

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UNIFIED PATENTS, LLC

Petitioner

- v. -

VL COLLECTIVE IP LLC

Patent Owner

IPR2022-01086

U.S. Patent 8,605,794

SUPPLEMENTAL DECLARATION OF DR. IMMANUEL FREEDMAN IN
SUPPORT OF PETITIONER'S REPLY

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I, Dr. Immanuel Freedman, do hereby declare as follows:

I. INTRODUCTION

1. I have been retained by counsel for Unified Patents, LLC (“Unified”) as an independent expert witness for the above-captioned Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 8,605,794 (“the ’794 Patent”). I am being compensated at my usual and customary rate for the time I spend in connection with this IPR. My compensation is not affected by the outcome of this IPR.

2. I have been asked to provide my supplemental opinions as to whether claims 1, 3, 5, 9, 12, 13, 15, 20, and 21 (each a “Challenged Claim” and collectively the “Challenged Claims”) of the ’794 Patent are anticipated by the prior art, or whether the claims would have been obvious to a person having ordinary skill in the art (“POSITA”) as of the claims’ priority date. It remains my opinion that the Challenged Claims are anticipated by and rendered obvious by each of the *Sonohara* and *Abbott* references as identified below.

3. In preparing this Supplemental Declaration, I have reviewed:

- a) EX1001, the ’794 Patent;
- b) EX1002, the file history of the ’794 Patent;
- c) the prior art references and documents identified below:
 - EX1003, US Patent 5,627,656 to Sonohara (“*Sonohara*”)
 - EX1004, U.S. Patent 6,654,933 to Abbott *et al.* (“*Abbott*”);

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- Decision Granting Institution of *Inter Partes* Review (Paper 8) in IPR2022-01086, December 19, 2022 (“Institution Decision”);
- Patent Owner’s Response (Paper 20) in IPR2022-01086 (“POR”);
- EX2007, Declaration of Dr. Michael T. Goodrich;
- EX2008, Deposition Transcript of Dr. Immanuel Freedman, March 22, 2023;
- EX2009, Claim Construction Order, *Starz Entertainment, LLC et al. v. VL Collective IP, LLC et al.*, No. 1:21-cv-01448-JLH (Jan. 10, 2023);
- EX2011, U.S. Patent No. 7,428,695 to Shin (“Shin”); and
- EX2012, U.S. Patent No. 5,598,352 to Rosenau et al. (“Rosenau”).

d) any other document cited below.

4. In forming the opinions expressed in this Supplemental Declaration, I relied upon my education and experience in the relevant field of art and have considered the viewpoint of a POSITA, as of April 12, 2005. I have also considered:

a) the documents listed above,

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- b) any additional documents and references cited in the analysis below,
- c) the relevant legal standards, and
- d) my knowledge and experience based upon my work in this area as described below.

II. LEGAL PRINCIPLES

5. I am not an attorney. For the purposes of my Original Declaration and this Supplemental Declaration, I have been informed about certain aspects of the law that are relevant to my opinions. My understanding of the law was provided to me by Petitioner's attorneys.

6. I understand that prior art to the '794 Patent includes patents and printed publications in the relevant art that predate the priority date of the '794 Patent. For purposes of this Declaration, and for the reasons set forth in more detail below, I have applied the date of April 12, 2005 as the priority date.

7. I have been asked to provide my opinions regarding whether the claims of the '794 Patent would have been anticipated by the prior art or would have been obvious to a POSITA at the time of the alleged invention in light of the prior art.

8. It is my understanding that, to anticipate a claim under 35 U.S.C. § 102, a reference must disclose each and every element of the claim.

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9. I understand that a claim is also unpatentable if it would have been obvious. Obviousness of a claim requires that the claim would have been obvious from the perspective of a POSITA at the time the alleged invention was made. I understand that a claim could have been obvious from a single prior art reference or from a combination of two or more prior art references.

10. I understand that an obviousness analysis requires an understanding of the scope and content of the prior art, any differences between the alleged invention and the prior art, and the level of ordinary skill in evaluating the pertinent art.

11. I further understand that a claim would have been obvious if it unites old elements with no change to their respective functions, or alters prior art by mere substitution of one element for another known in the field and that combination yields predictable results. Also, I understand that obviousness does not require physical combination/bodily incorporation, but rather consideration of what the combined teachings would have suggested to POSITAs at the time of the alleged invention. I understand that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

12. While it may be helpful to identify a reason for this combination, I understand that there is no rigid requirement of finding an express teaching, suggestion, or motivation to combine within the references. When a product is

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available, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a POSITA can implement a predictable variation, obviousness likely bars its patentability. For the same reason, if a technique has been used to improve one device and a POSITA would recognize that it would improve similar devices in the same way, using the technique would have been obvious. I understand that a claim would have been obvious if common sense directs one to combine multiple prior art references or add missing features to reproduce the alleged invention recited in the claims.

13. I further understand that certain factors may support or rebut the obviousness of a claim. I understand that such secondary considerations include, among other things, commercial success of the patented invention, skepticism of those having ordinary skill in the art at the time of invention, unexpected results of the invention, any long-felt but unsolved need in the art that was satisfied by the alleged invention, the failure of others to make the alleged invention, praise of the alleged invention by those having ordinary skill in the art, and copying of the alleged invention by others in the field. I understand that there must be a nexus—a connection—between any such secondary considerations and the alleged invention. I also understand that contemporaneous and independent invention by others is a secondary consideration tending to show obviousness.

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14. I am not aware of any allegations by the named inventor of the '794 Patent or any assignee of the '794 Patent that any secondary considerations tend to rebut the obviousness of any Challenged Claim of the '794 Patent.

15. I understand that in considering obviousness, it is important not to determine obviousness using the benefit of hindsight derived from the patent being considered.

16. I understand that Petitioner has the burden of proving unpatentability by a preponderance of evidence, which means that the claims are more likely than not unpatentable.

17. I understand that the claims are to be construed according to the same claim construction standard that district courts use wherein claim terms are given their ordinary and customary meaning from the perspective of a POSITA at the time of the invention. I understand that claim terms are generally to be construed according to their ordinary and customary meaning from the perspective of a POSITA at the time of the invention in the context of the patent's disclosure, unless the inventor provided an express definition for a claim term (i.e., the inventor acts as his or her own lexicographer), or the applicant disavowed or disclaimed the full scope of a claim term either in the specification or during prosecution. I understand that when the inventor acts as a lexicographer, the definition must be definition for a term, that definition must be set forth in the specification with reasonable clarity,

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deliberateness, and precision. I also understand that to constitute disavowal or disclaimer, the applicant must clearly and unambiguously express surrender of subject matter during prosecution. I understand that it is important not import limitations from a disclosed embodiment—even if it is the only embodiment disclosed in the specification—into a claim if the claim does not require those limitations, absent a clear indication that the applicant intended the claims to be so limited.

18. I understand that a patent may have two types of claims: an independent claim, and a dependent claim. I understand that a dependent claim must further define the subject matter of the claim from which it depends. I further understand that under the principle of claim differentiation, an independent claim should not be construed as requiring a limitation added by a dependent claim of that independent claim. In addition, I understand that under the principle of claim differentiation, limitations stated in a dependent claim are not to be read into the independent claim from which that dependent claim depends.

19. I understand that a patent claim may use the principle of antecedent basis to signal an intent to refer to the same term in that same claim or its dependent claim. For example, I understand that if a claim recites “a device” in a first limitation of the claim, and a second limitation of the claim then recites “the device,” it is presumed that the claim was drafted so that the “device” in the second limitation of

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the claim (“the device”) refers to the same “device” recited in the first limitation of the claim (“a device”). I understand that in this example, the recitation of “a device” in the first limitation of the claim provides antecedent basis for “the device” in the second limitation of the claim.

20. The analysis in this Supplemental Declaration is in accordance with the above-stated legal principles.

III. CLAIM CONSTRUCTION

21. I understand that Patent Owner construed the terms in the table below, and that Dr. Goodrich “agree[d] with Patent Owner with respect to these constructions.” EX2007, ¶55. Below is a screenshot of the table of Patent Owner’s proposed constructions as reproduced in ¶54 of Dr. Goodrich’s Declaration. For conciseness, I refer to the constructions below as “Patent Owner’s proposed constructions” based on the heading “Patent Owner’s Proposed Constructions” in the table reproduced in ¶54 of Dr. Goodrich’s Declaration. As noted above, I understand that Dr. Goodrich agrees with Patent Owner’s proposed constructions. I disagree with Patent Owner’s proposed constructions for the following reasons.¹

¹ I note that Dr. Goodrich addresses claims 1 and 9 together. Device claim 9 is substantially similar to method claim 1. For conciseness, I will address the language of method claim 1, unless noted otherwise.

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Term	Patent Owner’s Proposed Construction
content-related . . . data segments (Claims 1, 9)	data segments ordered in a file such that they will present the file’s contents in their intended presentation order when rendered sequentially
Preambles (claims 1, 9)	The preambles are construed to be limiting. The first data file and the second data file are distinct from each other.
“assignment rule for assigning each one of the content-related second data segments to one of the content-related first data segments” / “assignment rule for assigning each one of the	assignment rule for assigning each one of the content-related second data segments to one of the content-related first data segments, wherein the assignment is not

content-related second data segments to each one of the content-related first data segments” (Claims 1, 9)	performed by using exact timing information for the data segments
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A. Patent Owner's proposed construction of "content-related...data segments" is wrong.²

22. Patent Owner proposes to construe the "content-related...data segments" terms in claim 1 as "data segments ordered in a file such that they will present the file's contents in their intended presentation order when rendered sequentially." I disagree with Patent Owner's proposed construction of the "content-related...data segments" terms in claim 1, because this proposed construction (1) improperly imports limitations from the specification that are not required by the claims, and (2) renders other portions of claim 1 superfluous, as I explain below.

23. First, claim 1 does not require the additional features that Patent Owner is improperly reading into the claims. Specifically, claim 1 does not recite that the "content-related first data segments" or "content-related second data segments" are "ordered in a file," or that the data segments are "ordered in a file such that they will present the file's contents in their intended presentation order when rendered sequentially." These features do not appear anywhere in claim 1, and the

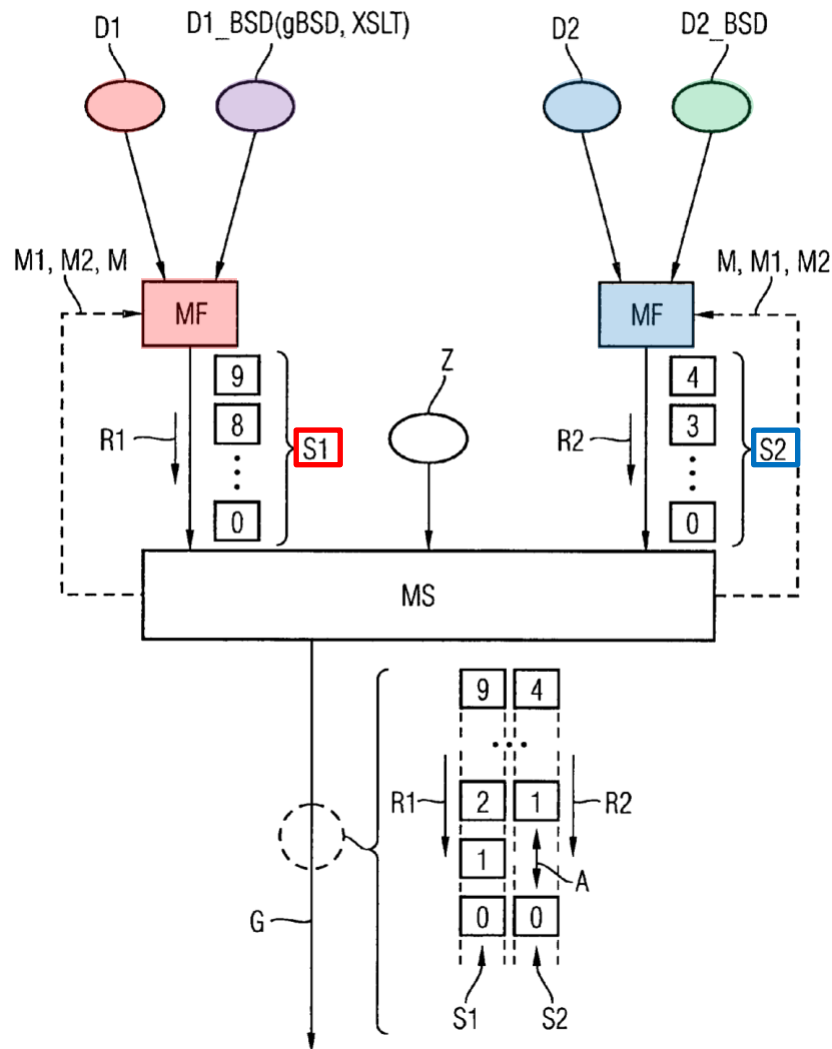
² In this Supplemental Declaration, all emphases have been added by me, unless indicated otherwise.

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specification of the '794 Patent does not support Patent Owner's proposed construction.

24. There is no indication in the specification or the file history of the '794 Patent that the applicant intended the "content-related...data segments" terms in claim 1 to mean "data segments ordered in a file such that they will present the file's contents in their intended presentation order when rendered sequentially." As shown in Figure 1 of the '794 Patent below, a video data stream (**data file D1**) is synchronized with an audio data stream (**data file D2**). EX1001, 3:65-8. For the **first data file D1**, there exists a "**fragmentation description file D1_BSD**," and for the **second data file D2**, there exists a "**fragmentation description file D2_BSD**." EX1001, 4:9-11. The '794 Patent explains that the "fragmentation description file D1_BSD, B2_BSD specifies how content-related first and content-related second data segments S1, S2 can be obtained from the respective first and second data file D12, D2." EX1001, 4:11-14. In other words, the **fragmentation description file D1_BSD** "specifies" how first content-related data segments **S1** 0 to 9 "can be obtained from the **first data file D1**, and the **fragmentation description file D1_BSD** "specifies" how first content-related data segments **S2** 0 to 4 "can be obtained from the **first data file D2**. EX1001, 4:11-14.

FIG 1



EX1001, Fig. 1 (annotated)

25. As shown in Figure 1 above, the content-related first data segments **S1** are taken from the **first data file D1** by the **fragmentation module MF** on the lefthand side of Figure 1 according to a “fragmentation rule of the **fragmentation description file D1_BSD**.” EX1001, 4:42-46. The content-related first data

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segments S1 are then “passed by the **fragmentation module MF** to a synchronization module MS in the same chronological sequence R1 in which they are to be output.” EX1001, 4:42-49. Similarly, the content-related second data segments **S2** are taken from the **second data file D2** by the **fragmentation module MF** on the lefthand side of Figure 1 according to a fragmentation rule of the **fragmentation description file D1_BSD**, and are passed to the synchronization module MS in the same chronological sequence R2 in which they are to be output. EX1001, 5:5-9.

26. Thus, based on the above disclosure of Figure 1 of the '794 Patent,³ I disagree that the content-related first data segments **S1** and the content-related second data segments **S2** are respectively “ordered in a file” **D1**, **D2** “such that they will present the file’s contents in their intended presentation order when rendered sequentially,” according to Patent Owner’s proposed construction. Instead, the “fragmentation rule of the **fragmentation description file D1_BSD**” governs the order in which the content-related first data segments **S1** are passed to the synchronization module MS (i.e., the chronological sequence R1), and the

³ “FIG. 1 shows a device for performing the method according to an embodiment of the invention.” EX1001, 3:46-47. I note that the '794 Patent does not describe any device other than the device in Figure 1.

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fragmentation rule of the **fragmentation description file D1_BSD** governs the order in which the content-related first data segments **S2** are passed to the synchronization module MS (i.e., the chronological sequence R2). EX1001, 4:42-49, 5:5-9. Contrary to Patent Owner's proposed construction, the '794 Patent does not explain that content-related data segments are "ordered in a file such that they will present the file's contents in their intended presentation order when rendered sequentially."

27. Second, construing the "content-related...data segments" terms as proposed by Patent Owner would improperly render other portions of claim superfluous, in my opinion. Patent Owner's proposed construction suggests that the content-related data segments **themselves** dictate how they will be ordered "when rendered sequentially" because the data segments are "ordered in a file" so that "the file's contents [will be] in their intended presentation order when rendered sequentially." But claim 1 recites that the content-related first and second data segments are sequentially output together "on the basis of an assignment rule for assigning each one of the content-related second data segments to one of the content-related first data segments." EX1001, 7:48-57. Construing the "content-related...data segments" in claim 1 as being "ordered in a file such that they will present the file's contents in their intended presentation order when rendered sequentially" renders the assignment rule entirely superfluous. It is the assignment

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rule in claim 1 that “assign[s] each one of the content-related second data segments to one of the content-related first data segments,” and claim 1 requires the “content-related...data segments” to be output sequentially based on the “assignment rule.”

28. In my opinion, if the “content-related...data segments” terms are to be construed, they should be construed to include only the explanation of “content-related” in the specification of the '794 Patent. The '794 Patent explains that the term “content-related” “mean[s] that first and second data segments have a syntactical meaning within the respective data file.” EX1001, 4:14-17. Thus, if the terms “content-related...data segments” are to be construed, they should be construed to mean “that first and second data segments have a syntactical meaning within the respective data file.” EX1001, 4:14-17. I understand that a district court judge in a case involving the '794 Patent construed the “content-related...data segments” terms to mean “segments of content data that have a syntactical meaning within the respective data file.” EX2009, 4.

29. I agree with Dr. Goodrich that the phrase “[t]he term ‘content-related’ is understood to mean that the first and second data segments have a syntactical meaning within the respective data file” is a definition provided in the '794 Patent for the term “content-related.” EX2007, ¶57 (citing EX1001, 4:14-17). During my deposition, I explained that the above-quoted phrase is a definition for the term

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“content-related,” and that this definition is consistent with the analysis in my original Declaration (EX1005). EX2007, 30:13-31:21.

30. Dr. Goodrich reproduces the entirety of EX1001, 4:14-19 in the first sentence of EX2007, ¶57:

The term “content-related” is understood to mean that first and second data segments have a syntactical meaning within the respective data file, such as e.g. a plurality of succeeding second data segments represent the speech signal of a specific speaker within a dialog sequence.

EX1001, 4:14-19. To the extent that Dr. Goodrich is incorporating the above-underlined portion of EX1001, 4:14-19 into the meaning of the term “content-related,” I disagree because the above-underlined portion is simply an example. The term “content-related” should not be construed to require this example.

31. As noted in Dr. Goodrich's Declaration (EX2007, ¶58), I explained my understanding of the term “syntactical meaning” as follows:

Q: ...And my question is what is a “syntactical meaning”?

A: In the context of video coding standards, the organization and arrangement of content, including audio and video segments and their encodings, is defined by a syntax which determines what is allowed and what isn't allowed, what order these elements of the syntax are allowed. In some standards, they are referred to as NAL units. In other standards, they're simply referred to as elements. But the syntax of the standard is

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what -- is what determines what order they're allowed to be in and what element of the information they represent.

EX2008, 32:13-33:6.

32. My understanding of the term “syntactical meaning” is consistent with how a POSITA would understand this term. For example, the '794 Patent cites the Panis publication (EX1019) as Document [1] to explain how it was known to use XML (Extended Markup Language)-based descriptions to provide the syntactical meaning of components of a data stream by using a BSD file. As I noted above with respect to Figure 1, the '794 patent uses a respective BSD file for the video data stream (data file D1) and the audio data stream (data file D2). Figure 2 of the '794 Patent shows an example of the fragmentation description file D1_BSD file for data file D1 in XML format. EX1001, 4:23-41, 3:48-51 (“FIG. 2 shows the contents of a fragmentation description file using the XML description language, wherein a fragmentation of a first and/or second data file is described by way of the fragmentation description file.”). I have reproduced below the portions of the Panis publication (EX1019) cited in the '794 Patent.

From the prior art, it is known to use XML-based descriptions of data streams in which individual components of the data stream are described or marked according to their syntactical meaning by means of BSD units (BSD=Bitstream Syntax Description) with freely addressable gBSD units (gBSD=generic Bitstream Description) with

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regard to different adaptation possibilities. A detailed description can be found in document [1] listed at the end of this application.

EX1001, 1:56-63.

A detailed description of the mode of operation of the gBSD language is known from [1], the first fragmentation description file D1_BSD being virtually identical with FIG. 9 from [1]. The extensible stylesheet language transformation (XSL Transformation or XSLT) represents another option for describing the fragmentation rules. This enables metadata MTD, in particular XML-encoded metadata, to be fragmented. Further information on XSLT can be found in document [1].

EX1001, 4:33-41.

[1] Panis G. et al., "Bitstream Syntax Description: A Tool for Multimedia Resource Adaptation within MPEG-21", Signal Processing, Image Communication, Elsevier Science Publishers, Amsterdam, NL, Volume 18, No. 8, Sep. 2003, pages 721-747, ISSN: 0923-5965

EX1001, 7:30-34.

33. The Panis publication explains that "XML is used to describe the high-level structure of a bitstream; the resulting XML document is called a Bitstream Syntax Description (BSD). This description is not meant to replace the original binary data, but acts as an additional layer, similar to metadata." EX1019, 727. This explanation is consistent with how the '794 Patent uses the XML format to construct

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the BSD files, and it is consistent how I understood the term “syntactical meaning” when I analyzed the Challenged Claims in my original Declaration (EX1005). My analysis of the term “content-related...data segments” in my original Declaration is the same if the term “content-related...data segments” is construed to segments of content data that have a syntactical meaning within the respective data file, because that is how I understood this term when I prepared my original Declaration (EX1005). For example, as I explained with respect to *Sonohara*, it was known for image and sound data portions to be synchronized based on the use of identification numbers for synchronizing those image and sound data portions according to a chronological sequence. EX1005, ¶¶134-137.

34. I disagree with Dr. Goodrich that a POSITA would need to define the term “syntactic meaning” even further to require that data segments be “ordered in a file such that they will present the file’s contents in their intended presentation order when rendered sequentially.” EX2007, ¶57. A POSITA would understand the meaning of the term “syntactical meaning,” as used in the definition of “content-related in EX1001, 4:14-17, such that it is unnecessary to further define what the term “syntactic meaning” would mean.

B. Patent Owner's proposed construction of "assignment rule" is wrong.

35. Claim 1 recites that "each of the content-related second data segments is output together with an associated one of the content-related first data segments on the basis of an assignment rule for assigning each one of the content-related second data segments to one of the content-related first data segments." EX1001, 7:51-57. Patent Owner refers to above limitation as the "assignment rule limitation." EX2007, ¶54. Patent Owner proposes to construe the "assignment rule" limitation to include both of the following two parts (1) and (2). Part (1) is the actual language of claim 1. Part (2) is an additional negative limitation that Patent Owner seeks to add.

(1) assignment rule for assigning each one of the content-related second data segments to one of the content-related first data segments; and

(2) wherein the assignment is not performed by using exact timing information for the data segments.

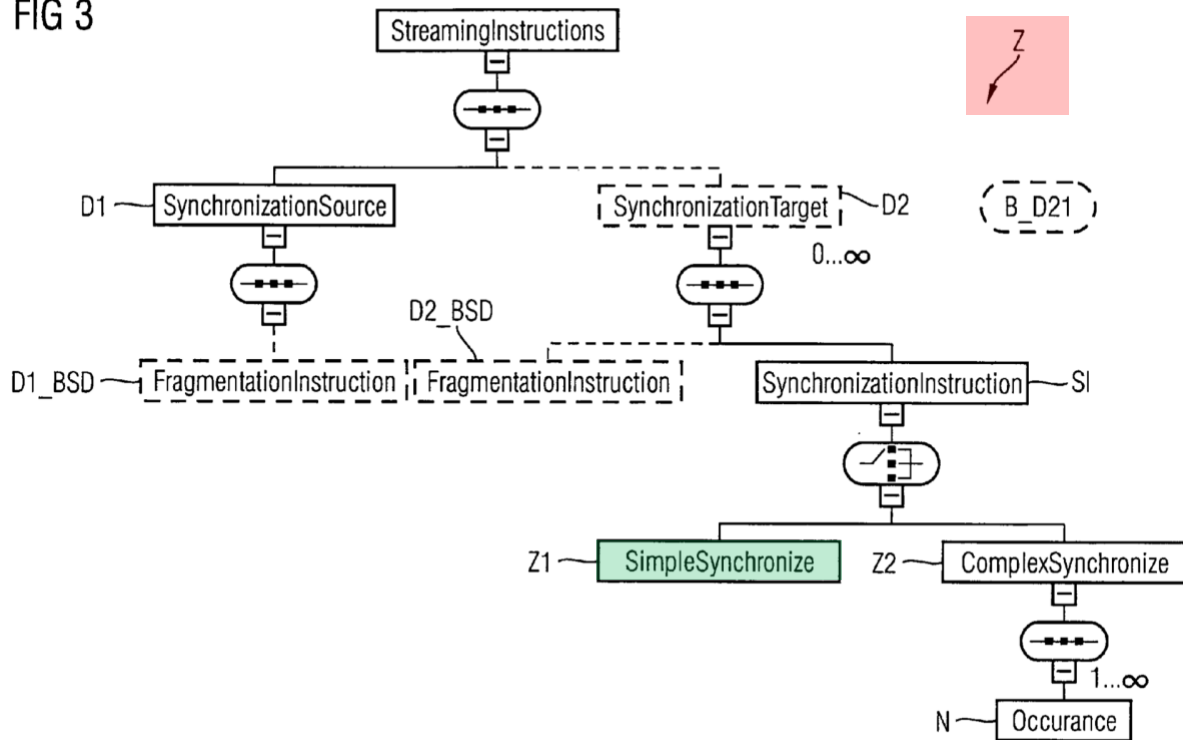
EX2007, ¶54. I understand that a district court judge in a case involving the '794 Patent construed the "assignment rule" limitation according to its plain and ordinary meaning, as I did in my original Declaration (EX1005). EX2009, 3 ("No construction necessary" for the "assignment rule limitations"). I disagree with Patent

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Owner's proposed construction of the "assignment rule" limitation for the following reasons.

36. First, Patent Owner's proposed construction of the "assignment rule" limitation improperly imports a negative limitation that is not required by claim 1 (or claim 9). In particular, Patent Owner's proposed construction improperly imports part (2), which is a negative limitation that is not required by claims 1 and 9. I understand that limitations from the specification should not be imported when the disclosed embodiments do not require that limitation. For example, the '794 Patent describes that the assignment rule "can be described merely by the specification of [a] number" of first data segments that are assigned to second data segments. EX1001, 2:47-54. In one embodiment, the assignment rule specifies that one audio segment (e.g., second data segment) is assigned to every second video segment (e.g., first data segment). EX1001, 5:38-58. For example, as shown in Figure 3 below, the '794 Patent explains that the **assignment rule Z** can have a "SimpleSynchronize" XML-based **assignment rule Z1** providing that each audio data segment is output with every second video data segment. EX1001, 5:38-58, 3:52-53 ("FIG. 3 shows a tree diagram for the pictorial representation of an assignment rule.").

FIG 3



EX1001, Fig. 3

37. Second, Patent Owner's proposed negative limitation renders claims 1 and 9 indefinite because it uses the relative and undefined term "exact timing information." This term appears nowhere in the specification of the '794 Patent, and Patent Owner has not provided any evidence to show that a POSITA would understand the proper scope of "exact timing information." Dr. Goodrich equates the undefined term "exact timing information" to "such as timestamps." EX2007, ¶64. In my opinion, claims 1 and 9 should not construed to include the undefined, relative term "exact timing information" whose scope is unknown.

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38. Third, the negative limitation that Patent Owner seeks to add in the “assignment rule” term fails under the principle of claim differentiation. As noted above, Dr. Goodrich equates the undefined, relative term “exact timing information” with “timestamps.” EX2007, ¶64 (“[A] POSITA would understand that the ’794 Patent discloses an ‘assignment rule’ that does not need to use timestamps.”) (citing EX1001, 2:36-46). Thus, Patent Owner’s negative limitation effectively means “the assignment is not performed by using exact timing information (i.e., a timestamp) for the content-related data segments.” However, dependent claim 20 (depending from claim 1) and dependent claim 21 (depending from claim 9) recite “wherein the assignment rule is not based on a timestamp.” EX1001, 9:1-4. Under the principle of claim differentiation, claims 1 and 9 cannot be construed to require a negative limitation that is already recited in dependent claims 20 and 21.

39. Fourth, I do not believe that the applicant’s arguments during prosecution rise to the level of disclaimer. As explained in Section II above, I understand that to constitute disavowal or disclaimer, the applicant must clearly and unambiguously express surrender of subject matter during prosecution. I considered the file history of the ’794 Patent when preparing my original Declaration (EX1005). I have reconsidered the file history of the ’794 Patent based on Dr. Goodrich’s comments about alleged disclaimer in paragraphs 62 and 63 of his Declaration (EX2007). As a POSITA, I do not believe that the applicant’s arguments with respect

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to the Shin (EX2011) and Rosenau (EX2012) references constitute a clear and unambiguously surrender of subject matter during prosecution.

40. During prosecution, the applicant argued that independent claim 1 was distinguishable over Shin (EX2011) because Shin teaches that “content data and metadata each include time information for synchronization,” and Shin’s synchronizer “determines a point in time in content [data] and metadata so that they are synchronized,” rather than using an “assignment rule” to synchronize the content data and metadata. EX1002, 259-260; POR, 33-36. Also, during prosecution, the applicant argued that independent claim 1 was distinguishable over Rosenau (EX2012) because it discloses using a system time clock to synchronize video display with audio playback, and that to account for lags in the video data in relation to the audio data, Rosenau skips or repeats frame for resynchronization, which is different than using an assignment rule for assigning video and audio data segments to each other. EX1002, 334-335; POR, 36-39. The Examiner summarized the applicant’s argument that Rosenau uses “timing information” for frame synchronization based on “a system time clock counter,” rather than an assignment rule. EX1002, 395-396. However, the applicant never argued, nor did the Examiner make any suggestion, that the assignment rule disclosed in the ’794 patent cannot be based on a timestamp or that the assignment rule is somehow “not performed by using exact timing information.” Therefore, the applicant’s arguments against the

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Shin and Rosenau references do not constitute clear and unambiguous disavowal of claim scope. As such, there is no prosecution history disclaimer to support Patent Owner's improper construction of the "assignment rule" limitation.

C. Patent Owner's construction of the preambles of claims 1 and 9 is wrong.

41. Dr. Goodrich makes two claim construction arguments about the preambles of claims 1 and 9: (1) the preambles are limiting, and (2) the "first data file" and "the second data file" must be different files. EX2007, ¶¶59-60.

42. I disagree that the preambles of claims 1 and 9 are limiting. The preambles of claims 1 and 9 provide antecedent basis for "the content-related first data segments" and "the content-related second data segments" in the bodies of claims 1 and 9. In addition, the terms "the first data file" and "the second data file" in dependent claims 5, 13, 18, and 19 derive antecedent basis from the preambles of claims 1 and 9. POR, 23-24. However, I have been informed and understand that antecedent basis alone is not dispositive, and does not demonstrate the preamble is limiting if the preamble is not a necessary component of the claim. I understand that a preamble is limiting if (1) it recites essential structure or steps, or (2) it is necessary to give life, meaning, and vitality to the claim. Neither of these conditions exist because the preambles of claims 1 and 9 do not recite any "essential structure" that is necessary to carry out the features in the bodies of claims 1 and 9, and the features

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in the bodies of claims 1 and 9 are not given life, meaning or vitality based merely on antecedent basis from the preambles of claims 1 and 9. The bodies of claims 1 and 9 and the limitations of dependent claims 5, 13, 18, and 19 define structurally complete concepts without reliance on the preambles except for a few non-determinative instances of antecedent basis. For example, the content-related first data structures and the content-related second data structures are sequentially output according to an assignment rule in the bodies of claims 1 and 9 regardless of whether the content-related first data structures or the content-related second data structures originated from “a first data file” or a “second data file.” Therefore, in my opinion, the preambles of claims 1 and 9 are not limiting because they do not provide “needed clarity about where the content-related data segments come from, and within which file the data segments have ‘syntactical meaning,’” as Dr. Goodrich alleges. EX2007, ¶59. Dr. Goodrich also argues that “a POSITA would understand that a ‘segment’ necessarily needs to be a portion of something, such as a file.” EX2007, ¶59. Continuing this argument, Dr. Goodrich contends that “[d]ivorced from the specific language of the preambles, a POSITA would not understand where the respective ‘content-related ... data segments’ come from, as is required of a ‘segment’ in the context of the ’794 Patent.” EX2007, ¶59. Dr. Goodrich’s comments illustrate why a POSITA would understand that the bodies of claims 1 and 9 define structurally complete concepts without the preambles of claims 1 and

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9, because a POSITA would understand that it is unnecessary “where the respective content-related...data segments come from” in order to carry out the sequential outputting and synchronization process that is recited in the bodies of claims 1 and 9 without reference to the first and second data files that are recited in the non-limiting preambles.

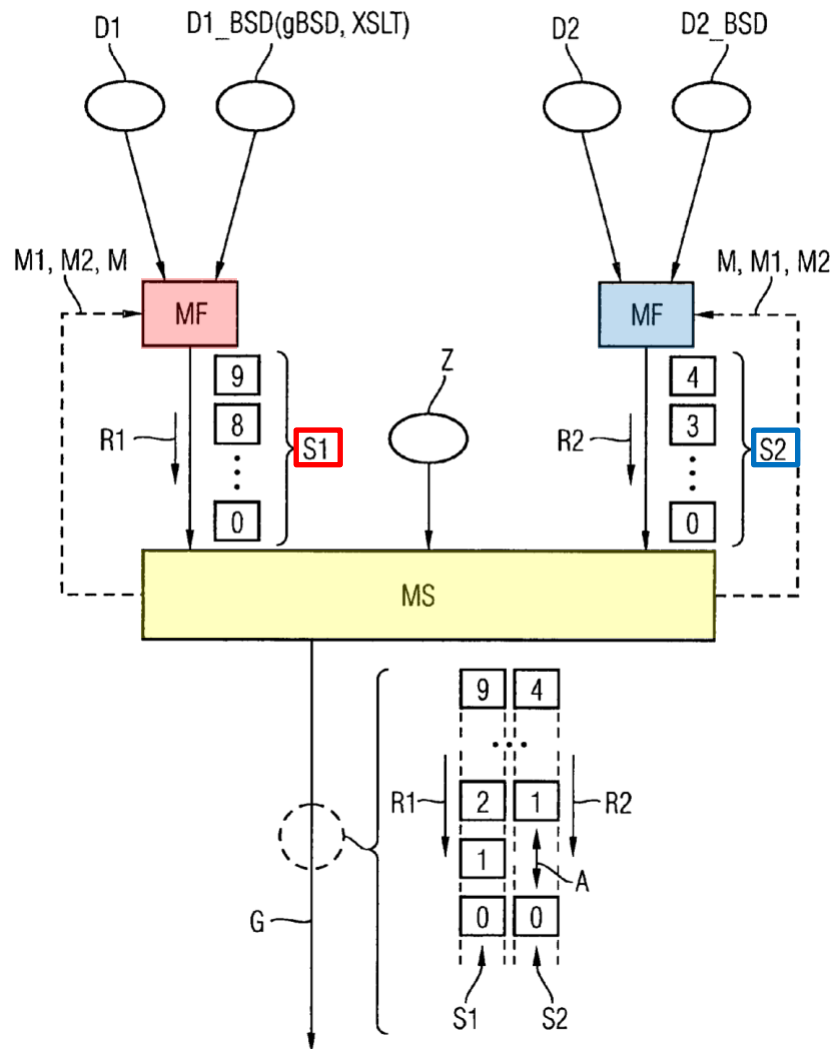
43. Similarly, a POSITA would not understand that, as Dr. Goodrich contends, “synchronizing and sequentially outputting data segments from two separate files is key to the invention,” when the bodies of claims 1 and 9 do not require at all the first and second data files. EX2007, ¶60. The provision of “distinct names, D1 and D2” in the specification of the '794 Patent does not suggest to a POSITA that the first and second data files must be read into the bodies of claims 1 and 9. The fact is that the bodies of claims 1 and 9 do not require the first and second data files.

44. Dr. Goodrich's reliance on these numerical adjectives is misplaced for two reasons. First, the bodies of claims 1 and 9 do not ever rely on the “first data file” or the “second data file.” On the contrary, as correctly observed by the Board in the Institution Decision, “the independent claims do not require synchronization of the first data file with the second data file; rather, those claims require synchronization of the ‘first *data segments*’ and ‘second *data segments*.’” Institution Decision, 10. The content-related first and second data segments are sequentially

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output according to an assignment rule in claims 1 and 9 entirely independent from “a first data file” and “a second data file” recited in the preamble of claims 1 and 9.. As shown in Figure 1 of the '794 patent, below, the synchronization module MS merely operates on the first data segments **S1** after they have been fragmented by the **first fragmentation module MF**, and operates on the second data segments **S2** after they have been fragmented by the **second fragmentation module MF**. EX1001, 4:42-49, 5:5-9. In other words, the segments' origin (from data files D1 and D2) does not change the operation of the synchronization module MS.

FIG 1



EX1001, Fig. 1 (annotated)

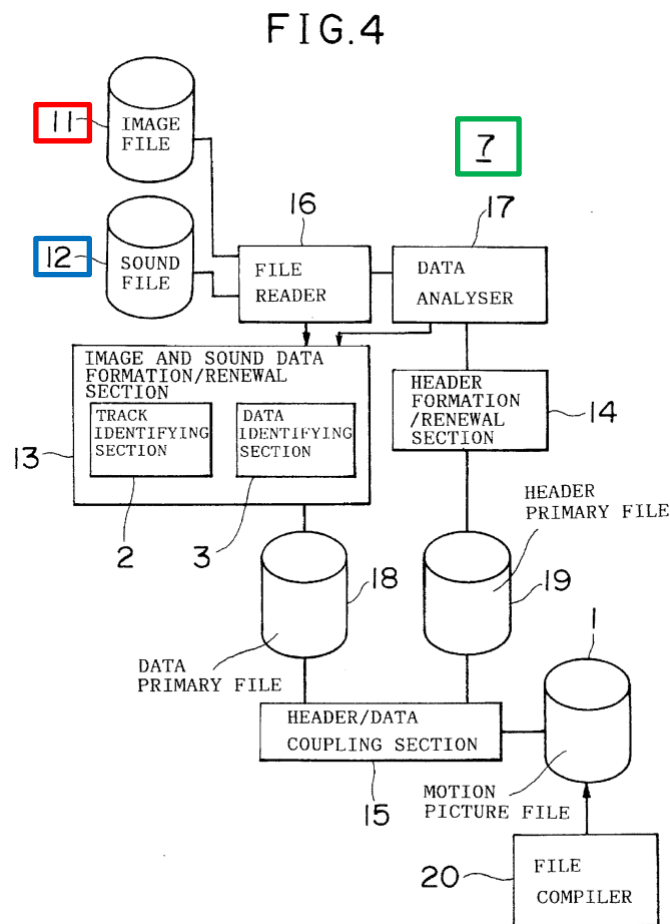
IV. THE CHALLENGED CLAIMS ARE ANTICIPATED AND RENDERED OBVIOUS BY *SONOHARA*

45. This Supplemental Declaration contains additional comments that respond to Dr. Goodrich's claim construction and unpatentability arguments with respect to *Sonohara* (EX1003).

A. *Sonohara* expressly discloses synchronizing and sequentially outputting content-related data files from two distinct files.

46. Dr. Goodrich contends that “*Sonohara* discloses a single file that comprises image and sound data provided with track and data identifying numbers and having fixed time lengths, such as 1 second, which are then output in this stored order from the file.” EX2007, ¶44 (citing EX1003, Fig. 1, 3:29). Similarly, Dr. Goodrich contends that “*Sonohara* expressly discloses that the video and audio fragments belong to a single file, file 1, not two files.” EX2007, ¶67; see also EX2007, ¶¶71, 73, 86, 87 (Dr. Goodrich repeating argument that *Sonohara* only discloses a “single file” that includes image and audio “fragments”). Dr. Goodrich’s arguments against *Sonohara* are based on a misunderstanding that *Sonohara* synchronizes only a single data file 1 with video and audio data “fragments.”

47. First, as I discussed in my original Declaration (EX1005), *Sonohara* discloses that the *content-related first data segments* (e.g., image data segments) are *of a first data file* and the *content-related second data segments* (e.g., sound data segments) are *of a second data file*, because the image data and sound data originate from an “**image file 11**” and a “**sound file 12**,” as shown in Figure 4 below. EX1003, 4:12-20; EX1005, ¶¶ 130-31.

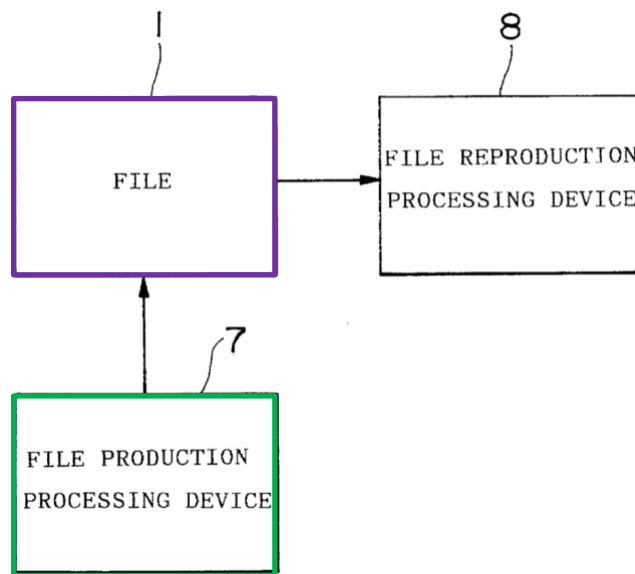


EX1003, Fig. 4 (annotated)

48. Sonohara's Figure 4 above "is a block diagram showing a structure of the **file production processing device 7**." EX1003, 4:12-13. As shown in Figure 2 below, Sonohara discloses that the "motion picture reproducing apparatus 2" "includes a **file 1** into which image data of a moving object and audio data are stored, a **file production processing device 7** for producing the **file 1**, and a file

reproduction processing device 8 for reproducing the video data and audio data of the **file 1**." EX1003, 3:49-58.

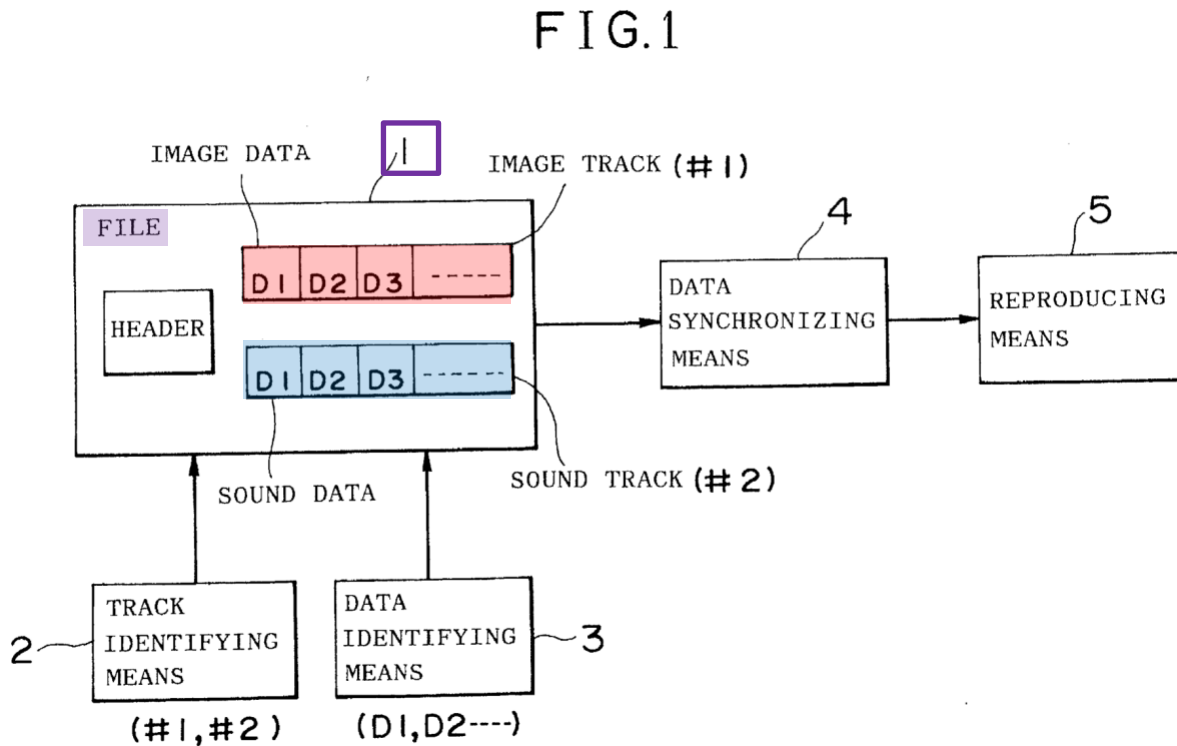
FIG. 2



EX1003, Fig. 2 (annotated)

49. As explained in my original Declaration, *Sonohara* discloses synchronizing the *content-related first data segments* (**image data segments**) and the *content-related second data segments* (**sound data segments**) in the **file 1**, as shown in Fig. 1 below. EX1005, ¶¶125-129 (citing EX1003, 1:59-2:4, claim 1, 11:59-62, 5:57-65, 5:14-17, 5:44-6:67). The **file 1** containing the *content-related first data segments* (**image data segments**) and the *content-related second data segments* (**sound data segments**) was created by the **file production processing**

device 7 from the image file 11 and the sound file 12, as shown above with respect to Figures 2 and 4.



EX1003, Fig. 1 (annotated)

50. Thus, Dr. Goodrich's argument that the single data file disclosed in *Sonohara* cannot meet the claim requirement of two, different data files (EX2007, ¶¶73-79) is incorrect, because the single data file 1 illustrated in Figure 1 above was created by the file production processing device 7 from the “image file 11” and “sound file 12,” as shown in Figure 4 above.

51. Dr. Goodrich attempts to argue against the plain reading of *Sonohara*'s Figure 4 by contending that “the image file 11 and sound file 12 are the inputs to a

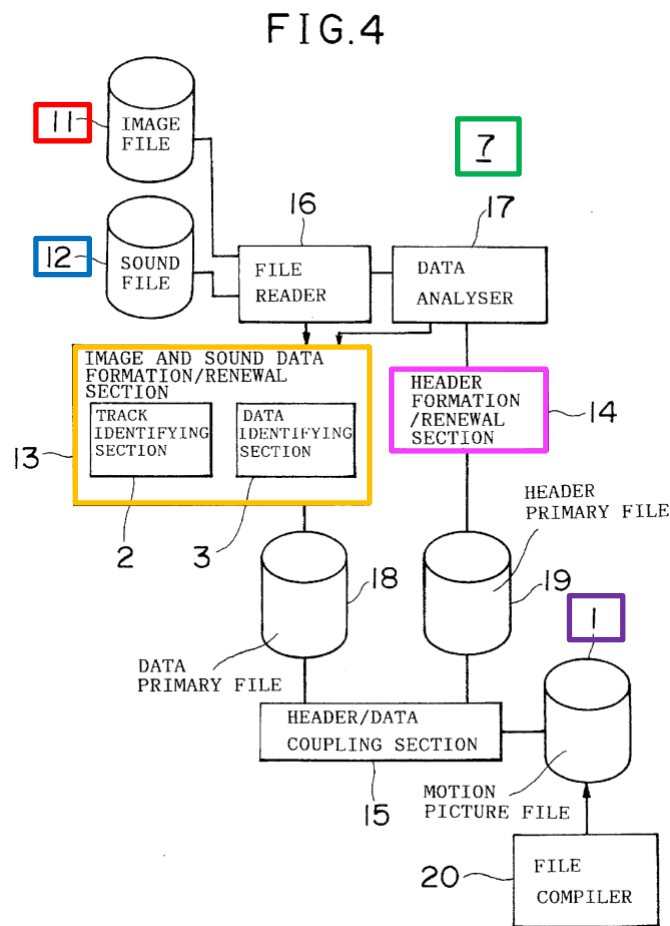
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separate process, which analyzes these files, performs several steps and transformations on this data, both in terms of its syntax (including headers) and structure (dividing it into frames), and ultimately produces the file 1 as an output.” EX1005, ¶70. This interpretation disregards how the file 1 (as shown in Figs. 1-4) is created from the “**image file 11**” and “**sound file 12**,” as shown in Figure 4. Dr. Goodrich appears to be misreading and taking out of context the portion of *Sonohara* describing that “[t]he image data and sound data formation/renewal section 13 renews and *forms* the image data and sound data from the file reader 16 on the basis of the analysis result of the data analyzer 17.” EX1003, 4:30-35. The use of the word “forms” in the above sentence does not mean, as Dr. Goodrich, contends that *Sonohara* performs “transformation on this data” (EX1005, ¶70), or that *Sonohara*’s device creates the file 1 independent from the “**image file 11**” and “**sound file 12**.” On the contrary, *Sonohara* discloses that the file reader 16 in Figure 4 “read[s] the image data of the image file 11 and the sound data of the sound file 12,” and the file 1 is created from this image data and sound data. EX1003, 4:21-24, 4:60-63.

52. Second, Dr. Goodrich’s argument that the two source data files 11, 12 do not have corresponding “content-related...data segments” is incorrect. EX2007, ¶¶69-74. As noted above, the “**single file**” 1 as Dr. Goodrich calls it, is the creation (by **file production processing device 7**) resulting from two separate files, the “**image file 11**” and “**sound file 12**,” as shown in Figure 4. The **single data file 1**

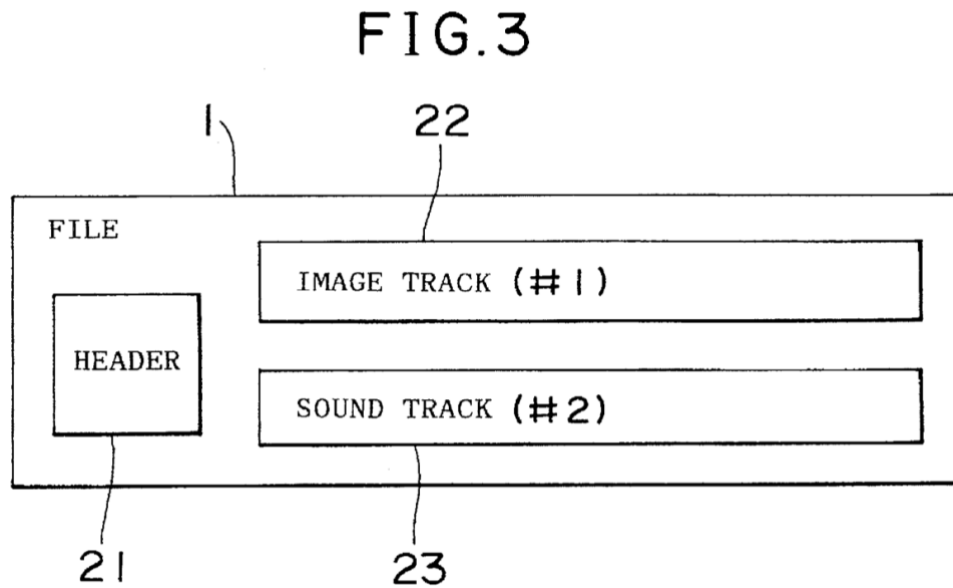
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does not have separate syntaxes as Dr. Goodrich contends. EX2007, ¶74. Rather, as shown in Figure 4 below, the **single data file 1** has the syntaxes (e.g., header and track identification numbers) as assigned by the **image and sound data formation/renewal section 13** and the **header formation/renewal section 14** of the **file production processing device 7**, which produces the **single data file 1** that contains the image and audio data segments as shown in Figure 1. EX1003, 4:25-67 (explaining that file 1 is created with header information including track identification numbers for the image and sound portions of the file 1).



EX1003, Fig. 4 (annotated)

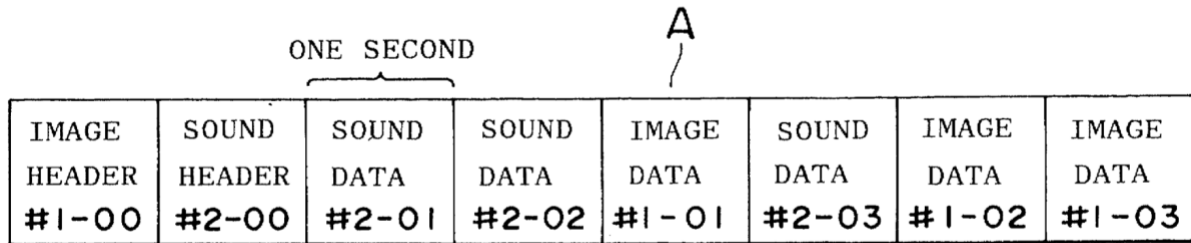
53. As shown in Figure 3 below, *Sonohara*'s file 1 contains a header 21 with syntax information (header, track information) for the image track 22 and sound track 23 of the file 1. EX1003, 3:67-4:7. Dr. Goodrich argues that *Sonohara* does not contain the words "syntax" or "syntactical," but Dr. Goodrich is focusing on not using the same exact words as claim 1.



EX1003, Fig. 3

54. As shown in Figure 7 below, *Sonohara* discloses that the track identifying means 2 in Figure 1 “impart[s] to the image data and the sound data **for every unit time**, track identifying numbers for identifying either the image track or the sound track.” EX1003, 1:59-62. For example, “track identifying number #1 is given to the image data for every unit time,” and “track number #2 is given to the sound data for every unit time.” EX1003, 6:14-17, 6:44-46. As I explained in my original Declaration, each portion of data for a unit of time corresponds to a *segment* as recited. EX1005, ¶128. Further, as explained in my original Declaration, *Sonohara* discloses that the image and sound data segments in the file 1 are synchronized and output sequentially based on the track and data identifying numbers in the file 1, as shown in Figures 1 and 7. EX1005, ¶¶135-137.

FIG. 7

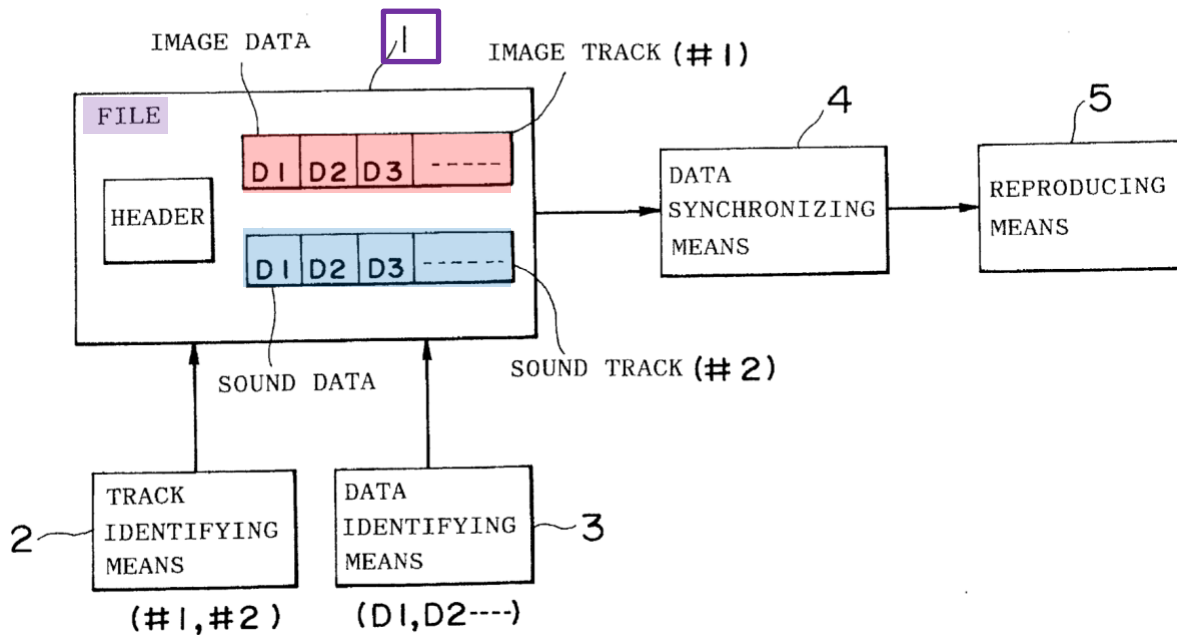


EX1003, Fig. 7

55. Thus, Dr. Goodrich is incorrect that the “syntactical meaning” is different between the source data files and the single data file (EX2007, ¶¶76-77), because the **single data file 1** is created from the image and sound portions of the “**image file 11**” and “**sound file 12**,” as shown in Figures 3-4, and the single data file includes syntax information including header information with track and data identifiers identifying the unit time and relationship between the image and audio portions of the file 1 based on that unit time, as shown in Figures 1, 3, and 7 above.

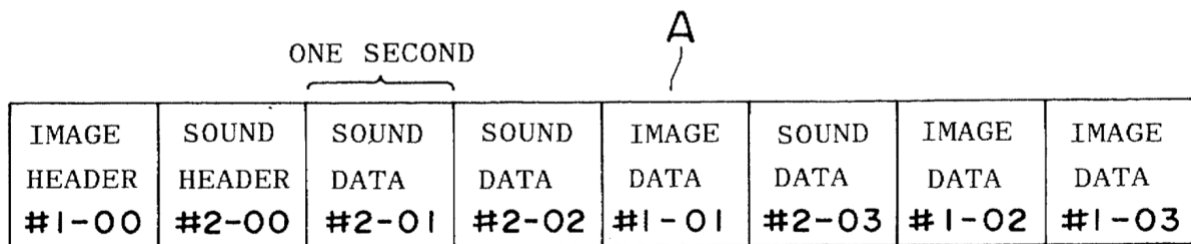
56. Further, as shown in Figures 1 and 7 below, even under Patent Owner’s construction, *Sonohara* discloses the image **data segments** and audio **data segments** are ordered in a **file 1** (created from image file 11 and audio file 12) such that the segments will present the **file 1’s** contents in their intended presentation order when rendered sequentially based on the track identifying numbers (e.g., #1, #2) and data identifying numbers (e.g., 01, 02, 03).

FIG.1



EX1003, Fig. 1 (annotated)

FIG.7



EX1003, Fig. 7

B. *Sonohara* discloses an assignment rule.

57. I understand that Dr. Goodrich contends that *Sonohara* does not disclose an assignment rule based on his understanding that the “assignment rule”

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limitations require the negative limitation that “the assignment is not performed by using exact timing information for the data segments.” EX2007, ¶80. I disagree with this construction for the reasons discussed above. Similarly, Dr. Goodrich contends that “the disclosures of Sonohara contrast with the assignment rule of the ’794 patent, where the precise duration of the data segments or exact times at which they are output is not required.” EX2007, ¶88. I note that claims 1 and 9 do not recite or encompass the concept that “the precise duration of the data segments or exact times at which they are output is not required,” as Dr. Goodrich contends.

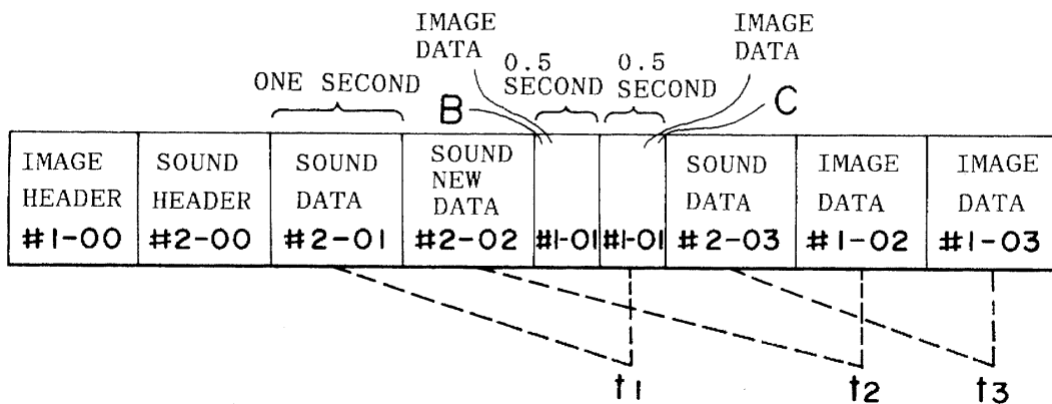
58. Further, I understand that Dr. Goodrich’s opinion that *Sonohara* does not teach an “assignment rule” is based on his view of “disclaimers from the File History [of the ’794 Patent],” and that “a POSITA would understand that the ‘assignment rule’ of the ’794 Patent achieves synchronization independent of timestamps, precise durations, or other exact timing information.” EX2007, ¶89. I note, however, that the claims of the ’794 Patent do not require that the “assignment rule” of the ’794 patent “achieves synchronization independent of timestamps, precise durations, or other exact timing information,” as Dr. Goodrich contends.

59. In my original Declaration, I explained that *Sonohara* discloses that the first and second *content-related data segments* are *output together...on the basis of an assignment rule* for each assigning each of the content-related first and second data segments to each other. In particular, as shown in Figure 8 below, *Sonohara*

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discloses synchronizing and outputting the image and sound segments that have the same identifying number (e.g., “sound data #2-01” and “image data #1-01”) at the same time based on the control information in the header (an assignment rule), where the header includes control information for controlling transfer of said image data and said sound data...said control information **indicating a relationship between the image data and said sound data**. EX1005, ¶¶143-152 (citing EX1003, 7:33-51, claim 1, 6:41-42).

FIG. 8



EX1003, Fig. 8

60. I understand that Dr. Goodrich has argued that the control information in *Sonohara*'s header cannot be the control information is based on timing information. EX2007, ¶¶86-89. I disagree. *Sonohara*'s track and identifying numbers (e.g., “sound data #2-01” and “image data #1-01” in Figure 8 above) in the file's header 21 are each “an identifier to be uniquely given to the track which is

present in the file 1,” and the identifiers given to both the image and audio data “allow[] recognition of which specific track the data belongs.” EX1003, 4:35-44. As I explained in my original Declaration, the information that represents the assignment is contained in the control information in the header. EX1005, ¶150. This information, the identifying numbers, is not based on “exact timing information,” as Dr. Goodrich contends, but constitutes identifying numbers that are used to associate image and sound data segments to each other, as shown above in Figures 7 and 8.

V. THE CHALLENGED CLAIMS ARE ANTICIPATED AND RENDERED OBVIOUS BY *ABBOTT*

61. My original Declaration (EX1005) showed how the Challenged Claims are anticipated and rendered obvious by *Abbott* (EX1004). EX1005, ¶¶53-120.

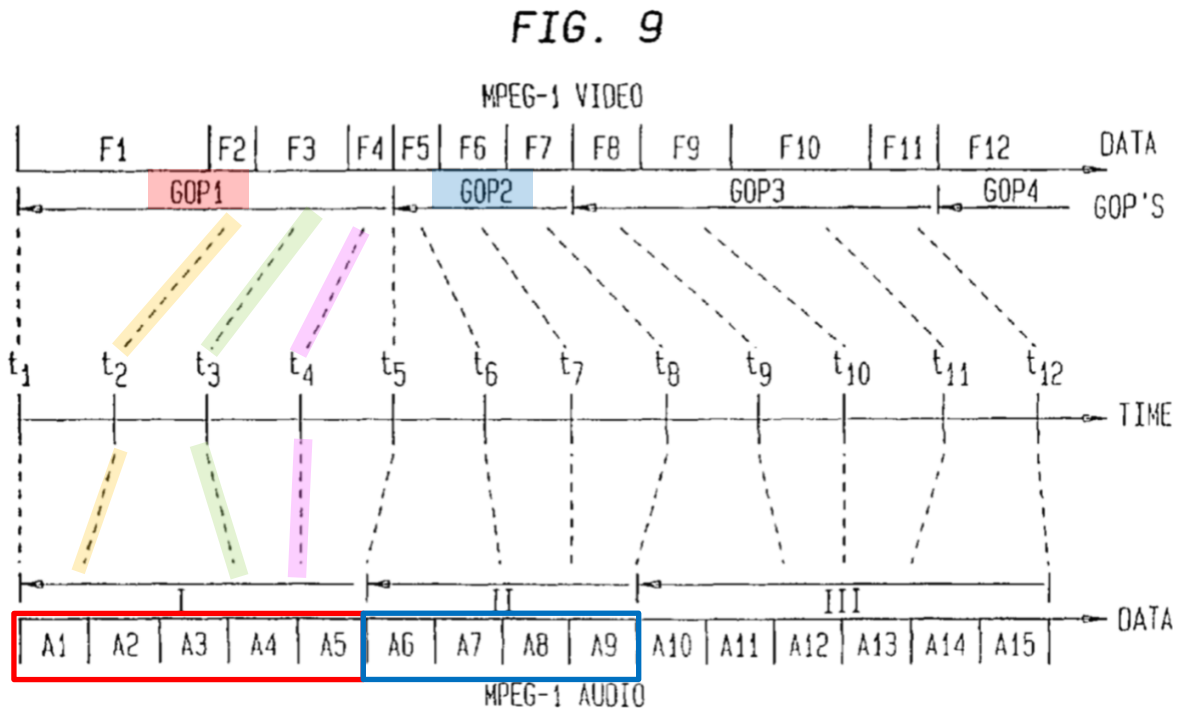
62. I understand that, based on Patent Owner's arguments before institution, the Board “agree[d] with Patent Owner's characterization of Abbott's disclosure,” and found in the Institution Decision that Petitioner did not show a reasonable likelihood of prevailing with the *Abbott*-based grounds. Institution Decision, 16-19. I understand that Dr. Goodrich did not address the *Abbott*-based challenges in the Petition, my original Declaration (EX1005), as summarized in the Institution Decision, or in support of the Patent Owner's Response. I have reviewed the Patent Owner's arguments with respect to the *Abbott*-based challenges in its Response and as summarized in the Institution Decision. As shown below, Patent

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Owner's arguments are incorrectly based on a misunderstanding of *Abbott*. It appears that the Board was persuaded by Patent Owner's misunderstanding of *Abbott*.

A. *Abbott* discloses outputting each of the second data segments together with a first data segment.

63. As explained in my original declaration (EX1005), *Abbott* discloses video data segmented into "Groups of Pictures" (GOPs) ("*first data segments*"), and audio data segmented into audio frames ("*second data segments*"). EX1004, 17:3-41; EX1005, ¶62. *Abbott*'s Figure 9 below shows an example where **GOP1** includes video segments F1-F4, **GOP2** includes video segments F5-F7, and so on. EX1005, ¶77 (citing EX1004, 17:3-26). Thus, the example of Figure 9 shows four GOPs respectively corresponding to four *first data segments*. EX1005, ¶77.



EX1004, Fig. 9 (annotated)

64. As explained in my original Declaration and as shown in Figure 9 above, multiple audio frames (“*content-related second data segments*”) are assigned to one GOP. For example, **audio segments A1-A5** are assigned to **GOP1** (spanning time interval t₁ to t₅), and **audio segments A6-A9** are assigned to **GOP2** (spanning time interval t₅ to t₈). EX1005, ¶78 (citing EX1004, 17:27-35).

65. Patent Owner argues that *each* of Abbott’s audio segments (“*content-related second data segments*”) are not assigned to one video segment (GOP) (“*content-related first data segments*”) because the audio segments are allegedly only output at the start of the GOP. POR, 44 (arguing, for example, that audio frame A2 would be output at the start of GOP1). This is incorrect and contradicted by the

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teachings of *Abbott* and a POSITA's interpretation of *Abbott*. As shown in Figure 9 above, audio segment A1 is output at the beginning of GOP1 (i.e., frame F1). Then, at time t_2 , audio frames A2 and A3 are output sequentially with frame F2 of GOP1, not at the start of GOP1 (i.e., frame F1). At time t_3 , audio frame A4 is output with frame F3 of GOP1, not at the start of GOP1. At time t_4 , audio frame A5 is output with frame F4 of GOP1, not at the start of GOP1. This is shown by the color annotations added to Figure 9 above for audio frames A2-A5, which merely emphasize the dotted line correspondence shown in *Abbott*'s Fig. 9. Thus, contrary to Patent Owner's argument, *Abbott* does not indicate that each audio frame assigned to a GOP is output at the beginning of that GOP, or that "the same video GOP" is "partially output multiple times in a row"; such an interpretation is contrary to *Abbott*'s express disclosure and nonsensical. *See, e.g.*, EX1004, 18:49-65 (*Abbott* indicating that it "ensure[s] that the audio and video **remain** synchronized" without "a time delay or offset between the video and the audio" which is inconsistent with Patent Owner's characterization of *Abbott* as repeatedly outputting a segment of video with multiple audio segments). A POSITA would not understand *Abbott* as outputting each audio frame A1-A5 with the **start** of GOP1 (POR, 44), because doing so would mean that each audio frame A1-A5 would "remain synchronized" without "a time delay or offset between the video and the audio." Outputting each audio frame A1-A5 at the start of GOP1, as Patent Owner incorrectly alleges, would

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lead to the erroneous result that different audio segments would all play at the same time over each other at the beginning of the GOP1. This interpretation is wholly inconsistent with *Abbott*'s disclosure that it "ensure[s] that the audio and video **remain** synchronized" without "a time delay or offset between the video and the audio." Further, this interpretation is wholly inconsistent with the illustration in Figure 9 above, which shows that audio segments A1-A5 are output at different times t_1 to t_4 for GOP1, not all at the same time at the start of GOP1.

66. *Abbott* explains that "synchronization is done by correlating audio frames of the audio data with GOPs of the video data." EX1004, 18:58–63. Accordingly, as shown in Figure 9 above, each of the audio frames (*content-related data segments*) is sequentially output with one of the GOPs (content-related first data segments) (e.g., audio data segments A1-A5 are sequentially output with frames F1-F4 of GOP1). EX1005, ¶¶82-86.⁴

⁴ To the extent Patent Owner is arguing that the assignment rule must be used for **every** audio frame and video frame in *Abbott* to render the claim obvious, such an argument is inconsistent with the claim language, which does not limit the synchronization to the entirety of a data file.

B. *Abbott* discloses outputting each of the second data segments together with a first data segment based on an assignment rule.

67. *Abbott* also discloses that the audio data segments are output with the video frames of a GOP by using an index file (“assignment rule”), which correlates audio segments with a GOP. EX1005, ¶¶84-87 (citing EX1004, 18:66-19:17, 20:6-24, 19:55-64). Patent Owner incorrectly contends that “*Abbott*’s index files correlate multiple audio frames to the start of each video GOP, which is fundamentally different than the assignment rules of the ’794 patent.” POR, 44. The underlying premise, that every audio frame assigned to a GOP must be associated with “the start of each video GOP,” is the assumption that causes Patent Owner to misunderstand *Abbott*. As shown in Figure 9 above, multiple audio segments (e.g., A1-A5) are assigned to a GOP (GOP1) (an assignment rule for assigning each of one of the content-related second data segments to one of the content-related first data segments), and upon output, the audio segments are sequentially output in such a way that each of the audio segments A1-A5 are output together with an associated one of the content-related first data segments (i.e., GOP1), such that the audio segments are synchronized with constituent video frames of a GOP. As such, Patent Owner’s arguments against *Abbott*’s index file being different than the claimed “assignment rule” are incorrect.

68. I understand that Patent Owner contends that *Abbott* “only uses the index files,” which correspond to the claimed *assignment rule*, “to correlate an audio frame with a video GOP when the user moves to a different point within the media,” based on Patent Owner’s characterization that *Abbott*’s index file is only used to “jump” to different points in the program material. POR, 42-43. I disagree. The challenged claims do not require “assignment” at a particular time during the playing of a video. Claims 1 and 9 only require assignment of each second data segment (e.g., *Abbott*’s audio segments A1-A5) to one of the first data segments (e.g., *Abbott*’s GOP1). This is clearly taught as shown in *Abbott*’s Figure 9 above.

VI. AVAILABILITY FOR CROSS-EXAMINATION

69. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross examination in the case and that cross examination will take place within the United States. If cross examination is required of me, I will appear for cross examination within the United States during the time allotted for cross examination.

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VII. CONCLUSION

70. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. § 1001.

Date: June 24th, 2023 Respectfully submitted,

I. Freedman

Dr. Immanuel Freedman