

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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SONOS, INC.  
Petitioner

v.

IMPLICIT, LLC  
Patent Owner

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Case: To Be Assigned

Patent No. 7,391,791

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**PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 7,391,791  
PURSUANT TO 35 U.S.C. §311 *et seq.* and 37 CFR §42.1 *et seq.***

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Ex.1001	U.S. Patent No. 7,391,791 to Balassanian et al.
Ex.1002	Patent Owner's Original Complaint in <i>Implicit, LLC v. Sonos, Inc.</i> , Case No. 1:17-cv-00259-LPS (D. Del.) (D.I. 1, dated 03/10/2017)
Ex.1003	Patent Owner's First Amended Complaint in <i>Implicit, LLC v. Sonos, Inc.</i> , Case No. 1:17-cv-00259-LPS (D. Del.) (D.I. 34, dated 10/06/2017)
Ex.1004	Petitioner's Answer, Affirmative Defenses, and Counterclaims to Patent Owner's First Amended Complaint in <i>Implicit, LLC v. Sonos, Inc.</i> , Case No. 1:17-cv-00259-LPS (D. Del.) (D.I. 36, dated 11/20/2017)
Ex.1005	Petitioner's First Amended Answer, Affirmative Defenses, and Counterclaims to Patent Owner's First Amended Complaint in <i>Implicit, LLC v. Sonos, Inc.</i> , Case No. 1:17-cv-00259-LPS (D. Del.) (D.I. 39, dated 1/11/2018)
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Ex.1008	U.S. Patent No. 8,286,207 to Schneidewend
Ex.1009	Expert Declaration of Roman Chertov

## **I. INTRODUCTION**

Pursuant to 35 U.S.C. §311 *et seq.* and 37 CFR §42.1 *et seq.*, Sonos, Inc. (“Petitioner” or “Sonos”) hereby petitions the Patent Trial and Appeal Board (the “Board”) to institute an *Inter Partes* Review of Claims 1-3, 6-9, 12, 16, 19, and 23-25 of U.S. Patent No. 7,391,791 (“the ‘791 Patent’; Ex.1001). The ‘791 Patent issued on June 24, 2008. According to USPTO records, the ‘791 Patent is currently assigned to Implicit, LLC (“Patent Owner” or “Implicit”).

This Petition demonstrates a reasonable likelihood that Petitioner will prevail with respect to claims 1-3, 6-9, 12, 16, 19, and 23-25 of the ‘791 Patent (the “Challenged Claims”). 35 U.S.C. §314(a). Petitioner asserts that the Challenged Claims are anticipated by and/or obvious over the asserted prior art.

Pursuant to 37 CFR §42.22, Petitioner respectfully requests that the Board review the asserted prior art and below analysis, institute a trial for *Inter Partes* Review of the Challenged Claims, and cancel those claims as unpatentable.

## **II. MANDATORY NOTICES UNDER 37 CFR §42.8**

**Real Party-In-Interest – 37 CFR §42.8(b)(1):** Pursuant to 35 U.S.C. §312(a)(2), the real party-in-interest is Sonos, Inc., a corporation organized under the laws of the State of Delaware with a principal place of business at 614 Chapala Street, Santa Barbara, California 93101.

**Related Matters – 37 CFR §42.8(b)(2):** On March 10, 2017, Patent Owner filed a Complaint against Petitioner in the U.S. District Court for the District of Delaware that alleged infringement of the ‘791 Patent as well as U.S. Patent No. 8,942,252 (the “Litigation”). Ex.1002. The case was assigned Civil Action No. 17-cv-00259-LPS and is currently pending before Judge Leonard P. Stark. *Id.*

After Petitioner moved to dismiss Patent Owner’s Complaint under Federal Rule of Civil Procedure 12(b)(6) for failure to state a claim upon which relief can be granted, Patent Owner filed a First Amended Complaint for Patent Infringement on October 6, 2017. Ex.1003.

On November 20, 2017, Petitioner filed its original Answer, Affirmative Defenses, and Counterclaims to Patent Owner’s First Amended Complaint. Ex.1004. On January 11, 2018, Petitioner then filed a First Amended Answer, Affirmative Defenses, and Counterclaims. Ex.1005.

Patent Owner also recently served its Initial Claim Charts in the Litigation, which demonstrate how Patent Owner interprets the Challenged Claims of the ‘791 Patent in attempting to read such claims onto Petitioner’s networked audio system (the “Accused Sonos Products”). Ex.1006.

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**Service Information – 37 CFR §42.8(b)(4):** Petitioner consents to electronic service at the addresses of lead and back-up counsel listed above.

**III. STANDING TO FILE PETITION UNDER 37 CFR §§42.101 – 103**

**Standing – 37 CFR §42.101:** Sonos has not filed a civil action challenging the validity of a claim of the ‘791 Patent. *See* 37 C.F.R. §42.101(a). In addition, this Petition has been filed within one year after Sonos was served with a jurisdictionally-proper complaint alleging infringement of the ‘791 Patent on March 10, 2017, i.e., the Litigation. *See* 35 U.S.C. §315(b); 37 C.F.R. §42.101(b);

Ex.1002. Petitioner is also not estopped from challenging Claims 1-3, 6-9, 12, 16, 19, and 23-25 of the '791 Patent on the grounds identified in the Petition. *See* 37 C.F.R. §42.101(c). Thus, the filing of this Petition is proper under 37 CFR §42.101.

**Timing – 37 CFR §42.102:** The '791 Patent was filed before March 16, 2013, was granted on June 24, 2008, and has had no post-grant review initiated. Accordingly, the timing for this Petition is proper under 37 CFR §42.102(a).

**Fees – 37 CFR §42.103:** Sonos is herewith paying both the \$15,500 request fee set forth in 37 CFR §42.15(a)(1), as well as the \$15,000 post-institution fee set forth in 37 CFR §42.15(a)(2). However, Petitioner authorizes a debit from Deposit Account No. 50-6632 for whatever additional payment is necessary in filing and/or granting this Petition.

#### **IV. PETITION REQUIREMENTS UNDER 37 CFR §42.104**

**Certification – 37 CFR §42.104(a):** Petitioner certifies that the '791 Patent is available for *Inter Partes* Review and that the Petitioner is not barred or estopped from requesting an *Inter Partes* Review of the Challenged Claims on the grounds identified herein.

**Claims Challenged – 37 CFR §42.104(b)(1):** Petitioner requests review of Challenged Claims 1-3, 6-9, 12, 16, 19, and 23-25 of the '791 Patent.

**Specific Statutory Grounds – 37 CFR §42.104(b)(2):** For the reasons set forth in detail below, Petitioner submits that the Challenged Claims of the ‘791 Patent are anticipated under 35 U.S.C. §102 and/or obvious under 35 U.S.C. §103 in view of the asserted prior art.

**Claim Construction – 37 CFR §42.104(b)(3):** In an *Inter Partes* Review, claim terms are given their “broadest reasonable construction in light of the specification of the patent in which it appears.” *See* 37 CFR §42.100(b). Under this broadest reasonable construction standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner respectfully submits that Patent Owner’s own broad interpretation of the Challenged Claims of the ‘791 Patent in the Litigation should also be considered when construing the claim terms, because those positions are informative of what Patent Owner considers to be the “broadest reasonable construction” of the claims.

In the “Claim Construction” section below, Petitioner has identified claim terms that should be construed in order to resolve the challenges herein, along with proposed constructions that reflect the terms’ “broadest reasonable construction” as understood by a person having ordinary skill in the art (“PHOSITA”) in light of

both the specification of the '791 Patent and Patent Owner's own interpretation of the Challenged Claims in the Litigation.

To be clear, Petitioner is only proposing constructions for terms that are necessary to resolve the specific challenges herein, and all of Petitioner's proposed constructions have been made under the "broadest reasonable construction" standard rather than the *Phillips* standard that governs the Litigation. Thus, Petitioner's proposed constructions herein shall not be used to limit Petitioner's ability to propose additional and/or different claim constructions in the Litigation or another proceeding. To the contrary, Petitioner expressly reserves the right to advocate additional and/or different claim interpretations in the Litigation or any other proceeding in accordance with the claim construction standards applied in such a proceeding.

Likewise, to the extent that any of Petitioner's proposed constructions are based on Patent Owner's interpretation of the Challenged Claims of the '791 Patent in the Litigation, such constructions certainly do not constitute an agreement with Patent Owner's interpretation. Rather, Petitioner's position is simply that it is appropriate to consider Patent Owner's interpretation of the Challenged Claims in the Litigation (which Patent Owner must view as reasonable) when determining the "broadest reasonable construction" here.

## V. OVERVIEW OF '791 PATENT

The '791 Patent was filed on December 17, 2002 as U.S. Patent Application No. 10/322,335 (“the ‘335 Application”), which claims the benefit of Provisional Application No. 60/341,574 filed on December 17, 2001. Ex.1001. The '791 Patent ultimately issued on June 24, 2008 with a total of 27 claims, of which Claims 1, 16, and 23 are independent and the remainder are dependent. *Id.*

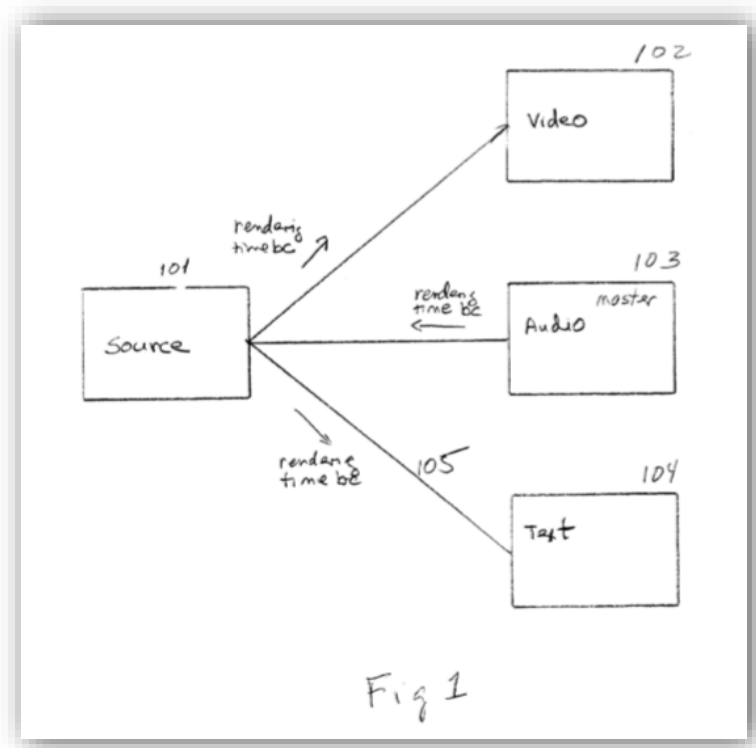
In general, the '791 Patent is directed to synchronizing the rendering of content at multiple “rendering devices,” examples of which may include a “video rendering device” (e.g., a video display), an “audio rendering device” (e.g., a stereo system) and a “text rendering device.” *Id.*, Abstract, FIG. 1, 3:60-64.

In its “Background,” the '791 Patent explains that rendering content on multiple renderer devices “in a synchronized manner” is made difficult by the fact that the rendering devices “may have different time domains.” *Id.*, 1:36-38. For instance, the '791 Patent notes that video and audio rendering devices “may have system clocks that operate at slightly different frequencies,” which may result in the video and audio content of a multimedia presentation “gradually appear[ing] to the person viewing the presentation to be out of synchronization.” *Id.*, 1:38-42.

In addition, the '791 Patent explains that a given rendering device may have “multiple time domains,” which may make it “even more difficult” to render content on multiple renderer devices “in a synchronized manner.” *Id.*, 1:42-45.

For example, the '791 Patent notes that an audio rendering device may have both “a system clock” and also “a clock on a digital signal processing (“DSP”) interface card,” which “may result in the presentation becoming even more quickly out of synchronization.” *Id.*, 1:45-49.

Thus, the '791 Patent's objective is to provide a method and system that synchronizes the rendering of content at rendering devices having different time domains. *Id.*, 1:50-52, 2:13-16. One embodiment of the '791 Patent's disclosed system is illustrated in FIG. 1:



*Id.*, FIG. 1. As shown in FIG. 1, a source device 101 distributes content of a presentation to a video rendering device 102, an audio rendering device 103, and a text rendering device 104 via a communication link 105. *Id.*, FIG. 1, 3:60-64.

In the disclosed system, each rendering device may have both a “device time” and a “rendering time.” *Id.*, 2:14-16. The ‘791 Patent states that a “device time is the time indicated by a designated clock (e.g., system clock) of the rendering device.” *Id.*, 2:16-17. On the other hand, the ‘791 Patent states that a “rendering time is the time represented by the amount of content that has been rendered by that rendering device.” *Id.*, 2:18-19; *see also* 7:42-44 (“rendering time continues to reflect the amount of the content that has been effectively rendered”).

In this respect, the “rendering time of content at a rendering device has a ‘corresponding’ device time, which is the device time at which the rendering time occurred.” *Id.*, 2:22-24. To illustrate this, the ‘791 Patent provides an example in which a video rendering device begins rendering at a device time of 30 minutes and then displays 450 video frames at a rate of 30 frames/second. *Id.*, 2:19-28. In this example, the video rendering device’s rendering time after it has rendered the 450<sup>th</sup> frame would be 15 seconds, and the corresponding device time would be 30 minutes and 15 seconds. *Id.*

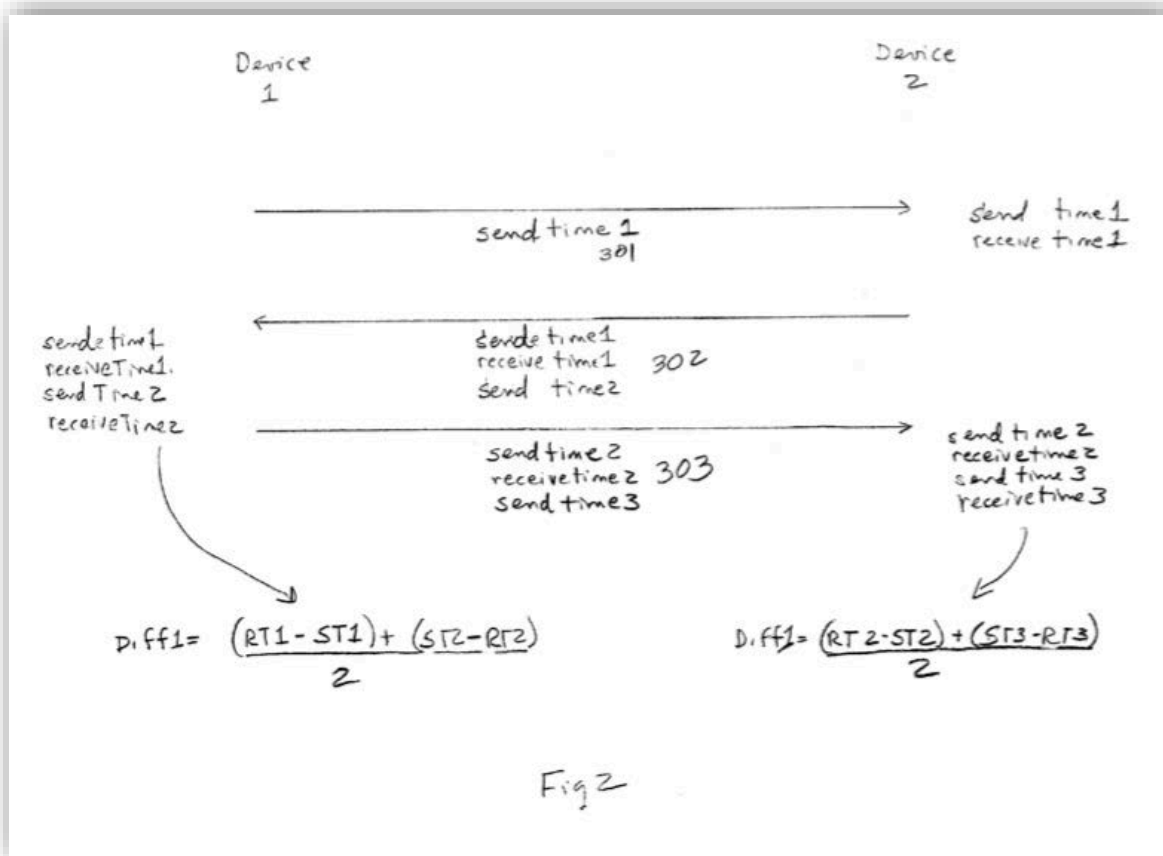
“To help ensure synchronization of rendering devices, the synchronization system designates one of the rendering devices as a master rendering device and

designates all other rendering devices as slave rendering devices.” *Id.*, 2:28-32.

For example, in the embodiment illustrated in FIG. 1, the audio rendering device 103 is designated as the “master” device and the video and text rendering devices 102 and 104 are designated as “slave” devices. *Id.*, FIG. 1, 4:15-20.

Once the master and slave roles have been assigned, each slave in the synchronization system “determines whether it is synchronized with the master rendering time.” *Id.*, Abstract, 2:37-42. The ‘791 Patent discloses a two-phase process for making this determination.

In a first phase of the disclosed process, each slave exchanges “device time information” with the master in order to determine a differential between the master and slave devices’ respective devices times (which the ‘791 Patent also refers to as a “time domain differential”). *Id.*, 3:27-59. The ‘791 Patent’s preferred process for determining a differential between two devices’ respective device times is illustrated in FIG. 2:



*Id.*, FIG. 2. As shown, this process may generally include the following steps:

1. A first device (such as master 103) may send a second device (such as slave 102) an originating message 301 that includes the first device's current device time when the originating message 301 is sent, which may be referred to as "sendtime1" or "ST1" for short;
2. The second device may record its current device time when it receives the originating message 301, which may be referred to as "receivetime1" or "RT1" for short;

3. The second device may send the first device a reply message 302 that includes the second device's current device time when the reply message 302 is sent, which may be referred to as "sendtime2" or "ST2" for short, as well as sendtime1 and receivetime1;
4. The first device may record its current device time when it receives the reply message 302, which may be referred to as "receivetime2" or "RT2" for short; and
5. The differential (or "Diff") between the devices' respective device times may then be calculated using the following equation:

$$\text{Diff} = ((\text{RT1} - \text{ST1}) + (\text{ST2} - \text{RT2})) / 2$$

*Id.*, 4:46-64.

In the '791 Patent's disclosed system, exchanges such as this are carried out between the master and each slave in order to determine a respective differential between the master's device time and each slave's device time. *Id.*, 3:27-59, 5:36-60. Additionally, the '791 Patent discloses that a differential between the respective device times of a rendering device and the source device could be determined in a similar manner. *Id.*, 5:36-60.

Turning to the second phase of the disclosed process, after the rendering devices in the system begin to render content, the master may periodically send each slave a "rendering time message" that includes an indication of the master's

rendering time. *Id.*, Abstract, 2:34-36, 4:20-28, 7:50-59, FIG. 9. In turn, each slave may use the indication of the master's rendering time and the determined differential between the master and slave devices' respective device times to calculate a difference between the master's rendering time and the slave's rendering time. *Id.*, Abstract, 2:42-61, 3:45-48, 4:28-34, 7:60-8:11, FIG. 10.

For instance, the '791 Patent discloses one embodiment in which the master sends each slave a rendering time message that includes a given master "rendering time" value together with a corresponding master "device time" value. *Id.*, Abstract, 2:34-36, 4:20-25, 7:50-59. Upon receiving this message, a slave first converts the master "device time" value into the slave's device time domain using the determined differential between the master and slave devices' respective device times. *Id.*, 3:45-48, 4:28-32, 7:63-66.

In turn, the '791 Patent discloses that a slave may calculate the difference between the master's rendering time and the slave's rendering time using one of the following approaches:

1. After converting the received master device time value into the slave's time domain, the slave identifies the value of its slave rendering time at the master's converted device time value and then calculates a difference between the received master rendering time value and the identified slave rendering time value;

2. The slave identifies the slave device time value at which the slave rendering time had the same value as the received master rendering time value and then calculates a difference between the master's converted device time value and the identified slave device time value; or
3. After converting the received master device time value into the slave's time domain, the slave (1) subtracts the received master rendering time value from the master's converted device time value to determine a "master start time" represented in the slave's time domain, (2) subtracts the current slave rendering time from the slave's current device time value to determine a "slave start time," and (3) calculates a difference between the master start time and the slave start time.

*Id.*, 2:42-48, 7:66-8:11, FIG. 10; *see also* 2:48-61 (disclosing an alternate embodiment where the slave determines the difference between the master and slave rendering times by evaluating master and slave device times corresponding to the same "default rendering time").

After each slave has determined whether it is synchronized with the master rendering time using the two-phase process discussed above, each slave then "adjusts the rendering of its content to compensate for the difference between the master rendering time and the slave rendering time." *Id.*, 2:39-42; *see also* Abstract, 4:35-46. For example, the '791 Patent discloses that a slave device can adjust the

rendering of its content by skipping ahead in the content to “speed up” rendering or by repeating certain content to “slow down” rendering. *Id.*, 4:35-46.

In line with the ‘791 Patent’s disclosure, all Challenged Claims are directed to methods for synchronizing the rendering of content at rendering devices, and there is significant overlap in the subject matter covered by each Challenged Claim. Ex.1009, ¶ 62. The broadest of the Challenged Claims is independent claim 23, which is reproduced below:

**23.** A method for synchronizing rendering of content at devices which are nodes of a network, each device having a device time and a rendering time, the device time of a device being in a time domain of the device, the method comprising:  
designating one of the devices as a master device having a master rendering time and the one or more slave devices having a slave rendering time; and for each slave device, exchanging time domain information between the master and one or more slave devices;  
calculating a time domain difference between the master rendering time of the master device and the slave rendering time of the slave device based on a master device time adjusted for a difference in time domains of the slave device and the master device; and  
rendering content at the slave device to account for the calculated time domain difference.

Ex.1001, Claim 23; Ex.1009, ¶ 62.

Independent claim 16 includes similar limitations to those recited in claim 23, along with additional limitations directed to “sending to each device content to be rendered at that device synchronized with the content sent to the other devices”

and “sending from the master device to the one or more slave devices a master device time corresponding to the master rendering time of the master device.”

Ex.1001, Claim 16. Ex.1009, ¶ 63.

In turn, claim 1 includes similar limitations to those recited in claim 16, with the primary differences being that (1) claim 1 recites “*receiving* the content for rendering by the master and at least one slave device” in place of “*sending* to each device content to be rendered at that device synchronized with the content sent to the other devices” and (2) claim 1 uses the language “determining a master device time domain, a slave device time domain, and a source time domain” in place of “exchanging time domain information between the master and one or more slave devices.” Ex.1001, Claim 1; Ex.1009, ¶ 64.

A more detailed discussion of each claim limitation of each Challenged Claim is provided below.<sup>1</sup>

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<sup>1</sup> Any statement that elements from different claims are “similar” is made solely in the context of the issues presented in this Petition, and shall not be taken as an admission that these elements should be assigned the same claim construction or should otherwise be treated as having the exact same scope. Petitioner expressly reserves the right to later argue that elements described herein as “similar” still have

## **VI. CLAIM CONSTRUCTION**

Pursuant to 37 C.F.R. §42.104(b)(3), the following sub-sections identify the specific claim terms of the Challenged Claims that should be construed in order to resolve the challenges herein along with Petition's proposed constructions for the identified claim terms.

### **A. "device time"**

The '791 Patent states that a rendering device's "device time" is "the time as indicated by a designated clock (e.g., system clock) of the rendering device."

Ex.1001, 2:16-17. Consistent with this disclosure, Petitioner proposes that the term "device time" be construed here as "a time indicated by any clock of a given rendering device."

### **B. "rendering time"**

The '791 Patent states that a rendering device's "rendering time" is "the time represented by the amount of content that has been rendered by that rendering device." *Id.*, 2:18-19. For example, if a rendering device has rendered 15 seconds-worth of a given presentation, the rendering device's "rendering time" would be 15 seconds. *Id.*, 2:19-28. Consistent with this disclosure, Petitioner proposes that the

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meaningful differences that have an impact on other issues, such as infringement or §112 invalidity.

term “rendering time” be construed here as “a time measure of the amount of content that has already been rendered by a given rendering device.”

**C. The “time domain differential” and “rendering” elements**

Each Challenged Claim includes claim elements directed to calculating a “time domain differential” between “the master rendering time” and “the slave rendering time” and then “adjusting” the “rendering” of content at a slave device “to account for” a difference between “the master rendering time” and “the slave rendering time.” Ex.1001, Claims 1, 16, & 23. Further, in some of the Challenged Claims, these elements further recite that the “time domain differential” between the “master rendering time” and “slave rendering time” is calculated based on “the master device time adjusted for a difference in time domains of the one or more slave devices and the master device.” *Id.*, Claims 16, 23.

Applying the meaning of the term “rendering time” to these claim elements, it is clear that these claim elements cover a scenario where a time differential is calculated between the amount of content that has already been rendered by the master device (the master rendering time) and the amount of content that has already been rendered by the slave device (the slave rendering time), and the rendering of content at the slave device is adjusted to account for this differential.

However, in the Litigation, Patent Owner has taken the position that these claim elements also cover the mere functionality of synchronizing *device times* of

rendering devices during playback. Ex.1006, pp.39, 44, 130, 135, 163, 168. While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to cover Patent Owner's interpretation in the Litigation. Thus, Petitioner proposes that these claim elements be construed here to cover any synchronization between a time measure of a master rendering device and a corresponding time measure of a slave rendering device during playback, where the time measure could either be device time or rendering time.

In the event that the Board does not find Patent Owner's interpretation in the Litigation to be reasonable, Petitioner has also proposed alternative "broadest reasonable constructions" for these elements. These constructions are shown below.

### **Claims 1-3, 6-9, and 12**

**Claim Elements:** [1.6] determining whether a time domain differential exists between the master rendering time, the slave rendering time; and [1.7] adjusting, based on the received indication, the rendering of the content at the at least one slave device within the slave device time domain and in proportion to the time domain differential when present to account for variation between when the master device and the at least one slave device to render content that should be rendered at the same time.

**Patent Owner's Interpretation:** synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback.

**Petitioner's Proposed Alternate Construction:** [1.6] determining whether a time differential exists between the amount of content that has already been rendered by the master device and the amount of content that has already been rendered by the slave device; and [1.7] adjusting the rendering of the content at the at least one slave device to account for the time differential.

### **Claims 16 and 19**

**Claim Elements:** [16.6] determining at least one time domain differential between the master rendering time and the slave rendering time between the master device and the one or more slave devices; and [16.7] adjusting the rendering of the content at the one or more slave devices to account for a difference in the slave rendering time and the master rendering time calculated based on the master device time adjusted for a difference in time domains of the one or more slave devices and the master device.

**Patent Owner's Interpretation:** synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback.

**Petitioner's Proposed Alternate Construction:** [16.6] determining at least one time differential between the amount of content that has already been rendered by the master device and the amount of content that has already been rendered by the slave device, where the determining accounts for a device time differential between the master and slave devices; and [16.7] adjusting the rendering of the content at the one or more slave devices to account for the time differential.

### **Claims 23-25**

**Claim Elements:** for each slave device, . . . [23.3] calculating a time domain difference between the master rendering time of the master device and the slave rendering time of the slave device based on a master device time adjusted for a difference in time domains of the slave device and the master device; and [23.4] rendering content at the slave device to account for the calculated time domain difference.

**Patent Owner's Interpretation:** synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback.

**Petitioner's Proposed Alternate Construction:** for each slave device, . . . [23.3] calculating a time differential between the amount of content that has already been rendered by the master device and the amount of content that has already been rendered by the slave device, where the calculating accounts for a

device time differential between the master and slave devices; and [23.4] adjusting the rendering of the content at each slave device to account for the time differential.

**D. “determining a master device time domain, a slave device time domain, and a source time domain”**

Claim 1 recites “determining a master device time domain, a slave device time domain, and a source time domain.”

In the context of the ‘791 Patent, a “time domain” of a given device broadly refers to a reference of time defined by a given clock that is used by the given device for some purpose. *See id.*, 1:36-49; *see also* Ex.1003, ¶35 (Patent Owner taking the position in the Litigation that rendering devices and audio sources “each necessarily must have its own time domain” that is “based on for example the internal clock of the processor, chipset, or otherwise used in those devices”). Petitioner proposes that the term “time domain” be interpreted in this manner for purposes of the present Petition.

Further, in the Litigation, Patent Owner has taken the position that a master device time domain, a slave device time domain, and a source time domain “necessarily must [be] determine[d] . . . in order to properly synchronize audio playback on multiple [rendering devices].” Ex.1003, ¶35. While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to

cover Patent Owner’s interpretation in the Litigation. Thus, Petitioner proposes that these claim elements be construed here to cover any scenario where playback is being synchronized on multiple rendering devices.

In the event that the Board does not find Patent Owner’s interpretation in the Litigation to be reasonable, Petitioner alternatively proposes that the “broadest reasonable construction” of this claim element here is “receiving any indication of any time domain associated with the master device, any time domain associated with the slave device, and any time domain associated with the source.”

**E. “upon receiving the sent master device time at the one or more slave devices, . . .”**

Independent claim 16 includes the clause “upon receiving the sent master device time at the one or more slave devices,” which is then followed by three claimed functions: (1) an “exchanging” function, (2) a “determining” function, and (3) an “adjusting” function.

In the Litigation, Patent Owner has treated this clause as though it imposes no limitation at all on the claim. Ex.1006, p.122. While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to cover Patent Owner’s interpretation in the Litigation. Thus, Petitioner proposes that this clause likewise be treated as a non-limitation here. However, to the extent that the Board is inclined to treat this clause as a limitation, Petitioner alternatively proposes that

the “broadest reasonable construction” of this claim element here covers any scenario in which the claimed “exchanging,” “determining,” and “adjusting” functions are performed at some point after a “master device time” is received at “the one or more slave devices.”

**F. “exchanging time domain information between the master and one or more slave devices”**

Independent claims 16 and 23 recite “exchanging time domain information between the master and one or more slave devices.”

In the Litigation, Patent Owner has taken the position that this claim element only requires a “slave device” to exchange “time domain information” with a “master device,” and does not require a “slave device” to additionally exchange “time domain information” with another “slave device.” While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to cover Patent Owner’s interpretation in the Litigation. Thus, Petitioner proposes that this claim element be construed here to cover any scenario in which a “master device” exchanges “time domain information” with a “slave device.”

**G. “sending ... an indication of when the master device renders content corresponding to the master rendering time” / “sending ... a master device time corresponding to the master rendering time”**

Claim 1 recites that the “master device” sends “an indication of when the master device renders content corresponding to the master rendering time,” and independent claim 16 similarly recites that the “master device” sends “a master device time corresponding to the master rendering time.”

In the context of the ‘791 Patent, it is clear that these claim elements cover a master device sending a “master device time” that corresponds to a particular “master rendering time.” However, in the Litigation, Patent Owner has taken the position that the foregoing claim elements more broadly cover the sending of any “timestamp” related to playback. Ex.1006, pp.22, 113. While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to cover Patent Owner’s interpretation in the Litigation. Thus, Petitioner proposes that these claim elements be construed here to cover the sending of any timestamp related to playback.

**H. Dependent Claim 7**

Dependent claim 7 recites “[t]he method of claim 6 wherein determining the time domain differential includes:” (1) “calculating a first difference between the master receive and master send times,” (2) “calculating a second difference

between the slave receive and the slave send times,” (3) “adding the first and second differences to yield a difference sum,” and (4) “halving the difference sum.” Ex.1001, Claim 7.

On its face, it appears claim 7 was written to capture the formula disclosed in the ‘791 Patent for calculating a differential between master and slave device times. However, the formula recited in claim 7 does not actually match the disclosed formula for calculating the “time domain differential” between a master device and a slave device. Indeed, the two formulas are depicted side-by-side below, with slave receive time highlighted in green and master receive time highlighted in yellow:

<u><b>Dependent Claim 7</b></u>	<u><b>‘791 Disclosure</b></u>
Diff = ((RT2-ST1)+(ST2-RT1))/2	Diff = ((RT1-ST1)+(ST2-RT2))/2

*Compare id., Claim 7 with 4:61.*

As shown, claim 7 has flipped the location of the slave receive time and master receive time in the formula, which produces a different mathematical outcome than the formula disclosed in the ‘791 Patent.<sup>2</sup>

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<sup>2</sup> Petitioner fails to see any written description support for the formula actually recited in Claim 7.

Patent Owner appears to have recognized this issue, because in the Litigation, Patent Owner interpreted claim 7 as though it recites the formula disclosed in the '791 Patent's specification, rather than the formula actually recited in claim 7. Ex.1006, pp.75-77. While Petitioner disagrees with this attempt by Patent Owner to rewrite the plain language of dependent claim 7, Petitioner respectfully submits that Patent Owner's interpretation of claim 7 in the Litigation should nevertheless be used here.

Thus, Petitioner proposes that dependent claim 7 be construed here as "determining a differential between a master device time and a slave device time" by (1) "calculating a first difference between the *slave* receive and master send times," (2) "calculating a second difference between the *master* receive and the slave send times," (3) "adding the first and second differences to yield a difference sum," and (4) "halving the difference sum."

#### **I. Dependent Claim 8**

Claim 8 recites "[t]he method of claim 7 wherein adjusting the rendering of the content includes:" (1) "conforming the slave rendering time to the master device rendering time so that the master device time and the at least one slave device operate in the same time domain" and (2) "deducting or adding the time domain differential to the same time domain." Ex.1001, Claim 7.

In the Litigation, Patent Owner has taken the position that both of these claim elements are met by the same functionality of synchronizing *device times* of rendering devices. Ex.1006, pp.77, 83. While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to cover Patent Owner's interpretation in the Litigation. Thus, Petitioner proposes that these claim elements be construed here to cover any synchronization between a time measure of a master rendering device and a corresponding time measure of a slave rendering device during playback, where the time measure could either be device time or rendering time.

**J. Claims 24-25**

Claims 24-25 both recite “sending a master device time and the master rendering time.” In the Litigation, Patent Owner has taken the position that this claim element can be met by sending a message that includes a single timestamp value. While Petitioner disagrees that this interpretation is correct under *Phillips*, the claims are to be given their broadest reasonable construction here, which should be broad enough to cover Patent Owner's interpretation in the Litigation. Thus, Petitioner proposes that the claimed functionality of sending “a master device time and the master rendering time” be construed here as requiring the sending of only a single timestamp value.

## **VII. OVERVIEW OF CHALLENGES**

**Challenge#1:** Petitioner asserts that Challenged Claims 1-3, 6-9, 12, 16, 19, and 23-25 are anticipated under 35 U.S.C. §102(e) by U.S. Patent No. 7,269,338 to Janevski (“Janevski”; Ex.1007), which was filed on December 11, 2001 and issued on September 11, 2007. Janevski qualifies as prior art under §102(e) because it is a patent granted on a United States patent application with a filing date that precedes the earliest possible effective filing date of the ‘791 Patent.

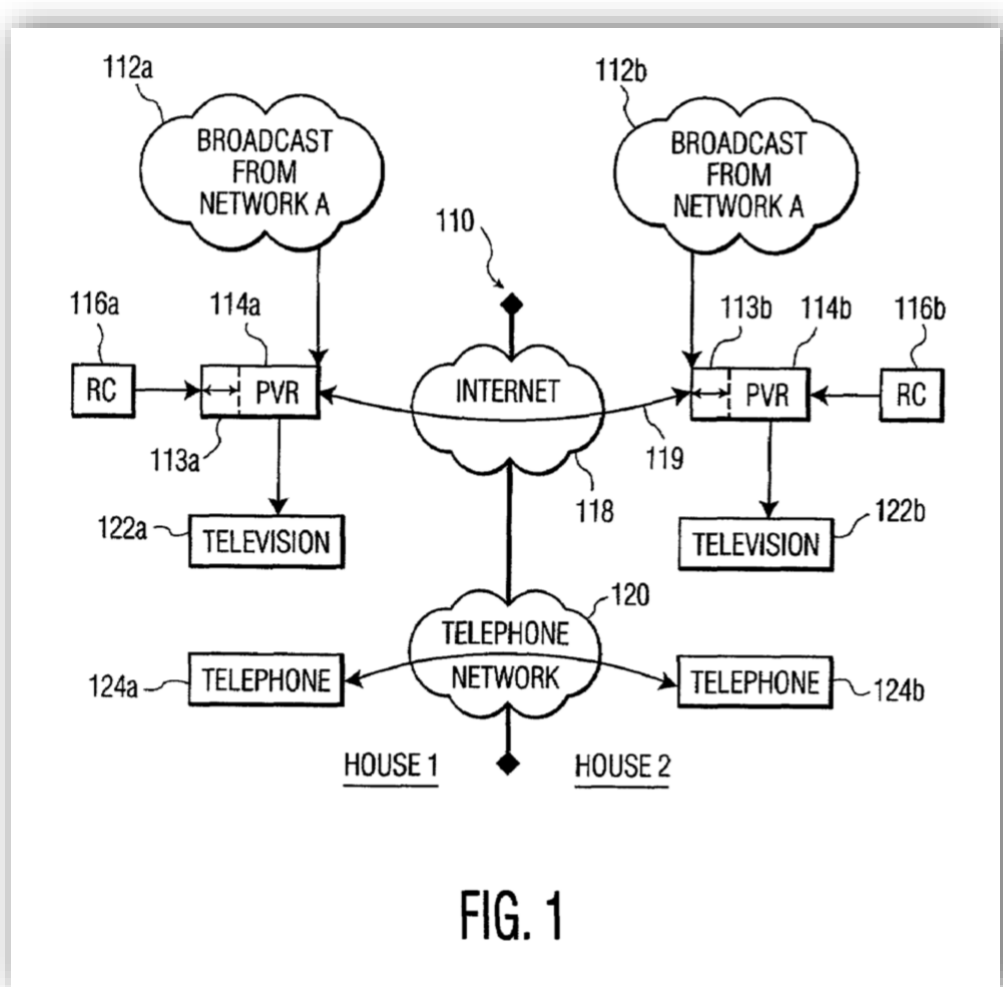
**Challenge#2:** Petitioner asserts that Challenged Claims 1-3, 6-9, and 12 are obvious under 35 U.S.C. §103(a) in view of Janevski, either alone or in combination with U.S. Pat. No. 8,286,207 to Schneidewend et al. (“Schneidewend”; Ex.1008), which was filed on November 12, 1998 and issued on October 9, 2012. Schneidewend qualifies as prior art under §102(e) because it is a patent granted on a United States patent application with a filing date that precedes the earliest possible effective filing date of the ‘791 Patent.

## **VIII. OVERVIEW OF JANEVSKI**

As with the ‘791 Patent, Janevski is directed to “techniques for synchronizing playback of two or more digital streams based on renderable content of those streams.” Ex.1007, 1:8-11. Janevski describes its synchronization techniques in the context of a “synchronized viewing system” in which the rendering devices take the form of personal video recorders (PVRs). *Id.*, 5:3-5,

6:4-7:50, FIG. 1. In general, a PVR is a video recording device that may be programmed to automatically find and record certain video content (such as a user's favorite television program) and then render the recorded content on a television so that it can be watched by a user. *Id.*, 1:13-20, 6:35-39.

One embodiment of the Janevski system is illustrated in FIG. 1:



*Id.*, FIG. 1. As shown, respective broadcasts 112a, 112b of video content from a network may be sent to a first PVR 114a and a second PVR 114b that are interconnected via the Internet 118. *Id.*, FIG. 1, 6:5-39. According to Janevski,

these broadcasts may come from various different service providers (e.g., RCN, Time Warner, etc.), and may be distributed using “any communication means known to one having ordinary skill in the art, such as cable, digital cable, satellite, antenna, over the Internet or combinations thereof.” *Id.*, 3:13-16, 3:27-30, 6:6-10. Further, according to Janevski, the PVRs in the disclosed system may receive content from other types sources as well, including Internet sources, DVD players, and/or VHS players. *Id.*, 1:13-17, 16:6-16.

As disclosed in Janevski, each PVR has a “video timer” that provides a respective “time count” for the PVR. *Id.*, FIG. 2, 8:39-10:3, 11:52-12:4, 12:59-66, 15:17. Additionally, when PVRs are rendering video content, each PVR keeps track of the amount of a given video program that has been rendered by the PVR in terms of “the time or frame into the program.” *Id.*, 1:64-2:5.

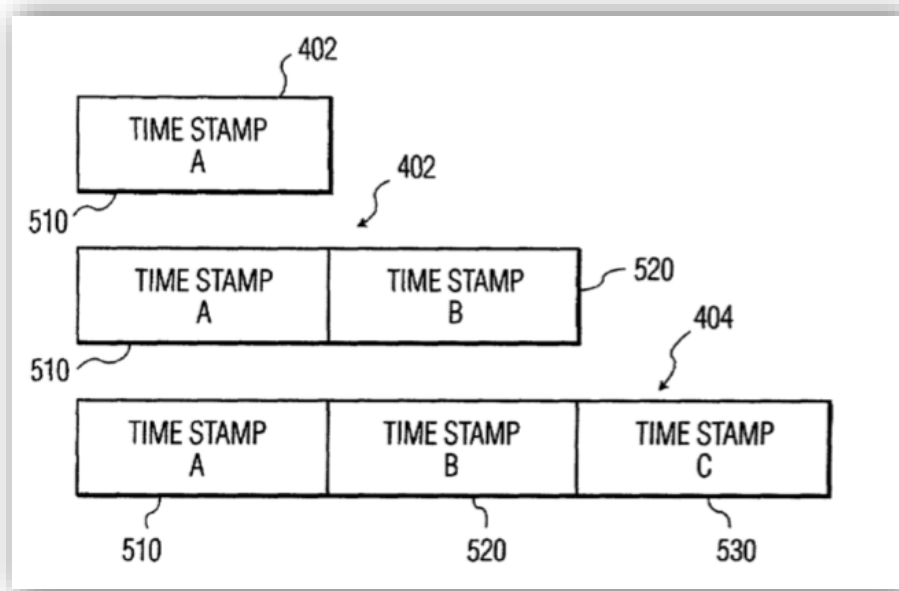
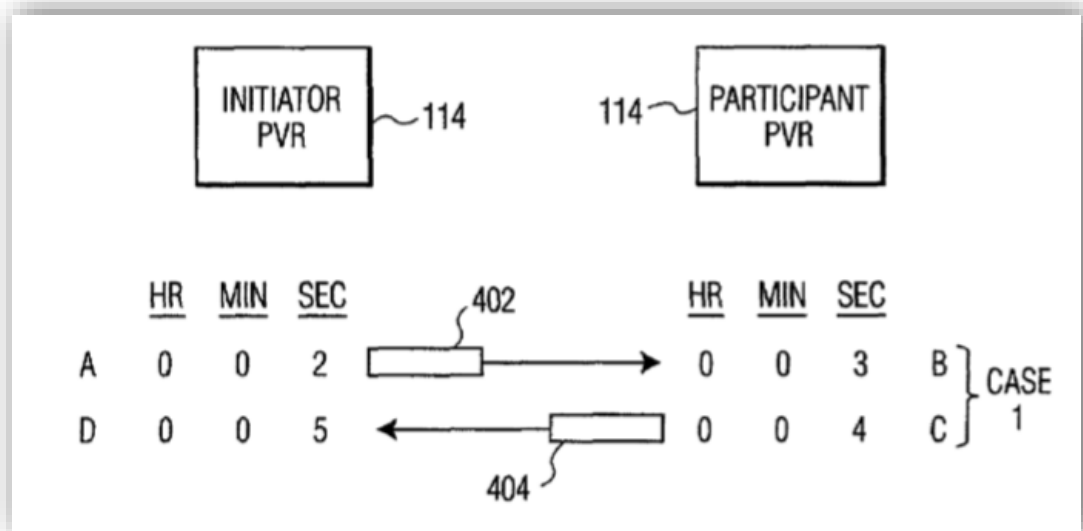
When a “synchronized viewing session” is initiated in Janevski, the PVR that started the session is designated as the “initiator” PVR (the master) and the other PVRs participating in the session are designated as “participant” PVRs (i.e., slaves). *Id.*, Abstract, 6:16-22. For example, in FIG. 1, PVR 114a is the “initiator” and PVR 114b is a “participant.” *Id.* The “initiator” role can later be “handed off” to any PVR that performs a control function for the session. *Id.*

Once the session is initiated, each “participant” PVR periodically determines whether there is any misalignment between the “initiator” PVR’s rendering of

video content and the “participant” PVR’s rendering of video content. *Id.*, Abstract, 7:36-50, 10:36-60, 12:59-13:29, 15:32-33. As in the ‘791 Patent, Janevski discloses a two-phase process for making this determination.

In Janevski’s first phase, a respective differential is determined between the “initiator” PVR’s time count and each “participant” PVR’s time count using a “time synchronization” mechanism. *Id.*, Abstract, 8:39-10:3, 11:43-12:4. Janevski discloses that this “time synchronization” between “initiator” and “participant” PVRs “can be implemented in many different known ways,” and that the disclosed techniques are “not limited to any particular time synchronization method.” *Id.*, 8:53-64, 13:21-22.

Janevski then discloses one example of a “time synchronization” mechanism for determining a “time count” differential between “initiator” the “participant” PVRs, which involves an exchange of “synchronization messages.” *Id.*, 8:65-10:20, 11:52-12:4. This example process is described with reference to FIGs. 4-5, portions of which are reproduced below:



*Id.*, FIGs. 4-5. As shown in FIGs. 4-5 and described in the corresponding text, this process may generally include the following steps:

1. The “initiator” PVR sends the “participant” PVR an originating message 402 that includes the “initiator” PVR’s time count when the originating message 402 is sent, which is referred to as “time A”;

2. The “participant” PVR records its time count when it receives the originating message 402, which is referred to as “time B”;
3. The “participant” PVR sends the “initiator” PVR a reply message 404 that includes the “participant” PVR’s time count when the reply message 404 is sent, which is referred to as “time C”;
4. The “initiator” PVR records its time count when it receives the reply message 404, which is referred to as “time D”; and
5. The differential (which Janevski calls “time misregistration” or “TM” for short) between the PVRs’ respective time counts may then be calculated using the following equation:

$$TM = \frac{1}{2}[(A+D)-(C+B)]$$

*Id.*, 8:65-10:20, 11:52-12:4.

When comparing the foregoing to the process disclosed in the ‘791 Patent for determining a differential between two devices’ respective device times, it is apparent that the two processes are nearly identical. Ex.1009, ¶¶81-86.

In Janevski, the “initiator” PVR engages in an exchange such as this with each “participant” PVR in order to calculate a respective “time misregistration” between the “initiator” PVR and each “participant” PVR, which is then used during the second phase of Janevski’s process. Ex.1007, 8:39-9:4, 12:59-66.

Turning to Janevski's second phase, the "initiator" PVR sends each "participant" PVR a "status message" that includes the calculated "time misregistration" for the "participant" PVR, an indication of the "initiator" PVR's "time into the program," and identifying information for a "query frame." *Id.*, Abstract, 7:36-50, 10:19-35, 12:5-36. Preferably, the identified "query frame" is "a frame that the initiator has just played or has recently played," so that the identifying information "represent[s] where the ['initiator' PVR's] playback is in the content at a particular time which is current." *Id.*, 12:5-11.

In Janevski's primary embodiment, the identifying information for the "query frame" comprises a "query signature" and a corresponding "query time stamp" for the query frame, although Janevski discloses that the identifying information may take other forms as well. *Id.*, 10:19-35, 12:5-36, 16:58-67. Further, in Janevski's primary embodiment, the "initiator" PVR may adjust the "query time stamp" by subtracting out the calculated "time misregistration" between the "initiator" and "participant" PVRs before including it in the "status message." *Id.*, 12:18-29.

After receiving the status message from the "initiator" PVR, each "participant" PVR may then use the calculated "time misregistration" between the "initiator" and "participant" PVRs, the indicator of the "initiator" PVR's "time into the program," and the identifying information for the "initiator" PVR's query

frame to determine whether there is any misalignment in the rendering between the “initiator” and “participant” PVRs. *Id.*, 10:36-60, 12:59-14:63.

Specifically, Janevski discloses that a “participant” PVR may first adjust its “time count” using the “time misregistration” between the “initiator” and “participant” PVRs in order to “time synchroniz[e]” its “time count” with the “initiator” PVR’s “time count.” *Id.*, 12:59-13:21. For example, the “participant” PVR may “compensate[] for time misregistration, by advancing the time count of its video timer 212 by the magnitude of the time misregistration, if the time misregistration is positive, or by rolling back the time count of its video timer 212 by the magnitude of the time misregistration, if the time misregistration is negative.” *Id.*, 12:59-66; *see also* 13:8-21 (disclosing an “alternative embodiment” where the “initiator” and “participant” PVRs “share time compensation duties”).

After adjusting its “time count,” the “participant” PVR may use the identifying information for the “initiator” PVR’s “query frame” to determine whether there is any differential between the video frames that have been rendered by the “initiator” PVR and the video frames that have been rendered by the “participant” PVR, which may be represented either in terms of a number of frames or in terms of “video time.” *Id.*, 10:36-60, 13:24-14:63. Janevski calls this differential “frame misregistration.” *Id.*

Upon determining that there is “frame misregistration” between the “initiator” and “participant” PVRs, the “participant” PVR compensates for this “frame misregistration” by slowing down, speeding up, rewinding, fast-forwarding, and/or halting its rendering of video content. *Id.*, Abstract, 3:52-57, 10:60-62, 13:24-30, 14:35-63. In this way, the “participant” PVR is able to “fine tune” the synchronization of the “participant” PVR’s rendering with the “initiator” PVR’s rendering. *Id.*, 7:47-50, 9:10-14, 10:33-35.

Janevski additionally discloses a process for a new “participant” PVR to join an ongoing “synchronized viewing session.” *Id.*, 10:63-11:29. According to this process, the new “participant” PVR first notifies the “initiator” PVR of a desire to join the session. *Id.*, 11:12-14. In response, the “initiator” PVR sends the new “participant” PVR an “originating synchronization message 402” that includes a “time stamp A” indicating the “initiator” PVR’s current “time count.” *Id.*, 11:14-17. In turn, the new “participant” PVR “advances the time count of its video timer 212 so that the value of the time count matches time stamp A contained in the message 402.” *Id.*, 11:17-20. Correspondingly, the new “participant” PVR fast forwards its copy of the video content to a point that “corresponds to the value of the advanced time count, so that the new participant's playback has caught up content-wise with the playback of the initiator.” *Id.*, 11:20-24.

Once the new “participant” PVR has completed these preliminary steps, the new “participant” PVR may then maintain synchronization with the “initiator” PVR using the two-phase process discussed above. *Id.*, 11:24-29.

According to Janevski, the sequence of the foregoing steps can also be modified. For instance, Janevski discloses that the “initiator” PVR may send the “query time stamp” separately from the “time misregistration,” and that “time misregistration and frame misregistration can be calculated and compensated for asynchronously.” *Id.*, 15:48-63.

## **IX. DETAILED ANALYSIS OF CHALLENGE#1**

Pursuant to 37 C.F.R. §42.104(b)(4)-(5), the following sub-sections provide a detailed analysis of why Challenged Claims 1-3, 6-9, 12, 16, 19, and 23-25 are anticipated under 35 U.S.C. §102(e) by Janevski. Challenge#1 is further supported by the Declaration of Roman Chertov. Ex.1009, ¶¶97-188.

Given that independent claim 23 is the broadest of the Challenged Claims, Petitioner has organized the sub-sections below such that the analysis of claim 23 and its dependent claims is presented first, followed by the analysis of independent claim 16 and its dependent claims, and then concluding with the analysis of claim 1 and its dependent claims. To avoid redundancy, Petitioner has also included cross-references between similar claim limitations where appropriate.

### **A. Independent Claim 23**

As established below, Janevski discloses every element of claim 23, and thus anticipates claim 23 under 35 U.S.C. §102(e). Ex.1009, ¶¶100-18.

***[23.0] A method for synchronizing rendering of content at devices which are nodes of a network, each device having a device time and a rendering time, the device time of a device being in a time domain of the device, the method comprising:***

To the extent it is limiting, Janevski discloses preamble 23.0. Ex.1009, ¶¶101-103. For instance, Janevski discloses a method for synchronizing the playback of video content at rendering devices that are nodes of a network, such as the PVRs interconnected via an “Internet network.” Ex.1007, Abstract, FIG. 1, 1:8-11, 6:4-39, 6:45-51.

Further, Janevski discloses that each PVR has a “time count” provided by the PVR’s “video timer,” which amounts to the claimed “device time” that is in a “time domain” of the PVR. *Id.*, FIGs. 2, 4, 7:51-62, 8:39-10:3.

Further yet, Janevski discloses that each PVR keeps track of the amount of content in a given video program that has already been rendered by the PVR in terms of “the time or frame into the program,” which amounts to the claimed “rendering time.” *Id.*, 1:65-2:5, 7:41-50; *see also* Ex.1006, p.147 (Patent Owner taking the position in the Litigation that a rendering device “necessarily has” a “rendering time[ ]”).

***[23.1] designating one of the devices as a master device having a master rendering time and the one or more slave devices having a slave rendering time; and***

Janevski discloses element 23.1. Ex.1009, ¶¶104-106. For instance, Janevski discloses a “synchronized PVR viewing system” in which the PVR that initiates a “synchronized viewing session” is designated as an “initiator” PVR and the one or more other PVRs participating in the “synchronized viewing session” are designated as “participant” PVRs. Ex.1007, FIG. 1, 6:4-25; *see also* Abstract, 7:36-39, 8:39-10:3.

Further, as noted above, Janevski discloses that each PVR keeps track of the amount of content in a given video program that has already been rendered by the PVR in terms of “the time or frame into the program,” which amounts to the claimed “rendering time.” *Id.*, 1:65-2:5, 7:41-50; Ex.1009, ¶105; *see also* Ex.1006, p.147 (Patent Owner taking the position in the Litigation that a rendering device “necessarily has” a “rendering time[ ]”).

Thus, Janevski’s “initiator” PVR amounts to the claimed “master device having a master rendering time,” and Janevski’s one or more “participant” PVRs amount to the claimed “one or more slave devices having a slave rendering time.” Ex.1009, ¶106.

***[23.2] for each slave device, exchanging time domain information between the master and one or more slave devices;***

Janevski discloses element 23.2. Ex.1009, ¶¶107-109. For instance, Janevski discloses a message flow for exchanging “synchronization messages” between “initiator” and “participant” PVRs that include information regarding the PVRs’ respective “time counts.” Ex.1007, FIG. 4, 8:39-10:3. This disclosure amounts to the claimed functionality of “exchanging time domain information between the master and one or more slave devices” under the “broadest reasonable construction.” Ex.1009, ¶107.

In fact, as noted above, Janevski’s message flow for exchanging “synchronization messages” between the “initiator” and “participant” PVRs disclosed is nearly identical to the preferred message flow for exchanging “time domain information” that is disclosed in the ‘791 Patent. Ex.1009, ¶¶81-86, 108. In both cases, there is an exchange of originating and reply messages between two devices in order to collect device time values that are then used to calculate a device time differential between the devices using a nearly identical formula. *Compare* Ex.1007, 8:65-10:20, 11:52-12:4 *with* Ex.1001, 4:46-64.

Janevski further discloses that “time synchronization” between the “initiator” and “participant” PVRs can be carried using other mechanisms that involve an exchange of “time domain information,” including approaches where “[d]istributed processors (nodes) in a network can broadcast their respective clock

values periodically to maintain synchronization” and/or where “[s]ynchronization messages [are] relayed between source and destination processors.” Ex.1007, 8:53-64. This disclosure also amounts to the claimed functionality of “exchanging time domain information between the master and one or more slave devices” under the “broadest reasonable construction.” Ex.1009, ¶109.<sup>3</sup>

*[23.3] for each slave device, . . . calculating a time domain difference between the master rendering time of the master device and the slave rendering time of the slave device based on a master device time adjusted for a difference in time domains of the slave device and the master device; and*

Janveski discloses element 23.3 under both Patent Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶¶110-16. For instance, Janevski discloses that each “participant” PVR periodically determines whether there is any misalignment between the “initiator” PVR’s rendering and the “participant” PVR’s rendering using a two-phase process that involves a determination of two separate time differentials between the PVRs. Ex.1007, Abstract, 7:36-50, 10:36-60, 12:59-13:29, 15:32-33.

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<sup>3</sup> In fact, the two “time synchronization” articles cited in Janevski disclose exchanges of time domain information between various different processors in a distributed network, which teaches that “time domain information” can be exchanged between “slave devices” as well. Ex.1009, ¶109

During Janevski's first phase, the "initiator" and "participant" PVRs engage in a "time synchronization" exchange in order to determine a differential between the "initiator" and "participant" PVRs' respective "time counts." *Id.*, Abstract, 8:39-10:3, 11:43-12:4. Janevski calls this first differential "time misregistration."

Then during Janevski's second phase, the "initiator" PVR sends a "status message" to the "participant" PVR that includes the "time misregistration" between the "initiator" and "participant" PVRs, an indication of the "initiator" PVR's "time into the [video] program," and identifying information for a recently-rendered video frame that includes both a "query signature" and a "query time stamp." *Id.* at Abstract, 7:36-50, 10:19-35, 12:5-36.

In response to receiving this "status message," the "participant" PVR begins by adjusting its "time count" to compensate for the "time misregistration" between the "initiator" and "participant" PVRs and thereby "time synchroniz[e]" its "time count" with the "initiator" PVR's "time count." *Id.*, 12:59-13:21. In turn, the "participant" PVR uses its adjusted "time count" along with the other information included in the "status message" to calculate a differential between the video frames that have been rendered by the "initiator" PVR and the video frames that have been rendered by the "participant" PVR, which may be represented in terms of "video time." *Id.*, 10:36-60, 13:24-14:63. Janevski calls this second differential "frame misregistration."

The foregoing meets element 23.3 under both Patent Owner's interpretation and the proposed alternate construction. Ex.1009, ¶115. Indeed, as noted above, each "participant" PVR periodically "time synchroniz[es]" its "time count" with the "initiator" PVR's "time count" and then uses this adjusted "time count" during rendering. This functionality amounts to "synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback," which meets element 23.3 under Patent Owner's interpretation.<sup>4</sup> *Id.*

Further, as noted above, each "participant" PVR periodically calculates a "video time" differential with the "initiator" PVR using its adjusted "time count," a "query signature," and a "query time stamp" that has been adjusted based on the "time count" differential between the "initiator" and "participant" PVRs. This functionality amounts to "calculating a time differential between the amount of

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<sup>4</sup> As noted above, Janevski also discloses that when a new "participant" PVR joins an ongoing session, the new "participant" PVR synchronizes its "time count" with the "initiator" PVR's "time count," fast forwards its video content to a point that corresponds to the adjusted "time count," and then begins rendering content starting at that point. Ex.1007, 10:63-11:29. This functionality also meets element 23.3 under Patent Owner's interpretation.

content that has already been rendered by the master device and the amount of content that has already been rendered by the slave device, where the calculating accounts for a device time differential between the master and slave devices,” which meets element 23.3 under both Patent’s Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶116.

***[23.4] for each slave device, . . . rendering content at the slave device to account for the calculated time domain difference.***

Janevski discloses element 23.4 under both Patent Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶¶117-18. For instance, as noted above, each “participant” PVR synchronizes its “time count” with the “initiator” PVR’s “time count” and then uses this adjusted “time count” during rendering. Ex.1007, 12:59-13:21. This functionality amounts to “synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback,” which meets element 23.4 under Patent Owner’s interpretation. Ex.1009, ¶117.

Further, Janevski discloses that after each “participant” PVR calculates its “video time” differential with the “initiator” PVR, the “participant” PVR compensates for the “video time” differential by adjusting its rendering of video content. Ex.1007, Abstract, 3:52-57, 10:60-62, 13:24-30, 14:35-63. Janevski refers to this process as “frame synchronization.” *Id.* Thus, this functionality amounts to “adjusting the rendering of the content at each slave device to account

for the time differential,” which meets element 23.4 under both Patent Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶118.

**B. Dependent Claims 24-25**

As established above, Janevski discloses every element of claim 23.

Further, as established below, Janevski discloses every additional element recited in claims 24-25 and thus anticipates claims 24-25 under 35 U.S.C. §102(e).

Ex.1009, ¶¶119-21.

*[24.0] The method of claim 23 including sending a master device time and the master rendering time to each slave device for use in calculating the time domain difference.*

*[25.0] The method of claim 24 wherein the master device sends the master device time and the master rendering time to the slave devices.*

Janevski discloses elements 24.0 and 25.0. Ex.1009, ¶¶120-21. For instance, Janevski discloses that the “initiator” PVR (the “master device”) sends each “participator” PVR (the “slave devices”) a “status message” that includes various information for use in synchronizing the “participator” PVR’s rendering with the “initiator” PVR’s rendering, including “an indication of the time into the [video] program” and a “query time stamp” for a recently-played video frame. Ex.1007, Abstract, 7:36-50, 10:19-35, 12:5-36. This disclosure amounts to the claimed functionality of a master device “sending a master device time and the master rendering time to each slave device for use in calculating the time domain difference.” Ex.1009, ¶120. In fact, under Patent Owner’s broad interpretation, the

“initiator” PVR’s sending of the “query time stamp” alone meets claim elements 24.0 and 25.0 under the “broadest reasonable construction.” *Id.*

As discussed above, Janevski discloses that the “initiator” PVR sends its current “time count” to “participant” PVRs at other times as well, including during the “time synchronization” process with an existing “participant” PVR and during the process for joining a new “participant” PVR to an ongoing viewing session. Ex.1007, 8:65-10:20, 10:63-11:29, 11:52-12:4. This functionality also meets elements 24.0 and 25.0 under the “broadest reasonable construction.” Ex.1009, ¶121.

### **C. Independent Claim 16**

As established below, Janevski discloses every element of claim 16 and thus anticipates claim 16 under 35 U.S.C. §102(e). Ex.1009, ¶¶122-49.

***[16.0] A method for synchronizing rendering of content at devices which are nodes of network, each device having a device time and a rendering time, the device time of a device being in a time domain of the device, the method comprising:***

Preamble 16.0 is identical to preamble 23.0. Thus, to the extent it is limiting, Janevski discloses preamble 16.0 for at least the same reasons discussed above with respect to preamble 23.0. Ex.1009, ¶¶123-26.

***[16.1] designating one of the devices as a master device having a master rendering time and the one or more slave devices having a slave rendering time;***

Claim element 16.1 is identical to element 23.1. Thus, Janevski discloses element 16.1 for at least the same reasons discussed above with respect to element 23.1. Ex.1009, ¶¶127-30.

***[16.2] sending to each device content to be rendered at that device synchronized with the content sent to the other devices;***

Janevski discloses element 23.1. Ex.1009, ¶¶131-32. For instance, Janevski discloses a “synchronized PVR viewing system” in which one or more service providers send respective broadcasts of video content to be rendered by multiple PVRs in a synchronized manner. Ex.1007, FIG. 1, 3:13-16, 6:5-39. One example of this functionality is illustrated in FIG. 1, which shows broadcasts 112a, 112b of video content being sent to a first PVR 114a and a second PVR 114b:

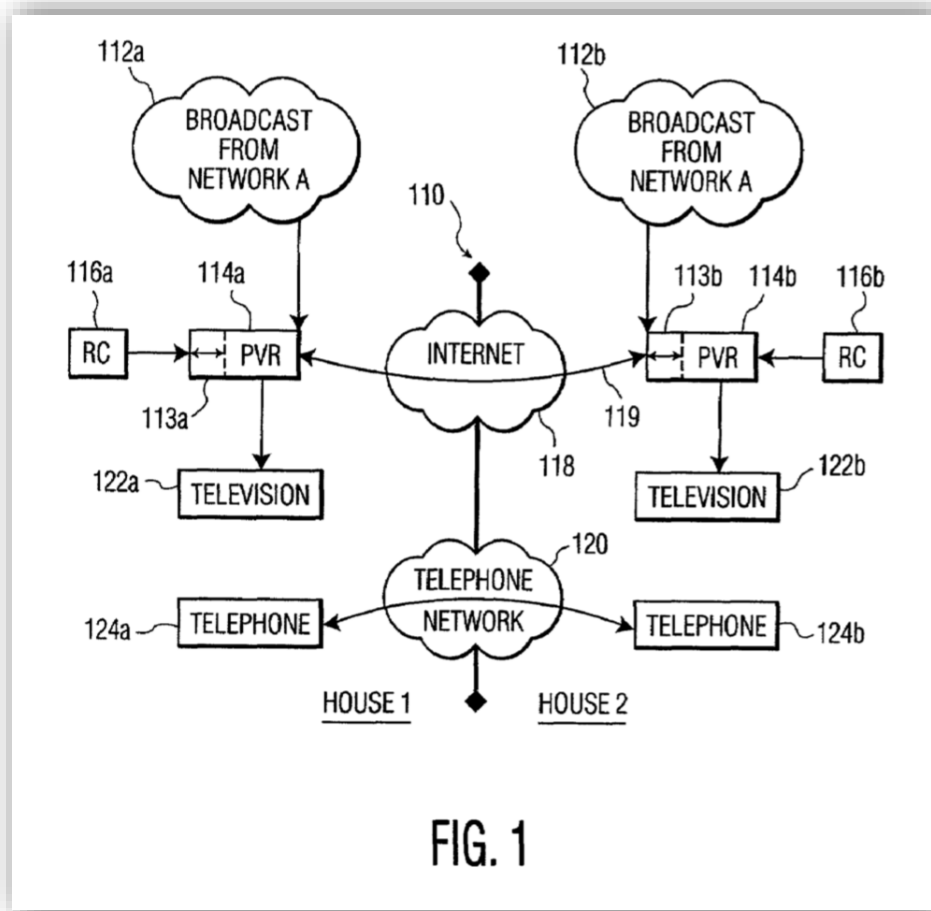


FIG. 1

*Id.*, FIG 1.

Janevski further discloses that video content to be rendered by the PVRs in the “synchronized PVR viewing system” may be sent by other types of sources as well, including Internet sources. *Id.*, 1:13-17, 16:6-16.

***[16.3] sending from the master device to the one or more slave devices a master device time corresponding to the master rendering time of the master device; and***

Janevski discloses element 16.3. Ex.1009, ¶¶133-34. For instance, Janevski discloses that the “initiator” PVR (the “master device”) sends each “participator” PVR (the “one or more slave devices”) a “status message” that includes a “query

time stamp” for “a frame that the initiator has just played or has recently played,” which “represent[s] where the [initiator PVR’s] playback is in the content at a particular time which is current.” Ex.1007, 10:19-35, 12:5-36. At a minimum, this disclosure of the “initiator” PVR sending the “query time stamp” amounts to the claimed functionality of sending “a master device time corresponding to the master rendering time of the master device.” Ex.1009, ¶133.

Additionally, Janevski discloses that when a new “participant” PVR joins a “synchronized viewing session,” the “initiator” PVR sends the new “participant” PVR a “synchronization message” that includes a time stamp indicating the “initiator” PVR’s current time count, which the new “participant” PVR then uses to both synchronize its “time count” with the “initiator” PVR’s “time count” and also fast-forward its video content to a point that corresponds to the adjusted “time count.” Ex.1007, 10:63-11:29. This disclosure also amounts to the claimed functionality of sending “a master device time corresponding to the master rendering time of the master device” under the “broadest reasonable construction.” Ex.1009, ¶134.

***[16.4] upon receiving the sent master device time at the one or more slave devices,***

To the extent this clause is limiting, Janevski discloses element 16.4. Ex.1009, ¶¶135-39. For instance, as discussed below, Janevski’s disclosed “[t]ime and frame synchronization” reads on the recited functions of “exchanging,”

“determining,” and “adjusting,” and Janevski discloses that this “[t]ime and frame synchronization is preferably performed *periodically* to keep the presentation synchronized.” Ex.1007, 15:32-33. This means that the PVRs in Janevski will continue to perform “[t]ime and frame synchronization” at some point after a given “query time stamp” is received at a “participant” PVR, which meets clause 16.4 under the “broadest reasonable construction.” Ex.1009, ¶136.

Further, Janevski discloses that when a new “participant” PVR wishes to join a “synchronized viewing session,” the “initiator” PVR sends the new “participant” PVR an “synchronization message” that includes a time stamp indicating the “initiator” PVR’s current time count – which is a “master device time” under Patent Owner’s interpretation – and after the new “participant” PVR catches up to the “initiator” PVR, the new “participant” PVR thereafter carries out the “time and frame synchronization” mechanisms that meet the “exchanging,” “determining,” and “adjusting” claim elements. Ex.1007, 10:63-11:29. This disclosure meets clause 16.4 under the “broadest reasonable construction” as well. Ex.1009, ¶137.

Further yet, Janevski discloses that the sequence in which the disclosed steps are performed can be modified, which provides further support for Janevski’s disclosure of clause 16.4. Ex.1009, ¶138. For instance, Janevski contemplates an embodiment where the “initiator” PVR (1) sends a “query time stamp” to each

“participant” PVR that amounts to the “master device time,” (2) exchanges “synchronization messages” with each “participant” PVR, which amounts to the claimed “exchanging” function, and then (3) sends the calculated “time misregistration” to each “participant” PVR, which in turn leads to the claimed “determining” and “adjusting” functions being performed at each “participant” PVR as discussed in further detail below. *See* Ex.1007, 15:48-63; Ex.1009, ¶139.

***[16.5] exchanging time domain information between the master and one or more slave devices;***

Element 16.5 is nearly identical to element 23.2. Thus, Janevski discloses element 16.5 for at least the same reasons discussed above with respect to element 23.2. Ex.1009, ¶¶140-43.

***[16.6] determining at least one time domain differential between the master rendering time and the slave rendering time between the master device and the one or more slave devices;***

Element 16.6 is similar to element 23.3. Thus, Janevski discloses element 16.6 for similar reasons to those discussed above with respect to element 23.3. Ex.1009, ¶¶144-46.

For instance, as discussed in detail above, Janevski discloses that each “participant” PVR periodically synchronizes its “time count” with the “initiator” PVR’s “time count” and then uses this adjusted “time count” during rendering. Ex.1007, 12:59-13:21. This functionality amounts to “synchronizing a time measure of a master rendering device with a corresponding time measure of a slave

rendering device during playback,” which meets element 16.6 under Patent Owner’s interpretation. Ex.1009, ¶145; *see also* FN4.

Further, as discussed in detail above, Janevski discloses that each “participant” PVR periodically calculates a “video time” differential with the “initiator” PVR using its adjusted “time count,” a “query signature” and a “query time stamp” that has been adjusted based on the “time misregistration” between the “initiator” and “participant” PVRs. Ex.1007, 10:36-60, 13:24-14:63. This functionality amounts to “calculating a time differential between the amount of content that has already been rendered by the master device and the amount of content that has already been rendered by the slave device, where the calculating accounts for a device time differential between the master and slave devices,” which meets element 16.6 under both Patents Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶146.

***[16.7] adjusting the rendering of the content at the one or more slave devices to account for a difference in the slave rendering time and the master rendering time calculated based on the master device time adjusted for a difference in time domains of the one or more slave devices and the master device.***

Element 16.7 is similar to elements 23.3 and 23.4. Thus, Janevski discloses element 16.7 for similar reasons to those discussed above with respect to elements 23.3 and 23.4. Ex.1009, ¶¶147-49.

For instance, as discussed in detail above, Janevski discloses that each “participant” PVR synchronizes its “time count” with the “initiator” PVR’s “time

count” and then uses this adjusted “time count” during rendering. Ex.1007, 12:59-13:21. This functionality amounts to “synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback,” which meets element 16.7 under Patent Owner’s interpretation. Ex.1009, ¶148.

Further, as discussed in detail above, Janevski discloses that after each “participant” PVR calculates its “video time” differential with the “initiator” PVR, the “participant” PVR compensates for the “video time” differential by adjusting its rendering of video content. Ex.1007, Abstract, 3:52-57, 10:60-62, 13:24-30, 14:35-63. This functionality amounts to “adjusting the rendering of the content at each slave device to account for the rendering time differential,” which meets element 16.7 under both Patents Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶149.

#### **D. Dependent Claim 19**

As established above, Janevski discloses every element of claim 16. Further, Janevski discloses the additional element recited in claim 19 and thus anticipates claim 19 under 35 U.S.C. §102(e). Ex.1009, ¶¶150-52.

***[19.0] The method of claim 16 wherein the content is sent from different sources to the master device and the slave devices.***

Janevski discloses element 19.0. Ex.1009, ¶¶151-52. For instance, as discussed above, Janevski discloses that the “initiator” and “participant” PVRs (the

“master device” and “slave device”) each receive respective broadcasts of video content that may be sent by “different cable or satellite providers.” Ex.1007, 3:13-16, 6:5-39. For example, Janevski’s disclosure contemplates an embodiment where a broadcast is sent to one PVR by RCN and a broadcast is sent is to another PVR by Time Warner. *Id.* Because these “different cable or satellite providers” amount to “different sources,” this disclosure amounts to the claim functionality of “the content [being] sent from different sources to the master device and the slave devices.” Ex.1009, ¶151.

Janevski further discloses that video content to be rendered by the PVRs in the “synchronized PVR viewing system” may be sent by other types of sources as well, including Internet sources, DVD players, and/or VHS players. Ex.1007, 1:13-17, 16:6-16.

#### **E. Independent Claim 1**

As established below, Janevski discloses every element of claim 1 and thus anticipates claim 1 under 35 U.S.C. §102(e). Ex.1009, ¶¶153-73.

***[1.0] A method for synchronizing a rendering of a content provided by a source at one or more devices which are nodes of a network, the content having a rendering time, the method comprising:***

Preamble 1.0 is similar to preamble 23.0. Thus, to the extent it is limiting, Janevski discloses preamble 1.0 for similar reasons to those discussed above with respect to preamble 23.0. Ex.1009, ¶¶154-55.

For instance, Janevski discloses a method for synchronizing the playback of video content at rendering devices that are nodes of a network, such as PVRs that are interconnected via an “Internet network.” Ex.1007, FIG. 1, 6:4-39, 6:45-51. Further, Janevski discloses that the content rendered by the PVRs is provided by a source such as a “cable or satellite provider” or an “Internet source.” *Id.*, 1:13-17, 3:13-16, 6:6:10. Further yet, in the Litigation, Patent Owner has taken the position that “content being played back necessarily has a rendering time (the time indicating the amount of content rendered thus far).” Ex.1006, p.1. Thus, for at least these reasons, Janevski discloses preamble 1.0. Ex.1009, ¶155.

***[1.1] designating one of the one or more devices a master device, the master device having a master device time and a master rendering time;***

Element 1.1 overlaps with aspects of elements 23.0 and 23.1. Thus, Janevski discloses element 1.1 for similar reasons to those discussed above with respect to elements 23.0 and 23.1. Ex.1009, ¶¶156-57.

For instance, Janevski discloses a “synchronized PVR viewing system” in which the PVR that initiates a session is designated as an “initiator” PVR, which amounts to the claimed “master device.” Ex.1007, FIG. 1, 6:4-25; Ex.1009, ¶157. Further, Janevski discloses that the “initiator” PVR has a “time count” provided by the “initiator” PVR’s “video timer,” which amounts to the claimed “master device time.” Ex.1007, FIGs. 2 & 4, 7:51-62, 8:39-10:3; Ex.1009, ¶157. Further yet, Janevski discloses that the “initiator” PVR keeps track of the amount of a given

video program that has already been rendered by the “initiator” PVR in terms of “the time or frame into the program,” which amounts to the claimed “master rendering time.” Ex.1007, 1:65-2:5, 7:41-50; Ex.1009, ¶157; *see also* Ex.1006, p.6 (Patent Owner taking the position in the Litigation that a master rendering device “necessarily has a master rendering time”).

***[1.2] designating remaining devices among one of the one or more devices as at least one slave device, the at least one slave device having a slave device time and a slave rendering time;***

Element 1.2 overlaps with aspects of elements 23.0 and 23.1. Thus, Janevski discloses element 1.2 for similar reasons to those discussed above with respect to elements 23.0 and 23.1. Ex.1009, ¶¶158-59.

For instance, Janevski discloses a “synchronized PVR viewing system” in which the one or more PVRs participating in a “synchronized viewing session” with the “initiator” PVR are designated as “participant” PVRs, which amounts to the claimed “at least one slave device.” Ex.1007, FIG. 1, 6:4-25; Ex.1009, ¶159.

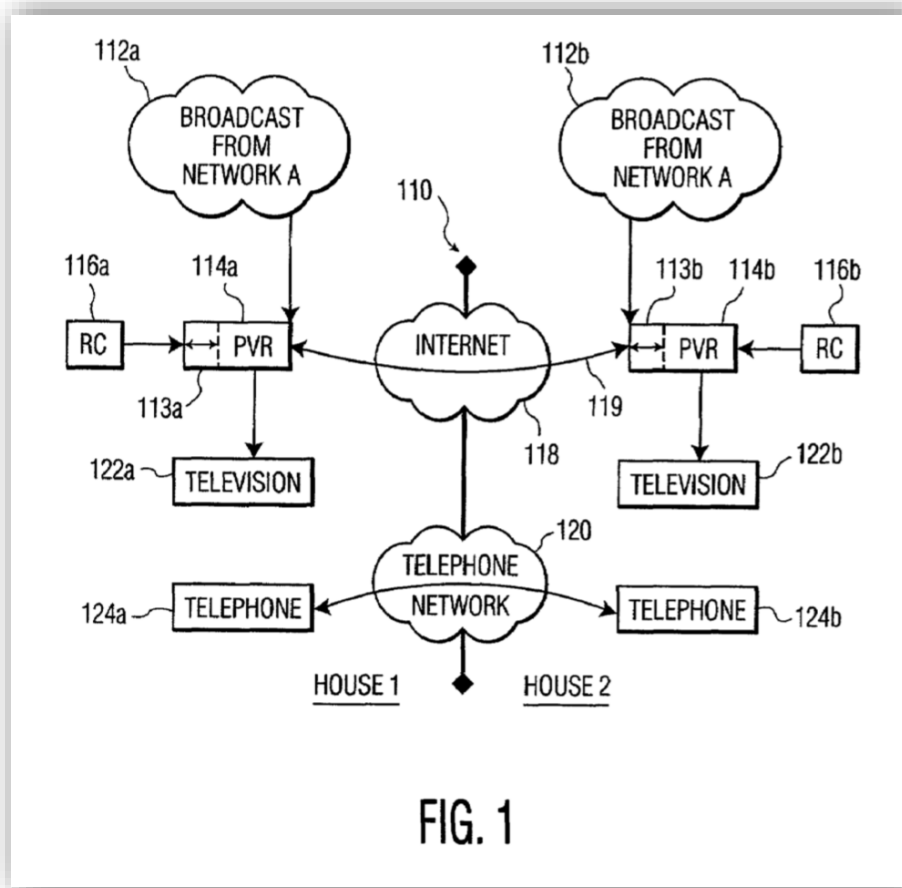
Further, Janevski discloses that each “participant” PVR has a “time count” provided by the “participant” PVR’s “video timer,” which amounts to the claimed “slave device time.” Ex.1007, FIGs. 2 & 4, 7:51-62, 8:39-10:3; Ex.1009, ¶159.

Further yet, Janevski discloses that each “participant” PVR keeps track of the amount of a given video program that has already been rendered by the “participant” PVR in terms of “the time or frame into the program,” which

amounts to the claimed “slave rendering time.” Ex.1007, 1:65-2:5; Ex.1009, ¶159; *see also* Ex.1006, p.6 (Patent Owner taking the position in the Litigation that slave rendering devices “necessarily have slave rendering times”).

***[1.3] receiving the content for rendering by the master and at least one slave device;***

Janveski discloses element 1.3. Ex.1009, ¶¶160-61. For instance, Janevski discloses a “synchronized PVR viewing system” in which “initiator” and “participant” PVRs (the “master device” and “slave device”) receive respective broadcasts of video content to be rendered by the PVRs. Ex.1007, FIG. 1, 1:13-17, 3:13-16, 6:5-39. One example of this functionality is illustrated in FIG. 1, which shows broadcasts 112a, 112b of video content being received by a first PVR 114a and a second PVR 114b:



*Id.*, FIG 1.

Janevski further discloses that video content to be rendered by the “initiator” and “participant” PVRs may be received from other types of sources as well, including Internet sources. *Id.*, 1:13-17, 16:6-16.

***[1.4] sending from the master device to the at least one slave device an indication of when the master device renders content corresponding to the master rendering time;***

Element 1.4 is similar to element 16.3. Thus, Janevski discloses element 1.4 for similar reasons to those discussed above with respect to element 16.3.

Ex.1009, ¶¶162-64.

For instance, as discussed in detail above, Janevski discloses that the “initiator” PVR (the “master device”) sends each “participator” PVR (the “at least one slave device”) a “status message” that may include a “query time stamp” for “a frame that the initiator has just played or has recently played,” which “represent[s] where the [initiator PVR’s] playback is in the content at a particular time which is current.” Ex.1007, 10:19-35, 12:5-36. At a minimum, this disclosure of the “initiator” PVR sending the “query time stamp” amounts to the claimed functionality of sending “an indication of when the master device renders content corresponding to the master rendering time.” Ex.1009, ¶163.

Additionally, Janevski discloses that when a new “participant” PVR joins a “synchronized viewing session,” the “initiator” PVR sends the new “participant” PVR an “synchronization message” that includes a time stamp indicating the “initiator” PVR’s current time count, which the new “participant” PVR then uses to both synchronize its “time count” with the “initiator” PVR’s “time count” and also fast forward its video content to a point that corresponds to the adjusted “time count.” Ex.1007, 10:63-11:29. This disclosure also amounts to the claimed functionality of sending “indication of when the master device renders content corresponding to the master rendering time” under the “broadest reasonable construction.” Ex.1009, ¶164.

***[1.5] determining a master device time domain, a slave device time domain, and a source time domain;***

Patent Owner has taken the position in the Litigation that this claimed functionality must *necessarily* be performed in a system that synchronizes playback on multiple rendering devices. Ex.1003, ¶35. Thus, under Patent Owner's interpretation, Janevski's disclosure of a "synchronized PVR viewing system" alone meets element 1.5. Ex.1007, Abstract, FIG. 1, 6:4-39; Ex.1009, ¶165.

Further, Janevski specifically discloses that a "time synchronization" mechanism is carried out between the "initiator" PVR and each participant "PVR" in order to determine a respective "time misregistration" between the "initiator" PVR and each "participant" PVR, which provides an indication of the "initiator" and "participant" PVR's device time domains relative to one another. Ex.1007, 8:53-10:20, 11:52-12:4. In fact, as noted above, the message flow for exchanging "synchronization messages" between the "initiator" and "participant" PVRs disclosed in Janevski is nearly identical as the message flow for exchanging "device time information" that is disclosed in the '791 Patent. Thus, this disclosure also amounts to the claimed functionality of "determining a master device time domain" and "a slave device time domain" under the alternate "broadest reasonable construction" proposed above. Ex.1009, ¶166.

Further yet, Janevski discloses that the PVRs in the “synchronized PVR viewing system” are capable of being “programmed to automatically find and record” a television program that is being broadcast by a service provider (Ex.1007, 1:13-24), which necessarily requires the PVR to have some indication of a time domain being used by a service provider when broadcasting programming, such as the time domain defined by a time-of-day clock used by the service provider. Ex.1009, ¶167. Indeed, having an indication of the times-of-day when a service provider will be broadcasting programming is a necessary requirement for a PVR – it would not be possible for a PVR to automatically find and record the correct program without this information. *Id.* Thus, this disclosure additionally amounts to the claimed functionality of “determining . . . a source time domain” under the alternate “broadest reasonable construction” proposed above. *Id.*

***[1.6] determining whether a time domain differential exists between the master rendering time, the slave rendering time; and***

Element 1.6 is similar to element 23.3. Thus, Janevski discloses element 1.6 for similar reasons to those discussed above with respect to element 23.3.

Ex.1009, ¶¶168-70.

For instance, as discussed in detail above, Janevski discloses that each “participant” PVR periodically synchronizes its “time count” with the “initiator” PVR’s “time count” and then uses this adjusted “time count” during rendering.

Ex.1007, 12:59-13:21. This functionality amounts to “synchronizing a time

measure of a master rendering device with a corresponding time measure of a slave rendering device during playback,” which meets element 1.6 under Patent Owner’s interpretation. Ex.1009, ¶169; *see also* FN4.

Further, as discussed in detail above, Janevski discloses that each “participant” PVR also periodically calculates a “video time” differential with the “initiator” PVR using its adjusted “time count,” a “query signature” and a “query time stamp.” Ex.1007, 10:36-60, 13:24-14:63. This functionality amounts to “calculating a time differential between the amount of content that has already been rendered by the master device and the amount of content that has already been rendered by the slave device,” which meets element 1.6 under both Patent’s Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶170.

***[1.7] adjusting, based on the received indication, the rendering of the content at the at least one slave device within the slave device time domain and in proportion to the time domain differential when present to account for variation between when the master device and the at least one slave device to render content that should be rendered at the same time.***

Element 1.7 is similar to element 23.4. Thus, Janevski discloses element 1.7 for similar reasons to those discussed above with respect to element 23.4. Ex.1009, ¶¶171-73.

For instance, as discussed in detail above, Janevski discloses that each “participant” PVR synchronizes its “time count” with the “initiator” PVR’s “time count” and then uses this adjusted “time count” during rendering. Ex.1007, 12:59-

13:21. This functionality amounts to “synchronizing a time measure of a master rendering device with a corresponding time measure of a slave rendering device during playback,” which meets element 1.7 under Patent Owner’s interpretation. Ex.1009, ¶172.

Further, as discussed in detail above, Janevski discloses that that after each “participant” PVR calculates its “video time” differential with the “initiator” PVR, the “participant” PVR compensates for the “video time” differential by adjusting its rendering of video content. Ex.1007, Abstract, 3:52-57, 10:60-62, 13:24-30, 14:35-63. This functionality amounts to “adjusting the rendering of the content at each slave device to account for the rendering time differential,” which meets element 1.7 under both Patents Owner’s interpretation and the proposed alternate construction. Ex.1009, ¶173.

**F. Dependent Claims 2-3, 6-9, 12**

As established above, Janevski discloses every element of claim 1. Further, Janevski discloses every one of the additional elements recited in claims 2-3, 6-9, and 12, and thus anticipates claims 2-3, 6-9, 12 under 35 U.S.C. §102(e). Ex.1009, ¶¶174-88.

***[2.0] The method of claim 1 wherein the indication sent from the master device to the at least one slave device includes the master device time at which the master device renders content corresponding to the master rendering time.***

Janevski discloses element 2.0 for at least the same reasons discussed above with respect to elements 24.0 and 25.0, 16.3, and 1.4. Ex.1009, ¶¶175-76.

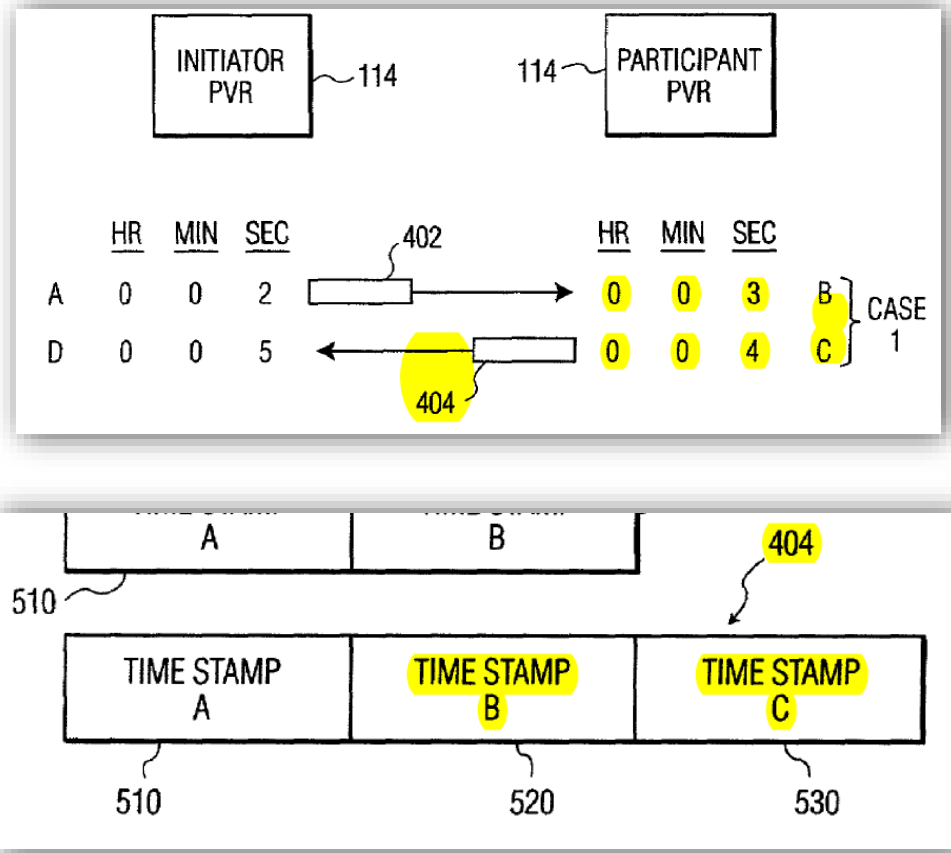
***[3.0] The method of claim 2 wherein the indication sent from the master device to the at least one slave device includes the master rendering time.***

Janevski discloses element 3.0 for at least the same reasons discussed above with respect to elements 24.0 and 25.0. Ex.1009, ¶¶177-78.

***[6.0] The method of claim 1 wherein the determining the time domains of the master device, the slave device, and the source includes determining the time domains relative to an other device by sending the send and receive times of at least one of the master device, the slave device, and the source to the other device.***

Janevski discloses element 6.0. Ex.1009, ¶¶179-80. For instance, Janevski discloses a “time synchronization” message flow in which the “initiator” PVR exchanges “synchronization messages” with at least one “participant” PVR to determine a differential between the “initiator” and “participant” PVRs’ respective device times. Further, in Janevski’s “time synchronization” message flow, the “participant” PVR (the “slave device”) sends the “initiator” PVR (the “master device”) a “reply synchronization message 404” that includes the both a receive time (referred to as “time B”) and a send time of the “participant” PVR (referred to as “time C”). This functionality is illustrated in FIGs. 4-5 of Janevski, portions of

which are reproduced below with highlighting to emphasize the “participant” PVR’s receive and send times as well as the synchronization message:



Ex.1007, FIGs. 4-5, *see also* 9:15-10:25, 11:56-66.

**[7.0-7.4] The method of claim 6 wherein determining the time domain differential includes:**

- calculating a first difference between the master receive and master send times;*
- calculating a second difference between the slave receive and the slave send times;*
- adding the first and second differences to yield a difference sum; and*
- halving the difference sum.*

Based on Patent Owner's position in the Litigation, elements 7.0-7.4 should be construed here as "determining a differential between a master device time and a slave device time by (1) "calculating a first difference between the slave receive and master send times," (2) "calculating a second difference between the master receive and the slave send times," (3) "adding the first and second differences to yield a difference sum," and (4) "halving the difference sum." Janevski discloses elements 7.0-7.4 under this construction. Ex.1009, ¶¶181-82.

For instance, Janevski discloses that the "time misregistration" (or "TM" for short) between the "initiator" PVR's time count and a "participant" PVR's time count is determined using the formula  $TM = \frac{1}{2}[(A+D)-(C+B)]$ , where "time A" is a send time of the "initiator" PVR, "time B" is a receive time of the "participant" PVR, "time C" is a send time of the "participant" PVR, and "time D" is a receive time of the "initiator" PVR. Ex.1007, 8:65-10:20, 11:52-12:4. As shown, this disclosed formula directly reads on elements 7.0-7.4 as they have been interpreted by Patent Owner in the Litigation. Ex.1009, ¶182

***[8.0-8.2] The method of claim 7 wherein adjusting the rendering of the content includes:***

***conforming the slave rendering time to the master device rendering time so that the master device time and the at least one slave device operate in the same time domain; and***

***deducting or adding the time domain differential to the same time domain.***

Janevski discloses that each “participant” PVR periodically “time synchroniz[es]” its “time count” with the “initiator” PVR’s “time count” to compensate for a calculated “time misregistration” between the “initiator” and “participant” PVRs. Ex.1007, 12:59-13:21. In this way, the “participant” PVR conforms its “time count” to the “initiator” PVR’s “time count” by deducting or adding the calculated “time count” differential to the “participant” PVR’s “video timer.” This functionality amounts to elements 8.0-8.2 under the “broadest reasonable construction.” Ex.1009, ¶184.

***[9.0] The method of claim 1 wherein the sending of the indication from the master device to the slave devices occurs at various times so that the at least one slave device can adjust the rendering of the content as appropriate.***

Janevski discloses element 9.0. Ex.1009, ¶185. For instance, Janevski discloses that the “status message” containing a “query time stamp” (the “indication of when the master device renders content corresponding to the master rendering time”) is sent by the “initiator” PVR “periodically” to ensure that the “initiator” and “participant” PVRs “remain synchronous.” Ex.1007, 7:36-38; *see also* 15:32-33 (disclosing that “[t]ime and frame synchronization is preferably

performed periodically to keep the presentation synchronized”). This “periodic” transmission of the “status message” amounts to the claimed functionality of “sending of the indication from the master device to the slave devices occurs at various times so that the at least one slave device can adjust the rendering of the content as appropriate.” Ex.1009, ¶185.

***[12.0] The method of claim 1 wherein the content is sent from different sources to the master device and the at least one slave device.***

Element 12.0 is nearly identical to element 19.0. Thus, Janevski discloses element 12.0 for at least the same reasons discussed above with respect to element 19.0. Ex.1009, ¶¶186-88.

## **X. DETAILED ANALYSIS OF CHALLENGE#2**

As explained above, under the “broadest reasonable construction” of the element “determining . . . a source time domain,” Petitioner respectfully submits that Janevski at least inherently discloses this element of Challenged Claims 1-3, 6-9, and 12. However, if the Board were to disagree, then Petitioner respectfully submits that a PHOSITA would have found Challenged Claims 1-3, 6-9, and 12

obvious under 35 U.S.C. §103(a) in light of Janevski as combined with Schneidewend. Ex.1009, ¶¶189-201.<sup>5</sup>

Indeed, similar to Janevski, Schneidewend discloses a “digital video receiving system” (“DVRS”) configured to receive and render video content broadcasts from multiple sources. Ex.1008, 2:37-44, 3:1-36. In the “Background” of this disclosure, Schneidewend teaches that the “PSIP” standard advanced by “ATSC” involved individual broadcasters including in their respective digital broadcasts “ancillary information,” such as “system timing information providing a time clock reference enabling determination of a time at which a specific program is to be broadcast.” *Id.*, 1:19-55.

In accordance with the PSIP standard, Schneidewend explains that, as the DVRS receives this information, the DVRS assembles a “System Time Table (STT)” that “contains a time reference indicator and associated correction data sufficient for a decoder to establish a time of transmission of a program by a

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<sup>5</sup> A PHOSITA would have the equivalent of a four-year degree from an accredited institution in computer science, computer engineering, electrical engineering, or the equivalent, and approximately 2-4 years of professional experience in the fields of networked systems and networked-based applications, or an equivalent level of skill and knowledge.

broadcast source . . . .” *Id.*, 4:15-26; *see also* 6:13-22. Schneidewend further explains that when the DVRS executes scheduled processing of a particular program, it “generates a scheduling time clock from a time reference indication (e.g., in the STT) provided by the broadcast source of the particular program[, which] is used to time the initiation of scheduled program processing functions.” *Id.*, 4:66-5:4. This disclosure amounts to the DVRS “determining . . . a source time domain” under the “broadest reasonable construction” proposed above. Ex.1009, ¶¶192-96.

Thus, to the extent that the broadcast signals received by the PVRs in Janevski did not already include the type of information disclosed in Schneidewend, it would have been obvious to a PHOSITA to combine Janevski’s teachings with the foregoing disclosures of Schneidewend at the time of the ‘791 Patent’s earliest possible priority date. Indeed, a PHOSITA would have been motivated to combine the foregoing disclosures of Schneidewend with the disclosure of Janevski for a variety of reasons. Ex.1009, ¶¶197-200.

For example, to the extent that Janevski’s broadcast signals were not already compliant with the PSIP standard, a PHOSITA would have had a reason to combine Janevski’s teachings with Schneidewend’s teachings— namely to comply with the PSIP standard – and such combination would have arisen from, at most, ordinary skill or common sense. *Id.*, ¶198.

Moreover, even disregarding compliance with the PSIP standard, a PHOSITA would have recognized that combining Janevski's teachings with Schneidewend's teachings would be beneficial. *Id.*, ¶199. Indeed, Schneidewend explains that one of the benefits of generating a scheduling time clock from a time reference indication provided by the broadcast source is avoidance of "time clock inaccuracy," which may result in "the wrong program [being] recorded (or viewed or played back)" and/or may result in "a program [being] erroneously recorded using" parameters intended for a different program broadcasted at a different time. *See* Ex.1008, 5:11-36; *see also* 7:11-15 ("It is advantageous that the time clock data used to derive the scheduling clock is synchronized with the time clock transmitted by the broadcast source in broadcasting the desired program.").

Accordingly, a PHOSITA would have had clear motivation to combine Janevski with the foregoing disclosures of Schneidewend at the time of the '791 Patent's earliest possible priority date. Ex.1009, ¶200

In view of the foregoing, Petitioner respectfully submits that the combination of Janevski and Schneidewend renders Challenged Claims 1-3, 6-9, and 12 obvious.

## **XI. CONCLUSION**

Petitioner respectfully submits that this Petition shows a reasonable likelihood that Petitioner will prevail with respect to at least one of the Challenged

Claims. Accordingly, Petitioner requests that the Board grant this Petition, institute *Inter Partes* Review of Claims 1-3, 6-9, 12, 16, 19, and 23-25 of the '791 Patent, and cancel these claims as unpatentable.

Date: March 9, 2018

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## CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §§42.24 and 42.6 the undersigned hereby certifies that this Petition complies with the type-volume limitation and general format requirements.

1. Exclusive of the exempted portions of the Petition, as provided in 37 C.F.R. §42.24(a)(1)(i), the Petition contains 13,810 words.
2. The Petition has been prepared in proportionally spaced typeface using Microsoft® Word for Mac v. 16.10 in 14-point Times New Roman font. The undersigned has relied upon the word count feature of this word processing system in preparing this certificate.

Date: March 9, 2018

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**CERTIFICATE OF SERVICE**

In accordance with 37 CFR §42.105, I hereby certify that on March 9, 2018, a true copy of the accompanying PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 7,391,791, including all exhibits, was served via Federal Express upon the Patent Owner at the following correspondence address of record for U.S. Patent No. 7,391,791:

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