

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**AMAZON.COM, INC.,
AMAZON.COM SERVICES LLC,
AMAZON WEB SERVICES, INC., and
AUDIBLE, INC.,**
Petitioners,

v.

AUDIO POD IP, LLC,
Patent Owner.

Case No. IPR2025-00757
U.S. Patent No. 10,091,266

DECLARATION OF PROFESSOR KETAN MAYER-PATEL, Ph.D.

<p><i>Amazon v. Audio Pod</i> US Patent 10,091,266 Amazon EX-1002</p>
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I, Ketan Mayer-Patel, do hereby declare:

1. I am making this declaration at the request of Petitioners Amazon.com, Inc., Amazon.com Services LLC, Amazon Web Services, Inc., and Audible, Inc. (“Petitioners”). I have been retained by Petitioners as a technical expert in this matter.

2. I am being compensated for my work on this case. My compensation does not depend on the content of this Declaration or the outcome of these proceedings.

I. BACKGROUND

A. Experience and Qualifications

3. I received Bachelor of Arts degrees in Computer Science and Economics in 1992, a Master of Science in 1997 from the Department of Electrical Engineering and Computer Science, and a Ph.D. in 1999 from the Department of Electrical Engineering and Computer Science, all from the University of California, Berkeley.

4. I have been involved in the research and development of multimedia computing systems for nearly 30 years. I have been a faculty member at the University of North Carolina since January 2000, where I perform research and teach in the areas of networking, web programming, and multimedia computing. I also have

expertise other areas, including distributed systems, networking devices, and the general operation of computer systems.

5. I am a member of the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronics Engineers (IEEE). These are the two leading professional societies for both academic and practicing computer scientists.

6. I have authored or co-authored over 30 papers in peer-reviewed journals and conference proceedings. I have served as an Associate Editor for both IEEE Transactions on Multimedia and ACM Transactions on Multimedia Computing, Communications, and Applications, which are the two leading journals in the field. I regularly serve as a member of the technical program committee for a number of different conferences and workshops including ACM Multimedia, The International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV), IFIP Networking, ACM Multimedia Systems (MMSys), MMEDIA, and SIGMAP. I am also currently chair of the standing executive committee for both NOSSDAV and MMSys. A complete listing of all my publications can be found in my CV, which I understand is being submitted as Exhibit 1096. I am also a named inventor or co-inventor on multiple issued patents, which are also listed in my CV.

7. My research has been supported by both government agencies as well as private industry. I received the National Science Foundation (NSF) CAREER Award in 2003 while an Assistant Professor. I have been a principal investigator for

grants awarded by the NSF, the Office of Naval Research, and the Laboratory of Analytic Sciences. I have also served on several NSF reviewing panels for funding recommendations.

8. In my research and teaching I have considered problems of video streaming, dynamic adaptation and transcoding of media, adaptive streaming transport protocols, telepresence, and scalable display architectures, among others.

9. In the classroom, I have regularly taught classes on Data Structures, Foundations of Programming, Modern Web Programming, Files and Databases, and Multimedia Computing and Networking. I also serve as the Director of Undergraduate Studies for the Department of Computer Science.

B. Materials Considered

10. In preparing this Declaration, I have considered the following materials:

Exhibit No.	Description
1001	U.S. Patent. No. 10,091,266 (“the ’266 patent”)
1020	U.S. Patent Publication No. 2015/0093093 (“Abecassis”)
1021	U.S. Patent Publication No. 2009/0259711 (“Drieu”)
1022	U.S. Patent Publication No. 2002/0034374 (“Barton”)
1023	U.S. Patent Publication No. 2015/0256903 (“Walker”)
1024	U.S. Patent Publication No. 2012/0084455 (“McCue”)

Exhibit No.	Description
1025	U.S. Patent Publication No. 2014/0280695 (“Sharma”)
1035	U.S. Patent Publication No. 2004/0148638 (“Weisman”)
1050	U.S. Patent App. No. 15/054,756, filed February 26, 2016 (the “’756 application”)
1095	Excerpts from the File History of U.S. Pat. No. 10,091,266

11. In addition, I have reviewed the full file history of the ’266 patent. I have also relied on my education, training, and experience, and my knowledge of pertinent literature in the field of the ’266 patent.

II. APPLICABLE LEGAL STANDARDS

12. I have been asked to provide my opinion as to whether the claims of the ’266 patent would have been obvious to a person of ordinary skill in the art at the time of the alleged invention, in view of the prior art.

13. I am a computer scientist by training and profession. The opinions I am expressing in this report involve the application of my training and technical knowledge and experience to the evaluation of certain prior art with respect to the ’266 patent.

14. Although I have been involved as a technical expert in patent matters before, I am not an expert in patent law. Therefore, the attorneys from Knobbe, Martens, Olson & Bear, LLP have provided me with guidance as to the applicable

patent law in this matter. The paragraphs below express my understanding of how I must apply current principles related to patent validity to my analysis.

A. Priority

15. I understand that a patent claim is entitled to claim the priority date of an earlier-filed application only if the earlier application satisfies a “written description requirement” for that claim. I further understand that each application in the chain leading back to the earlier application must satisfy the written description requirement as well.

16. I understand that to comply with the written description requirement, the specification must contain disclosure allowing a person of ordinary skill in the art, reading that original disclosure, to immediately discern the limitation at issue in the claim. If the limitation is not disclosed, but would only be obvious over what is disclosed, that is not sufficient to satisfy the written description requirement.

B. Claim Construction

17. It is my understanding that in determining whether a patent claim is obvious in view of the prior art, the Patent Office construes the claim by giving the claim terms their plain and ordinary meaning, as they would have been understood by a person of ordinary skill in the art at the time of the invention in view of the intrinsic record (patent specification and file history). For the purposes of this review, and to the extent necessary, I have interpreted each claim term in accordance

with its plain and ordinary meaning as it would have been understood by a person of ordinary skill in the art at the time of the invention, in view of the intrinsic record. I understand that the time of the invention is November 22, 2016.

18. I understand that a patent and its prosecution history are considered “intrinsic evidence” and are the most important sources for interpreting claim language in a patent. I also understand that in reading the claim, I must not import limitations from the specification into the claim terms; in other words, I must not narrow the scope of the claim terms by implicitly adding disclosed limitations that have no express basis in the claims. The prosecution history of related patents and applications can also be relevant.

19. I understand that sources extrinsic to a patent and its prosecution history (such as dictionary definitions and technical publications) may also be used to help interpret the claim language, but that such extrinsic sources cannot be used to contradict the unambiguous meaning of the claim language that is evident from the intrinsic evidence.

20. Unless expressly stated herein, I have applied the plain and ordinary meaning of the claim terms, which I understand is the meaning that a person of ordinary skill in the art would have given to terms in November 2016 based on a review of the intrinsic evidence.

C. Obviousness

21. It is my understanding that a claim is “obvious” if the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time of the alleged invention. I understand that an obviousness analysis involves a number of considerations. I understand that the following factors must be evaluated to determine whether a claim would have been obvious: (i) the scope and content of the prior art; (ii) the differences, if any, between each claim of the ’266 patent and the prior art; (iii) the level of ordinary skill in the art in November 2016; and (iv) additional considerations, if any, that indicate that the invention was obvious or not obvious. I understand that these “additional considerations” are often referred to as “secondary considerations” of non-obviousness or obviousness.

22. I also understand that the frame of reference when evaluating obviousness is what a hypothetical person of ordinary skill in the pertinent art would have known in November 2016. I understand that the hypothetical person of ordinary skill is presumed to have knowledge of all pertinent prior art references.

23. It is my understanding that something is “inherent in,” and therefore taught by, the prior art, if it necessarily flows from the explicit disclosure of the prior art. I understand that the fact that a certain result or characteristic *may be* present in the prior art is not sufficient to establish inherency. However, if the result or

characteristic is *necessarily* present based upon the explicit disclosure in the prior art, it is inherent in the prior art and is therefore disclosed.

24. I understand that a prior art reference may be a pertinent prior art reference (or “analogous art”) if it is in the same field of endeavor as the patent or if it is pertinent to the problem that the inventors were trying to solve. A reference is reasonably pertinent if it logically would have commended itself to an inventor’s attention in considering the problem at hand. If a reference relates to the same problem as the claimed invention, that supports use of the reference as prior art in an obviousness analysis. Here, all of the references relied on in my obviousness analysis below are from the same field of endeavor as the ’266 patent, e.g., content distribution and/or rendering. The references are also pertinent to a particular problem the inventor was focused on, e.g., efficient and effective distribution and/or rendering of content.

25. It is my understanding that the law recognizes several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include:

- combining prior art elements according to known methods to yield predictable results;
- simple substitution of one known element for another to obtain predictable results;

- a predictable use of prior art elements according to their established functions;
- using known techniques to improve similar devices (methods, or products) in the same way;
- applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (in which case a claim would have been obvious to try);
- known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and
- some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

26. I understand that “secondary considerations” must be considered as part of the obviousness analysis when present. I further understand that the secondary considerations may include: (1) a long-felt but unmet need in the prior art that was satisfied by the claimed invention; (2) the failure of others; (3) skepticism by experts;

(4) commercial success of a product covered by the patent; (5) unexpected results achieved by the claimed invention; (6) industry praise of the claimed invention; (7) deliberate copying of the invention; and (8) teaching away by others. I also understand that evidence of the independent and nearly simultaneous “invention” of the claimed subject matter by others is a secondary consideration supporting an obviousness determination and may support a conclusion that a claimed invention was within the knowledge of a person of ordinary skill as of November 22, 2016. I am not aware of any evidence of secondary considerations that would suggest that the claims of the '266 patent would have been nonobvious in November 2016.

27. I understand that when assessing obviousness, using hindsight is impermissible; that is, what is known today or what was learned from the teachings of the patent should not be considered. The patent should not be used as a road map for selecting and combining items of prior art. Rather, obviousness must be considered from the perspective of a person of ordinary skill at the time the alleged invention was made – November 2016 in this case.

28. I also understand that an obviousness analysis must consider the invention as a whole, as opposed to just a part or element of the invention. I understand this “as a whole” assessment to require showing that one of ordinary skill in the art at the time of invention, confronted by the same problems as the inventor and with

no knowledge of the claimed invention, would have selected the elements from the prior art and combined them in the claimed manner.

III. PERSON OF ORDINARY SKILL IN THE ART

29. It is my understanding that when interpreting the claims of the '266 patent and evaluating whether a claim would have been obvious, I must do so based on the perspective of a person of ordinary skill in the art at the relevant priority date. I understand that the relevant priority date of the '266 patent is November 22, 2016.

30. I understand that in determining the level of ordinary skill in the art, several factors are considered. Those factors may include: (i) the type of problems encountered in the art; (ii) prior art solutions to those problems; (iii) the rapidity with which innovations are made; (iv) the sophistication of the technology; and (v) the educational level of active workers in the field. A person of ordinary skill in the art must have the capability of understanding the scientific and engineering principles applicable to the pertinent art.

31. The '266 patent describes the use of well-known technologies for the rendering and/or distribution of digital content. Based on my review of the specification and claims of the '266 patent, it is my opinion that a person of ordinary skill in the art would have had a minimum of a bachelor's degree in electrical engineering, computer engineering, or computer science, and at least three years of industry or academic experience in the design, development, and/or implementation of content

rendering and/or distribution systems. Work experience could substitute for formal education and additional formal education could substitute for work experience.

32. My conclusions below that the claims of the '266 patent would have been obvious would remain the same even if the priority date, field of endeavor, or level of ordinary skill were slightly different.

33. I meet the above definition of a person of ordinary skill in the art, and did so as of November 22, 2016. Also, I have worked with persons of ordinary skill in the art through my professional and academic experiences, and I have an understanding of their skill level around November 2016.

IV. TECHNOLOGY BACKGROUND

A. Exchanging a Content Identifier and a Play Position Between Devices Was Well Known.

34. By 2016, exchanging content information between devices was well known. For example, Abecassis taught that a second device obtains a “video ID” and a play position for the video playing on a first device to allow the two devices to display content simultaneously. (EX-1020 (Abecassis) ¶¶[0258], [0261], [0281], Abstract.) The second device used the video ID to obtain a “video map” that describes the content of the video as well as information and content necessary to display supplemental content. (*Id.* ¶[0067].) The second device used the play position to display supplemental content related to the video playing on the primary device, which could be, for example, “images and description of a location depicted in ... a

movie playing on a primary device,” “subtitle data” to identify and display corresponding subtitles, or “[s]hopping items” that enable a shopping feature. (*Id.* ¶¶[0067], [0084], [0108], Abstract.)

35. Drieu disclosed exchanging content information, including a “media object identifier” and a play position, between devices via a server. (EX-1021 (Drieu) ¶¶[0024], [0030], [0037]-[0038].)

36. McCue, which published in 2014, disclosed exchanging content information, including a content identifier and a play position, between devices. McCue disclosed a bookmark that (1) “identifies and/or points to the virtual audio stream descriptor of the target audio stream (e.g., in a local directory or at some network address);” and (2) “identifies a specific point in time in the audio stream that is offset from the beginning of that audio stream.” (EX-1024 (McCue) ¶[0075].) Figure 9 shows this bookmark:

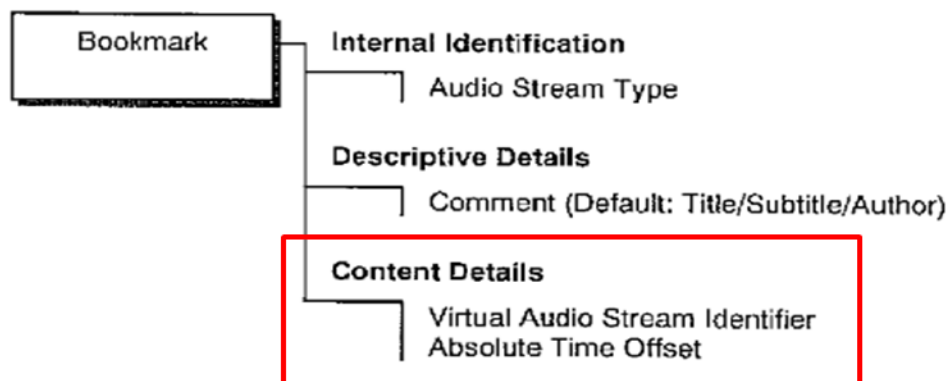


Fig. 9

(*Id.*, Fig. 9.¹) McCue explained that this bookmark “can be transferred from client to client or from server to client.” (*Id.* ¶[0079].) The client can use the information from the bookmark to retrieve a descriptor, which includes information about the audio stream like “internal media marks, illustrations related to the audio stream, and/or internal advertising.” (*Id.* ¶[0066].)

B. Simultaneously and Synchronously Presenting Digital Content Across Two Devices was Well Known.

37. By 2016, simultaneously and synchronously presenting digital content on two devices was also well known. For example, Abecassis taught a second device that obtains “current play position data of a video being played on a primary screen device” and “display[s] information on the second screen device synchronized with the contemporaneously played video on the primary screen device.” (EX-1020 (Abecassis), Abstract.) The information displayed on the second screen may be, for example, subtitles, performer information, geographical maps, shopping information, ratings, or trivia information. (*Id.*)

38. Sharma likewise taught a multi-screen system where a user “may consume second screen content in synchronization with primary content that the user simultaneously consumes via a first screen device.” (EX-1025 (Sharma) ¶[0059].)

¹ Figures in this Declaration may be colored and/or annotated for clarity.

C. Discarding Unneeded Content From Device Memory was Well Known.

39. Discarding unneeded content from device memory was also well known. For example, Barton disclosed a mechanism for streaming content by using a linear cache (“LC”). (EX-1022 (Barton) ¶¶[0031].) Barton’s LC is shown in Figure 3:

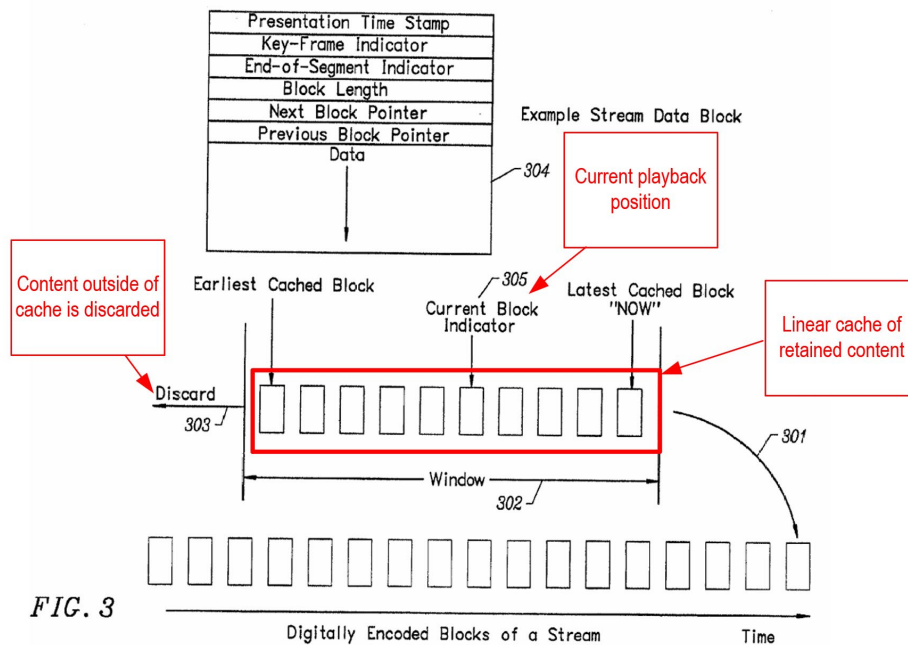
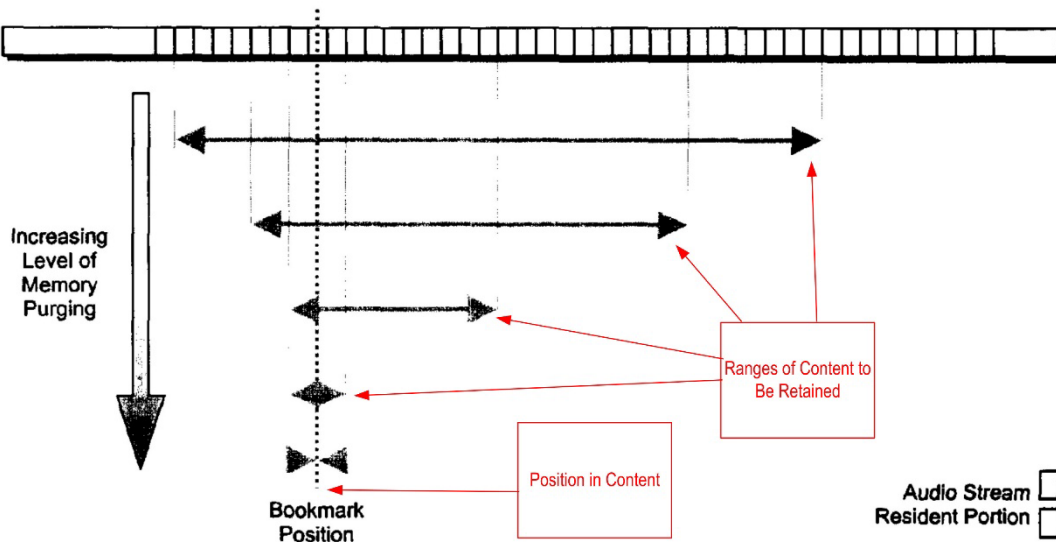


FIG. 3

(*Id.*, Fig. 3.) Barton disclosed identifying and retaining a “window” of streaming content around the user’s current position. (*Id.* ¶¶[0048]-[0049].) Content outside the window is discarded to reduce memory demand. (*Id.* ¶[0049].)

40. McCue disclosed a similar process. McCue teaches “a memory purge process” that ensures that a “requested level of free memory is made available.” (EX-1024 (McCue) ¶[0091].) McCue’s purge process “focuses on the bookmark

position within the audio stream.” (*Id.* ¶[0096].) The process for purging bookmarked audio streams is shown in Figure 13 of McCue, which shows ranges of content to be retained or purged depending on memory demand:



(*Id.*, Fig. 13.)

V. THE '266 PATENT

A. Overview

41. Because McCue is a continuation-in-part of a patent in the priority chain of the '266 patent, the specifications are extremely similar. Most of the '266 patent's disclosure is contained verbatim in McCue, although McCue added more disclosure. The '266 patent, like McCue, discusses transferring a bookmark from a first client to a second client. (EX-1001 ('266 patent), 8:24-41, Fig. 9.) The bookmark identifies both the particular content and the position in the content. (*Id.*, 8:10-

11, Fig. 9.) Like McCue, the '266 patent also discloses discarding unneeded content from memory. (*Id.*, 12:66-13:1, 13:23-49, Fig. 13.)

B. Claims

42. I have been asked to consider claims 1-13 in this Declaration. Claim 1 is representative and recites a “method of rendering digital content across multiple client devices.” The method comprises several steps, which fall into three categories. First, a series of steps relating to rendering content on a first device:

- [a] rendering on a first client device at least a portion of primary digital content;
- [b] determining on the first client device an identifier corresponding to the primary digital content, wherein the identifier identifies a descriptor of the primary content;
- [c] determining on the first client device a first position in the primary digital content;

The second set of steps relate to rendering associated content on a second device:

- [d] transferring the identifier and the first position from the first client device to a second client device via a network accessible library;
- [e] downloading the descriptor from the network accessible library to the second client device by using the identifier;
- [f] rendering on the second client device at least a portion of secondary

other digital content associated with the primary digital content by using the descriptor and the first position, wherein the secondary digital content is ancillary to the primary digital content, and wherein the secondary digital content is rendered on the second client device simultaneously and in synchronization with the rendering of the primary digital content on the first client device;

Finally, a third set of steps relates to discarding unneeded content on the first and second devices:

[g] identifying a range of content surrounding the first position in the primary digital content as content to be retained;

[h] releasing storage resources allocated to all content of the primary digital content that is not identified as content to be retained on the first client device;

[i] identifying content in the secondary digital content that is related to the range of content surrounding the first position in the primary digital content as content to be retained; and

[j] releasing storage resources allocated to all content of the secondary digital content that is not identified as content to be retained on the second client device.

C. Priority Date

43. I understand that the '266 patent issued on October 2, 2018, from U.S. Patent Application 15/358,354 (“the '354 application”), filed November 22, 2016. I also understand that the '354 application claims priority to U.S. Patent Application 15/054,756 (“the '756 application), filed on February 26, 2016, and thereafter through a chain of several continuation and divisional applications to provisional application 60/749,632, filed on December 13, 2005.

44. I have reviewed the '756 application, and in particular Paragraphs 45 and 93-97. Those paragraphs are identical to the corresponding paragraphs in the specification of the '266 patent. (*Compare* EX-1050 ('756 application) ¶¶[0045], [0093]-[0097] *with* EX-1001 ('266 patent), 5:1-17, 11:52-60 (Table 1).)

45. Paragraph 45 of the '756 application discusses a “virtual audio stream descriptor” that “includes descriptive details used to describe the content of [an] audio stream, such as the title and/or the ISBN” and, optionally, “internal media marks, illustrations related to the audio stream, and/or internal advertising.” (EX-1050 ('756 application) ¶[0045].) Nothing in that paragraph relates to presenting content on two different devices “simultaneously and in synchronization” as recited in each challenged claim.

46. Paragraphs 93-97 also lack any description of presenting content across two different devices “simultaneously and in synchronization.” Those paragraphs

are part of a table that provides a “summary of various types of information, structures or files” that reside on servers within the system. (EX-1050 (’756 application) ¶¶[0066].) The paragraphs correspond to rows on the table discussing illustrations, ancillary content, and advertisements. (*Id.* ¶¶[0093]-[0097].) The rows contain no disclosure of how those these types of information would be presented at all, let alone any disclosure of presenting content across two different devices “simultaneously and in synchronization.”

47. Accordingly, the ’756 application contains no disclosure of rendering primary and secondary content on devices “simultaneously and in synchronization,” as the claims of the ’266 patent recite. I therefore understand that the earliest possible priority date of the ’266 patent is its own filing date, November 22, 2016.

VI. CLAIMS 1-13 OF THE ’266 PATENT WOULD HAVE BEEN OBVIOUS.

A. Claims 1-9 and 12-13 Would Have Been Obvious in View of Abecassis, Drieu, and Barton.

48. For at least the reasons I discuss below, Abecassis, Drieu, and Barton render claims 1-9 and 12-13 obvious.

1. Claim 1

a. Preamble

49. The preamble of claim 1 recites a “method of rendering digital content across multiple client devices.” Abecassis discloses such a method.

50. For example, Abecassis discloses “displaying information on the second screen device synchronized with the contemporaneously played video on the primary screen device.” (EX-1020 (Abecassis), Abstract.) The first and second screen devices are client devices. (*Id.* ¶¶[0057] (primary and secondary devices may be “televisions, personal computers, laptop and portable computers, tablets, smartphones, and mobile devices”), [0075] (primary and second screen devices “acquire[] access to the network 100 and the various services providers 101-103”).)

51. Abecassis further discloses that the content is digital. (EX-1020 (Abecassis) ¶¶[0073] (video is “available over the internet”), [0292] (video played by devices disclosed in an incorporated patent entitled “Video Entity Recognition In Compressed *Digital* Video Streams” (emphasis added)).)

52. Thus, Abecassis discloses the preamble of claim 1.

b. Element 1[a]: Rendering Primary Content on a First Client Device

53. Element 1[a] recites “rendering on a first client device at least a portion of primary digital content.” Abecassis discloses this claim element.

54. Abecassis discloses a “primary screen device” (a first client device) that is capable of “playing/displaying content.” (EX-1020 (Abecassis) ¶[0057]; *see also id.* ¶¶[0114] (disclosing “playing [a] video on the primary screen device”), [0003]-[0004], [0006]-[0008], [0075] (identifying client devices), [0089]-[0090] (same),

[0108], [0114]-[0115], [0122], [0125], [0129], [0141], [0258], Abstract, Figs. 12, 13.)

55. Thus, Abecassis discloses claim element 1[a].

c. Element 1[b][i]: Determining an Identifier of the Primary Content on a First Client Device

56. Element 1[b][i] recites “determining on the first client device an identifier corresponding to the primary digital content.” Abecassis and Drieu each disclose this claim element.

57. Abecassis discloses that, upon the playing of a video on the primary screen, the device’s control program “causes the reading of the video’s *identifier* from the video source,” searches memory for a corresponding video map and, if one is not available, downloads the video map. (EX-1020 (Abecassis) ¶¶[0086] (emphasis added), Fig. 12.) Abecassis further discloses that, following a user’s selection of a video, “the video ID(s) are obtained” to determine whether a video map is available for the video. (*Id.* ¶¶[0261], Fig. 12.) Thus, Abecassis discloses determining (reading or obtaining) on the first client device (primary screen device) an identifier (video ID) corresponding to the primary digital content (video).

58. Drieu discloses that a “first device” can determine “state information” including a “media object identifier” that relates “to a user’s access of content on the first device.” (EX-1021 (Drieu) ¶¶[0030], [0037]; *see also id.* [0004]-[0007],

[0019], [0024], [0035]-[0036], [0037]-[0038].) Drieu further discloses that the first device may transmit “the determined state information.” (*Id.* ¶¶[0037]-[0038].)

59. A person of ordinary skill in the art would have been motivated to modify Abecassis’s method to incorporate this teaching of Drieu (along with Drieu’s teaching of transferring the identifier to the second device) for several reasons.

60. First, the references suggest doing so. Abecassis discloses a second device using a “video ID” to identify and then synchronously display content with a first device. (EX-1020 (Abecassis) ¶¶[0258], [0261], Abstract.) Drieu provides additional details as to how the second device acquires the video ID: the first device to determines a media object identifier for the content and then transfers that identifier to the second device. (EX-1021 (Drieu) ¶¶[0030], [0037]-[0038].) Drieu uses its method to obtain the same goal as Abecassis. (*Compare* EX-1021 (Drieu), Abstract (Drieu goal of “Media state synchronization”) *with* EX-1020 (Abecassis), Abstract (Abecassis goal of “synchronized” playing on two devices).) Additionally, using the first device to determine and transfer the identifier would efficiently allow two devices to synchronize content between each other and ensure that the second device was correctly playing content that corresponded to the content on the first device.

61. Second, the combination represents the simple addition of one known element (Drieu’s identifier determination and transfer) to another known element (Abecassis’s two-device system) to obtain predictable results (a second device

obtaining the video ID from the first device to facilitate display of related content). Third, the combination represents the use of a known technique (Drieu’s transfer of an identifier determined on a first device) to improve a similar device and method (Abecassis’s use of a video ID to display second screen information) in the same way. Fourth, the combination applies a known technique (Drieu’s transfer of an identifier determined on a first device) to a known device and method (Abecassis’s use of a video ID to facilitate simultaneous display on two devices) that is ready for improvement and yields predictable results (second device obtaining the video ID via transfer from a first device that determined the identifier).

62. A person of ordinary skill would have had a reasonable expectation of success when making this combination because Abecassis already discloses using a video ID at a second device and Drieu provides details about how that could be accomplished.

63. Thus, Abecassis and Drieu each disclose and/or render obvious claim element 1[b][i].

d. Element 1[b][ii]: The Identifier Identifies a Descriptor of the Primary Content

64. Element 1[b][ii] recites that the “identifier identifies a descriptor of the primary content.” Abecassis discloses this claim element.

65. Abecassis discloses that its “video ID” (identifier) is used to “determine if a map” (descriptor) is available for a user selected video. (EX-1020 (Abecassis) ¶¶[0261], Fig. 12.) If not, “then the map is downloaded from a remote source.” (*Id.*; *see also id.* ¶¶[0086] (device causes “the reading of the video’s identifier from the video source,” uses the identifier to search for a video map, and downloads “the appropriate map” if necessary).)

66. Abecassis’s “video map” is a descriptor of the primary content, i.e., the video being played. Abecassis’s “‘video map’, ‘map’, and ‘segment map’” refer to “any combination, arrangement, table, database, listing, index, and/or information” that “defines a beginning and ending of one or more segments” of a video and “describes ... content of a video.” (EX-1020 (Abecassis) ¶¶[0040], [0067], [0082]-[0087], [0103].) The video map comprises a “descriptor,” and a “linkage among segments.” (*Id.* ¶¶[0067].) It also comprises “information, data, linkages, and content that may [be] required to enable or support the features and functions detailed” in Abecassis, such as images and description of a location depicted in a particular scene of a video playing on a primary device, a “video map subtitle data” to identify and display subtitles corresponding to the “desired period of time,” or “Shopping items” to provide a shopping feature. (*Id.* ¶¶[0067], [0084], [0108], [0134]-[0136], Abstract.)

67. Abecassis’s video map contains the same information as the “descriptor” in the ’266 patent. For example, the “descriptor” in the ’266 patent includes subtitle information, “Advertisements,” and information about “Segment[s].” (EX-1001 (’266 patent), Fig. 5c.) Abecassis’s video map similarly includes information about subtitles, shopping items, and video segments. (*See, e.g.*, EX-1020 (Abecassis) ¶¶[0067], [0084], [0106]-[0116] (subtitles), [0190]-[0197] (shopping).) Accordingly, Abecassis discloses that an identifier (video ID) identifies a descriptor (map) of the primary content (video).

68. Thus, Abecassis discloses claim element 1[b][ii].

e. Element 1[c]: Determining a Position in the Primary Content on the First Device

69. Element 1[c] recites “determining on the first client device a first position in the primary digital content.” Abecassis discloses this claim element.

70. Abecassis discloses that “an identification of [the] current play position may be performed by the primary screen device[.]” (EX-1020 (Abecassis) ¶[0115]; *see also id.* ¶¶[0259] (primary device determines “the time code of the current play position”), [0259] (similar “time code retrieval functionality” is available with “most software media players”), [0262] (when item notification routines have been activated, “the current play location within a video 1222 is identified” by the primary device to enable the display of notification information), [0114] (“second screen

device receiv[es] ... from the primary screen device an identification of a current play position of a video being played on the primary screen device”), Abstract (second screen device obtains “obtain[s] from the primary screen device an identification of a current play position of the video”).) Accordingly, Abecassis discloses that the first device (primary screen) determines a first position (e.g., current play position) in the primary digital content (e.g., video).

71. Thus, Abecassis discloses claim element 1[c].

f. Element 1[d][i]: Transferring the Identifier and Position from the First Device to a Second Device

72. Element 1[d][i] recites “transferring the identifier and first position from the first client device to a second client device.” Abecassis and Drieu each disclose and/or render obvious this claim element.

73. As I discuss above, Abecassis discloses that the primary device determines the identifier (video ID) and play position. (*See* ¶¶56-63, 69-71, above.)

74. Abecassis further discloses transferring the current play position from the first device to the second device. Specifically, Abecassis discloses that the second screen device obtains “current play position data of a video being played on a primary screen device (e.g., obtaining *from the primary screen device* an identification of a current play position of the video).” (EX-1020 (Abecassis), Abstract (emphasis added); *see also id.* ¶¶[0114] (“the second screen device receiving ... from

the primary screen device an identification of a current play position of a video being played on the primary screen device”), [0292] (system may provide “direct current play position identification”), claim 9 (second screen device receives, from a primary screen device, “an identification of a play position in a video playing on the primary screen device”).)

75. Transferring the video ID from the primary screen device to the secondary screen device would have been obvious to a person of ordinary skill in the art in view of Abecassis’s disclosure. Abecassis discloses that the second screen device downloads a video map using the video ID after obtaining the video ID. (EX-1020 (Abecassis) ¶¶[0260]-[0261], Fig. 12.) An obvious way for the second device to obtain the video ID is for the primary device to send the video ID to the second screen device, either directly or through an intermediate server.

76. Alternatively, this limitation would have been obvious in view of Drieu. Drieu discloses that a “content viewer on a first device can ... determine state information relating to an access state of” content presented on the first device. (EX-1021 (Drieu) ¶[0037].) The state information can include a video identifier (“media object identifier”) and play position (“playhead position”). (*Id.* ¶¶[0030], [0037]-[0038]; *see also id.*, Abstract, ¶[0004], claims 1, 11, 17, 27, 33, 43; *see* ¶¶56-63, 69-71, above.) Drieu teaches that this identifier (as included in the state information) and play position is transmitted to the second device. (*Id.*; *id.* ¶[0024].)

77. A person of ordinary skill in the art would have been motivated to modify Abecassis to incorporate this teaching of Drieu for several reasons.

78. First, the references suggest doing so. Abecassis discloses transferring the play position from the first device to the second device, as I have discussed. Abecassis also discloses that the second device uses the “video ID” to identify and then synchronously display content with the first device. (EX-1020 (Abecassis) ¶¶[0258], [0261], Abstract.) Drieu provides additional details as to how the second device acquires the video ID: the first device determines a media object identifier for the content and then transfers that identifier to the second device. (EX-1021 (Drieu) ¶¶[0030], [0037]-[0038].) Drieu uses its method to obtain the same goal as Abecassis. (*Compare* EX-1021 (Drieu), Abstract (Drieu goal of “Media state synchronization”) *with* EX-1020 (Abecassis), Abstract (Abecassis goal of “synchronized” playing on two devices).) Drieu further teaches how to transmit the identifier from one device to another. (EX-1020 (Abecassis) ¶¶[0258], [0261]; EX-1021 (Drieu) ¶¶[0030], [0037]-[0038].) Thus, a person of ordinary skill implementing Abecassis’s method would have looked to other references, such as Drieu, for detailed teachings of how to transfer the identifier and play position. Drieu’s method of using the first device to determine and transfer the identifier and play position would efficiently allow two devices to synchronize content between each other and

ensure that the second device was correctly playing content that corresponded to the content on the first device.

79. Second, the combination represents nothing more than the simple addition of one known element (Drieu's transfer mechanism for video identifier and play position) to another known element (Abecassis's first and second devices) to obtain predictable results (enabling transfer of an identifier and play position from first device to second device). Third, the combination represents the use of a known technique (Drieu's transfer of identifier and play position) to improve a similar device and method (Abecassis's use of identifier and play position to display second screen content) in the same way. Fourth, the combination applies a known technique (Drieu's transfer of identifier and play position) to a known device and method (Abecassis's use of identifier and play position at second devices) that is ready for improvement and yields predictable results (second device obtaining identifier and play position via transfer from a first device that determined the identifier and position).

80. A person of ordinary skill would have had a reasonable expectation of success when making this combination because Abecassis already discloses using an identifier at two devices and Drieu teaches how to transmit this identifier from one device to another.

81. Thus, Abecassis and Drieu each disclose and/or render obvious claim element 1[d][i].

g. Element 1[d][ii]: The Transfer is Via a Network Accessible Library

82. Element 1[d][ii] recites that the transfer is “via a network accessible library.” Abecassis and Drieu each disclose and/or render obvious this claim element.

83. Abecassis discloses synchronizing devices through Wi-Fi networks “and/or remote servers.” (EX-1020 (Abecassis) ¶[0102].) A person of ordinary skill would have understood this disclosure to teach, or at least render obvious, transmitting the video ID and play position from the first device to the second device via a network accessible library. Network accessible libraries were a common way of transmitting information via the Internet; for example, in my work on scalable adaptive streaming of non-linear media, we developed techniques for collecting and distributing spatially organized images within a virtual environment via centralized, network accessible servers (i.e., libraries) that allowed clients to retrieve data most relevant to their position within the environment. More generally, supporting create, read, update, and delete operations (CRUD) to information stored on the Web via a stateless representation state transfer (REST) interface is a foundational technique for implementing a network accessible library of information that I have taught in my Web Programming course for over 20 years.

84. Alternatively, transferring the video ID and play position via a network accessible library would have been obvious in view of Drieu. Drieu teaches transferring an identifier and a play position between two devices. (See ¶¶72-81, above; EX-1021 (Drieu) ¶¶[0037]-[0038], [0005].)

85. Drieu further teaches that the transfer can occur via a network accessible library. For example, Drieu teaches a system including multiple clients connected to a server via a network. (EX-1021 (Drieu), Fig. 1, ¶¶[0020]-[0022], [0045].) The server provides content, such “as movies, television episodes, music, or presentations,” to clients. (*Id.* ¶¶[0028], [0020] (content includes movies), [0029] (content server and state information server can be the same).) Thus, Drieu’s server is a network-accessible library.

86. Drieu teaches that the transfer of a position and identifier between clients is via the network-accessible library server. (EX-1021 (Drieu) ¶¶[0024] (transfer of state information between client devices occurs via “server 130”), [0020] (server 130 is content server); *see also id.*, Abstract, ¶¶[0004], [0037]-[0038], claims 1, 11, 17, 27, 33, 43.)

87. As I discuss above, it would have been obvious to incorporate Drieu’s transfer of an identifier and position into the method of Abecassis. (See ¶¶72-81, above.) Because Drieu’s transfer is via a network accessible server, this combination

teaches “transferring the identifier and position from the first client device to a second client device via a network accessible library” as claimed in the ’266 patent.

88. A person of ordinary skill in the art would have been motivated to modify Abecassis to transfer the video ID (identifier) and play position (position) from the first device to a second device via a network accessible library, as taught by Drieu, for many reasons.

89. First, Abecassis suggests doing so because it explicitly contemplates synchronization of devices via “remote servers.” (EX-1020 (Abecassis) ¶[0102].) Using a network accessible library server as taught by Drieu would be advantageous because storing identifiers, play positions, and content on the same location would reduce complexity of the system and require fewer servers. Similarly, it would increase efficiency because a client would only need to communicate with a single server, as opposed to multiple servers for each of the identifiers, play positions, and content.

90. Second, the combination represents nothing more than the simple addition of one known element (transfer of identifier and position via a network accessible server, as taught by Drieu) to another known element (Abecassis’s method, in which the second device requires the identifier and position) to obtain predictable results (synchronization information transferred between devices via a network accessible server). Third, the combination represents the use of a known technique

(transferring synchronization information via a network accessible server) to improve a similar device and method (Abecassis's) in the same way (provide synchronization information to second device). Fourth, the combination applies a known technique (Drieu's identifier and position transfer via a network accessible server) to a known device and method (Abecassis's) that is ready for improvement and yields predictable results (second device obtaining identifier and play position from first device via a network accessible server).

91. Fifth, transferring the identifier via a server would allow the transfer to occur using a standard internet connection and would not require specialized hardware, such as Wi-Fi or Bluetooth transceivers. This would advantageously simplify the types of client devices that could use the system.

92. A person of ordinary skill would have had a reasonable expectation of success when making this combination because Abecassis already discloses synchronizing via servers and Drieu provides details about how that could be accomplished.

93. Thus, Abecassis and Drieu each disclose and/or render obvious claim element 1[d][ii].

h. Element 1[e]: Downloading the Descriptor from the Library to the Second Device

94. Element 1[e] recites “downloading the descriptor from the network accessible library to the second client device by using the identifier.” Abecassis and Drieu each disclose and/or render obvious this claim element.

95. As I discuss above, Abecassis’s video map is a descriptor. (See ¶¶64-68, above.) That video map may be “downloaded ... at a second screen device.” (EX-1020 (Abecassis) ¶[0260].)

96. Abecassis further discloses that the video ID is used to “determine if a map” is available for a user-selected video. (EX-1020 (Abecassis) ¶[0261], Fig. 12.) If not, “then the map is downloaded from a remote source.” (*Id.*; *see also id.* ¶[0289] (once video is identified, map may be “downloaded from a remote source”), Fig. 13.) Thus, Abecassis discloses that the second device downloads the video map using the identifier. Further, Abecassis discloses, or at least suggests, downloading this descriptor from the network accessible library because it discloses synchronizing devices through Wi-Fi networks “and/or remote servers.” (*Id.* ¶[0102].)

97. Alternatively, downloading the video map via the network accessible library would have been obvious in view of Drieu. Drieu teaches that its library server provides content, such as movies, as well as metadata about the content. (EX-1021 (Drieu) ¶¶[0020], [0029].) A person of ordinary skill would have

understood that the video map of Abecassis comprises metadata about the content. (EX-1020 (Abecassis) ¶¶[0067] (video map includes metadata such as “a descriptor” or “video synchronizing information”).)

98. A person of ordinary skill in the art would have been motivated to use the network library of Drieu, and would have reasonably expected success doing so, for the same reasons I discuss above. (See ¶¶82-93, above.) Moreover, Abecassis teaches that video maps are stored at a “video provider” that enables the “downloading of ... video content” via a network. (EX-1020 (Abecassis) ¶¶[0071]-[0072].) Thus, Abecassis teaches that video maps can be obtained at a server with video content, like the server of Drieu. Accordingly, combining Abecassis with Drieu would be merely be applying a known technique (Drieu’s video content server) to a known device and method (Abecassis’s video map source) that is ready for improvement and yields predictable results.

99. Thus, Abecassis and Drieu each disclose and/or render obvious claim element 1[e].

i. Element 1[f]: Rendering Secondary Content on the Second Device

100. Element 1[f] recites “rendering on the second client device at least a portion of secondary other digital content associated with the primary digital content by using the descriptor and the first position, wherein the secondary digital content

is ancillary to the primary digital content, and wherein the secondary digital content is rendered on the second client device simultaneously and in synchronization with the rendering of the primary digital content on the first client device.” Abecassis discloses this claim element.

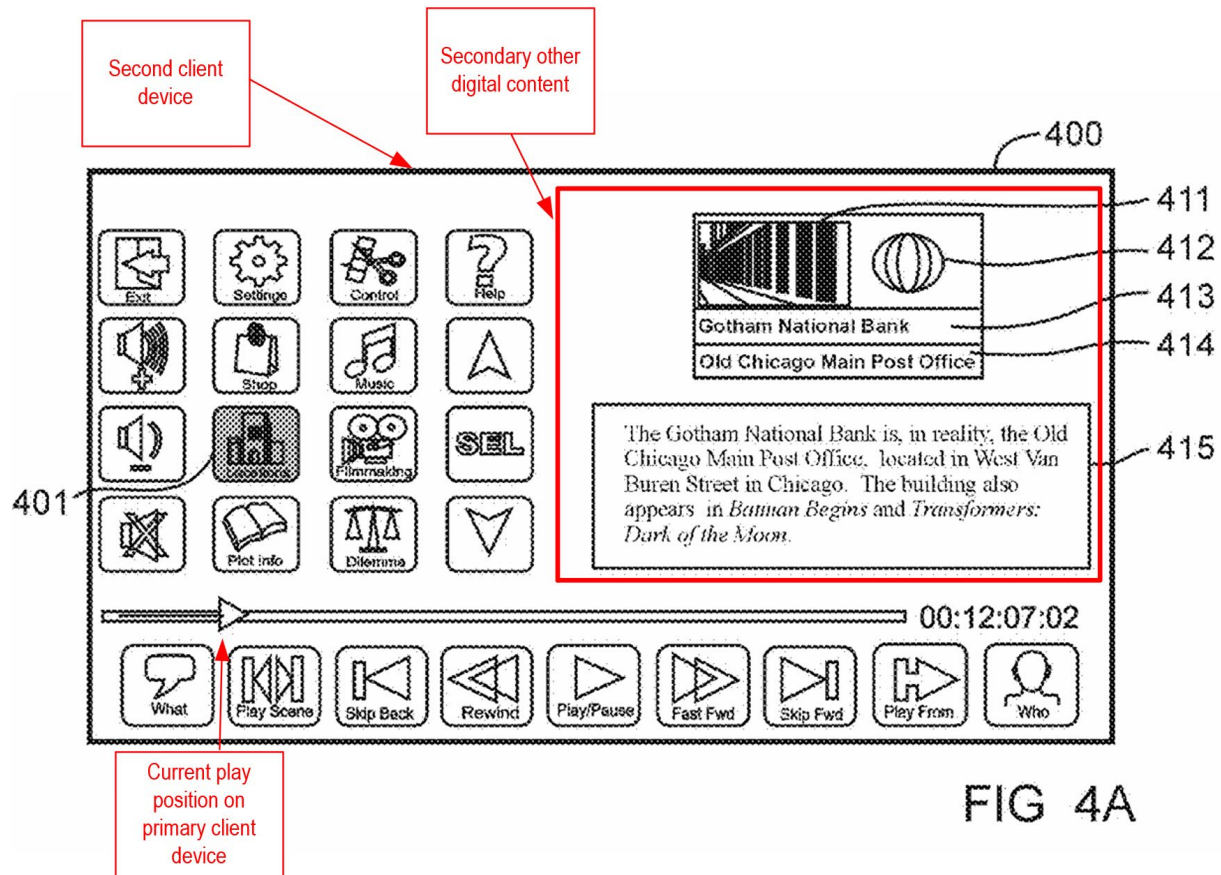
101. Abecassis discloses “displaying information on the second screen device synchronized with the contemporaneously played video on the primary screen device.” (EX-1020 (Abecassis), Abstract; *see also id.* ¶¶[0007] (second display used for “synchronized” display of subtitles), [0080] (use of second screen may be “simultaneous” and used “as part of the viewing of the content on a primary screen”), [0104], [0105] (system is “synchronized” to provide additional information on second screen “during playback of the movie” on primary screen), [0109] (“The synchronizing information enables the second screen to synchronize the display of subtitles to the video playback on the primary screen”), [0112] (subtitles on second screen synchronized to video on first screen), [0129] (identification information is continuously displayed on second screen “contemporaneously with the playing of the video” on primary screen), [0141] (disclosing second screen “synchronization to the playing of the video” on first screen), [0248] (supplemental information may be “automatically retrieved and displayed on the second screen as the video continues to be played on the primary screen”), [0257] (video playback on primary screen is

synchronized with information displayed on second screen), [0258], [0264], Fig. 12, claims 1-19.)

102. Abecassis further discloses that the secondary content is rendered using the descriptor (video map) and the first position (play position). (EX-1020 (Abecassis) ¶¶[0105] (secondary video content rendered using video map), [0114] (supplemental content such as subtitles rendered using “current play position”), [0115], [0129] (using the “current play position,” supplemental “Who” information may be displayed on second screen “contemporaneously” and in “strict synchronization” with the primary video being played on the primary screen), [0129] (“responsive to the current play position, the depicted noteworthy performers/characters are identified” on the second screen), [0141]-[0142] (locale information synchronized to primary video), [0193]-[0194] (display of item for purchase is based on “current play location”).)

103. For example, Abecassis teaches a “Locations function” that “identifies the locale being depicted” on a primary device and provides “relevant locale information and geographical maps.” (EX-1020 (Abecassis) ¶[0134].) Abecassis teaches that a second device uses the video map (e.g. a descriptor) to determine real-world information, such as images and descriptions, of a location depicted in a particular scene of a movie playing on a primary device, and then displays that information on

the second device. (*Id.* ¶¶[0135]-[0138].) The second screen display of location information is depicted in Figure 4A of Abecassis:



(*Id.*, Fig. 4A.)

104. Abecassis’s second screen content is “associated with” and “ancillary to” the original primary content. (EX-1020 (Abecassis) ¶¶[0114]-[0115] (subtitles), [0128]-[0131] (information about performers/characters), [0133]-[0140] (locale information), [0144]-[0149] (plot information), [0150]-[0155] (filmmaking information), [0156]-[0165] (dilemmas), [0166]-[0175] (trivia), [0190]-[0197] (shopping information).) Such information is “ancillary to the primary digital content” (the

video being played on the first device) at least because it can be selectively displayed (or not) without effecting playback of the video. (*Id.* ¶¶[0136]; *see also* EX-1001 ('266 patent), 11:54-56 (ancillary content includes “information, structures, and files used in the delivery of content not considered actual content”).) Indeed, Abecassis discloses the same types of ancillary content as the '266 patent, such as subtitle information or advertisements. (EX-1001 ('266 patent), Fig. 5c-e, 11:57-60; EX-1020 (Abecassis) ¶¶[0106]-[0116], [0190]-[0197].)

105. Accordingly, Abecassis discloses rendering on the second client device (second screen) at least a portion of secondary other digital content (e.g., subtitles, locale information, shopping information) associated with the primary digital content (video being played on primary screen) by using the descriptor (e.g., video map) and the first position (e.g., play position).

106. Thus, Abecassis discloses claim element 1[f].

j. Element 1[g]: Identifying a Range in the Primary Content as Content to Be Retained

107. The last four limitations of claim 1 relate to known methods of managing storage resources and, specifically, discarding content. For example, element 1[g] recites “identifying a range of content surrounding the first position in the primary digital content as content to be retained.” Barton discloses this claim element.

108. Barton discloses a mechanism for streaming content in which a “window” of content around the current play position is retained. (EX-1022 (Barton) ¶¶[0048]-[0049], [0059], claims 2, 23, 45, 68, 89, 110, 135.) Barton does so using a linear cache (“LC”), as shown in Figure 3:

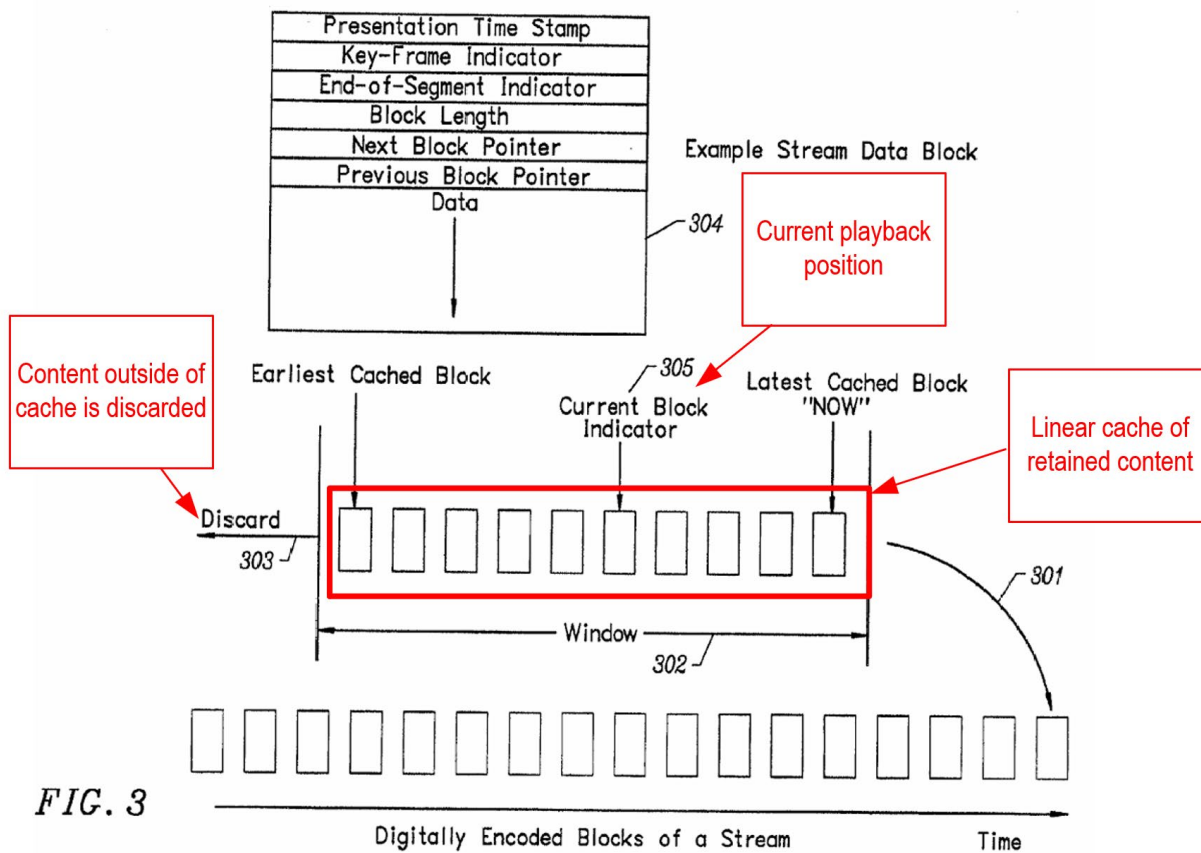


FIG. 3

(*Id.*, Fig. 3, ¶[0031].) The content includes “encoded digital blocks.” (*Id.* ¶[0048].) Thus, Barton’s LC identifies a range of content surrounding a first position in a primary digital content as content to be retained.

109. It would have been obvious in view of Barton to implement Abecassis (modified in view of Drieu, as I discuss above) such that streamed content is stored

within a linear cache that identifies a range of content surrounding a first position in a primary digital content as content to be retained.

110. A person of ordinary skill in the art would have been motivated to modify Abecassis to use the LC as taught in Barton for multiple reasons.

111. First, both Abecassis and Drieu—like Barton—implement streaming video to client devices. (EX-1020 (Abecassis) ¶¶[0072]; EX-1021 (Drieu) ¶¶[0005]; EX-1022 (Barton) ¶¶[0010].) Barton notes that storage of an entire digital video stream requires extensive storage space and is therefore undesirable. (EX-1022 (Barton) ¶¶[0010].) The LC of Barton provides “the illusion for the consumer that recent portions of the stream are stored locally.” (*Id.* ¶¶[0007].) This local storage enables desirable functionalities such as rewinding and fast-forwarding video. (*Id.*) Thus, a person of ordinary skill would have found it advantageous to use the system of Barton to store content.

112. Second, the combination represents nothing more than the simple addition of one known element (Barton’s LC for streaming video) to another known element (Abecassis and Drieu’s methods for streaming video to client devices) to obtain predictable results (reducing storage requirements for streaming video). Third, the combination represents the use of a known technique (Barton’s LC) to improve a similar device and method (Abecassis and Drieu’s streaming client devices) in the same way. Fourth, the combination applies a known technique (Barton’s LC) to a

known device and method (Abecassis and Drieu’s streaming client devices) that is ready for improvement and yields predictable results (reducing local storage requirements for streaming video).

113. A person of ordinary skill would have had a reasonable expectation of success when making this combination because both Abecassis teaches a system for streaming media content and Barton teaches a method for storing media content in such a system.

114. Thus, Barton discloses claim element 1[g].

k. Element 1[h]: Releasing Storage of All Other Portions of Primary Content

115. Element 1[h] recites “releasing storage resources allocated to all content of the primary digital content that is not identified as content to be retained on the first client device.” Barton discloses this claim element.

116. Barton teaches that the portion of the primary digital content that falls outside the LC window is discarded. (EX-1022 (Barton) ¶[0049], claims 3, 24, 46, 69, 90, 111, 136.) Discarding blocks from a cache releases storage resources allocated to those blocks.

117. Thus, Barton discloses claim element 1[h].

l. Elements 1[i]-1[j]: Identifying Content in the Secondary Content Related to the Range as

**Content to Be Retained and Releasing Storage
of All Other Portions of Secondary Content**

118. Elements 1[i] and 1[j] recite “identifying content in the secondary digital content that is related to the range of content surrounding the first position in the primary digital content as content to be retained” and “releasing storage resources allocated to all content of the secondary digital content that is not identified as content to be retained on the second client device.” These elements are similar to the preceding elements of claim 1, except that they relate to “content in the secondary digital content” that is “related to” the retained portion of primary content. Barton discloses these claim elements.

119. Abecassis teaches that supplemental content (e.g., secondary content) can be displayed on a second device simultaneously and in synchronization with primary content shown on a first device. (EX-1020 (Abecassis) ¶¶[0142]; see ¶¶100-106, above.) Abecassis teaches that supplemental content may be video content, such as a “video presentation” of a locale depicted in a video shown on a first device. (EX-1020 (Abecassis) ¶¶[0138], [0152], [0195].) Abecassis further teaches that secondary content may be retrieved from “remote locations” (e.g., streamed). (*Id.* ¶¶[0272].) Thus, it would have been obvious to incorporate the LC of Barton when streaming video on a second device, and a person of ordinary skill would have reasonably expected success doing so, for the same reasons I discuss above with respect

to a first device (e.g., to reduce storage requirements on the second device). (*See* ¶¶107-14, above.)

120. Additionally, a person of ordinary skill would have been further motivated to incorporate the LC of Barton to store secondary content because Abecassis teaches displaying the primary video content and the supplemental content synchronously. Thus, a person of ordinary skill would have been motivated to use the same system to store both portions of content to ensure that only the supplemental content intended to be played with the retained primary content was retained. Indeed, it was known in the art to remove related secondary content (e.g., bookmarks and related series information) when primary content is removed. (*See, e.g.*, EX-1035 (Weisman) ¶[0206] (if “a participant decides that the show is completely unsatisfying or has no further value, the participant can select the drop button ... the ability to resume the episode, related series, and access to any bookmarks [] is abandoned”).)

121. Abecassis further teaches that the supplemental video content relates to a current playback position on the first device. (EX-1020 (Abecassis) ¶¶[0008], [0114], [0129].) Thus, the supplemental video content stored in the LC would constitute “content in the secondary digital content that is related to the range of content surrounding the first position in the primary digital content” as claimed in the ’266 patent. Those portions of the supplemental video content stored in the LC would be “identif[ied] as ... as content to be retained.” Accordingly, a second device of

Abecassis, when implementing the LC of Barton, would “identify[] content in the secondary digital content that is related to the range of content surrounding the first position in the primary digital content as content to be retained” as also claimed in the ’266 patent.

122. Because the LC discards content that falls outside the retained window, a second device of Abecassis, when implementing the LC of Barton, would “re-lease[e] storage resources allocated to all content of the secondary digital content that is not identified as content to be retained on the second client device” as further claimed in the ’266 patent.

123. Thus, Barton discloses claim elements 1[i] and 1[j].

124. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 1 obvious as a whole.

2. Claim 2

a. Element 2[a]: Secondary Content Comprises a Series of Items

125. Claim 2 depends from claim 1. Element 2[a] further recites that “the secondary digital content comprises a series of items.” Abecassis discloses this claim element.

126. Abecassis teaches that supplemental content can include subtitles. (EX-1020 (Abecassis) ¶[0114].) Abecassis discloses that such subtitles are divided into portions, corresponding to a video’s audio dialogue. (*Id.* ¶[0060].) Thus,

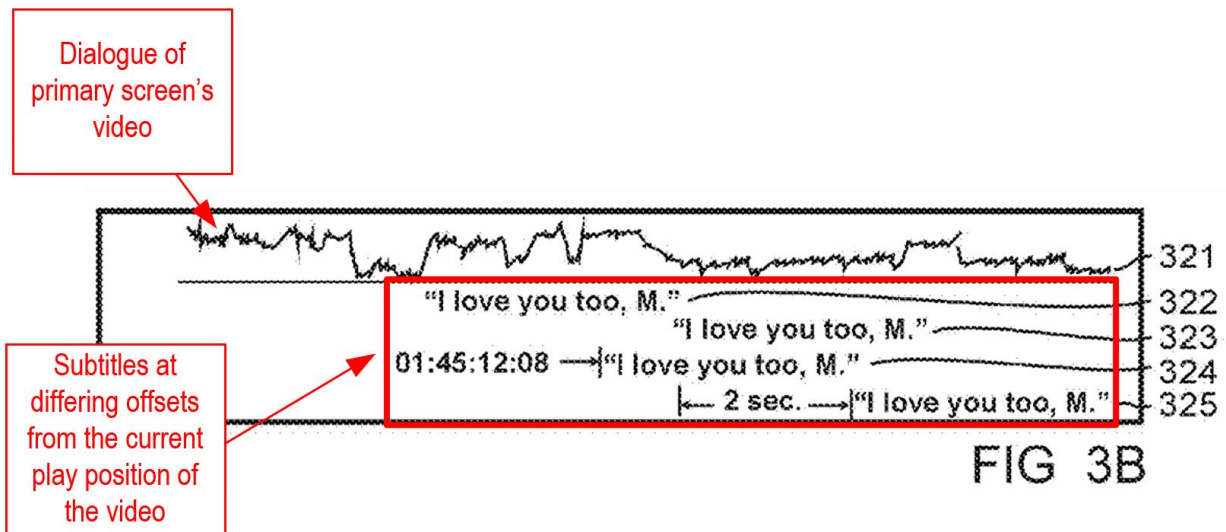
Abecassis discloses that the secondary content comprises a series (multiple portions) of items (e.g., subtitles). Abecassis similarly discloses displaying different information, locations, or items for sale (e.g., secondary content) based on the particular scene or frame of the primary content. (*Id.* ¶¶[0118]-[0119], [0135]-[0140], [0145]-[0147], [0176], [0191]-[0203].) Because each of these types of content consists of different items that are displayed as the primary content changes, a person of ordinary skill would have understood them to be a series of items.

127. Thus, Abecassis discloses claim element 2[a].

b. Element 2[b]: Determining on the Second Device an Item Associated with the First Position Using the Descriptor

128. Element 2[b] recites “determining on the second client device an item in the series of items that is associated with the first position in the primary digital content by using the descriptor.” Abecassis discloses this claim element.

129. Abecassis discloses a “What function” that enables a user to view subtitles for a currently playing video, optionally with an offset (to enable users to determine what was recently said in the video), as shown in Figure 3B:



(EX-1020 (Abecassis), Fig. 3B, ¶[0108].) The appropriate subtitles for a current play position are determined using the video map of Abecassis (e.g., a descriptor). (*Id.* ¶[0108] (“video map subtitle data is searched to identify the subtitle information” corresponding to the desired offset calculated based on “the current play position”).) Accordingly, Abecassis discloses determining on the second client device an item (e.g., subtitle) in the series of items (e.g., series of subtitles) that is associated with (corresponding to, but potentially offset from) the first position (current play position) in the primary digital content by using the descriptor (video map). Abecassis similarly discloses that its video map (e.g., descriptor) identifies the information, locations, or items for sale to display for a current play position. (*Id.* ¶¶[0084], [0103], [0135], [0139], [0145], [0147], [0206].)

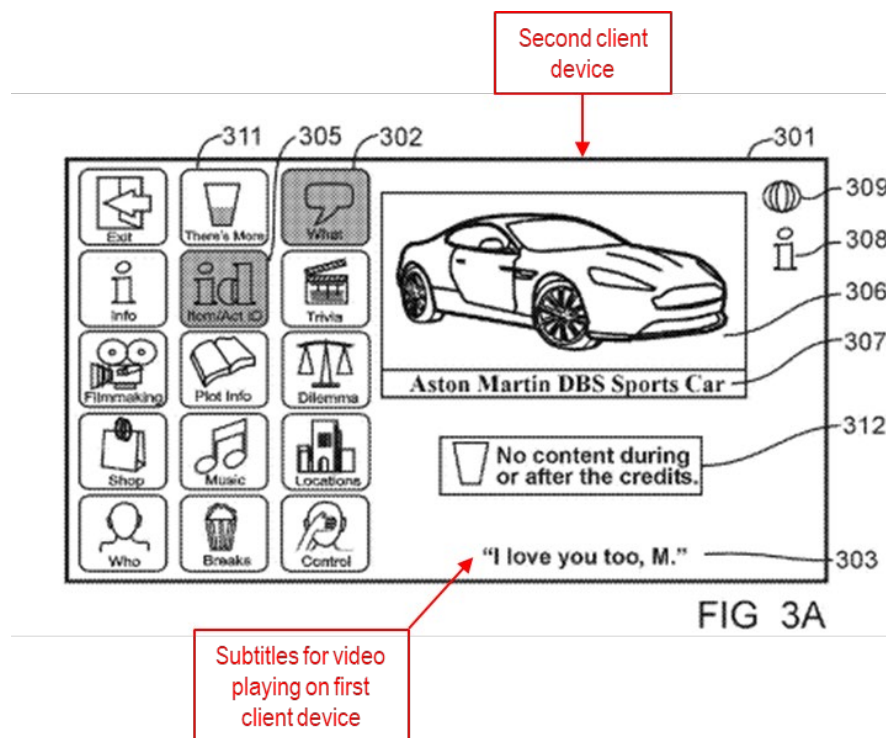
130. Thus, Abecassis discloses claim element 2[b].

c. Element 2[c]: Item Associated with the First Position Is Rendered on the Second Device

131. Element 2[c] recites that “the item associated with the first position is rendered on the second client device.” Abecassis discloses this claim element.

132. Abecassis discloses that, once appropriate subtitles are determined, the “subtitles are then displayed” on the second device. (EX-1020 (Abecassis) ¶[0108].)

This is shown in Figure 3A:



(*Id.*, Fig. 3A.)

133. Abecassis further discloses that its secondary device can display the information, locations, or items for sale for the particular scene or frame being played on its primary device in the same manner as it displays subtitles. (EX-1020

(Abecassis) ¶¶[0118]-[0119] (series of information and writeups about the items on the screen), [0145]-[0147], [0176], [0135]-[0140] (series of descriptions of the locations displayed on the screen), [0191]-[0203] (series of items for sale that are displayed on the screen).)

134. Thus, Abecassis discloses claim element 2[c].

135. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 2 obvious as a whole.

3. Claim 3

136. Claim 3 depends from claim 1 and further recites that “the first position is determined by tracking a current position in the primary digital content as the primary digital content is rendered on the first client device.” Abecassis discloses the additional claim element of claim 3.

137. Abecassis teaches a method for displaying second screen information in which a second device “obtain[s] synchronizing information (e.g., timing information such a current location time code) from the video as the video is played.” (EX-1020 (Abecassis) ¶¶[0258]-[0259].) As part of the method, “the play location” on the primary device “continue[s] to be monitored.” (*Id.* ¶¶[0262], [0193].) Accordingly, Abecassis discloses that the first position is determined by tracking (e.g., monitoring) a current position (e.g., play location) in the primary digital content as the primary digital content is rendered on the first client device.

138. Thus, Abecassis discloses the additional claim element of claim 3.

139. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 3 obvious as a whole.

4. Claim 4

140. Claim 4 depends from claim 1 and further recites that “the descriptor contains the secondary digital content, location information for accessing the secondary digital content, or a combination thereof.” Abecassis discloses the additional claim element of claim 4.

141. Abecassis discloses that the video map (descriptor) can include “information, data, linkages, and content” for performing the functions described in Abecassis. (EX-1020 (Abecassis) ¶[0067].) Thus, Abecassis teaches that the descriptor (video map) contains secondary digital content (e.g., maps or information).

142. Abecassis also discloses that the video map (descriptor) may link to associated secondary content. (EX-1020 (Abecassis) ¶¶[0139] (“a video map, associates, for example, a Google map link with a video location”), [0139] (providing “an example of Google map link ... showing the Old Chicago Main Post Office depicted in the motion picture *The Dark Knight*”), [0067] (a “video map’s data may comprise ... a linkage to an internal/external source of information/content”); *see also id.* ¶¶[0040], [0067], [0084], [0105], [0118], [0134]-[0135], [0139]-[0142] (linkage to location information), [0145] (linkage to plot information), [0149]

(same), [0155] (linkage to filmmaking information), [0157] (linkage to dilemma information), [0165] (same), [0167] (linkages to trivia information), [0173] (linkage to trivia information), [0176]-[0177] (linkage to information about item on screen), [0191] (linkages to shopping information).) Accordingly, Abecassis also discloses that the descriptor (e.g., video map) contains location information (e.g., a link) for accessing the secondary content.

143. Thus, Abecassis discloses the additional claim element of claim 4.

144. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 4 obvious as a whole.

5. Claim 5

145. Claim 5 depends from claim 4 and further recites that “the descriptor contains location information for accessing the secondary digital content” and that the method comprises “accessing the secondary digital content for rendering on the second client device by using the location information in the descriptor.” Abecassis discloses the additional claim elements of claim 5.

146. As I discuss above, Abecassis discloses that its video map can provide “linkages to secondary information.” (EX-1020 (Abecassis) ¶[0007]; *see* ¶¶140-44, above.) This linkage “enables retrieving and/or downloading data from a local/internal and/or a remote/external source.” (EX-1020 (Abecassis) ¶[0040]; *see also id.* ¶[0204].)

147. For example, as I discuss regarding claim 4 above, Abecassis discloses a descriptor that contains location information for accessing secondary digital content, e.g., a video map that includes a link to a map of a physical location depicted in primary content. (EX-1020 (Abecassis) ¶¶10139]; see ¶¶140-44, above.) Abecassis further teaches accessing the secondary content using that link and rendering it on the second device. For example, Figure 4B shows map data obtained by “parsing the data provided by the above Google map link” in a video map “and utilizing the Google Maps Javascript API” to retrieve and render the map data:

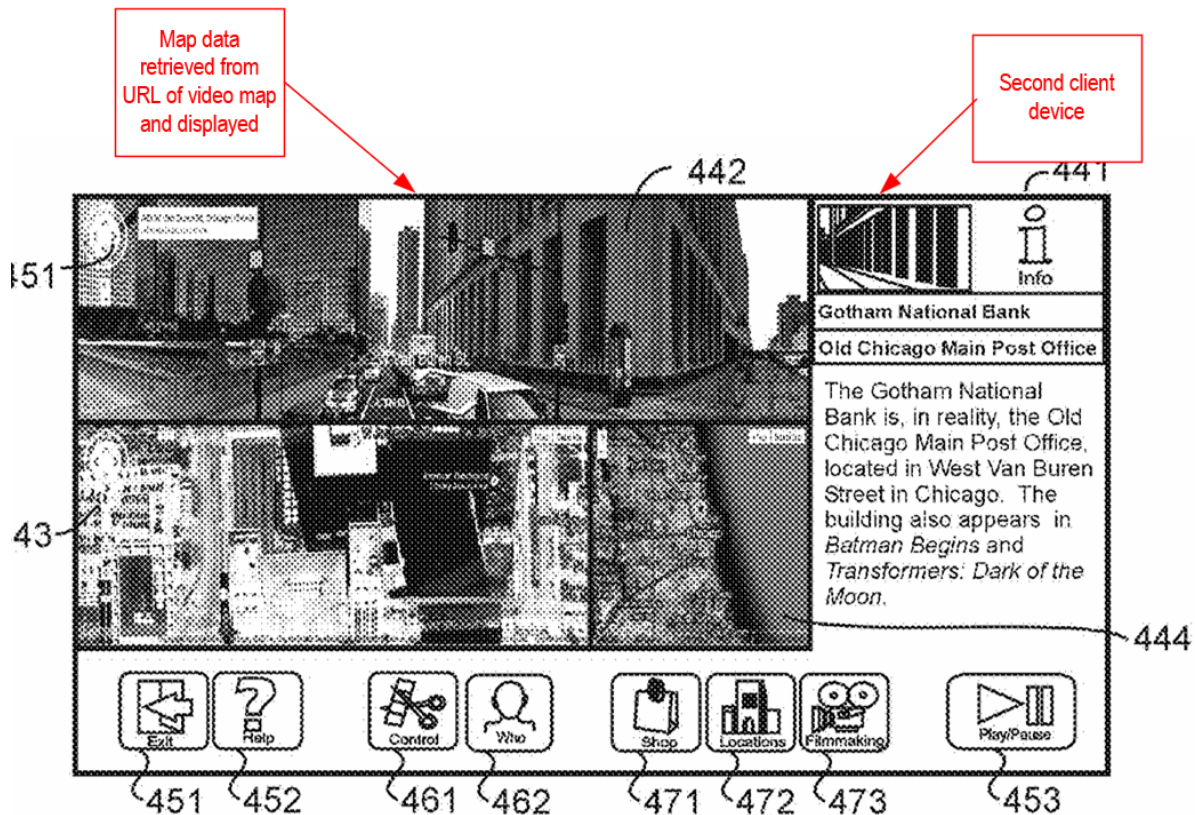


FIG 4B

(EX-1020 (Abecassis), Fig. 4B, ¶[0141].)

148. Thus, Abecassis discloses the additional claim element of claim 5.

149. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 5 obvious as a whole.

6. Claim 6

150. Claim 6 depends from claim 1 and further recites that “the secondary digital content is a different type of digital content than the primary digital content.” Abecassis discloses the additional claim element of claim 6.

151. Abecassis teaches that primary content is video, while supplemental content can be “a geographic map, a write-up, and an actual identity of a locale, each corresponding to a locale depicted in the playing of the video.” (EX-1020 (Abecassis) ¶[0141].) Each of these is supplemental content of a different type than a video. Abecassis further teaches other types of supplemental content, including subtitles, a list of performers, shopping information, plot points, ratings, and trivia information, each of which is of a different type than the video. (*Id.*, Abstract.)

152. Thus, Abecassis discloses the additional claim element of claim 6.

153. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 6 obvious as a whole.

7. Claim 7

154. Claim 7 depends from claim 1 and further recites that “the secondary digital content includes audio content, audio/video content, video content, text content, static image content, moving image content, user-entered content, advertising content, or a combination thereof.” Abecassis discloses the additional claim element of claim 7.

155. Abecassis teaches that supplemental content can include an image of a physical location depicted in a video or a video presentation of that location. (EX-1020 (Abecassis) ¶[0138].) The supplemental content can also be advertising content including “an image or video of the item” shown on the screen, or “textual identification” of the item. (*Id.* ¶[0195].) Abecassis’s supplemental content can also be “a playable video from behind the scenes, production photos and other pictorial material, playable audio track from the director’s commentary” or “a multimedia presentation including video and audio.” (*Id.* ¶[0152]; *see also id.* ¶¶[0164], [0172] (table of inputs for trivia).)

156. Thus, Abecassis discloses the additional claim element of claim 7.

157. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 7 obvious as a whole.

8. Claim 8

158. Claim 8 depends from claim 1 and further recites that “the secondary digital content includes a plurality of different types of digital content.” Abecassis discloses the additional claim element of claim 8.

159. Abecassis teaches supplemental content can be “a geographic map, a write-up, and an actual identity of a locale, each corresponding to a locale depicted in the playing of the video.” (EX-1020 (Abecassis) ¶[0141].) Abecassis further teaches multiple types of supplemental content, including subtitles, a list of performers, shopping information, plot points, ratings, and trivia information, each of which is of a different type. (*Id.*, Abstract.)

160. Thus, Abecassis discloses the additional claim element of claim 8.

161. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 8 obvious as a whole.

9. Claim 9

162. Claim 9 depends from claim 8 and further recites “selecting one or more of the different types of digital content for rendering on the second client device.” Abecassis discloses the additional claim element of claim 9.

163. Abecassis in Figure 2 teaches an interface enabling selection of different types of secondary digital content:

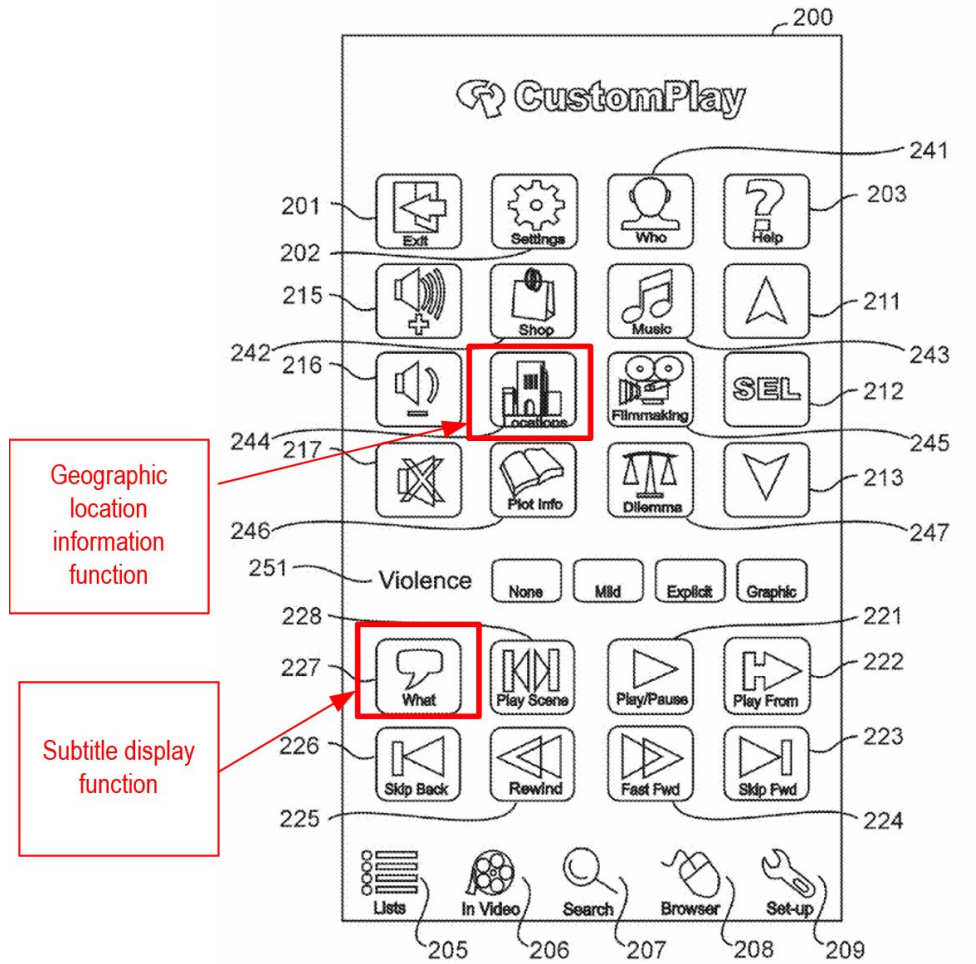


FIG 2

(EX-1020 (Abecassis), Fig. 2, ¶¶[0095], [0011], [0098].)

164. Selection of an input displays the corresponding content, as shown, e.g., in Figure 4A:

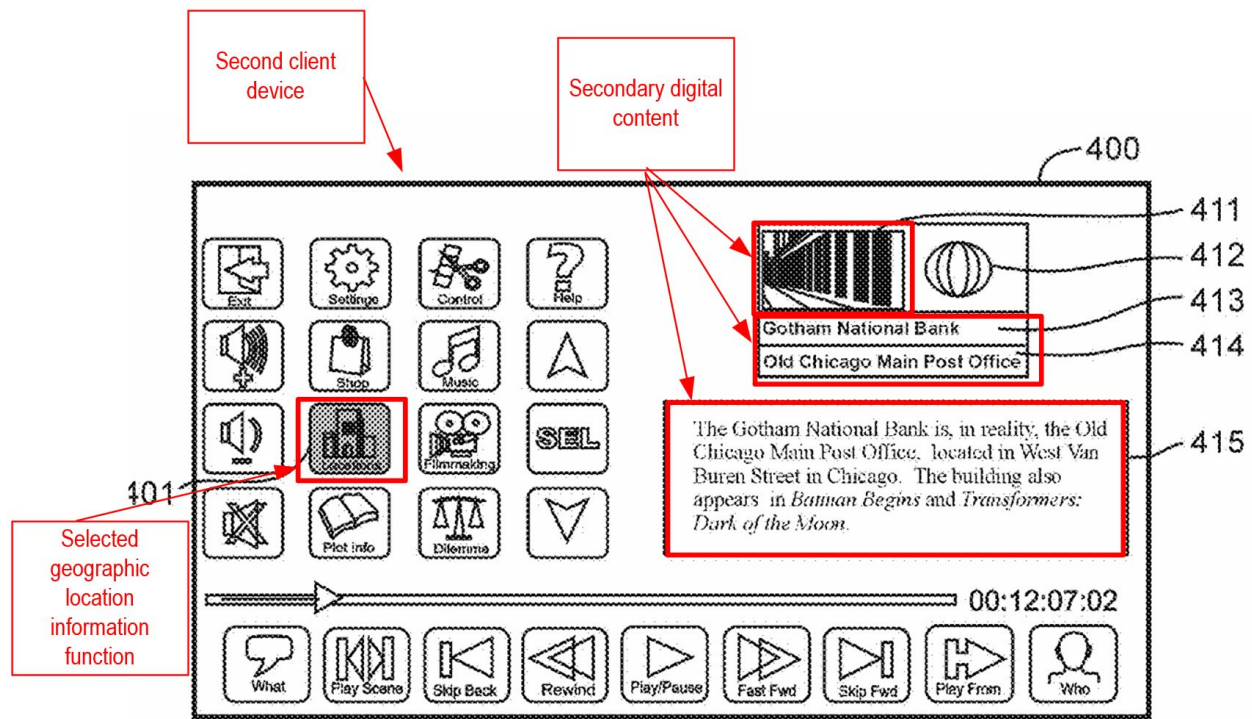


FIG 4A

(EX-1020 (Abecassis), Fig. 4A.)

165. Thus, Abecassis discloses the additional claim element of claim 9.

166. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 9 obvious as a whole.

10. Claim 12

167. Claim 12 depends from claim 1 and further recites that “the first client device and the second client device have different rendering capabilities.” Abecassis discloses the additional claim element of claim 12.

168. Abecassis teaches a system including at least two devices. (EX-1020 (Abecassis) ¶[0075].) These devices can be “televisions, personal computers, laptop

and portable computers, tablets, smartphones, and mobile devices, remote control devices, and computing devices having a display screen.” (*Id.* ¶[0057]). A person of ordinary skill would have understood that these devices each have different rendering capabilities (e.g., screen size, screen resolution, audio output capabilities). For example, I have worked with devices that have different rendering capabilities, such as mobile devices, laptops, fixed function set-top boxes, and large-scale displays as components of distributed multimedia systems supported by generalized receiver-driven adaptation mechanisms.

169. Thus, Abecassis discloses the additional claim element of claim 12.

170. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 12 obvious as a whole.

11. Claim 13

171. Independent claim 13 recites substantially the same limitations as claim 1, but recites a system rather than a method. The system comprises “a first client device; a second client device; and a network accessible library accessible by the first and second client devices via a network.” As I discuss above, Abecassis, alone or with Drieu, discloses and renders obvious such a system. (*See* ¶¶53-55 (first client device), 72-81 (second client device), 82-93 (network accessible library), above.)

172. As a further example, Abecassis discloses a system including multiple client devices connected to video, data, and information providers via a network:

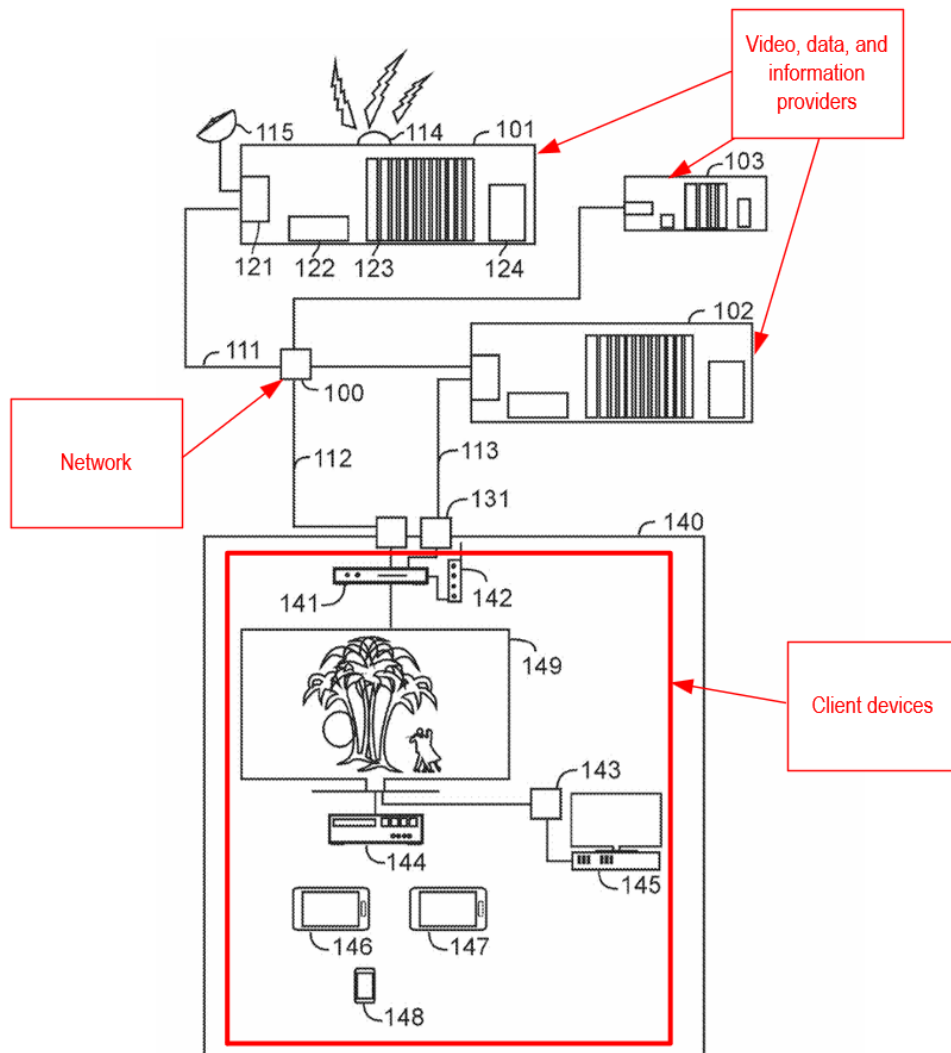


FIG 1

(EX-1020 (Abecassis), Fig. 1.) Abecassis teaches that the video providers enable downloading of video content, thus acting as a network-accessible library. (See EX-1020 ¶¶[0071]-[0072], [0010], [0085]-[0086].)

173. Alternatively, Drieu discloses such a system because it discloses multiple client devices that access a server acting as a network library, as I discuss above.

(See ¶¶82-93, above.) And, it would have been obvious to include these features in Abecassis for the reasons I discuss above. (*Id.*)

174. I have compared the elements in claim 13 to the elements in claim 1. As shown, the functional steps recited in claim 13 mirror the method steps recited in claim 1. The table below demonstrates how the elements correspond. As I discuss above for claim 1, Abecassis, Drieu, and Barton together disclose all the steps recited in claim 13. (See ¶¶49-124, above.)

	Claim 13		Claim 1
13[pre]	A system for <i>rendering digital content across multiple client devices</i> comprising:	1[pre]	A method of <i>rendering digital content across multiple client devices</i> comprising:
13[a]	a first client device;		
13[b]	a second client device; and		
13[c]	a network accessible library accessible by the first and second client devices via a network;		
13[d]	wherein the first client device is configured to:		
13[d][i]	<i>render at least a portion of primary digital content;</i>	1[a]	<i>rendering on a first client device at least a portion of primary digital content;</i>
13[d][ii]	<i>determine an identifier corresponding to the primary digital content, wherein the identifier identifies a descriptor of the primary digital content;</i>	1[b]	<i>determining on the first client device an identifier corresponding to the primary digital content, wherein the identifier identifies a descriptor of the primary content;</i>
13[d][iii]	<i>determine a first position in the primary digital content;</i>	1[c]	<i>determining on the first client device a first position in the primary digital content;</i>

13[d][iv]	<i>transfer the identifier and the first position to the second client device via the network accessible library;</i>	1[d]	<i>transferring the identifier and the first position from the first client device to a second client device via a network accessible library;</i>
13[d][v]	<i>identify a range of content surrounding the first position in the primary digital content as content to be retained; and</i>	1[g]	<i>identifying a range of content surrounding the first position in the primary digital content as content to be retained;</i>
13[d][vi]	<i>release storage resources allocated to all content of the primary digital content that is not identified as content to be retained on the first client device; and</i>	1[h]	<i>releasing storage resources allocated to all content of the primary digital content that is not identified as content to be retained on the first client device;</i>
13[e]	wherein the second client device is configured to:		
13[e][i]	<i>download the descriptor from the network accessible library by using the identifier;</i>	1[e]	<i>downloading the descriptor from the network accessible library to the second client device by using the identifier;</i>
13[e][ii]	<i>render at least a portion of secondary digital content associated with the primary digital content by using the descriptor and the first position, wherein the secondary digital content is ancillary to the primary digital content, and wherein the secondary digital content is rendered on the second client device simultaneously and in synchronization with the rendering of the primary digital content on the first client device;</i>	1[f]	<i>rendering on the second client device at least a portion of secondary other digital content associated with the primary digital content by using the descriptor and the first position, wherein the secondary digital content is ancillary to the primary digital content, and wherein the secondary digital content is rendered on the second client device simultaneously and in synchronization with the rendering of the primary digital content on the first client device;</i>
13[e][iii]	<i>identify content in the secondary digital content that is</i>	1[i]	<i>identifying content in the secondary digital content that is</i>

	<i>related to the range of content surrounding the first position in the primary digital content as content to be retained; and</i>		<i>related to the range of content surrounding the first position in the primary digital content as content to be retained; and</i>
13[e][iv]	<i>release storage resources allocated to all content of the secondary digital content that is not identified as content to be retained on the second client device.</i>	1[j]	<i>releasing storage resources allocated to all content of the secondary digital content that is not identified as content to be retained on the second client device.</i>

175. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, and Barton render claim 13 obvious as a whole.

B. Claims 10-12 Would Have Been Obvious in View of Abecassis, Drieu, Barton, and Walker.

176. As I discuss above, Abecassis, Drieu, and Barton disclose and/or render obvious each limitation of claims 1-9. (See ¶¶49-166, above.) For at least the reasons I discuss below, claims 10-12 would have been obvious in further view of Walker.

1. Claim 10

177. Claim 10 depends from claim 9 and further recites “wherein the one or more of the different types of digital content are selected in dependence on rendering capabilities of the second client device.” Abecassis and Walker each disclose the additional claim element of claim 10.

178. Abecassis discloses that its second screen devices can be “televisions, personal computers, laptop and portable computers, tablets, smartphones, and

mobile devices, remote control devices, and computing devices having a display screen.” (EX-1020 (Abecassis) ¶[0057]). Because such devices have different capabilities (e.g. screen size, audio output capabilities, high/low screen resolution), it would have been obvious to a person of ordinary skill in the art to select digital content to be sent to the second screen device based on the capabilities of the particular device. For example, a person of ordinary skill would have been motivated to select content based on the capabilities of the particular device to ensure that the device can play the selected content to the user. In my own work, I have dealt with adjusting content based on device capability as part of developing continuous media toolkits and generalized adaptation mechanisms to support client-driven on-demand transcoding and stream selection.

179. Alternatively, this limitation would have been obvious in view of Walker. Walker teaches a system for providing supplemental content in connection with a video. (EX-1023 (Walker) ¶[0027].) The system retrieves “supplemental content identifying data” identifying supplemental content for a video. (*Id.* ¶[0060].) The identifying data can be based on the rendering capabilities of a rendering device, such as “screen size, audio capabilities, video capabilities, 3D television support, [or] 4k television support.” (*Id.* ¶¶[0061], [0065]-[0066], [0027] (supplemental content “may be displayed on a separate device”).)

180. A person of ordinary skill in the art would have been motivated to modify the systems of Abecassis to incorporate the capability-dependent content selection of Walker for multiple reasons.

181. First, Abecassis expressly discloses a variety of different types of platforms on which content can be rendered. (EX-1020 (Abecassis) ¶¶[0090].) A person of ordinary skill would have understood in view of Walker that different platforms can have different rendering capabilities, such that some may not be able to render certain types of content. (EX-1023 (Walker) ¶¶[0061].) Incorporating the capability-dependent content selection of Walker would avoid presenting a user with content that their device cannot render.

182. Second, the combination represents nothing more than the simple addition of one known element (Walker's capability-dependent content selection) to another known element (Abecassis's supplemental content selection) to obtain predictable results (selecting supplemental content based on device capability). Third, the combination represents the use of a known technique (Walker's capability-dependent content selection for supplemental content) to improve a similar device and method (Abecassis's display of supplemental content) in the same way. Fourth, the combination applies a known technique (Walker's capability-dependent content selection) to a known device and method (Abecassis's second screen display) that is

ready for improvement and yields predictable results (selecting supplemental content based on device capability).

183. A person of ordinary skill would have had a reasonable expectation of success when making this combination because both Abecassis and Walker disclose similar devices for displaying video content. (EX-1020 ¶¶[0075]; EX-1023 ¶¶[0036].)

184. Thus, Abecassis and Walker each disclose the additional claim element of claim 10.

185. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, Barton, and Walker render claim 10 obvious as a whole.

2. Claim 11

186. I have compared claim 11’s additional claim elements to the elements of claims 7-10. The table below demonstrates how claim 11’s elements mirror those of claims 7-10. As I discuss above, Abecassis, Drieu, Barton, and Walker together disclose each of the additional limitations of claims 7-10, and thus of claim 11. (See ¶¶[154-166, 177-185, above].)

	Claim 11		Claims 7-10
11[pre]	The method of claim 8,		
11[a]	<i>wherein the secondary digital content includes at least two different types of digital content selected from among audio content, audio/video content, video content, text content, static image</i>	7[a]	<i>wherein the secondary digital content includes audio content, audio/video content, video content, text content, static image content, moving image content, user-entered</i>

	<i>content, moving image content, user-entered content, and advertising content,</i>		<i>content, advertising content, or a combination thereof.</i>
		8[a]	wherein the secondary digital content includes <u>a plurality of different types of digital content.</u>
11[b]	further comprising: <i>selecting one or more of the different types of digital content for rendering on the second client device <u>in dependence on rendering capabilities of the second client device.</u></i>	9[a]	further comprising: <i>selecting one or more of the different types of digital content for rendering on the second client device.</i>
		10[a]	wherein the one or more of the different types of digital content are selected <u>in dependence on rendering capabilities of the second client device.</u>

187. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, Barton, and Walker render claim 11 obvious as a whole.

3. Claim 12

188. Claim 12 depends from claim 1 and further recites that “the first client device and the second client device have different rendering capabilities.” As I discuss above, Abecassis discloses this additional element. (See ¶¶167-170, above.) The additional element of claim 12 also would have been obvious in further view of Walker.

189. As I discuss above, Abecassis teaches a system including at least two devices. (EX-1020 (Abecassis) ¶[0075]; see ¶¶72-81, above.) Walker teaches that different devices have different attributes, such as differing “resolution, screen size,

audio capabilities, video capabilities, 3D television support, 4k television support, scanning support (interlaced, progressive, and the like), brand, applications available, refresh rates, display settings, and the like.” (EX-1023 (Walker) ¶¶[0060].)

190. Thus, Abecassis and/or Walker disclose the additional claim element of claim 12. In particular, Abecassis and Walker together teach two client devices having different rendering capabilities.

191. Accordingly, for at least the reasons I discuss above, Abecassis, Drieu, Barton, and Walker render claim 12 obvious as a whole.

C. Claims 1-13 Would Have Been Obvious in View of McCue and Sharma.

192. For at least the reasons I discuss below, McCue and Sharma render claims 1-13 obvious. I identify below the portions of McCue that are most similar to the claim limitations of the '266 patent. Other than my opinions above regarding the '266 patent's priority date (*see* ¶¶43-47, above), I do not provide any opinion as to whether the '266 patent complies with the written description requirement for its own claims.

1. Claim 1

a. Preamble

193. The preamble of claim 1 recites a “method of rendering digital content across multiple client devices.” McCue and Sharma disclose such a method.

194. McCue discloses that a user can listen to “audio streams on more than one client device,” but discloses doing so sequentially rather than simultaneously. (EX-1024 (McCue) ¶¶[0010]-[0011]; *see also id.* ¶¶[0014], [0079], [0083], [0132] (user may switch from rendering text on a computer to audio on a cell phone), [0169] (bookmark allows user to start listening to an audio stream of an e-book from a bookmark created while reading the e-book).)

195. Sharma discloses rendering digital content across first and second devices simultaneously. (EX-1025 (Sharma), Abstract.)

196. Thus, McCue and/or Sharma disclose the preamble of claim 1.

b. Element 1[a]: Rendering Primary Content on a First Client Device

197. Element 1[a] recites “rendering on a first client device at least a portion of primary digital content.” McCue discloses this claim element.

198. McCue teaches a “client 150” including “a media player 156.” (EX-1024 (McCue) ¶¶[0063], [0073], *see also id.*, Abstract, ¶¶[0015]-[0016], [0065], claims 1, 24.) “As the media player advances through the audio stream, the small audio files are successively loaded and played until the end of the audio stream is reached.” (*Id.* ¶[0103].)

199. Thus, McCue discloses claim element 1[a].

c. Element 1[b]: Determining an Identifier Corresponding to the Primary Content on a

**First Client Device, Wherein the Identifier
Identifies a Descriptor**

200. Element 1[b] recites “determining on the first client device an identifier corresponding to the primary digital content, wherein the identifier identifies a descriptor of the primary content.” McCue discloses this claim element.

201. McCue discloses that the first client device may create a bookmark. (EX-1024 (McCue) ¶[0077] (bookmarks typically created by client software); *id.* (user may create a bookmark).) A bookmark “identifies and/or points to the virtual audio stream descriptor of the target audio stream (e.g., in a local directory or at some network address).” (*Id.* ¶[0076].) Thus, McCue discloses that, when a bookmark is created, the first client device determines an identifier (e.g., the pointer to the virtual audio stream descriptor or other item that “identifies ... the virtual audio stream descriptor”). (*Id.*; *see also id.* ¶[0087], Fig. 5c.) That identifier corresponds to the primary digital content (e.g., audio stream) and identifies a descriptor (e.g., the virtual audio stream descriptor). (*Id.*)

202. Thus, McCue discloses claim element 1[b].

**d. Element 1[c]: Determining a Position in the
Primary Content on the First Device**

203. Element 1[c] recites “determining on the first client device a first position in the primary digital content.” McCue discloses this claim element.

204. McCue teaches that the bookmark also identifies “a specific point in time in the audio stream that is offset from the beginning of that audio stream.” (EX-1024 (McCue) ¶[0076]; *see also id.* ¶¶[0077] (“bookmark identifies ... the time offset of the bookmarked position”), [0103] (as client plays the audio stream, “current position in the actual audio stream is tracked”), [0105] (bookmark identifies “the time offset of the bookmarked position”).) Accordingly, McCue discloses determining on the client device a first position (e.g., bookmarked position) in the primary digital content (e.g., audio stream).

205. Thus, McCue discloses claim element 1[c].

e. Element 1[d][i]: Transferring the Identifier and Position from the First Device to a Second Device

206. Element 1[d][i] recites “transferring the identifier and the first position from the first client device to a second client device.” McCue discloses this claim element.

207. McCue’s “bookmark can be transferred from client to client.” (EX-1024 (McCue) ¶[0079].) “For example, a user can bookmark an audio stream at an interesting point and e-mail that bookmark to friends.” (*Id.*; *see also id.* ¶¶[0014], [0079], [0083], [0132] (user may switch from rendering text on a computer to audio on a cell phone), [0169].) Because the bookmark contains the identifier and the first position as I discuss above (*see* ¶¶200-205, above), McCue discloses

transferring the identifier and first position from the first client device to a second client device.

208. Thus, McCue discloses claim element 1[d][i].

f. Element 1[d][ii]: The Transfer is Via a Network Accessible Library

209. Element 1[d][ii] recites that the transfer is “via a network accessible library.” McCue renders obvious this claim element.

210. McCue teaches that “the bookmark can be transferred from client to client or from server to client.” (EX-1024 (McCue) ¶[0079].) McCue further teaches “[i]nformation transfer from client to server.” (*Id.* ¶[0088].) The server and client are connected via a network. (*Id.* [0063].) McCue teaches “information structures and files that reside on one or more servers,” which information includes “Bookmark[s].” (*Id.* ¶¶[0088]-[0089], Table 1.) McCue teaches that servers may host “a library.” (*Id.* ¶[0067].)

211. Thus, McCue renders obvious claim element 1[d][ii].

g. Element 1[e]: Downloading the Descriptor from the Library to the Second Device

212. Element 1[e] recites “downloading the descriptor from the network accessible library to the second client device by using the identifier.” McCue renders obvious this claim element.

213. McCue discloses that the bookmark includes a pointer to the “virtual audio stream descriptor” (EX-1024 (McCue) ¶[0077]) and that the virtual audio stream descriptor may be “addressed from ... the bookmark” (*id.* ¶[0078]). (*See also id.* ¶¶[0087] (virtual audio stream descriptor is acquired from a server), [0067] (virtual audio stream descriptor stored in “library residing on one or more servers on the Internet”), [0100] (virtual audio stream descriptor is “downloaded”).) McCue discloses that a device may use a bookmark “to play the audio stream at the bookmarked position.” (*Id.* ¶[0079].) Accordingly, it would have been obvious to a person of ordinary skill in the art based on McCue’s disclosure that a second client device that had received a transferred bookmark would download the virtual audio stream descriptor from the network accessible library using the identifier (e.g., the pointer or other item in the bookmark that “identifies ... the virtual audio stream descriptor”) so that it could render content on the second client device.

214. Thus, McCue renders obvious claim element 1[e].

h. Element 1[f][i]: Rendering Secondary Content on the Second Device

215. Element 1[f][i] recites “rendering on the second client device at least a portion of secondary other digital content associated with the primary digital content by using the descriptor and the first position.” McCue discloses or renders obvious this claim element.

216. McCue discloses or renders obvious that, after the second client obtains the descriptor, the descriptor “provides the information needed to recreate a continuous media experience for the user from the discontinuous media streams in the plurality of media streams” stored on the server. (EX-1024 (McCue) ¶¶[0117]; *id.* ¶¶[0014], [0079], [0083], [0132], [0169].) By recreating the media experience, the client is rendering content (both the primary and secondary content). McCue further explains that the media streams can include an “audio stream” (e.g., primary content), as well as “eText, illustrations, graphics, video, figures, tables, and user generated content” (e.g., a portion of secondary other digital content). (*Id.* ¶¶[0115]-[0116].) The media streams can also include “advertising” (e.g., a portion of secondary other digital content). (*Id.* ¶[0116].) Accordingly, McCue discloses that the second device renders both primary and secondary content.

217. Thus, McCue discloses or renders obvious claim element 1[f][i].

i. Element 1[f][ii]: The Secondary Content Is Ancillary

218. Element 1[f][ii] recites that “the secondary digital content is ancillary to the primary digital content.” McCue discloses this claim element.

219. McCue teaches that the “virtual audio stream descriptor” can include “illustrations related to the audio stream, and/or internal advertising.” (EX-1024 (McCue) ¶[0066]; *see also id.* ¶[0112] (virtual audio stream descriptor is also a

“Virtual Media Descriptor”).) “Illustrations” are ancillary because they are “intended for use with and in support of the actual audio stream.” (*Id.*, Table 1.) “Advertisements” are ancillary because they are “portions of multimedia content intended to be used before, during, and after presentation of any audio stream.” (*Id.*, Table 1; *see also id.* ¶[0200] (descriptor identifies “ancillary content”).)

220. Thus, McCue discloses claim element 1[f][ii].

j. Element 1[f][iii]: The Secondary Content Is Rendered Simultaneously and in Synchronization Across Devices

221. Element 1[f][iii] recites that “the secondary digital content is rendered on the second client device simultaneously and in synchronization with the rendering of the primary digital content on the first client device.” McCue and Sharma render obvious this claim element.

222. McCue discloses that, when the user is streaming media based on the virtual media descriptor, the user “can have both the audio stream and the eText rendered simultaneously” *on the same device*. (EX-1024 (McCue) ¶[0198].) McCue does not disclose rendering secondary digital content on the second device “simultaneously and in synchronization with the rendering of the primary digital content on the first client device.”

223. Sharma teaches that “a user may control a second screen device 302 so that the user may consume second screen content in synchronization with primary

content that the user simultaneously consumes via a first screen device.” (EX-1025 (Sharma) ¶¶[0059]; *id.*, Abstract, ¶¶[0019], [0032].) To synchronize the devices, a synchronization manager sends a “synchronization signal” to the second screen device identifying “the portion or point in time” of the content on the first screen device. (*Id.* ¶¶[0082], [0067], [0005], [0046]-[0049], [0051]-[0053].) The second screen device then simultaneously displays the relevant second screen content based on this signal. (*Id.*) In view of Sharma, would have been obvious to a person of ordinary skill to modify McCue’s system to use a synchronization manager to allow McCue’s client devices to render content simultaneously and in synchronization across the devices, such as by incorporating the synchronization manager into McCue’s library server. Indeed, McCue’s library server, like the synchronization manager, already communicates with McCue’s client devices. (EX-1025 (Sharma), Fig. 5 (Sharma synchronization manager 542 is a server connected to client devices); *see* ¶¶206-208, above (McCue library server connects to client devices).)

224. A person of ordinary skill in the art would have been motivated to modify McCue’s system to incorporate simultaneous and synchronous output of content across devices as taught in Sharma for multiple reasons.

225. First, Sharma teaches that a second screen displaying content related to the primary screen content keeps users engaged, and that “there is a demand for taking second screen experiences further” by providing “supplemental content (e.g.,

second screen content) that is synchronized with the primary content.” (*Id.* ¶[0001].)

Incorporating simultaneous display across devices into McCue would thus increase engagement and meet consumer demand.

226. Second, the combination represents the addition of one known element (Sharma’s simultaneous and synchronous presentation across devices) to another known element (McCue’s synchronization on one device) to obtain predictable results (simultaneous and synchronous rendering of content across devices). Third, the combination represents the use of a known technique (simultaneous and synchronous presentation across devices) to improve a similar device and method (McCue’s) in the same way. Fourth, the combination applies a known technique (simultaneous and synchronous presentation across devices) to a known method (McCue’s) that is ready for improvement and yields predictable results (simultaneous and synchronous rendering of content across devices).

227. A person of ordinary skill in the art would have had a reasonable expectation of success when combining McCue and Sharma because both systems render content across multiple devices. (EX-1024 (McCue) ¶[0198]; EX-1025 (Sharma) ¶[0059].) Moreover, both systems rely on transferring the same type of information. (*See* ¶¶200-211, above (McCue transfers identifier corresponding to content and first position); EX-1025 (Sharma) ¶[0046] (Sharma transfers

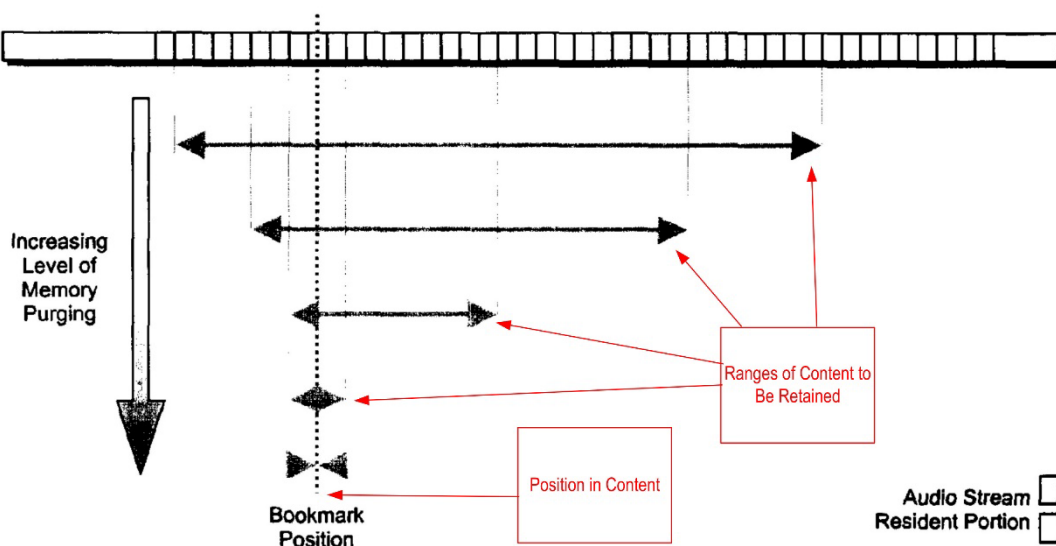
information identifying primary content and timing).) Both do so via a server. (See ¶¶206-214, above; EX-1025 (Sharma) ¶¶0005].)

228. Thus, McCue and Sharma together render obvious claim element 1[f][iii].

k. Element 1[g]: Identifying a Range in the Primary Content as Content to Be Retained

229. Element 1[g] recites “identifying a range of content surrounding the first position in the primary digital content as content to be retained.” McCue discloses this claim element.

230. McCue discloses the same “memory purge process” described in the ’266 patent. (EX-1024 (McCue) ¶¶0091].) McCue’s “purge process focuses on the bookmark position within the audio stream.” (*Id.* ¶¶0096].) Figure 13 shows various ranges of content to be retained:



(*Id.*, Fig. 13; *id.* ¶¶[0102]-[0103].)

231. Thus, McCue discloses claim element 1[g].

l. Element 1[h]: Releasing Storage of All Other Portions of Primary Content

232. Element 1[h] recites “releasing storage resources allocated to all content of the primary digital content that is not identified as content to be retained on the first client device.” McCue discloses this claim element.

233. McCue’s memory purge process “is used to remove volatile files to ensure that a requested level of free memory is made available.” (EX-1024 (McCue) ¶[0091]; *id.* ¶¶[0092], [0102]-[0103].) “Bookmarked audio streams are purged with increasing levels of severity until the memory demands are met.” (*Id.* ¶[0094].) By removing files, McCue’s system releases storage.

234. Thus, McCue discloses claim element 1[h].

m. Elements 1[i]-1[j]: Identifying Content in the Secondary Content Related to the Range as Content to Be Retained and Releasing Storage of All Other Portions of Secondary Content

235. Elements 1[i] and 1[j] recite “identifying content in the secondary digital content that is related to the range of content surrounding the first position in the primary digital content as content to be retained” and “releasing storage resources allocated to all content of the secondary digital content that is not identified as content to be retained on the second client device.” These elements are similar to the

preceding elements of claim 1, except that they relate to “content in the secondary digital content” that is “related to” the retained portion of primary content. McCue and Sharma together render obvious these claim elements.

236. McCue’s purging process can also remove secondary content. McCue teaches that “a user’s position within a text or audio stream can be determined” and “used to free up memory or resources should the need arise.” (EX-1024 (McCue) ¶¶[0196]; *id.* ¶¶[0091]-[0092].) “For example, the first 60 chapters of Moby Dick, both eText, audio, and ancillary content can be purged from a devices memory or storage when the user has advanced sufficiently beyond that content.” (*Id.* ¶[0196].) McCue discloses that this process can occur on its client devices generally. (*Id.* ¶¶[0196] (memory manger performs purging), [0074] (memory manager on client).) Thus, it would have been obvious that this process could occur on a second client device.

237. These claim elements would further have been obvious in view of Sharma’s disclosure that secondary content can be stored on a second client device, and thus would need to be purged from the second client device. (EX-1025 (Sharma) ¶[0032] (second screen content on second screen device).)

238. Thus, McCue and Sharma together render obvious claim elements 1[i] and 1[j].

239. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 1 obvious as a whole.

2. Claim 2

a. Element 2[a]: Secondary Content Comprises a Series of Items

240. Claim 2 depends from claim 1. Element 2[a] further recites that “the secondary digital content comprises a series of items.” McCue teaches “a series of independent images that represent illustrations of the e-Book” of an audio stream. (EX-1024 (McCue) ¶[0116]; *see also id.* ¶¶[0066], [0115] (“ancillary content” includes illustrations), [0119], [0139], [0176] (describing items of secondary content), [0200], Table 1.) McCue also discloses secondary content such as “graphics” (*id.* ¶¶[0155], [0117], claim 17), advertisements including images or videos (*id.*, Table 1, ¶¶[0066], [0070], claim 17), or notes, videos, and links (*id.* ¶[0117]). These are series of items. Thus, McCue renders obvious claim element 2[a].

b. Element 2[b]: Determining on the Second Device an Item Associated with the First Position Using the Descriptor

241. Element 2[b] recites “determining on the second client device an item in the series of items that is associated with the first position in the primary digital content by using the descriptor.” McCue teaches a “media stream” including illustrations of a given work, graphics, or advertising. (EX-1024 (McCue) ¶[0116]; *id.* ¶[0119].) McCue teaches that “bookmarks containing a time offset can be used to

access any media stream at will” because “the time offset associated with the bookmark is used with the Virtual Media Descriptor to position the media stream to the selected position.” (*Id.* ¶[0170]; *see also id.* ¶¶[0164]-[0165], [0173]-[0174].) McCue’s offsets are used to “access” content including “Illustrations” and “Advertising” in the media stream. (*Id.* ¶¶[0173]-[0174].) Thus, McCue renders obvious claim element 2[b].

c. Element 2[c]: Item Associated with the First Position Is Rendered on the Second Device

242. Element 2[c] recites that “the item associated with the first position is rendered on the second client device.” McCue discloses that the time offset information of a virtual media stream “is used to ... render the relevant content.” (EX-1024 (McCue) ¶[0200]; *see also id.* ¶¶[0173]-[0174].) McCue also discloses rendering an item (e.g., graphic, note, video, or link) from a series of items using time offsets in the descriptor. (*Id.* ¶[0177].) Thus, McCue renders obvious claim element 2[c].

243. Furthermore, it would have been obvious to render the items on the second device as taught by Sharma for the reasons I discuss above regarding claim 1. (*See* ¶¶221-228, above.)

244. Accordingly, for at least the reasons I discuss above, McCue and Sharma together render claim 2 obvious as a whole.

3. Claim 3

245. Claim 3 depends from claim 1 and further recites that “the first position is determined by tracking a current position in the primary digital content as the primary digital content is rendered on the first client device.” McCue discloses the additional claim element of claim 3.

246. McCue teaches that “[a]s the media player advances through the audio stream, ... [t]he current position in the actual audio stream is tracked.” (EX-1024 (McCue) ¶¶[0103]; *id.* ¶¶[0112]-[0113].) The device then creates a bookmark at the position. (*Id.* ¶[0105]; *id.* ¶¶[0019], [0077], claims 23, 27.)

247. Thus, McCue discloses the additional claim element of claim 3.

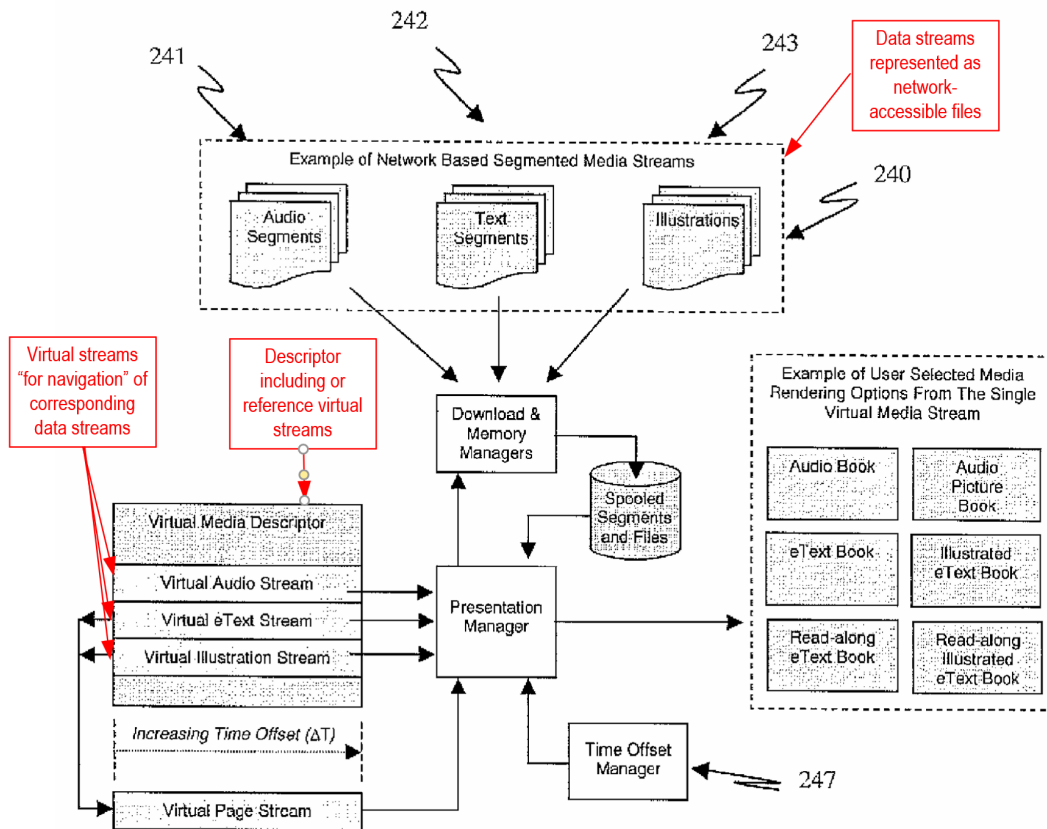
248. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 3 obvious as a whole.

4. Claim 4

249. Claim 4 depends from claim 1 and further recites that “the descriptor contains the secondary digital content, location information for accessing the secondary digital content, or a combination thereof.” McCue discloses the additional claim element of claim 4.

250. McCue teaches that a “Virtual Media Descriptor 224 typically includes or references a plurality of Virtual Media Streams 228,” for example, an illustration

stream. (EX-1024 (McCue) ¶[0117].) The illustration stream is stored as one or more network-accessible files. (*Id.* ¶[0124].)



(*Id.*, Fig. 24a.) These files are “downloaded” (e.g., accessed) to the client and “rendered on a media player via a presentation manager.” (*Id.* ¶[0124].) Because the illustrations are accessed from network accessible files using the illustration stream, the illustration stream is location information for those files. The descriptor can include “links to web addresses or web based content” (*id.* ¶[0177]), which is also location information for accessing secondary digital content.

251. Further, the virtual audio stream descriptor can include “internal media marks, illustrations related to the audio stream, and/or internal advertising.” (EX-1024 (McCue) ¶¶[0066]; *id.* ¶¶[0117].)

252. Thus, McCue discloses the additional claim element of claim 4.

253. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 4 obvious as a whole.

5. Claim 5

254. Claim 5 depends from claim 4 and further recites that “the descriptor contains location information for accessing the secondary digital content” and that the method comprises “accessing the secondary digital content for rendering on the second client device by using the location information in the descriptor.” As I discuss above for claim 4, McCue discloses or renders obvious that the descriptor contains location information for the secondary content and that the secondary content is “rendered on a media player via a presentation manager.” (EX-1024 (McCue) ¶¶[0124]; *see* ¶¶[249-253, above.]) McCue discloses that this media player can render content on first and second devices. (EX-1024 (McCue) ¶¶[0073].) As I discuss regarding claim 1, Sharma discloses rendering secondary content simultaneously on the second device. (*See* ¶¶[221-228, above.]) Thus, McCue and Sharma together render obvious the additional claim element of claim 5.

255. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 5 obvious as a whole.

6. Claims 6-7

256. Claim 6 depends from claim 1 and further recites that “the secondary digital content is a different type of digital content than the primary digital content.” Claim 7 depends from claim 1 and further recites that “the secondary digital content includes audio content, audio/video content, video content, text content, static image content, moving image content, user-entered content, advertising content, or a combination thereof.” McCue discloses the additional claim elements of claims 6 and 7.

257. As I discuss above, the “primary digital content” of McCue can be an audio stream. (*See* ¶¶197-199, above.) The secondary digital content can include “eText, illustrations, graphics, video, figures, tables, and user generated content.” (EX-1024 (McCue) ¶[0116]; *id.* ¶¶[0066], [0117], [0157]-[0158].)

258. Thus, McCue discloses the additional claim elements of claims 6 and 7.

259. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claims 6 and 7 obvious as a whole.

7. Claim 8

260. Claim 8 depends from claim 1 and further recites that “the secondary digital content includes a plurality of different types of digital content.” McCue discloses the additional claim element of claim 8.

261. McCue teaches that “eText or eText segments is/are rendered” whereby “each page is dynamically created” and “filled with appropriately formatted text and ancillary content” such as “illustrations and videos” (e.g., a plurality of different types of digital content). (Ex 1008 (McCue) ¶¶[0157]-[0158]; *id.* ¶[0177].) McCue’s secondary content can also comprise “graphic, image, video or audio/video portions of multimedia content. (*Id.*, Table 1.)

262. Thus, McCue discloses the additional claim element of claim 8.

263. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 8 obvious as a whole.

8. Claim 9

264. Claim 9 depends from claim 8 and further recites “selecting one or more of the different types of digital content for rendering on the second client device.” McCue and Sharma render obvious the additional claim element of claim 9.

265. McCue teaches that a user “can select any media rendering option available” for content, including rendering “as an audio book, as an eText book, a read-along book, an audio picture book, an illustrated eText book, or a read-along

illustrated eText book.” (EX-1024 (McCue) ¶¶[0124]; *id.* ¶¶[0015]-[0016], claims 1, 24.) As I discuss above, the illustrations of McCue are secondary digital content. (See ¶¶215-220, above.) Accordingly, user selection to render “an illustrated eText book” represents selection to render one of the different types of digital content (illustrations). As I discuss above (*see* ¶¶254-255, above), McCue discloses that this rendering can occur on a first or second client device.

266. Moreover, Sharma discloses that a user can “select second screen content” (secondary content) to download and view. (EX-1025 (Sharma) ¶¶[0033], [0063].) It would have been further obvious in view of Sharma to render the different types of digital content on the second client device for the reasons I discuss above regarding claim 1. (*See* ¶¶221-228, above.)

267. Thus, McCue and Sharma render obvious the additional claim element of claim 9.

268. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 9 obvious as a whole.

9. Claim 10

269. Claim 10 depends from claim 9 and further recites “wherein the one or more of the different types of digital content are selected in dependence on rendering capabilities of the second client device.” McCue renders obvious the additional claim element of claim 10.

270. McCue teaches a “plurality of media streams” including “eText.” (EX-1024 (McCue) ¶[0116].) McCue teaches this text can be rendered on multiple eReaders and that “it is possible for the first and second eReaders to use different formats (e.g., PDF and epub).” (*Id.* ¶[0199].) Thus, a person of ordinary skill would have found it obvious to adjust the eText to the format of the eReader that the eText is being sent to.

271. Thus, McCue renders obvious the additional claim element of claim 10.

272. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 10 obvious as a whole.

10. Claim 11

273. Claim 11’s elements mirror those of claims 7-10. (*See* ¶186, above.) As I discuss above, McCue and Sharma together disclose or render obvious each of the additional limitations of claims 7-10, and thus of claim 11. (*See* ¶¶256-272, above.)

11. Claim 12

274. Claim 12 depends from claim 1 and further recites that “the first client device and the second client device have different rendering capabilities.” McCue renders obvious the additional claim element of claim 12.

275. McCue teaches that “it is possible for the first and second eReaders to use different formats (e.g., PDF and epub)” and that “eBook formats and file types

continue to develop and change with time and since many platforms are available.” (EX-1024 (McCue) ¶[0199].) Thus, it would have been obvious that different clients could be different eReaders and therefore have different rendering capabilities.

276. Thus, McCue renders obvious the additional claim element of claim 12.

277. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 12 obvious as a whole.

12. Claim 13

278. Independent claim 13 recites substantially the same limitations as claim 1, but recites a system rather than a method. The system comprises “a first client device; a second client device; and a network accessible library accessible by the first and second client devices via a network.” McCue discloses such a system.

279. McCue teaches a system including “a server 100, a client 150, and a network ... for connecting the server 100 and the client 150.” (EX-1024 (McCue) ¶[0063]; *see also id.* ¶¶[0017], [0064], [0073], [0079].) The network-accessible server includes a “library.” (*Id.* ¶[0067]; *see also id.* ¶¶[0075], [0124] (content stored on “network accessible library”), [0141] (same), [0150] (same), [0187] (same).) McCue discloses multiple client devices. (*Id.* ¶¶[0010] (disclosing “more than one client device”), [0079] (“transfer[] from client to client”), [0083], [0112], claim 28.)

280. The functional steps recited in the remainder of claim 13 mirror the method steps recited in claim 1. (See ¶174, above.) As I discuss above for claim 1, McCue and Sharma together render obvious all the steps recited in claim 13. (See ¶¶193-239, above.)

281. Accordingly, for at least the reasons I discuss above, McCue and Sharma render claim 13 obvious as a whole.

D. Claims 10-12 Would Have Been Obvious in View of McCue, Sharma, and Walker.

282. As I discuss above, McCue and Sharma disclose or render obvious each limitation of claims 1-9. (See ¶¶193-268, above.) I also discuss above how Walker discloses and/or renders obvious each additional limitation of claims 10-12. (See ¶¶176-191, above.)

283. A person of ordinary skill in the art would have been motivated to modify McCue to incorporate Walker's teachings for multiple reasons.

284. First, McCue discloses multiple platforms on which content can be rendered. (EX-1024 (McCue) ¶[0132] (computer, cell phone).) Walker teaches that different platforms can have different rendering capabilities and that some may not be able to render certain types of content. (EX-1023 (Walker) ¶[0061].) Thus, sending content only to devices that can display that content as taught by Walker would avoid presenting a user with content their device cannot render.

285. Second, the combination represents the addition of one known element (Walker's capability-dependent content selection) to another known element (McCue's supplemental content selection) to obtain predictable results (selecting supplemental content based on device capability). Third, the combination represents using a known technique (Walker's capability-dependent content selection) to improve a similar device and method (McCue's display of supplemental content) in the same way. Fourth, the combination applies a known technique (Walker's capability-dependent content selection) to a known device and method (McCue's second device) that is ready for improvement and yields predictable results (selecting supplemental content based on device capability).

286. A person of ordinary skill would have reasonably expected success when making this combination because McCue and Walker disclose similar devices. (EX-1024 (McCue) ¶[0132]; EX-1023 (Walker) ¶[0036].)

287. Thus, McCue and Walker disclose and/or render obvious the additional claim elements of claims 10-12.

288. Accordingly, for at least the reasons I discuss above, McCue, Sharma, and Walker render claims 10-12 obvious as a whole.

VII. SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS

289. I am not aware of any secondary considerations of nonobviousness. If Patent Owner identifies any alleged evidence of secondary considerations in the future, I reserve the right to respond to that information.

VIII. CONCLUSION

290. For the foregoing reasons, it is my opinion that claims 1-13 of the '266 patent would have been obvious to a person of ordinary skill in the art at the time of the alleged invention in view of the prior art discussed above.

291. I reserve the right to supplement my opinions in the future to address or respond to any issues that the Patent Owner may raise, as well as new information including, but not limited to, any claim constructions advanced by the Patent Owner or adopted by the Board in the Institution Decision, and respond to any alleged secondary considerations as they become available to me.

Amazon.com, Inc. v. Audio Pod IP, LLC
Declaration of Ketan Mayer-Patel – U.S. Pat. No. 10,091,266

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on March 18, 2025

at Chapel Hill, NC.



Professor Ketan Mayer-Patel, Ph.D.