DECLARATION OF MATTHEW GOLDMAN

I. BACKGROUND AND QUALIFICATIONS

1. I, Matthew Goldman, make this Declaration based on facts and information within my knowledge and experience and on documents and information provided to me by others.

2. I was retained by counsel for Plaintiff B.S.D. Crown, Ltd. ("BSD") to provide an opinion concerning certain technical aspects of U.S. Patent No. 6,389,473 ("the '473 Patent") (Exhibit A) in comparison to certain prior art relied upon by the Examiner in rejecting claims of the '473 Patent in the above-captioned proceeding.

3. Specifically, I was asked to provide my independent opinions on certain issues relating to the Office Action dated February 24, 2025, and references applied therein (United States Patent No. 6,138,147 – "Weaver"; and United States Patent No. 5,610,841 – "Tanaka"), in connection with the '473 Patent.

4. I am being compensated by BSD on an hourly basis for my work in this case, including reimbursement for reasonable expenses. My compensation is not dependent on the outcome of this matter.

5. I am currently Vice President, Strategic & Technical Initiatives at SINCLAIR, Lakewood Ranch, Florida. My duties include formulating and leading technical initiatives to perform proofs of concepts and rollout into commercial deployment of projects for Sinclair's broadcast TV stations and sports properties.

6. My Curriculum Vitae (Exhibit B) describes 40+ years of engineering practice with 33 years of direct experience in multimedia video streaming and broadcasting, including designing of video servers while working at Digital Equipment from 1992-1996 and systems for delivering real-time video using MPEG-2 transport and compression from 1996-2000 while I was employed by DiviCom.

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7. As part of my professional engagement, I also was one of the authors of the MPEG-2 Systems Standard for video transport and streaming and, at about the time of the invention of the '473 Patent, I was working in the field of Asynchronous Transport Mode ("ATM") data transmission and was specifically working in the development of packet-based data transfers for streaming multimedia to users. In other words, I was working to establish technology which was directly competitive with the technology of the '473 Patent and am intimately familiar with the then-state-of-the-art in multimedia streaming.

8. As shown in my CV, I am listed as the inventor on 6 issued patents in the area of video on demand systems and video over ATM transmission, among others.

9. A full list of publications I authored or coauthored is provided in my CV.

10. In undertaking my study, I have considered information from a variety of sources, which are identified in this declaration and in the attached Exhibits. I have also relied upon my professional judgment and expertise, gathered over many years in the field. My analysis and opinions in this declaration are based on the information available to me as of the date of this declaration. I may modify or supplement my opinions, if necessary and allowed, based on review and analysis of information provided to me after the filing of this declaration.

II. SUMMARY OF CONCLUSIONS

11. In my opinion, the invention disclosed in the '473 Patent represented a drastic change in the way real-time streaming of multimedia data was previously accomplished and was a significant and unforeseen departure from previously known and practiced methods of such streaming.

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III. SECTION 103 – OBVIOUSNESS

12. I am not an attorney. I have been informed about certain legal principles regarding obviousness by BSD's counsel, which I have applied in my analysis and my technical opinions in this matter.

13. It is my understanding that obviousness is a question of law based on underlying factual inquiries. M.P.E.P. 2141.

14. It is also my understanding that the factual inquiries are:

Determining the scope and content of the prior art;

Ascertaining the differences between the claimed invention and the prior art; and

Resolving the level of ordinary skill in the pertinent art.

15. It is further my understanding that, in determining the scope and content of the prior art, a thorough understanding of the invention disclosed and claimed must first be obtained. M.P.E.P. 904.

16. It is still further my understanding that ascertaining the differences between the claimed invention and the prior art requires interpreting the claim language (M.P.E.P. 2111) and considering both the invention and the prior art as a whole (M.P.E.P. 2141.02).

17. It is my understanding that a prior art reference must be considered in its entirety, *i.e.*, as a whole, including portions that would lead away from the claimed invention. M.P.E.P. 2141.02(VI).

18. It is also my understanding that the person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the relevant time.

19. It is further my understanding that the content of the prior art is determined at the time the invention was made to avoid impermissible hindsight. M.P.E.P. 2141.01.

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20. It is still further my understanding that a prior art reference must be analogous art to be considered for obviousness purposes. M.P.E.P. 2141.01.

21. It is my understanding that a reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention).

IV. The Field of the Invention

22. The '473 Patent relates generally to the field of network data communications, and specifically to real-time multimedia broadcasting over a network. ('473 Patent, col. 1, lines 10-12). Based on the claim construction of "real-time broadcasting" discussed *infra*., a person of ordinary skill in the art at the time of the invention (a "POSITA") would understand this field to be concerned with the problems associated with broadcasting an event at a speed which is generally the same as that at which it occurs, and not with problems associated with nonsequential video-on-demand playback which is concerned with transmitting stored data at a rate which differs from that at which it occurs.

V. The Level of Ordinary Skill in the Art (Field) of the Invention at the Time of the Invention herein.

23. I have been advised that the level of ordinary skill in the art of the '473 Patent as of the Priority Date (March 24, 1998) has been established to be "a person with a bachelor's or equivalent degree in electrical engineering or computer science, and approximately 3 years of experience working in the areas of communications and networking. Additional education may substitute for less experience, and additional experience may substitute for less formal education."

24. I agree with this statement, and have accepted that definition in my analysis.

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VI. CONSTRUCTIONS FOR CERTAIN CLAIM TERMS.

25. I have been advised that the '473 Patent has been the subject of several litigations in which various claim terms were construed. Consistent with the constructions reached in those litigations, I understand the following terms to mean as they have been construed, and these constructions are consistent with the meaning which would be ascribed to each such term by a POSITA.

Term	Construction
"file" / "files" (Claims 1, 8, 9, 10, 11)	an item containing a single slice of data that has an identifier that is recognizable by a file system Microsoft CC Ruling, Thompson Decl., Exh. C at 3-4.
"data rate" (Claims 1, 8)	an amount of data (*i.e.* number of bits) per unit of time Microsoft CC Ruling, Thompson Decl., Exh. C at 5.
"a data stream having a given data rate" (Claim 1)	A data stream having an assigned data rate Microsoft CC Ruling, Thompson Decl., Exh. C at 5-6.
"providing at the transmitting computer a data stream [having a given data rate]" (Claim 1)	before slicing, the transmitting computer provides a data stream Microsoft CC Ruling, Thompson Decl,. Exh. C at 6-7.
"each slice having a predetermined data size associated therewith" (Claim 1)	each slice having a data size, which may be established by setting a time duration of the slice, assigned in advance of the stream being divided Microsoft CC Ruling, Thompson Decl., Exh. C at 7-8.
"wherein dividing the stream into the sequence of slices comprises dividing the stream into a sequence of time slices, each having a predetermined duration associated therewith" (Claim 23)	the stream is divided into a sequence of slices, where the predetermined data size of the slices is established by setting the time duration of the slices Microsoft CC Ruling, Thompson Decl., Exh. C at 7-8.
"encoding the slices in a corresponding sequence of files" (Claim 1)	forming each slice as a file in a corresponding sequence of files, wherein the sequence of files corresponds to the sequence of slices Microsoft CC Ruling, Thompson Decl., Exh. C at 8-9.
"encoding slices in a plurality of different quality levels" (claim 11)	forming each slice at more than one quality level Microsoft CC Ruling, Thompson Decl., Exh. C at 9.
"decode the sequence" (Claim 8)	decompressing any compressed data in the sequence Microsoft CC Ruling, Thompson Decl., Exh. C at 9-10.
"sequence of files, each file having a respective index" (Claim 1)	sequence of files, wherein each file has an index that represents a respective slice's location in the sequence Microsoft CC Ruling, Thompson Decl., Exh. C at 10.
"uploading the sequence to a server at an upload rate generally equal to the data rate of the stream (Claim 1)	transmitting the files from the transmitting computer to the server at an upload rate generally equal to the data rate of the stream

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	Microsoft CC Ruling, Thompson Decl., Exh. C at 11.
"such that the one or more client computers can download the sequence over the network from the server at a download rate generally equal to the data rate" (Claim 1)	such that one or more client computers are able to select individual files corresponding to the slices for download over the network at a download rate generally equal to the data rate Microsoft CC Ruling, Thompson Decl., Exh. C at 12.
"real-time broadcasting" (Claim 1)	simultaneous transmission of data to one or more clients matching the human perception of time or proceeding at the same rate as a physical or external process Apple CC Ruling, Thompson Decl., Exh. A at 1. Amazon CC Ruling, Thompson Decl., Exh. D at 6.

VII. SUMMARY OF THE INVENTION OF THE '473 PATENT

26. In my opinion, a POSITA would have understood that the '473 Patent discloses client-driven, rate-controlled, real-time streaming of multimedia, using common Internet communication protocols, without the need for a dedicated or customized broadcast server/system. '473 Patent, 1:51-67. This represented a drastic change in the way real-time streaming of multimedia data was accomplished and was a significant and unforeseen improvement over previously known and practiced methods of such streaming.

A. The Objectives of '473 Patent.

27. The inventors of the '473 Patent were concerned with the problem of providing real-time multimedia streaming over a network because of the prohibitive expense of using dedicated broadcast servers. '473 Patent, 1:55-62. To address the problems of the server-driven, packet-based prior art systems, one of the stated objects of some aspects of the '473 Patent was to provide data broadcasting capability for multimedia data, "without the need for a dedicated broadcast computer system." '473 Patent, 1:55-58.

28. Another object of some aspects of the '473 Patent was to "provide data streaming over a network using common, existing server and network infrastructure." '473 Patent, 1:51-53.

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29. Still another stated object of some aspects of the '473 Patent was to "enable a personal computer to remotely broadcast a multimedia program through an Internet Service provider (ISP) using common, universally-supported Internet communication protocols." '473 Patent, 1:63-67. As described *infra.*, the invention claimed in the '473 Patent achieved these objectives by providing techniques that allowed for client-driven broadcasting using inexpensive (*e.g.*, HTTP) servers, as opposed to the server-driven broadcasting techniques of the prior art that used expensive dedicated broadcasting servers.[1]

B. The Novel Approach of the '473 Patent to Problems of the Prior Art.

30. The '473 Patent resolved the technical problems of the prior art through a novel solution that was markedly different from previous server-driven technologies. Unlike prior art technologies, the '473 Patent enabled the general public to stream multimedia data over the Internet through a client-driven architecture, using common servers and network infrastructure to mitigate cost and maximize scalability. *See, e.g.*, '473 Patent, 2:12-15 ("The clients download the data stream from the server, preferably using an Internet protocol, as well, most preferably the Hypertext Transfer Protocol (HTTP), or alternatively, using other protocols, such as UDP or RTP, which are similarly known in the art.").

31. The prior art had many problems, including the fact that existing solutions were unable to utilize streaming over the internet due to the underlying network's lack of rate control and bandwidth restrictions. Existing solutions at the time of the invention were unable to manage upload and download data rates effectively in a manner which supported live streams over the

[1] *See* 7:9-12 ("Since FTP and HTTP are supported by substantially all network servers, server 36 need not include any special-purpose broadcasting hardware or software, as noted above.").

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open internet. *IPTV: Next-generation delivery of the television experience*, Goldman, M., Broadcast Engineering magazine, November 2005, p. 80 (Exhibit C).

32. As described below, the '473 Patent thus claimed a technology that differs from the disclosed prior art in at least four very significant ways.

i. Client-Driven Instead of Server-Driven Control.

33. *First*, the '473 Patent moved away from server control of multimedia streaming, and instead granted ***client computers***[2] the ability to request multimedia for download. This was a significant departure from the network broadcasting of the time as it removed the need for specialized broadcast servers and improved the scalability of streaming services.[3]

34. This was also a surprising and unexpected approach to the problems that had faced the streaming industry, of which I was a part, and one which was later adopted as a standard by the industry (HTTP Adaptive Streaming – "HAS"), several years after it was first developed in the '473 Patent. *Implementing Adaptive HTTP Streaming Using the Web*, Toast UI, May 31, 2019, pp. 1-2 (Exhibit E).

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[2] *See, e.g.*, 10:45-48 ("The client first reads index file 50 (FIG. 3B), and graphic 56 (FIG. 3C) is displayed by the client, so that a user can decide and indicate at which slice of data stream 40 to begin downloading. *Responsive to a user input*, client 30 selects an appropriate starting slice and begins to download and decode (decompress) files 42, 44, 46, etc.") (emphasis added).

[3] *See, e.g.*, 1:34-40 ("Encoder 24 and server 26 typically comprise high-cost, dedicated computer Systems, such as a Sun Station (produced by Sun Microsystems) or a Windows NT server, running suitable RealSystem 5.0 software (produced by RealNetworks Inc., Seattle, Wash.). These dedicated systems are required in order to ensure that the data stream is distributed and received by clients 30 in real time.").

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ii. Use of Files Instead of Mere Data Packets so that Client Computers can Download.

35. *Second*, to achieve client-driven broadcasting, the invention as claimed in the '473 Patent encodes multimedia slices as ***files***[4] (with an identifier recognizable by a file system) that have a corresponding index[5] so that client computers can request indexed files for download over common servers and network infrastructure. The '473 Patent's contrarian use of files permitted the use of *e.g.*, HTTP servers, for network media streaming. The HTTP protocol, in comparison to others used at the time, was not believed to be optimal to maintain high quality video broadcasts, since the underlying hypertext markup language ("HTML") did not natively handle multimedia content until the introduction of HTML5 in 2008. *HTML 5 A vocabulary and associated APIs for HTML and XHTML W3C Working Draft 22* January 2008 (Exhibit D).

36. The use of files and client-driven download enabled the scaling of simultaneous viewers – a feature that is critical to modern video streaming.[6]

37. The '473 Patent further teaches that during real-time streaming, client computers may select a file from different quality levels corresponding to that slice of multimedia data depending

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[4] *See, e.g.*, '473 Patent, Claim 1, 14:24-27 ("dividing the stream into a sequence of slices. . . encoding the slices in a corresponding sequence of files…"); *see also* Microsoft CC Ruling, Thompson Decl., Exh. C at 8-9 (construing "encoding the slices in a corresponding sequence of files" as "forming each slice as a file, in a corresponding sequence of files, wherein the sequence of files corresponds to the sequence of slices"); Microsoft CC Ruling, Thompson Decl., Exh. C at 3-4 (construing "file" as "an item containing a single slice of data that has an identifier that is recognizable by a file system").

[5] *See, e.g.*, '473 Patent, Claim 9, 14:65-15:2 ("A method according to claim 8, wherein uploading the sequence comprises uploading and updating an index file containing the index of the file in the sequence that was most recently uploaded, and wherein the one or more client computers read the index file to play back the sequence.").

[6] *See* '473 Patent, 7:9-12 ("Since FTP and HTTP are supported by substantially all network servers, server 36 need not include any special-purpose broadcasting hardware or software, as noted above.").

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on the existing network conditions, such as varying bandwidth constrictions and traffic bottlenecks.[7]

38. This feature, totally unavailable in the then-current state of the art was adopted several years later as standard in the industry. *Implementing Adaptive HTTP Streaming Using the Web*, pp. 1-2 (Exhibit E).

iii. The Data Rate of the Stream is Assigned Before Slicing.

39. *Third*, the claims require a **given ("assigned")[8] data rate**. For example, in some embodiments, the '473 Patent describes how a transmitting computer can encode the multimedia stream at multiple quality levels (assigned data rates) through the use of compression techniques.[9] In other embodiments, the '473 Patent describes that the assigned data rate may vary based on the network conditions.[10] The use of a given (assigned) data rate allows efficient encoding of indexed files that can then be downloaded by client computers. The client computers can also choose

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[7] *See* '473 Patent, 3:5-14 ("In other preferred embodiments, the slices are provided by the server at multiple resolution or quality levels. Each such level has a different degree of data compression, and thus corresponds to a different data bandwidth requirement. The client or the server monitors the data transfer rate of a data link opened therebetween and selects the level that is appropriate to the link bandwidth. If the monitored data transfer rate changes during transmission, the quality level is preferably reselected accordingly.").

[8] *See* Microsoft CC Ruling, Thompson Decl., Exh. C at 5-6 (construing "data stream having the given data rate" as "a data stream having an assigned data rate").

[9] "Each of clients 30 chooses or is assigned the quality level appropriate to the bandwidth of its link on network 28 to server 36." '473 Patent, 9:6-8; *see also, e.g.*, '473 Patent, 10:64-11:8 (discussing, in relation to Fig. 6B, that "[a]fter reading header 43 and, preferably, making an initial assessment of the link bandwidth, the client selects one of the available quality levels in the stream").

[10] *See*'473 Patent, 4:63-67 ("Preferably, the transmitting computer compares the upload rate to the data rate and adjusts the upload rate responsive to the comparison. Most preferably, the transmitting computer compresses the data at a ***compression ratio which is varied*** responsive to the comparison.") (emphasis added).

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among streams of different quality levels depending on the bandwidth throughput (transfer rate) conditions between the server and the client computers.[11]

40. As construed, the data rate must be assigned before slicing occurs. Microsoft CC Ruling, Thompson Decl., Exh. C at 5-6.

iv. Rate Control.

41. *Fourth*, the '473 Patent ensures ***real-time*** delivery of multimedia streams by maintaining the upload (Claim 1), download (Claim 1) and replay (Claim 8) rates so they are generally ***equal*** to the assigned (given) data rate of the stream. For instance, the '473 Patent discloses an embodiment whereby the amount of data generated by the transmitting computer over a period of time (*e.g.*, 10 seconds) is uploaded to a server within 10 seconds and is subsequently downloaded within 10 seconds by the client computer. Hence, there is a balance of flow between the production, transmission, and consumption of a real-time multimedia stream, resulting in a stable and scalable operation. The '473 Patent provides explicit steps for ***rate control***, balancing the given data rate provided at the transmitting computer, the upload rate, download rate, and replay rate, including techniques for adjusting these rates synergistically, through selectable compression choices and other techniques. The invention's rate control techniques are employed when the rates of the upload and download are slow compared to the data rate(s) of the multimedia stream(s), or when the upload and download rates are faster than the data rates of the multimedia streams. '473 Patent, 11:9-22.

42. The '473 Patent also disclosed various rate-control techniques based on the local bandwidth throughput conditions (*e.g.*, varying compression and the use of multiple streams at

[11] *See* 11:9-11 ("Periodically, client 30 makes an assessment of the rate of data transfer over the link from the server and, if necessary, changes the quality level accordingly.").

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different quality levels),[12] thus addressing the issues of (a) varying bandwidth conditions (which at the time was impacted by, for example, dial-up connections and mobile networks), and (b) providing the best video quality at a fraction of the cost required by technologies known at the time. For at least these reasons, the '473 Patent's techniques were non-conventional at the time of the patent, and represented a clear departure from the way others in the field worked. *Implementing Adaptive HTTP Streaming Using the Web* (Exhibit E), p. 2.

VIII. SUMMARY OF THE APPLIED WEAVER REFERENCE

43. At the outset, Weaver is directed to a "method and apparatus for implementing seamless playback of continuous media feeds". (Weaver, Title). The method and apparatus disclosed therein relate to the storing of multimedia to provide for nonsequential access to the information being stored.

44. Weaver describes the field of the invention disclosed therein as follows:

> "The present invention relates to a method and apparatus for processing audio-visual information, and more specifically, to a method and apparatus for providing nonsequential access to audio-visual information represented in a live content stream." (Weaver, col. 1, lines 27-31.

45. Weaver's disclosure, whether taken alone or in combination with Tanaka or any other applied reference, does not in any way relate to the invention claimed in the '473 Patent, as will be shown presently.

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[12] *See* '473 Patent, 3:43-48 ("Preferably, uploading the sequence includes comparing the upload rate to the data rate and adjusting the upload rate responsive to the comparison. Further preferably, encoding the stream includes compressing data in the stream at a desired compression ratio, and adjusting the upload rate includes changing the compression ratio."); *see also* '473 Patent, 4:43-47 ("Preferably, downloading the sequence includes determining a data bandwidth of the network between the server and the client computer and selecting one of the quality levels responsive to the determined bandwidth."); '473 Patent, 3:8-13 ("The client or the server monitors the data transfer rate of a data link opened therebetween and selects the level that is appropriate to the link bandwidth. If the monitored data transfer rate changes during transmission, the quality level is preferably reselected accordingly.").

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A. Weaver is not "real-time".

46. The invention claimed in the '473 Patent is directed to "real-time broadcasting" (claim 1, preamble). This is defined as the "simultaneous transmission of data to one or more clients matching the human perception of time or proceeding at the same rate as a physical or external process". In other words, the '473 Patent seeks to make the client's experience of watching a video being broadcast in accordance with the method disclosed therein to be as close as possible to matching a "live" or in-person experience.

47. Weaver is directed to a system for the "non-sequential access" to a stored video.

48. Weaver provides an express definition of "non-sequential access" as follows:

> "With respect to digital video data, non-sequential playback refers to any playback operation that does not play all of the encoded frames in the exact order in the sequence in which they were encoded. For example, jump ahead and fast forward operations are non-sequential in that some frames are skipped. Rewind operations at any speed are non-sequential in that during a rewind operation, frames are not played in the sequence in which they are encoded." (Weaver, 1:48-56). (emphasis supplied).

49. This is explicitly ***not*** "real-time broadcasting" as that claim term is used in the '473 Patent, and as it has been construed by the Court: "simultaneous transmission of data to one or more clients matching the human perception of time or proceeding at the same rate as a physical or external process". Apple CC Ruling, Thompson Decl., Exh. A at 1; Amazon CC Ruling, Thompson Decl., Exh. D at 6.

50. Weaver does not, therefore teach "real-time broadcasting", or even relate to a method which is intended to provide "real-time broadcasting". It is expressly concerned with providing "non-sequential access" to a data stream, which, by its own terms, means that the data stream is being accessed in an order ***other than*** the order in which it was recorded.

51. It should be observed that Weaver, at col. 14, lines 7-10 states: "For live feeds, the video server **106** will be storing the video stream into the video file **134** at the same time the video pump

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120 is sending a video stream from the file **134** to the client **122.**" Weaver, however, ***does not state*** that the storing and sending of a video stream is of the ***same*** video stream, or that it occurs at the ***same*** rate. In fact, a POSITA would read Weaver as teaching that the two streams are ***different***, since Weaver at first refers to "***the***" video stream which is being stored and then refers to "***a***" video stream which is being sent to the client. This ***explicitly*** tells a POSITA that they are ***not*** the same stream.

B. Weaver does not have a "given data rate".

52. According to claim 1, one of the required method steps is "providing at the transmitting computer a data stream having a given data rate;". The claim term "given data rate" is construed to be an "assigned data rate".

53. It must be remembered that this rate is set for the data being provided to the transmitting computer, *i.e.*, it is the video input to the transmitting computer.

54. Weaver does not at any point disclose any scenario in which the data being input to the system has an ***assigned*** data rate. The portions of Weaver to which the Examiner refers as providing support for this claim term do not refer to the rate at which data is provided ***at the transmitting computer*** (which is what the claims require), but rather to the rate at which the data is encoded (Weaver, 4:51-53 "Encoder 101 receives audio visual input and generates a digital stream of data that encodes the audio visual input according to a particular format."). There is no disclosure of ***assigning*** the data rate, merely that data is received at some unspecified rate.

55. According to Weaver, the encoder simultaneously generates "tags" of data to indicate encoding parameters (including the bit rate of encoded stream), but does not ***assign*** a data rate at which the data is received by the encoder.

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C. Weaver uses a stateful process, and sends packets, not "files"

56. Weaver teaches a packet-based streaming service using a stateful server/client relationship (Weaver 6:66-67: "Digital audio-visual storage formats, whether compressed or not, use ***state machines*** and ***packets*** of various structures."). Thus, Weaver teaches that ***any*** method of delivering video *via* streaming ***must*** use a stateful machine and packet-based streaming. Weaver does not teach or fairly suggest the use of a ***stateless*** server/client relationship or the use of ***files*** as claimed in the '473 Patent. In fact, both of these concepts are completely antagonistic to Weaver's approach, and a POSITA would so read Weaver to discourage the use of both a stateless machine and the sending of files. At the time of the invention (March, 1998), a POSITA would not have thought to use a stateless machine or the explicit request to "pull" files (instead of "push" video packets) by reading Weaver or Weaver in combination with the other applied art.

57. Weaver also requires that the ***state*** of the various devices be monitored (something which is avoided with the invention of the '473 Patent):

> "In addition to the general information described above, the tag file **132** contains an entry for each frame within the MPEG file **134**. The entry for a video frame includes information about the ***state*** of the various MPEG layers relative to the position of the data that represents the frame. For an MPEG-2 file, each entry includes the ***state*** of the MPEG-2 transport state machine, the ***state*** of the program elementary stream state machine and the ***state*** of the video state machine. For an MPEG-1 file, each entry includes the current ***state*** of the Pack system MPEG stream and the ***state*** of the video state machine." (Weaver 8:35-46; italics supplied)

58. Additionally, as quoted by the Examiner (Office Action, p. 8), Weaver delivers the desired information via ***packets***, and not ***files*** as also required by the claims.

> "Each PES ***packet*** has a header that identifies the length and contents of the PES ***packet***. In the illustrated example, a PES ***packet*** 250 contains a header 248 followed by a sequence of transport ***packets*** 251-262. PES ***packet*** boundaries coincide with valid transport ***packet*** boundaries." (Weaver 7:6-27)

59. The Examiner apparently equates packets and files, which is not something a POSITA would do, and the Examiner simply offers packets as files without justification. They are different.

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60. A file is construed to mean "an item containing a single slice of data that has an identifier that is recognizable by a file system" Microsoft CC Ruling, Thompson Decl., Exh. C at 3-4. A packet, on the other hand, is one of the building blocks of a "file", and this is acknowledged explicitly by Weaver, 7:6-16, where Weaver describes MPEG "files" as being made up of a sequence of "packets". A "packet" is defined as "a small segment of a larger message"[13]. A "file" is defined as "a collection of digital data stored as a single object on a disk."[14] "Packets" and "files" are therefore not the same thing, and a POSITA would not understand them to be the same thing.

D. Weaver does not disclose the use of files having a predetermined data size.

61. Furthermore, Weaver does not disclose the use of files having a "predetermined data size," as required by the claims. The Examiner concedes that Weaver does not show the use of data slices having a predetermined data size (Office Action, pp. 7-8), and offers Tanaka (discussed, *infra.*) to make up the difference. As will be discussed presently, however, this suggested combination does not in fact teach the claimed invention.

62. Again, Weaver teaches the use of packets not files.

63. Weaver also expressly states that the size of the packets has "no correlation" to the size of the frames being transmitted (Weaver, 7:45-46). A POSITA would therefore understand Weaver to teach that the amount of data being transmitted *via* the packets in each group of packets varies, and is not of a "predetermined" size.

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[13] "In networking, a packet is a small segment of a larger message. Data sent over computer networks, such as the Internet, is divided into packets. These packets are then recombined by the computer or device that receives them." https://www.cloudflare.com/learning/network-layer/what-is-a-packet/, downloaded May 26, 2025. A copy is attached as Exhibit F hereto.

[14] Pickle, B. (2023, September 18). File Definition. Retrieved 2025, May 26, from https://techterms.com. Exhibit G hereto.

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E. Weaver does not teach that the three data rates are generally equal.

64. The claims require three ***distinct*** data rates:

a "data rate" provided to the stream at the transmitting computer;

"an upload rate" that is "generally equal to the data rate of the stream" at which the transmitted data is uploaded to a server; and

"a download rate" that is "generally equal to the data rate" at which client computers can download the data.

65. According to the claims, the upload and download (and replay) rates must be "generally equal" to the assigned data rate of the stream.

66. Weaver does not teach the data rate for the upload of the data stream. Weaver merely states that the data is being encoded at the same time as it is happening, but not necessarily at the same ***rate*** as it is happening (Weaver, 5:2-6, quoted by the Examiner at Office Action, p. 10):

> "For the purposes of illustration, it shall be assumed that the video source being captured by CODEC 102 is a live source and, consequently, CODEC 102 is encoding video at 1X relative to real time."

67. Then, Weaver teaches that the data is ***compressed*** and sent to CODEC 102.

> "MUX 104 multiplexes the compressed audio and visual information generated by CODEC 102 to generate a compressed video stream. In the compressed video stream, the data representing video frames and audio are merged and formatted according to the particular digital format supported by encoder 101. The specific operations performed during the merging process will vary based on the type of encoding employed. For example, the merging process may involve determining the order and placement of portions of digitized audio and video in the stream and inserting metadata at various points within the stream. The metadata may take the form, for example, of header information that identifies the starting point and content of 'packets' within the stream. The stream of compressed audiovisual information constructed by MUX 104 is transmitted from the encoder 101 to the video server 106 over a communication channel 128." (Weaver, 5:9-29)

68. Weaver does not mention the upload rate at which the compressed data is being transmitted, but a POSITA would understand that, since it is a compressed data stream, it could be sent ***faster*** than the rate at which it was captured. It could not, of course, transmit data that had not been received, but there could be gaps in the transmission between transmitted frames. Or it could be

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slower, with some lag time between frames, if the header information is sufficiently large to require it. A POSITA would have no way to determine from Weaver whether the upload rate was generally equal to the download rate or the rate at which the data was initially recorded.

69. Since Weaver is concerned with nonsequential playback of the input video rather than real-time broadcasting (as discussed, *supra.*), a POSITA would not understand Weaver to teach that the various rates would be generally equal.

F. Weaver does not use internet protocols for transmitting video to the client (claim 2)

70. Weaver teaches (13:34-46; in a section that is titled Video Pump and Stream Server):

> "[T]he client 122 receives information from the video pump 120 through a high bandwidth network 150. The high bandwidth network 150 may be any of type [*sic.*] of circuit-style network link capable of transferring large amounts of data. A circuit-style network link is configured such that the destination of the data is guaranteed by the underlying network, not by the transmission protocol. For example, the high bandwidth network 150 may be an asynchronous transfer mode (ATM) circuit or a physical type of line, such as a T1 or E1 line. In addition, the high bandwidth network 150 may utilize a fiber optic cable, twisted pair conductors, coaxial cable, or a wireless communication system, such as a microwave communication system."

71. Thus, Weaver expressly states that the video that is being sent to the client is ***not*** being sent *via* an internet protocol. Instead, Weaver expressly states that, for any transmission of video from the video pump to the client computers, "***circuit-style*** ***network links*** are used. Circuit-style network links do not rely on transmission protocols, such as the Internet protocol, for transmission – the destination is guaranteed by the network itself. Thus, Weaver teaches ***away*** from the claimed invention by teaching that a circuit-style network should be used rather than internet protocols.

72. In fact, Weaver also teaches that the use of TCP (an internet protocol) is suitable on "lightly loaded networks" (Weaver, 6:1-2), which would not include most client users who would be expected to be downloading on the same network which handles all of the client's other needs.

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This statement is also contained in the section of Weaver entitled "COMMUNICATION BETWEEN THE ENCODER AND THE VIDEO SERVER", which underscores that Weaver does not contemplate using transmission using TCP to the client over the internet and it would be so understood by a POSITA.

IX. TANAKA DOES NOT OVERCOME THE DEFICIENCIES IN WEAVER

A. Tanaka does not teach the use of fixed size files in a real time broadcasting system

73. Tanaka is not concerned with real-time broadcasting.

74. Like Weaver, Tanaka is concerned with the problems of a video-on-demand system (Tanaka, 1:20-22). Tanaka describes such systems:

> "Since the videos are transmitted in the form of digital data, they are processed quickly, and the subscribers can not only play the videos in real time whenever they want, but also play the videos quickly in both directions (fast-forward and fast-rewind) in real time as if they were manipulating the video tape player." (Tanaka, 1:57-62)

75. This is not "real-time broadcasting" as that term is construed in the '473 Patent, because Tanaka refers to having the system disclosed therein operate like a video tape player to go fast-forward and fast-rewind which is different than "real-time" meaning "proceeding at the same rate as a physical or external process". They may be the same words, but a POSITA would understand that they do not mean the same thing.

76. A POSITA would not combine the video-on-demand systems of Weaver and Tanaka to create a "real-time broadcasting" system as taught by the '473 Patent. They are from different fields and have very different concerns and objectives.

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B. Tanaka is only applied to provide a fixed size file, but it does not do so in the fashion suggested by the Examiner.

77. The Examiner applies Tanaka to Weaver in an attempt to overcome the admitted deficiency in Weaver's failure to teach the use of "dividing the stream into a sequence of slices, each slice having a predetermined data size associated therewith". (Office Action, pp. 7-8).

78. The Examiner states (Office Action, p. 8):

> It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Tanaka with the teachings of Weaver because applying the well-known concept of using the fixed sized units ('64 Kbytes files' – 'MSFs' as disclosed by Tanaka) would be a simple substitution of a known element (fixed sized units) for another (variable size units – 'PES packets' of Weaver) to obtain predictable results or use of known technique (using fixed sized units for video streaming) to a [*sic.*] improve similar devices (client-server video streaming systems such as those discussed in Weaver) in the same way (KSR v. Teleflex, 550 U.S. 398, 417 (2007))."

79. Tanaka does not teach that the use of "fixed size units for video streaming" provides any improvement in video streaming. It is simply the way that Tanaka's custom system delivered packets to the client.

80. To modify the flexible file size stream of Weaver to accommodate fixed size data packets as taught by Tanaka would require a substantial re-design of Weaver, since Weaver teaches that the tag file 132 must contain picture size 233, picture start pos 235, picture end pos 237, frame type 239, time value 241 and timing buffer info 243 (*see* Fig. 2 and Table 3). All of this information is necessary for processing the video stream being uploaded by Weaver and would be unnecessary if fixed file sizes were used.

81. The Examiner also does not explain how "units" are the same as "files" or are the same as "packets", but simply conflates these terms to mean the same thing.

82. Similarly, the Examiner conflates the meanings of "tags" and "indices", where they do not mean the same thing. Weaver teaches many types of "tags", but does not teach any "indices",

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which describe the sequence in which to display the files. '473 Patent, 7:28-29. ("Computer 34 stores each slice as a corresponding file, having a running slice index 1, 2, 3 ... N.").

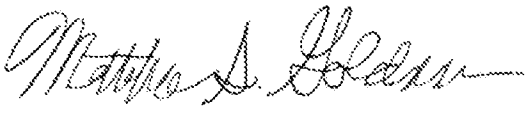
C. Tanaka teaches the use of "packets" and not "files"

83. Tanaka expressly states that the MSFs may be transmitted as ***packets***, rather than files, because Tanaka does not concern itself with the transmission of files in the way that the '473 Patent transmits files:

> "The MSFs may be transmitted at irregular intervals to the terminals in the form of packets." (Tanaka, col. 17, lines 36-37)

84. The MSFs disclosed in Tanaka are not "files" as that term has been construed in the context of the '473 Patent, namely "an item containing a single slice of data that has an identifier that is recognizable by a file system." There is no teaching in Tanaka that the MSFs disclosed therein have any identifier which is recognizable by a file system. They are simply packets of data, as that term is classically used and would be so understood by a POSITA.

85. I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.



Matthew Goldman

Dated: May 27, 2025

Place of execution: Lakewood Ranch, FL

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