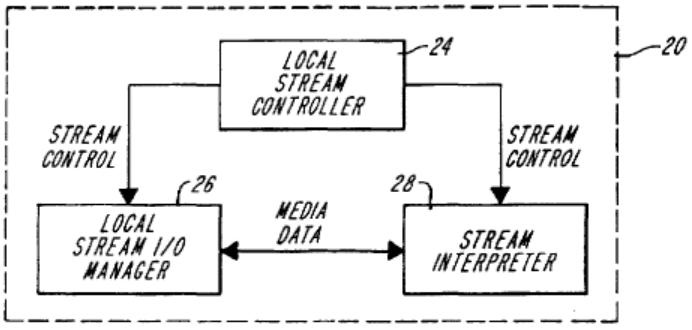


FIG. 4

Figure 4 of Nelson (above) is a schematic diagram of a network implementation of the DVMS. *Id.* at 5:7–8. The description of Figure 4 states:

> [T]he local DVMS manager 20 consists of three modules: the stream controller 24, stream input/output (I/O) manager 26, and the stream interpreter 28. This modularity is exploited in the DVMS design to separate the flow of data in a media data streams from the flow of control information for that media

> stream through the system. Based on this data and control separation, streams data and stream control information are each treated as producing distinct interactions among the three manager modules, which operate as independent agents.

Id. at 7:57–66. The description of Figure 4 further states:

> The stream interpreter module 28 is responsible for managing the dynamic computer-based representation of audio and video as that representation is manipulated in a standalone computer or a computer linked into a packet network. This dynamic management includes synchronization of retrieved audio and video streams, and control of the rate at which the audio and video information is presented during a presentation sequence.

Id. at 8:25–32. Figure 5 of Nelson is reproduced below.

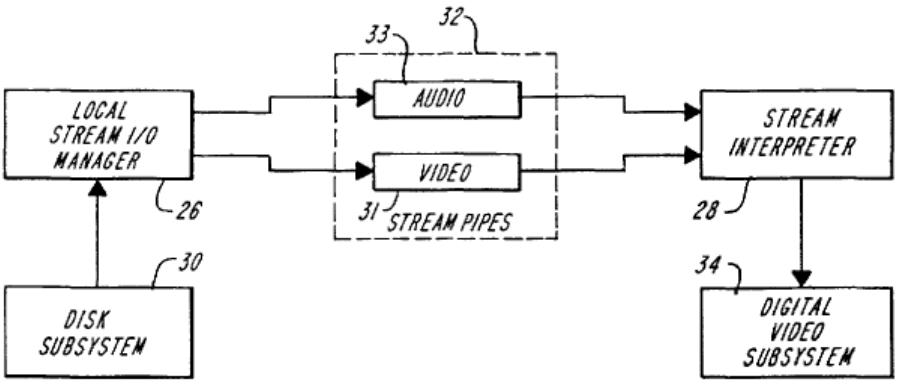


FIG. 5

Figure 5 of Nelson (above) depicts a stream flow when the DVMS requests access to audio or video streams. *Id.* at 9:62–63. The description of Figure 5 states:

> The stream I/O manager 26 module retrieves the requested streams from a stream input 30; this stream input comprises a storage access point, e.g., a computer file or analog video source. The stream I/O manager then separates the retrieved streams according to the specified file format of each stream. If two streams, e.g., audio and video streams, which are accessed were interleaved in storage, the stream I/O manager

> dynamically separates the streams to then transform them to distinct internal representations, each comprising a descriptor which is defined based on their type (i.e. audio or video). Once separated, the audio and video stream data are handled both by the stream I/O manager and the stream interpreter as distinct constituent streams within a stream group. The stream I/O manager 26 then exchanges the stream data, comprising sequences of presentation units, with the stream interpreter 28 via a separate queue of presentation units called a stream pipe 32, for each constituent stream; an audio stream pipe 33 is thus created for the audio presentation units, and a video stream pipe 31 is created for the video presentation units. Each audio stream (of a group of audio streams) has its own pipe, and each video stream has its own pipe. During playback of streams, the stream I/O manager continually retrieves and produces presentation units from storage and the stream interpreter continuously consumes them, via the stream pipes, and delivers them to a digital media data subsystem for, e.g., presentation to a user.

Id. at 9:63–10:22. "[T]he digital video management system of the invention provides synchronization of audio to video, and in general, synchronization between any two or more dynamic stream[s] being presented." *Id.* at 12:16–21.

Figure 6 of Nelson is reproduced below.

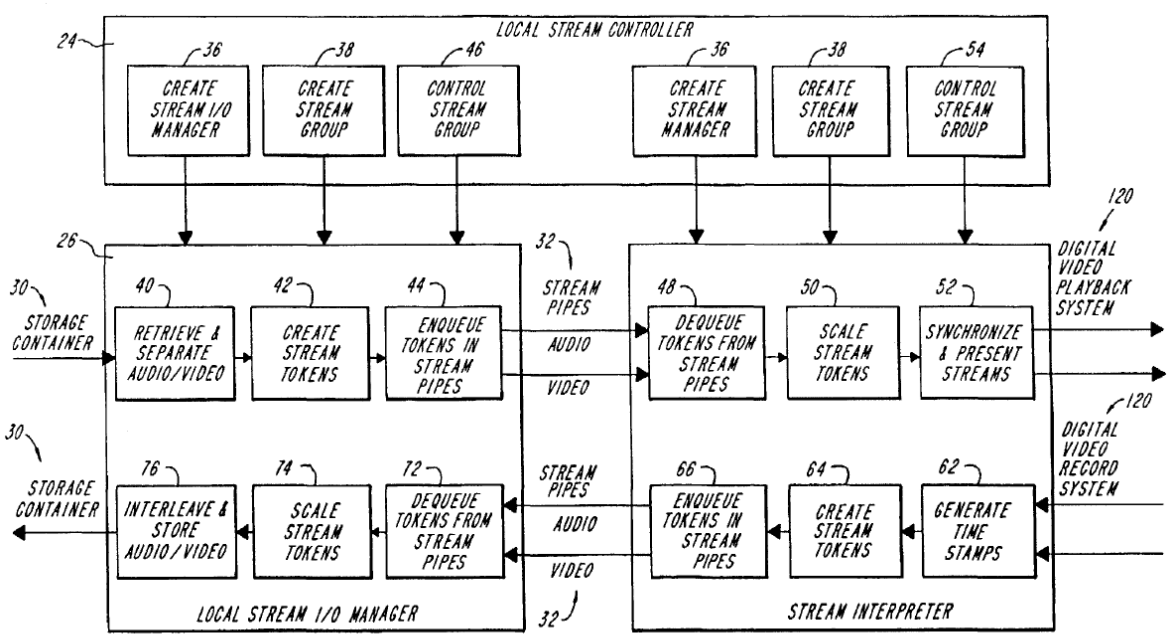


FIG. 6

Figure 6 of Nelson (above) depicts "a schematic flow chart illustrating presentation and capture scenarios carried out by the local digital video management system manager of FIG. 4." *Id.* at 5:13–15. The description of Figure 6 states:

> [T]he synchronization of streams within a stream group is the responsibility of the stream interpreter module during a scaling process. The streams may be self-synchronized using either an implicit timing scheme or an explicit timing scheme. Implicit timing is based on the fixed periodicity of the presentation units in the constituent streams of a stream group to be synchronized. In this scheme, each presentation unit is assumed to be of a fixed duration and the presentation time corresponding to each presentation unit is derived relative to a reference presentation starting time. This reference starting time must be common to all of the constituent streams. Explicit timing is based on embedding of presentation time stamps and optionally, presentation duration stamps, within each of the constituent streams themselves and retrieving the stamps during translation of streams from the storage format to the token format. The

> embedded time stamps are then used explicitly for synchronization of the streams relative to a chosen reference time base.
>
> Using either the implicit or explicit timing self-synchronization schemes, a reference time base is obtained from a reference clock, which advances at a rate termed the reference clock rate. This rate is determined by the reference [cl]ock period, which is the granularity of the reference clock ticks.
>
> The DVMS of the invention supports two levels of self-synchronization control, namely, a base level and a flow control level. Base level synchronization is applicable to stream process scenarios in which the stream I/O manager is able to continuously feed stream data to the stream interpreter, without interruption, and in which each presentation unit is available before it is to be consumed. In this scenario, then, the stream I/O manager maintains a process rate and a process work load that guarantees that the stream I/O manager stays ahead of the stream interpreter.

Id. at 13:19–53. Figure 10 of Nelson is reproduced below.

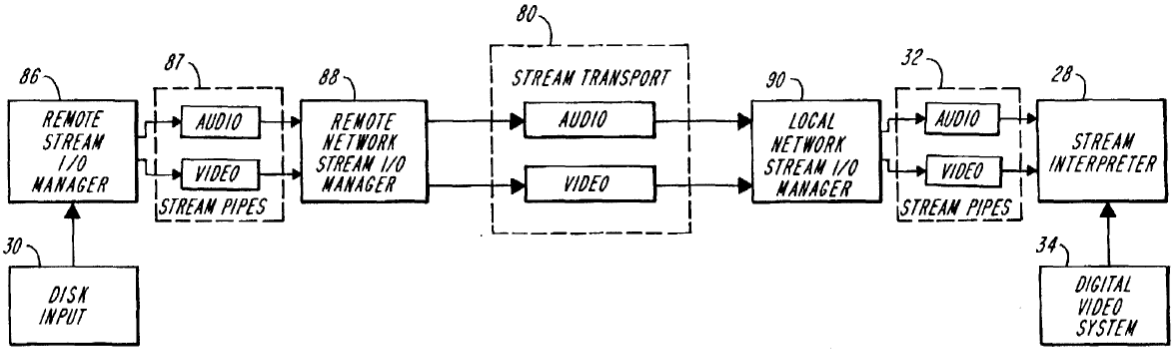


FIG. 10

Figure 10 of Nelson (above) depicts "a schematic diagram illustrating the flow of media stream data between the remote and local digital video management manager modules." *Id.* at 5:29–31. The description of Figure 10 states:

> Upon initialization from the request, and based on the network servers' stream group advertisements, the appropriate remote stream I/O manager 86 retrieves stored streams, e.g., audio and video streams, from the appropriate file storage 30 containing the requested stream group. The manager then separates the retrieved streams, if necessary, thereby producing separate audio and video presentation unit streams, and enqueues corresponding stream descriptor tokens in separate stream pipes 87, one pipe for each presentation unit token stream.
>
> The remote network stream I/O manager 88 consumes the presentation unit tokens from each of the stream pipes, assembles transmission packets based on the streams, and releases them for transmission across the network 80 directly to the corresponding local network stream I/O manager 90, based on the DVMS stream data transport protocols; the particular transport protocol used is set by the network environment.

Id. at 20:21–38.

2. Analysis of Independent Claims 1, 12, 13, and 22

a) Claim 1

> *"A method, performed by at least one machine, for rendering temporal sequence presentation data in a machine-implemented rendering system, the temporal sequence presentation data being tangibly stored in a first computer-readable medium, the method comprising steps of:"*

In the Petition, Petitioner does not take a position as to whether the preamble of claim 1 is limiting.[25] Pet. 19 ("To the extent that the preamble of claim 1 is limiting, *Nelson* discloses the limitations therein."). Patent Owner relies on the recitation of "rendering system" in the preambles of the

[25] "[W]here a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation." *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997).

challenged, independent claims in arguing that Nelson does not teach the claimed inventions. PO Resp. 31–40.

Parsing the preamble, it recites, (1) "[a] method, performed by at least one machine;" (2) "rendering temporal sequence presentation data in a machine-implemented rendering system;" and (3) tangibly storing the temporal sequence presentation data in a computer-readable medium. The Petition states, "*Nelson* discloses '**a computer-based media data processor** for controlling the **computer presentation** of digitized continuous **time-based** media data composed of a **sequence of presentation units**'" and "*Nelson* discloses a DVMS [Digital Video Management System], which 'provides the ability to capture, store, transmit, access, process and **present live or stored media stream data**.'" Pet. 19–20 (citing Ex. 1006, 2:10–13, 5:45–50). The Petition further states that, "*Nelson* discloses that a stream includes 'dynamic information . . . with **temporal predictability**' and '**a succession of sequences** . . . in turn, each sequence contains **a succession of segments**'" and "each stream contains a presentation unit being 'a unit of continuous, **temporally**-based data to be presented,' which 'has an **associated presentation time and presentation duration**.'" *Id*. at 21 (citing Ex. 1006, 6:10–26, 6:44–47).

Figure 2 of Nelson is reproduced below.

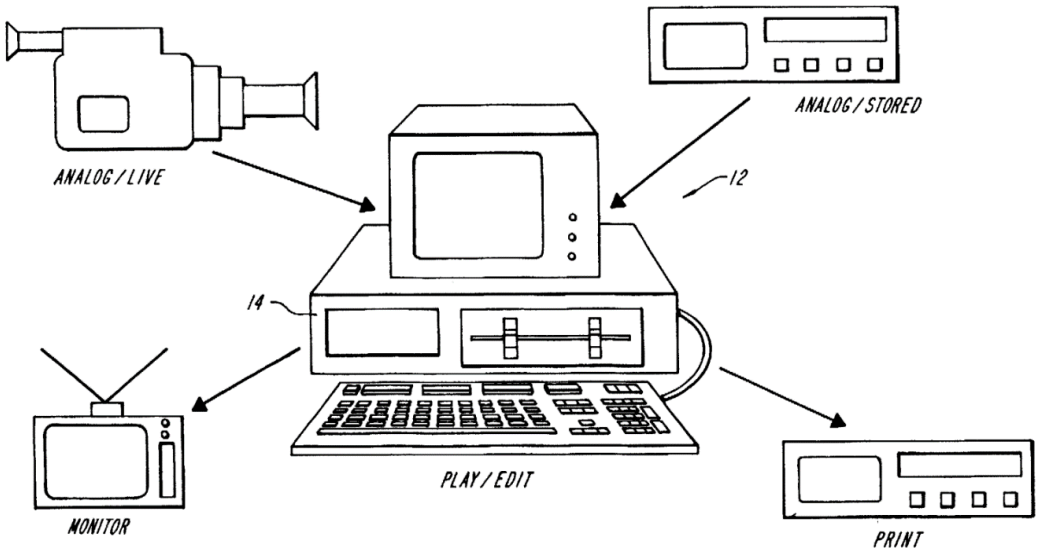


FIG. 2

Figure 2 of Nelson depicts "a stand-alone implementation of the digital video management system [DVMS]." Ex. 1006, 5:1–2. The detailed description of Figure 2 in Nelson states:

> [T]he DVMS may be implemented in a stand-alone computer system or a computer-based, packet switched network. Referring to FIG. 2, in a stand-alone computer system implementation 12, live or stored media streams are accessed and captured for presentation and editing on the stand-alone computer 14. The captured, and optionally edited media streams may then be delivered to a presentation monitor or to a VCR tape printer utility.

Id. at 6:57–64. Figure 3 of Nelson is reproduced below.

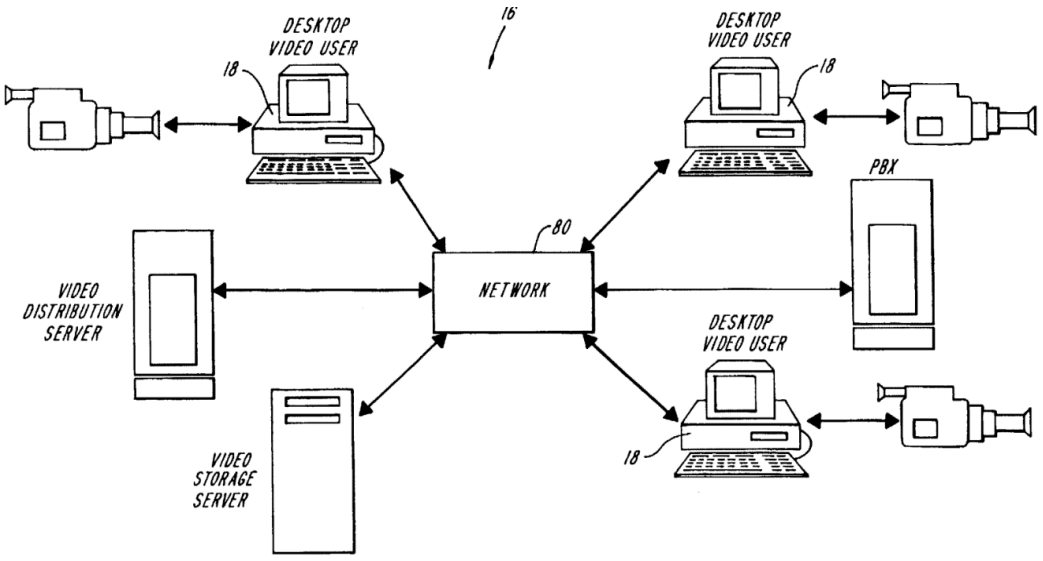


FIG. 3

Figure 3 of Nelson depicts "a network implementation of the digital video management system [DVMS]." *Id*. at 5:4–5. The detailed description of Figure 3 in Nelson states:

> Referring to FIG. 3, a packet switching network in which the DVMS is implemented comprises desktop computer systems 18 which are linked via a packet switching network 80, which is controlled by the DVMS network implementation 16. The network 80 may comprise a local area network (LAN) or a wide area network (WAN), or a combination of one or more LANs and WANs. The DVMS provides access to and capture of media streams from live analog video capture, e.g., a VCR or camcorder, a network, storage or PBX server, or one of the desktop computers, and in turn manages the transmission of the media stream data across the network back to any of the access points.

Id. at 6:65–7:9.

As noted previously, Patent Owner argues that Petitioner has failed to establish that Nelson teaches a "rendering system" as recited in the challenged claims. PO Resp. 31–42. However, this argument is based on Patent Owner's contention that Petitioner has failed to establish that Nelson

teaches a "rendering system" according to the construction proposed by Petitioner that we have not adopted. *See id.* We construe "rendering system" to mean "a system for rendering temporal sequence presentation data." *Supra* Section II.C.1. Applying this construction, Petitioner has shown that Nelson teaches a "rendering system" as recited in the context of the preambles of the challenged, independent claims, and Patent Owner does not argue to the contrary. *See* PO Resp. 31–42.

We find that the preamble of claim 1 is taught by Nelson.

> *"(A) maintaining a value of a presentation time parameter tangibly stored in a second computer-readable medium and representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data"*

Petitioner contends that Nelson's description of a "reference time base" that is maintained and used in synchronization of media streams discloses the "presentation time parameter" as recited in this limitation. Pet. 41–42 (citing Ex. 1002 (Schonfeld Decl.) ¶¶ 59–64). The Petition states:

> *Nelson* discloses maintaining a value of a reference time base ("a value of a presentation time"), which is stored in a computer-readable medium of the DVMS ("stored in a second computer-readable medium"), where the value represents an amount of time elapsed during rendering of a portion of the media stream ("representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data"). ([Ex. 1002] ¶59.).

Pet. 41. And, "[i]n either the implicit timing scheme or the explicit timing scheme, 'a reference time base' obtained from a reference clock ([Ex. 1006], 13:38-43) is used to control synchronization. (*See, e.g.*, [Ex. 1006,] 14:44-

48, 15:20-25.)" *Id.* at 24. With regard to the use of the "reference time base" in synchronization, the Petition states:

> *Nelson* explains that synchronization amongst media streams is "inherently required for the coordinated presentation." (Ex. 1006, 12:17-29; Ex. 1002, ¶60.) Synchronization of the streams may be achieved by maintaining "**a common reference time base**" in the disclosed synchronization schemes, including an implicit timing scheme and an explicit timing scheme. (Ex. 1006, 12:49-51 (disclosing that "independent constituent streams may . . . be stored in separate file containers and be synchronized, before presentation, with a common reference time base"), 13:38-43 (disclosing that in either synchronization scheme "a reference time base is obtained from a reference clock"), 13:22-26 (disclosing that synchronization of stream may be achieved using implicit or explicit timing scheme).) The implicit timing scheme is "based on the fixed periodicity of the presentation units in the constituent streams of a stream group to be synchronized." (*Id.*, 13:24-26; *see also id.*, 13:26-31.) The explicit timing scheme is based on embedded presentation time stamps (and optionally presentation duration stamps) within each of the streams.

Id. at 41–42.

Patent Owner disputes whether Nelson discloses "maintaining a value of a presentation time parameter . . . representing an amount of time elapsed during rendering of a portion of the temporal sequence presentation data." PO Resp. 42–50. First, Patent Owner argues that the "reference time base" that Petitioner relies on as teaching the "presentation time parameter" is not maintained. *Id.* at 43 ("[W]hat Petitioner identifies as the presentation time parameter is not ***maintained***—it is, according to Petitioner and its expert, merely utilized at the point at which it is required for comparison by the stream interpreter."). This argument is contradicted by Patent Owner's own statements and by the disclosure of Nelson cited by Patent Owner. In the same section of its Response (Section V.B. (PO Resp. 42–50)), Patent

Owner acknowledges that the reference time "clock value is always available" (*id.* at 45) and that "an external clock time is maintained" (*id.* at 48). Patent Owner's Preliminary Response states:

> "Reference time base" is also referred to as the "current presentation time" ([Ex. 1006], 14:53-58, 15:20-22) and the "currently maintained time count" (*id.*, 14:25-29). An example of the reference time base is an "external clock." *Id.*, 14:55–58.
>
> * * *
>
> To be clear, *Nelson* also refers to the external clock time as the current reference time, and also as the currently maintained time count. EX1006, 13:38-41, 14:26-29, 14:55-58, 15:29-32, 58 (CoC, Feb. 17, 1998).

Prelim. Resp. 23 n.6, 26. *Cook Group Inc. v. Boston Sci. Scimed, Inc.*, 809 F. App'x. 990, 1000 (Fed. Cir. 2020) ("[A]n admission in a preliminary patent owner response, just like an admission in any other context, is evidence appropriately considered by a factfinder."). We find that Nelson teaches maintaining the reference time base (external clock).

Second, Patent Owner argues that "Nelson does not teach or suggest the claimed 'presentation time parameter.'" PO Resp. 46. This argument is based on Patent Owner's claim construction argument relating to this limitation particularly "during rendering." *Id.* at 46–50. Specifically, Patent Owner argues, "[a]s explained above, based on the plain meaning of the claim language, this presentation time parameter must represent 'an amount of time elapsed ***during rendering***' of the relevant portion of presentation data." *Id.* at 46. As discussed above (*supra* Section II.C.2.), the '903 patent defines "presentation time" as "time elapsed since the beginning of the media content presentation." As acknowledged by Patent Owner, "[t]he

Petition relies on *Nelson*'s disclosure that the reference clock 'indicates the current real time relative to the start time of the presentation unit consumption process for the corresponding stream.' *E.g.*, Petition, 43 (*citing* EX1006, 14:27-29)." PO Resp. 47. We do not find this argument persuasive.

With regard to the portion of claim element (A) relating to storing the presentation time parameter ("maintaining a value of a presentation time parameter tangibly stored in a second computer-readable medium"), Petitioner provides a well-supported showing that Nelson meets this limitation. *See* Pet. 43–44. The Petition states:

> Moreover, this value is "tangibly stored in a second computer-readable medium," as claimed. (Ex. 1002, ¶62.) For example, as discussed above, *Nelson* discloses that the DVMS utilizes the reference time base (the claimed "value of a presentation time parameter") to compare it with a calculated product. (Ex. 1006, 14:34-36.) Thus, the disclosed "value" is at least temporarily stored on the DVMS. Furthermore, as discussed above in claim 1 preamble, a POSITA would have found it obvious to store data, program instructions, and other parameters in non-volatile storage elements. (*See supra* Section IX.A.1.pre.) Accordingly, for similar reasons discussed therein, a POSITA would have would found it obvious to store the disclosed "value of a presentation time parameter" in non-volatile storage elements (the claimed "second computer-readable medium"). (Ex. 1002, ¶62; Section VIII.C.)

Id. at 43. Patent Owner does not address this storing limitation or dispute Petitioner's showing that Nelson teaches or suggests it.[26]

We find that Nelson teaches or suggests limitation (A) of claim 1.

[26] Patent Owner does not dispute that the storing limitations of the challenged claims ("tangibly stored"/"tangibly storing") would have been obvious to a skilled artisan. *See generally* PO Resp.

> *"(B) providing the value of the presentation time parameter to a first component of the rendering system"*

With regard to this limitation, Petitioner argues, "*Nelson* discloses providing the value of the reference time base ('the value of the presentation time parameter') to the stream interpreter of the DVMS [Digital Video Management System] ('a first component of the rendering system')." Pet. 46. Petitioner contends, "*Nelson* discloses that the stream interpreter module is responsible for synchronizing streams using either the implicit or explicit timing scheme," and "the stream interpreter module uses the value of the reference time base to determine whether to release a presentation unit for synchronization purposes." *Id.* Nelson supports Petitioner's argument. Nelson states:

> [T]he synchronization of streams within a stream group is the responsibility of the stream interpreter module during a scaling process. . . . The embedded time stamps are then used explicitly for synchronization of the streams relative to a chosen reference time base.
>
> Using either the implicit or explicit timing self-synchronization schemes, a reference time base is obtained from a reference clock, which advances at a rate termed the reference clock rate. This rate is determined by the reference [cl]ock period, which is the granularity of the reference clock ticks.

Ex. 1006, 13:19–43.

Patent Owner argues, "the stream interpreter does not ***provide*** the reference time base (the alleged 'value of a presentation time parameter') ***to*** anything—not the rendering system or any component thereof, or even to itself—as the Challenged Claims explicitly require in this element." PO Resp. 44. Patent Owner's argument is not responsive to Petitioner's showing with regard to this limitation. Again, Petitioner argues "*Nelson*

discloses providing the value of the reference time base ('the value of the presentation time parameter') to the stream interpreter of the DVMS [Digital Video Management System] ('a first component of the rendering system')." Pet. 46. And, as the above-quoted passage states, Nelson discloses that the "reference time base is obtained from a reference clock" and provided to the stream interpreter. Patent Owner's argument does not undermine Petitioner's persuasive showing.

We find that Nelson teaches this limitation.

> *"(C) maintaining a value of a data time parameter tangibly stored in a third computer-readable medium and representing an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate"*

Petitioner relies on Nelson's description of calculated and embedded presentation times as disclosing the "data time parameter" of this limitation. Pet. 47. Petitioner argues:

> *Nelson* discloses maintaining a value of a calculated or an embedded presentation time ("maintaining a value of a data time parameter"), which is stored in a computer-readable medium of the DVMS ("stored in a third computer-readable medium"), where the value represents an amount of time required by the DVMS to render a portion of the media stream at the original presentation rate ("representing an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate").

Id. Petitioner asserts that Nelson discloses this limitation in two distinct ways. *Id.* First, the Petition states:

> *Nelson* discloses in the implicit timing scheme that the DVMS "maintains a separate presentation unit counter" for each audio and video stream pipe (Ex. 1006, 14:8-17, 14:18-21), where the unit counter "indicates the number of already

> consumed presentation units in the corresponding stream" (*id.*, 14:29-32). (*Supra* Section IX.A.1.a; Ex. 1002, ¶68.) The scheme then calculates a product between the presentation unit count and the fixed presentation duration of each presentation unit. (Ex. 1006, 14:32-34; *see also id.*, 13:26-27.) *Nelson* explains that the calculated product "specifies **the real time which has elapsed to present the counted units**." [*Id.*] 14:32-34 (emphasis added).).

Id. at 47–48. Petitioner contends "this product represents 'an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate,' as claimed, [because] it is the same time requirement regardless of the presentation rate." *Id.* at 48. The cited portions of Nelson support this contention by Petitioner.

Second, the Petition states:

> *Nelson* discloses in the explicit timing scheme that the DVMS "reads the embedded time stamp of each presentation token . . . to determine presentation time and duration for each presentation unit in the sequence." (Ex. 1006, 15:10-13; *supra* Section IX.A.1.a.) The scheme then compares "a reference time base with the presentation time and presentation duration stamp embedded in each presentation unit" to determine whether a presentation unit should be released for presentation. (Ex. 1006, 15:20-25.) The embedded presentation time discloses "a value of a data time parameter . . . representing an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate," as claimed at least because it is equivalent to the calculated presentation time (the presentation unit-duration product), as discussed above in the first way of disclosing the claimed "value of a data time parameter." (*Id.*, 14:67-15:3 ("The stream interpreter does not maintain a presentation unit counter in [the explicit timing] scheme, as it does in the implicit timing scheme. Rather, the embedded time stamps in

> the streams provide equivalent information."); Ex. 1002, ¶70.)

Id. at 50. The cited portions of Nelson support this contention by Petitioner. Thus, Petitioner shows Nelson's disclosure of "presentation time" (calculated or embedded) teaches the "value of a data time parameter" as recited in the claims.[27]

Nelson also provides this further description of the presentation of streams of time-based media data using its digital video management system (DVMS):

> Segments of streams contains presentation units. A presentation unit is a unit of continuous, temporally-based data to be presented, and accordingly, has an associated presentation time and presentation duration. A presentation time indicates the appropriate point in the sequence of a presentation at which the associated presentation unit is to be played, relative to the time base for the ongoing presentation. A presentation duration indicates the appropriate interval of time over which the associated presentation unit is to be played in the ongoing presentation.

Ex. 1006, 6:44–53. This passage also supports Petitioner's contention that Nelson teaches "maintaining a value of a data time parameter . . . representing an amount of time required by the rendering system to render the portion of the temporal sequence presentation data at a default presentation rate" as recited in independent claims.

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[27] Patent Owner recognizes that the differences in the terminology used in the '903 patent and Nelson could cause confusion and explains, "[w]hat Nelson calls 'presentation time' is not equivalent to the challenged claims' 'presentation time,' and Petitioner does not rely on what Nelson calls 'presentation time' as the 'presentation time' of the challenged claims." PO Resp. 47 n.14; *see also* Prelim Resp. 22 ("Petitioner relies on the 'presentation time' time stamps of *Nelson* to disclose the claimed 'data time.'").

The Petition also references the following passages in Nelson as disclosing "data time":

> "[e]ach presentation unit is characterized by a prespecified **presentation time** during a computer presentation of the media data." (1006, 2:14-17; *see also id.*, 6:44-56 (disclosing that "[a] presentation time indicates the appropriate point in the sequence of a presentation at which the associated presentation unit is to be played, relative to a time base for the ongoing presentation"), 11:7-11 (disclosing "retriev[ing] the time stamp information from the corresponding [audio and video] frames"), 14:8-48 (describing use of presentation time), 15:10-40 (same), 15:66-16:19 (same), 16:21-53 (same).)

Pet. 30–31 (bracketed material in original).

Patent Owner does not contest that Nelson discloses "a data time parameter" that "represents an amount of time required by the rendering system to render a portion of the temporal sequence presentation data at a default presentation rate." Indeed, Patent Owner appears to acknowledge that Nelson teaches "maintaining a value of a data time parameter." In the Response, Patent Owner acknowledges that Nelson's stream interpreter compares the "reference clock base to the ***value of an explicit or calculated (implicit) timestamp***" and "Nelson . . . mak[es] the decision on when to render a unit based on a comparison of the ***unit's time stamp*** to a single reference time base." PO Resp. 52, 55 (emphasis added). The Preliminary Response states that "'[d]ata [t]ime' can be regarded as a time value (e.g., timestamp) that specifies 'how long it would take to reach that location, starting from the beginning of the media content, and playing at [a] normal rate.'" Prelim. Resp. 13 (citing Ex. 1001, 2:2–8). With regard to Nelson, the Preliminary Response states:

> In *Nelson*, presentation time indicates the appropriate time at which the unit is to be played, relative to a reference time base.

> [Ex. 1001], 6:47-50. Presentation times are either explicit time stamps or the implicit calculated equivalent.
>
> * * *
>
> The token for each unit [as shown in Figure 7] represents an audio or video presentation unit (114) and a time stamp for that unit (116). *Id*., 11:11-14.
>
> * * *
>
> Explicit timing synchronization is based on the time stamps that are embedded in the stream tokens. *Id*., 14:50-52.

Prelim. Resp. 17, 19, 20.

With regard to the portion of this limitation relating to storing the data time parameter ("maintaining a value of a data time parameter tangibly stored in a third computer-readable medium"), Petitioner provides a well-supported showing that Nelson meets this limitation. *See* Pet. 49–50. The Petition states:

> Moreover, this value is "tangibly stored in a third computer-readable medium," as claimed. (Ex. 1002, ¶69.) For example, as discussed above, *Nelson* discloses that the DVMS utilizes the calculated product (the claimed "value of a data time parameter") to compare it with the reference time base. (Ex. 1006, 14:34-36.) Thus, the disclosed "value" is at least temporarily stored on the DVMS. Furthermore, as discussed above in claim 1 preamble, a POSITA would have found it obvious to store data, program instructions, and other parameters in non-volatile storage elements. (*See supra* Section IX.A.1.pre.) Accordingly, for similar reasons discussed therein, a POSITA would have would found it obvious to store the disclosed "value of a data time parameter" in non-volatile storage elements (the claimed "third computer-readable medium"). (Ex. 1002, ¶69; Section VIII.C.)

Id. at 49. Patent Owner does not address this storing limitation or dispute Petitioner's showing that Nelson teaches or suggests it.

We find that Nelson teaches or suggests limitation (C) of claim 1.

"(D) providing the value of the data time parameter to a second component of the rendering system"

Petitioner argues:

> *Nelson* discloses providing the calculated or embedded presentation time ("the value of the data time parameter") to the stream interpreter of the DVMS ("a second component of the rendering system"), where the value of the reference time base ("the value of the presentation time parameter") is not equal to the value of the calculated or embedded presentation time ("the value of the data time parameter"). ([Ex. 1002] ¶71.)
>
> As discussed in claim element 1(b), the stream interpreter module is responsible for synchronizing streams using either the implicit or explicit timing scheme. (*See supra* Section IX.A.1.b; Ex. 1006, 13:19-26, FIG. 6; Ex. 1002, ¶72.) Consistent with as discussed in claim element 1(c), the stream interpreter module uses the calculated or embedded presentation time to determine whether to release a presentation unit for synchronization purposes. (*See supra* Section IX.A.1.c; *see also* Ex. 1006, 14:37-48, 15:10-25.) Thus, each of the disclosed "value of the data time parameter" discussed above is provided to the stream interpreter module of the DVMS ("a second component of the rendering system").

Pet. 51–52 (footnote omitted). Nelson supports Petitioner's argument. We determine that Nelson teaches providing the calculated or embedded presentation time to the stream interpreter. Patent Owner does not dispute Petitioner's showing with regard to this limitation or argue that Nelson fails to teach or suggest this limitation. *See generally* PO Resp.

We find that Nelson teaches this limitation.

"wherein the value of the presentation time parameter is not equal to the value of the data time parameter"

Petitioner contends, "*Nelson* discloses that the value of the calculated or embedded presentation time ('the value of the data time parameter'), and

the value of the reference time base ('the value of the presentation time parameter') are not equal." Pet. 52. Petitioner argues:

> *Nelson* discloses controlling the synchronization of media streams based on these values not being equal. As discussed in claim elements 1(a) and (c), these two values are compared to determine whether a presentation unit should be released for presentation. (*See supra* Sections IX.A.1.a and c.) Only when these two values match, a presentation unit will be released. (Ex. 1006, 14:34-48, 15:20-25.) Indeed, *Nelson* discloses that "if the appropriate release time for those [presentation] units has passed," i.e., if the two times values are not equal, both the implicit and explicit schemes delete those units. (*Id.*, 15:26-40.)

Id. (bracketed material in original). Nelson supports Petitioner's contention.

Patent Owner argues that "*Nelson* does not teach or suggest the 'not equal' limitation of the challenged claims." PO Resp. 50. Notwithstanding Patent Owner's argument, Patent Owner appears to acknowledge this limitation is taught by Nelson. In its Response with regard to the claimed invention, Patent Owner states, "in the context of the invention . . . portions of the temporal sequence data are rendered at a rate other than the default rate (potentially more than one rate) and rendering time ('presentation time') will not be the same as the time it would take to render the same content at a default rate ('data time')" (*id.* at 50–51) and "the two values will only be equal when media is presented at a 'normal' or default rate. When at least a portion of the data being rendered is presented at a rate other than the default rate, then the two will not be equal as required in every challenged claim" (*id.* at 11). With regard to Nelson, Patent Owner states, "[t]he *Nelson* system can operate at a speed other than the default rate; it does so by speeding up or slowing down the reference time base. EX1006, 17:43-50; EX2016, ¶103" (*id.* at 17) and "*Nelson* effectuates faster or slower playback

of media by simply changing the speed of the reference time base. *See e.g.*, EX1006, at 17:43-48; *see also* 16:54-17:50, Appx. D." (*id.* at 59).

We find that Nelson teaches this limitation.

Summary as to Claim 1

Petitioner's showing that claim 1 of the '903 patent would have been obvious in view of Nelson is well-supported. In contrast, we do not find Patent Owner's arguments regarding claim 1 undermine Petitioner's persuasive showing. We conclude that Petitioner has shown by a preponderance of the evidence that claim 1 would have been obvious in view of Nelson.

b) Claims 12, 13, and 22

Independent claims 12, 13, and 22 include limitations similar to the limitations of independent claim 1. Petitioner relies on similar arguments and evidence as discussed above with respect to claim 1 for these claims. *See* Pet. 56–64. Patent Owner's arguments concerning claims 12, 13, and 22 are the same as those discussed above with respect to claim 1. *See* PO Resp. 30–57. We have reviewed the contentions of the parties and supporting evidence and we conclude that Petitioner has shown by a preponderance of the evidence that claims 12, 13, and 22 would have been obvious in view of Nelson.

3. Dependent Claims 2–4, and 14

Petitioner asserts that Nelson teaches each of the additional limitations of dependent claims 2–4 and 14. *See* Pet. 52–55, 62. Petitioner supports these assertions with citations to the record and the testimony of Dr. Schonfeld. *See id.* Patent Owner does not dispute these assertions, or raise arguments separate from those discussed above with respect to claim 1.

See generally PO Resp. Indeed, claims 2–4 and 14 are not specifically addressed by Patent Owner. *Id.*

a) Claims 2 and 14

Claim 2 depends from claim 1 and claim 14 depends from claim 13. Ex. 1001, 23:40–42, 25:32–34. Claims 2 and 14 recite, "the first component and the second component are the same component of the rendering system." *Id.* The Petition states, "*Nelson* discloses that either under the implicit or explicit timing scheme, 'synchronization of streams within a stream group is the responsibility of the stream interpreter module'" and "the stream interpreter module uses the presentation time value (either calculated or embedded) and a reference time base to determine whether to release a presentation unit for synchronization purposes." Pet. 52–53 (citing Ex. 1006, 13:19–26, 14:37–48, 15:10–25, Fig. 6); *see also id.* at 62. The cited passages in Nelson support these undisputed contentions. We conclude that Petitioner has shown by a preponderance of the evidence that claims 2 and 14 would have been obvious in view of Nelson.

b) Claim 3

Claim 3 recites, "step (B) comprises a step of providing the presentation time parameter value in response to a request from the first component for a current time." Ex. 1001, 23:43–46. The Petition states, "*Nelson* discloses pseudocodes in Appendix D and E for running the implicit and explicit timing synchronization schemes, where a variable, 'reference time base,' and another variable, presentation time (calculated or embedded), are requested by the stream interpreter for comparison" and "Nelson discloses that the 'reference time base is obtained from a reference clock.'" Pet. 53–54 (citing Ex. 1006, 12:4–15, 13:38–43, 14:37–48, 15:10–25). With regard to showing the "request [is] for a current time," the

Petition states, "*Nelson* discloses that the requested 'reference time base indicates the **current real time** relative to the start time of the presentation unit consumption process for the corresponding stream.'" *Id.* at 54 (citing Ex. 1006, 14:27–29). The cited passages in Nelson support these undisputed contentions. We conclude that Petitioner has shown by a preponderance of the evidence that claim 3 would have been obvious in view of Nelson.

c) Claim 4

Claim 4 recites, "step (D) comprises a step of providing the data time parameter value in response to a request from the second component for a current time." Ex. 1001, 23:47–49. The Petition states, "*Nelson* discloses providing the calculated or embedded presentation time ('the data time parameter value')" and "*Nelson* discloses that running the implicit and explicit timing synchronization schemes involves requesting variables for comparison, including the reference time base and the presentation time (calculated or embedded), and the disclosed request is 'for a current time,' as claimed." Pet. 55 (citing Ex. 1006, 14:34–36, 15:22–40). The cited passages in Nelson support these undisputed contentions. We conclude that Petitioner has shown by a preponderance of the evidence that claim 4 would have been obvious in view of Nelson.

E. Obviousness Challenge Based on Nelson and DeMoney

Petitioner contends that claims 7 and 17 would have been obvious in view of Nelson and DeMoney. Pet. 3, 64–69.

1. DeMoney

DeMoney was filed on June 5, 1996, and issued on May 16, 2000. Ex. 1012, codes (22), (45). Therefore, DeMoney is prior art to the '903 patent under 35 U.S.C. § 102(a). *See* Pet. 3. Patent Owner does not dispute that DeMoney is prior art. *See generally* Prelim. Resp.

DeMoney relates to "a video server system and method for indexing between video streams having different presentation rates, i.e., normal play, fast forward and fast reverse video streams." Ex. 1012, 1:16–19. The fast forward and fast reverse video streams are called "trick play video streams." *Id.* at 5:4–7. "The present invention generates index look-up tables (ILUTs) between the normal play and trick play video streams which enable indexing between the streams." *Id.* at 5:7–10. A server "maps . . . presentation timestamps to a 'normal play time' (NPT) standard." *Id.* at 8:26–27. "For the scaled streams, e.g., the fast forward and fast reverse streams, a scale factor is introduced into the normal play time values of the index look-up tables to compensate for the different presentation rates." *Id.* at 9:32–35.

2. Claims 7 and 17

Dependent, method claim 7 depends from claim 1 and dependent, device claim 17 depends from claim 13. Ex. 1001, 24:4–15, 25:56–67. *Id.* Claims 7 and 17 recite:

> 7./17. The method/device of claim 1/13, wherein (C) comprises steps of:
> (C)(1) for each element in the portion of the temporal sequence presentation data:
> (a) identifying an actual rendition period of the element;
> (b) identifying an actual presentation rate of the element;
> (c) multiplying the actual rendition period of the element by the actual presentation rate of the element to produce a product; and
> (C)(2) maintaining a sum of the products produced by (C)(1) as the data time parameter in the second computer-readable medium.

Id. Petitioner provides detailed arguments and cites to the asserted art to show that the limitations of claims 7 and 17 are taught and that a motivation existed to combine the relevant teachings of Nelson and DeMoney. Pet. 64–

69. Petitioner supports these assertions with citations to the record and the testimony of Dr. Schonfeld. *See id.*

The Petition states, "*Nelson* discloses a 'presentation decision scheme,' in which '[a] stream counter of each stream pipe indicates the number of already consumed presentation units in the corresponding stream,' wherein '[m]ultiplying this count by the (fixed) duration of each of the presentation units specifies the real time which has elapsed to present the counted units" and "[a] person of ordinary skill in the art would have understood that calculating a product (*e.g.*, multiplying the fixed duration by unit count) is equivalent to calculating a sum by repeated addition (*e.g.*, repeatedly adding the fixed duration a number of times corresponding to the presentation unit count)." Pet. 65 (citing Ex. 1006, 14:29–48) (bracketed material in original). With regard to DeMoney, the Petition states, "*DeMoney* generally relates to a video delivery system in which video may be played back at different presentation rates" and "*DeMoney* explains, a 'compressed presentation timestamp value' can be converted into a normal presentation time value by multiplying the compressed value by the ratio of the presentation rate to the normal presentation rate (i.e., the presentation rate scale factor)." *Id.* at 67–68 (citing Ex. 1012, 1:15–20, 9:32–41, 11:42–65). With regard to combining the teachings of Nelson and DeMoney, the Petition states:

> [A] POSITA would have recognized that taking into account actual durations of presentation units would have not only been desirable, but also could have readily been implemented by multiplying each such duration against the presentation rate to arrive at a duration equivalent to that described in Nelson. (Ex. 1002, ¶111.) As discussed above, maintaining a sum of such products would have provided a value that is equivalent to that calculated in Nelson and compared against the reference

> time base, but would have provided the added benefit of accounting for varying and actual durations of presentation units. (*Id.*) As such, it would have been obvious to a POSITA to apply the mathematical algorithm recited in claim 7. (*Id.*)

Id. at 68.

Patent Owner does not argue that the combination of Nelson and DeMoney fails to teach or suggest the additional limitations recited in claims 7 and 17. PO Resp. 57–60. Patent Owner does argue that Petitioner has not shown why a skilled artisan would have combined the teachings of Nelson and DeMoney. *Id.* Patent Owner contends that, because Nelson already explicitly discloses "a value of a data time parameter," there is no reason why a skilled artisan would look to DeMoney to determine how to calculate it. *Id.* at 57 ("[A] POSITA who saw that *Nelson* already explicitly disclosed the value would have had no motivation to find another reference to determine how to calculate it."). Petitioner replies that Patent Owner is wrong because, "[w]hile *Nelson* discloses the claimed 'data time parameter value,' it does not explicitly disclose, for example, calculating the data time using **actual** duration of each unit." Pet. Reply 23.

With regard to the calculation disclosed in Nelson's "Base Level Implicit Timing Synchronization" method (Ex. 1006, 14:1–48), Nelson uses an assumed fixed "duration of each of the presentation units" (*see id.* at 13: 24–29, 14:32–34). Nelson discloses that the DVMS "maintains a separate presentation unit counter" for each audio and video stream pipe (Ex. 1006, 14:8–21), where each unit counter "indicates the number of already consumed presentation units in the corresponding stream" (*id*. at 14:29–32). Having determined the number of presentation units that have been consumed, the scheme calculates a product of the presentation unit count

and the presentation duration of each unit, assuming that each presentation unit has a fixed duration. *Id*. at 14:32–34; *see also id*. at 13:26–27 (disclosing that in the implicit timing scheme, "each presentation unit is assumed to be of a fixed duration"). Petitioner contends that a skilled artisan would have recognized that it would not always be the case that each presentation unit would have the same, fixed duration and that it would have been desirable to take into account situations when the duration of the presentation units differs. Pet. 66. And, as shown by Petitioner (*id.* at 67–68), DeMoney teaches that video may be played back at "different presentation rates, i.e., normal play, fast forward and fast reverse" (Ex. 1012, 1:15–20) and teaches "compensat[ing] for the different presentation rates" by multiplying the presentation unit timestamps "by the ratio of the [actual] presentation rate to the normal presentation rate" (*id.* at 9:32–38). Accordingly, Petitioner contends a skilled artisan would have understood that accounting for actual duration times for the presentation units "could have readily been implemented" and "would have provided the added benefit of accounting for varying and actual durations of presentation units." Pet. 68. We find Petitioner's contentions to be well-supported and reasonable and, accordingly, we do not find Patent Owner's argument undermines Petitioner's persuasive showing.

We find that the combination of Nelson and DeMoney teaches all the limitations of claims 7 and 17 and that a skilled artisan would have been motivated to combine the relevant teachings of these references. We conclude that Petitioner has shown by a preponderance of the evidence that claims 7 and 17 would have been obvious in view of Nelson and DeMoney.

III. CONCLUSION[28]

For the foregoing reasons, we conclude that Petitioner has established by a preponderance of the evidence that claims 1–4, 12–14, and 22 would have been obvious in view of Nelson and claims 7 and 17 would have been obvious in view of Nelson and DeMoney.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 7, 12–14, 17, and 22 of the '903 patent are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–4, 12–14, 22	103	Nelson	1–4, 12–14, 22	
7, 17	103	Nelson, DeMoney	7, 17	
Overall Outcome			1–4, 7, 12–14, 17, 22	

[28] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

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