UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE, LLC.

Petitioner

v.

ART RESEARCH AND TECHNOLOGY LLC

(record) Patent Owner

IPR2025-01404
Patent No. 9,451,001

PETITION FOR INTER PARTES REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 ET. SEQ

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TABLE OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 9,451,001 ("**'001 patent**").
1002	Declaration of Henry Houh, Ph.D.
1003	C.V. of Henry Houh, Ph.D.
1004	U.S. Patent Publication 2008/0154908 A1 ("**Datar**").
1005	A Web-Enabled Video Indexing System ("**Zhou**").
1006	U.S. Patent No. 7,051,275 B2 ("**Gupta**").
1007	U.S. Patent Publication 2013/0145248 A1 ("**Friedlander**").
1008	U.S. Patent No. 8,706,685 B1 ("**Smith**").
1009	BilVideo-7: An MPEG-7-Compatible Video Indexing and Retrieval System ("**Bastan**").
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1013	U.S. Pat. App. Pub. 2009/0327856 A1 ("**Mouilleseaux**").
1014	U.S. Patent No. 9,697,230 B2 ("**'230 patent**").
1015	Claim Chart Exhibit attached to Complaint in *ART Research and Technology v. Google, LLC et al.*, Civ. Action No. 3:24-cv-04898 (N.D. Cal).
1016	Redline chart illustrating differences between claims.
1017	Declaration of June Ann Munford.
1018	U.S. Patent No. 7,801,910 B2 ("**'910 patent**").

1019	U.S. Patent No. 8,346,747 B2 ("**Liu**").
1020	U.S Patent No. 8,285,758 B1 ("**Bono**").
1021	U.S. Patent No. 8,276,096 B2 ("**Plow**").

Petitioner respectfully requests *inter partes* review under 35 U.S.C. § 311 of claims 1-21 of U.S. Pat. No. 9,451,001 ("the '001 patent").

NOTICE OF LEAD AND BACKUP COUNSEL

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NOTICE OF THE REAL-PARTIES-IN-INTEREST

The real-parties-in-interest for this petition are Google LLC ("Google")[1] and YouTube, LLC. YouTube, LLC is a subsidiary of Google.

NOTICE OF RELATED MATTERS

[1] Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

Petitioner is aware of the following matters that may affect, or be affected by, a decision in this proceeding.

The ’001 patent is asserted in *ART Research and Technology v. Google, LLC et al.*, Civ. Action No. 3:24-cv-04898 (N.D. Cal), filed August 8, 2024. In that case, Google (the Petitioner here) filed a motion to dismiss under FRCP 12(b)(6), alleging that all asserted patents claim ineligible subject matter under 35 U.S.C. § 101. The Court has not ruled on that motion or held an initial case management conference.

In addition, Petitioner is concurrently requesting *inter partes* review of the other three patents at issue in that litigation: U.S. Patent No. 10,084,840 (IPR2025-01403), U.S. Patent No. 10,681,103 (IPR2025-01405), and U.S. Patent No. 10,609,442 (IPR2025-01406). Each of these patents is related to the ’001 patent.

NOTICE OF SERVICE INFORMATION

Please address all correspondence to the lead counsel at the addresses shown above. Petitioner consents to electronic service by email at: smith@smithbaluch.com, laughton@smithbaluch.com, and baluch@smithbaluch.com.

GROUNDS FOR STANDING

Petitioner certifies that the ’001 patent is available for *IPR*, and that Petitioner is not barred or estopped from requesting an *IPR* on the present grounds.

STATEMENT OF PRECISE RELIEF REQUESTED

Petitioner respectfully requests that claims 1-21 of the '001 patent be canceled based on the following grounds:

Ground 1: Claims 1-4, 8-11, and 15-18 are obvious over Datar in view of Zhou further in view of Smith.

Ground 2: Claims 5-7, 12-14, and 19-21 are obvious over Datar, Zhou, and Smith, further in view of Gupta.

Ground 3: Claims 1-21 are obvious over Friedlander in view of Mouilleseaux.

THRESHOLD REQUIREMENT FOR INTER PARTES REVIEW

This petition presents "a reasonable likelihood that the Petitioners would prevail with respect to at least one of the claims challenged in the petition," 35 U.S.C. § 314(a), as shown in the Grounds below.

I. INTRODUCTION

The challenged claims represent nothing more than the use of prior art techniques for annotating, storing, and displaying playable media files, and claim no new technological solutions. (Ex-1001)(Ex-1002, ¶¶24-34). The '001 patent is directed to annotating playable media files, such as videos. (Ex-1001, 1:14-2:6) (*See also* Ex-1012). The '001 patent states that "Applicants[']algorithm 136, and its functions, can be accessed by users of Applicants' network 100 to create, share, edit, associate one or more annotations with, and/or associate one or more discussion

threads with, a Playable Media File." (Ex-1001, 5:45-48). Annotations "may be any known format and may include text, video, audio, pictures, or a combination thereof." (Ex-1001, 6:10-14, 6:6-34). According to the '001 patent, "[i]n certain embodiments Applicants' algorithm 136 further generates a table of contents of the annotations added to the Playable Media File . . . . For each new annotation added to the Playable Media File, Applicants' algorithm 136 updates the table of contents." (Ex-1001, 6:35-52)(Ex-1002, ¶¶24-34).

II. CLAIM CONSTRUCTION

Petitioner does not believe that the Board needs to construe the claims in order to apply the prior art herein. (Ex-1002, ¶11). Petitioner reserves the right to propose constructions or contend that the patent claims are indefinite in the co-pending litigation.

III. DETAILED EXPLANATION OF THE REASONS FOR UNPATENTABILITY

Ground 1. Claims 1-4, 8-11, and 15-18 are obvious over Datar in view of Zhou further in view of Smith

Claims 1-4, 8-11, and 15-18 are obvious under pre-AIA[2] 35 U.S.C. § 103(a)

[2] Because the prior art predates the filing of the first provisional application leading to the '001 patent, Petitioner does not address, at this point, whether the '001

over U.S. Pat. App. Pub. US 2008/0154908 A1 ("**Datar**")(Ex-1004) in view of "A Web-Enabled Video Indexing System" by Jian Zhou and Xiao-Ping Zhang ("**Zhou**")(Ex-1005) further in view of U.S. Pat. No. 8,706,685 B1 ("**Smith**")(Ex-1008)(Ex-1002, ¶37).

Datar is a U.S. patent application publication published on June 26, 2008. (Ex-1004)(Ex-1002, ¶38).

Zhou is a conference paper published in 2004. (Ex-1005). Zhou is a printed publication that was publicly accessible by the critical date: it has conventional markers of publication in 2004, it was catalogued and shelved in a library by at least 2005 (Ex-1017), and a PHOSITA could have located it with reasonable diligence (Ex-1002, ¶39)(*see also* Ex-1010, p. 2)(Examiner citation to Zhou for patent that issued on August 21, 2007).

Smith is a U.S. Patent that issued on April 22, 2014. (Ex-1008). The application leading to the issuance of the Smith patent was filed on October 29, 2008. (*Id.*)(Ex-1002, ¶40).

Datar and Zhou are prior art under pre-AIA 35 U.S.C. § 102(b). Smith is prior art under pre-AIA 35 U.S.C. § 102(e). (Ex-1002, ¶41).

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patent is entitled to the filing date of that application. Petitioner reserves the right to do so should Patent Owner assert an earlier date of invention.

Neither Datar nor Zhou nor Smith was cited during prosecution of any application leading to the '001 patent. (Ex-1002, ¶42).

A. Overview of the Ground

The challenged claims would have been obvious over the combination of Datar, Zhou, and Smith. (Ex-1002, ¶43). Datar discloses or renders obvious most of the elements of the challenged claims. Datar alone suggests the use of a table of contents for annotations, and its use would have been obvious in view of Zhou. Furthermore, to the extent that the claims require that the annotations be stored in the same file as the media content itself or combined together into the same file as the media content itself, it would be obvious to do so in view of Smith. (Ex-1002, ¶43).

1. Overview of Datar

Datar is directed to "[a] system and method for transferring **annotations** associated with a **media file**", which can be a video file. (Ex-1004, Abstract, ¶0020).[3] Datar's system is illustrated in Figure 1, reproduced below, which "shows a network connecting a community of video providers and consumers" and "illustrates [an] embodiment by which a plurality of users can exchange videos and annotations." (Ex-1004, ¶¶0009, 0020).

[3] Emphases added throughout unless indicated otherwise.

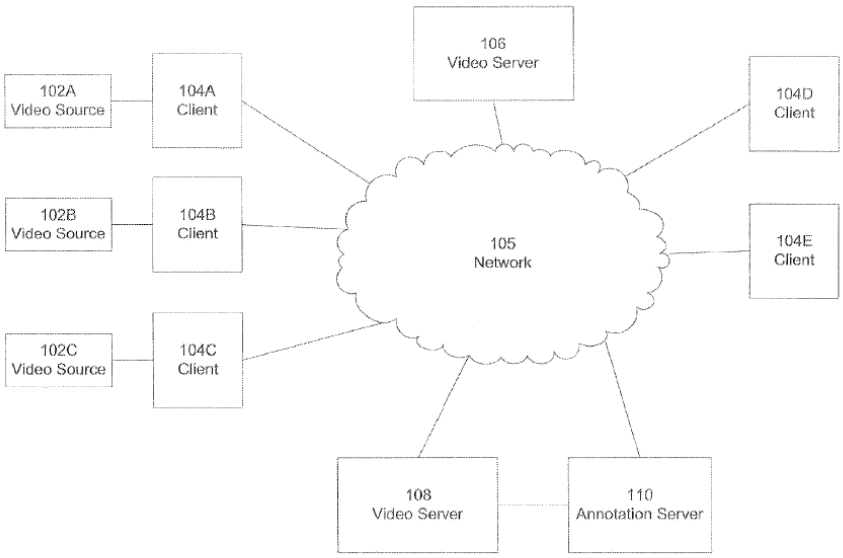


FIG. 1

(Ex-1004, Fig. 1)(Ex-1002, ¶44). "A user **views, authors, and edits annotations** using a client 104." (Ex-1004, ¶0021). Per Datar, "[a]n annotation is any data which can usefully supplement a media file." (*Id.*). In Datar's system, "[t]he clients 104 are connected to a network 105. The network 105 can be implemented as any electronic medium by which annotation content can be transferred. Through the network 105, the clients 104 can send and receive data from other clients 104." (Ex-1004, ¶0022)(Ex-1002, ¶44).

Datar's system has a "[a] video server 106 [that] stores a collection of videos on an electronic medium. Responsive to a request by a client 104 for a particular video (or a set of videos matching certain criteria), the video server 106 transfers a video over the network 105 to the client 104." (Ex-1004, ¶¶0023, 0025, 0027).

Datar's system also has an "[a]nnotation server 110 [] connected to the network 105" which "stores annotations on an electronic medium." (Ex-1004, ¶0026)(Ex-1002, ¶45).

Users can **submit** annotations to and **receive** annotations from Datar's system. Figure 7(b), reproduced below, illustrates an interface through which a user can **submit** a new annotation:

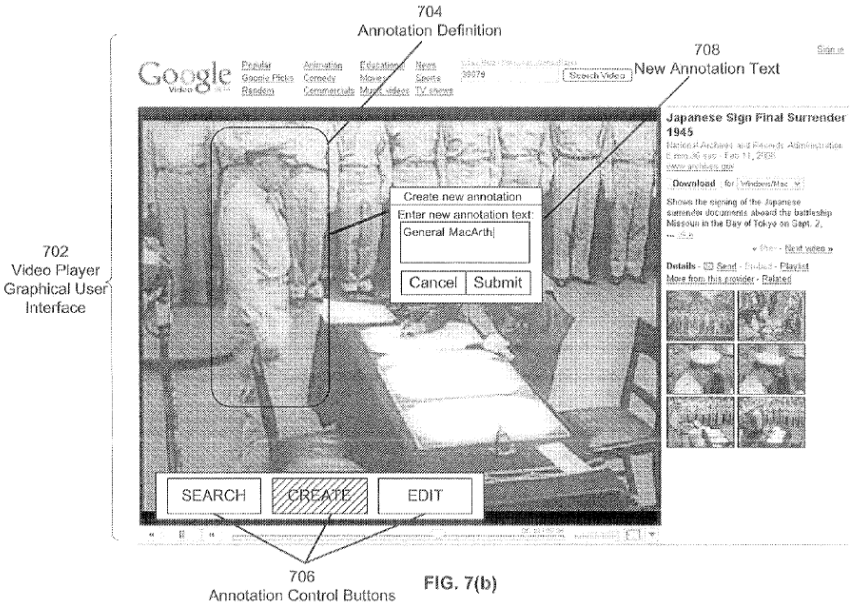


FIG. 7(b)

(Ex-1004, Fig. 7b, ¶¶0025-0026, Figs. 4-7, ¶¶0075-0089)(Ex-1002, ¶46).

When a user creates an annotation, Datar's system "transmits the new annotation to the annotation server 110 for storage." (Ex-1004, ¶¶0074, 0005, 0014, 0026, 0035, 0047, 0049, 0059, 0072, 0074-0080, 0087-0089, 0100, Fig. 5, claim 18). The annotation is "associated with a media file" which can be, e.g., video. (Ex-1004, ¶¶0026, 0030-0035, 0040, 0047-0050, 0061-0062, Fig. 2, claims 1, 18, 30). Datar

teaches that the "annotation server 110 stores annotations **indexed** to instances of one or more media files or portions thereof" and that annotations can be stored "**indexed** to a canonical instance of video." (Ex-1004, ¶¶0059, 0058-0063, 0068-0069, 0072, 0026, 0087, 0045, 0048, Fig. 5, Fig. 4a). As an alternative, "annotations are stored **indexed** to features of the instance of video used by the client that submitted that annotation." (Ex-1004, ¶¶0088, 0087, 0047-0048, 0069, 0072, 0074)(Ex-1002, ¶¶47-48).

2. Overview of Zhou

Zhou describes a "web-enabled **video indexing** system." (Ex-1005). Zhou specifically presents a system based on "Synchronized Multimedia Integration Language (SMIL)" and which can be used to browse, interact with, and synchronize video content. (Ex-1005, 307-308). Zhou explains that "SMIL and HTML are used to describe the structures of video content including shot boundaries, video format, frame rate and other cinematic information." (Ex-1005, 308). "**For each video file**, the system generates a **table-of-contents indexing file**" "which can be used for previewing and browsing video content online." (Ex-1005, 307, 308). Zhou explains: "The table-of-contents web-enabled indexing file generated by the tool is shown in Figure 9. Web users can browse and preview the video segments, and jump to a specified location from frame-level." (Ex-1005, 313, 314, Fig. 9). Further, Zhou explains that "keywords and conceptual attributes can be embedded in the

SMIL-based indexing file that could be used by existing text-based search engines to realize video web search request[s]." (Ex-1005, 313)(Ex-1002, ¶49).

3. Overview of Smith

Smith teaches a system which is very similar to that of Datar and Gupta. (Ex-1002, ¶50). Smith teaches a system for "organizing collaborative annotations" where a "plurality of annotations is stored at an annotations database coupled to the server system" and the system can "provide an online service 114 that can receive and distribute annotations as well as the digital items to which the annotations pertain." (Ex-1008, Abstract, 3:3-7, 3:28-52, 5:23-27, 9:38-57). Smith teaches that digital items can be, e.g., "video content" and "movies." (Ex-1008, 4:61-5:8, 3:28-53, 4:31-36). Smith teaches that its "server system 102 may send all of the data related to the content of the digital item to the client device 104 to be downloaded and stored in memory of the client device 104. Annotations associated with the digital item may also be provided to the client device 104 by the server system 102 for each portion of the digital item sent to the client device 104." (Ex-1008, 4:5-11). Smith teaches that the annotations may be stored in a variety of different ways:

> "Annotations may be stored in an annotation file separate from a corresponding digital item, **embedded in a data file of the digital item**, or otherwise associated with the digital item. **Storing an annotation in association with a digital item may be accomplished in any suitable manner**, including simply storing the annotation in the annotations database 112 with an indication of the

digital item to which the annotation pertains."

(Ex-1008, 5:1-8). As can be seen above, Smith teaches that one option for configuring the system is for the annotation to be "embedded in a data file of the digital item." (*Id.*)(Ex-1002, ¶51).

B. Rationale (Motivation) Supporting Obviousness

Datar alone suggests the use of a table of contents to store information regarding annotations and their locations in a playable media file, and it would have been obvious to use a table of contents in this manner in view of Zhou. (Ex-1002, ¶52).

Datar teaches that annotations are stored "indexed to a canonical instance of video in an annotation server." (Ex-1004, ¶¶0058-0063, 0068-0069, 0072, 0026, 0087, 0045, 0048, Fig. 5, Fig. 4a). As an alternative, "annotations are stored indexed to features of the instance of video used by the client that submitted that annotation." (Ex-1004, ¶¶0088, 0087, 0047, 0048, 0069, 0072, 0074). Datar does not discuss the specifics of this indexing, suggesting that the precise details of its implementation are well within the skill of the PHOSITA. (Ex-1002, ¶53). A PHOSITA would already appreciate that Datar's reference to indexing refers to correlating annotations to times or frames in a video in a table or database structure, thus already suggesting the use of a table of contents to organize annotations. (*See* Ex-1004, ¶¶0030-0035, 0040, Fig. 2)(storing "annotation list" at client using a table)(*See also, e.g.*, Ex-1009,

66)(Ex-1002, ¶53).

Zhou describes a "web-enabled **video indexing** system." (Ex-1005). Zhou explains that "[f]or each video file, the system generates a **table-of-contents indexing file**" "which can be used for previewing and browsing video content online." (Ex-1005, 307, 308). Zhou explains: "The table-of-contents web-enabled indexing file generated by the tool is shown in Figure 9. Web users can browse and preview the video segments, and jump to a specified location from frame-level." (Ex-1005, 313, 314, Fig. 9)(*compare* Ex-1004, ¶¶0074-0078). Further, Zhou explains that "keywords and conceptual attributes can be embedded in the SMIL-based indexing file that could be used by existing text-based search engines to realize video web search request." (Ex-1005, 313)(Ex-1002, ¶54). Zhou thus expressly teaches that the function of "indexing" "keywords and conceptual attributes" which are annotations to video content (the same concept taught by Datar) can be carried out with a "table-of-contents indexing file". (Ex-1005, 307, 308)(Ex-1004, ¶0021)(Per Datar, "[a]n annotation is any data which can usefully supplement a media file.")(Ex-1002, ¶54).

A PHOSITA would have been motivated to create and use a "table of contents indexing file" "for each video file" such as that described in Zhou, in order to index annotations to a canonical instance of the video at the annotation server, and thus implement Datar's teachings. (Ex-1004, ¶¶0059, 0058-0063, 0068-0069, 0072,

0026, 0087, 0045, 0048, Fig. 5, Fig. 4a)(Ex-1002, ¶55). Datar explains that "[c]onsistent indexing of annotations supports sharing of annotations and allows for a collaborative community of annotation authors, editors, and consumers." (Ex-1004, ¶0006). It would have been obvious to use a table of contents to directly implement Datar's teachings that annotations should be "indexed" to a video, without limiting the means for doing so. (Ex-1004, ¶¶0035, 0026, 0069, 0072)(Ex-1002, ¶55). Using a table of contents to track the contents of annotations, including information regarding where or when they should be displayed in connection with a media file, is an obvious way to organize such information. (Ex-1002, ¶55). Indeed, a table of contents is one of the most common, straightforward, and familiar ways to organize information, and its use here represents nothing more than the predictable use of known prior art elements for their known purposes. *See KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 417-21 (2007).

It furthermore would have been obvious, based on Datar, to check whether an annotation is a first annotation, and if so, to **create** a table of contents ("TOC") at the time that a first annotation is submitted for the file. Specifically, a PHOSITA would have known that a TOC (e.g. a file or file metadata) needs to be created at some point. A TOC could either be created in advance (i.e., before there are any annotations for a file), or when a first annotation is submitted. A PHOSITA understood that a TOC is needed to store any annotation and thus it is first needed

when the first annotation is received, and not later. (Ex-1002, ¶¶56-58). And if the TOC is created again after the first annotation, the newly created TOC would either not contain all annotations, or would overwrite an already-existing file, which a PHOSITA would have wanted to avoid. A PHOSITA would also have understood that if the TOC file for storing annotations is created earlier than receiving the first annotation, the file might not be needed (because some videos will have no annotations at all). A PHOSITA would have therefore found it logical to create the TOC when it is needed because an annotation has been submitted for the file. (Ex-1002, ¶58).

It would thus have been obvious to check whether an annotation is a first annotation (which could be carried out in a variety of different ways, *e.g.* by checking to see if the annotation file exists), and if so, creating a TOC annotation file, and if not, placing the annotation in an already-existing TOC. (Ex-1002, ¶59). Indeed, Datar already teaches identifying "when the annotation is the first to be associated with a particular video." (Ex-1004, ¶0087). A PHOSITA would have been motivated to check whether an annotation is a first annotation to avoid overwriting an existing TOC, to avoid creating unnecessary files/data structures, and to keep the annotations together in a single TOC. The process of determining whether a file or data structure exists, and if so, storing an item in the pre-existing file, and if not, creating the file was well known in the patent and printed publication

prior art, as explained by Dr. Houh. (Ex-1002, ¶¶59-67)(*citing* Ex-1019, 1:50-2:46, 8:6-31, Fig. 2, claims 1-3; Ex-1020, 8:54-9:60, Fig. 16; Ex-1021, 9:41-10:12, 10:66-11:8, Fig. 5).

To the extent that the claims require that the annotations be stored or located in the same location as the media file itself or combined into the same file as the media file (referring to the term "**embedded"**), it would have been obvious to do so in view of Smith. (Ex-1002, ¶68). A PHOSITA would have been motivated to store, combine, and transfer annotations in the same file as the media file, as taught by Smith. (Ex-1002, ¶68).

Smith teaches, in the context of a system similar to those of Datar and Gupta, that annotations can be "embedded in a data file of the digital item" and that digital items can be, e.g., "video content" and "movies." (Ex-1008, 4:61-5:8, 3:28-53, 4:31-36). It would have been obvious to embed annotations in the media files of Datar such that the annotations are located in the same file as the media file. (Ex-1002, ¶69).

Smith teaches that there are multiple different options for storing annotations—the annotation can be "embedded in a data file of the digital item, or otherwise associated with the digital item" or it can be stored separately in an "annotations database." (Ex-1008, 5:1-8). Embedding the annotations in the video file of Datar thus represents nothing more than the predictable use of prior art

elements according to known methods to yield predictable results. (*See* Ex-1004, ¶0003)(Ex-1002, ¶70). *See KSR*, 550 U.S. at 417-21.

It would also have been advantageous to embed annotations in a video file in order to simplify the transfer and playback of certain videos, particularly where the video is comparatively short in length, or a personal video. (Ex-1004, ¶0089)(describing personal videos). For example, it would have been advantageous to combine the annotations and video into a single file, embedding the annotations at the appropriate locations in the video, and then transfer that file to a user as opposed to sending a video and annotations separately. (Ex-1002, ¶71).

Sending video and annotations separately, while desirable in some circumstances, also has drawbacks. For example, network delays could be introduced such that the video and annotations cannot be recombined or synced properly. When everything is in the same file, the handling process (particularly after being sent to a client device that may lack relevant context information) would be simplified. Further, transferring video and annotations separately also requires that separate files be managed and stored, thus increasing computing needs. (Ex-1002, ¶72). Furthermore, there are finite options for storing and transmitting annotations—they can be within the same file, or a different file. Both options are predictable solutions, and either is obvious. (Ex-1002, ¶72).

A PHOSITA would also have seen the benefit of storing annotated videos,

with certain annotations already embedded therein, at the server. For example, a specific critical edition of a video with director's or actors' commentary, may be particularly popular. Such a video can be created and stored as a combined file, with annotations embedded therein, and then delivered in its entirety to a user. (*See, e.g.*, Ex-1008, 9:8-19)(Ex-1002, ¶73). Datar recognizes that "exchanging annotated video by transferring a complete copy of the video" is a known solution (Ex-1004, ¶¶0003-0004) and it would have been obvious to implement a system that provides this functionality, which can be desirable to use under certain circumstances. (Ex-1002, ¶73).

Incorporating the use of annotations which are combined into the same file as the media file would have required nothing more than using standard computer programming in the combined system and represents a known method of annotating media content. (Ex-1004, ¶0003)(Ex-1008, 5:1-8)(Ex-1002, ¶74).

Other modifications that are minor or relate to dependent claims are discussed where relevant in the claim mapping section. (Ex-1002, ¶75).

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in using a table of contents indexing file, an example of which is taught in Zhou, to index annotations to a canonical instance of a video (which, per Datar, can also be the client instance of the video). (*See, e.g.*, Ex-1009, 66, 67)(use of table of contents to

index and view annotations for video)(Ex-1006, 8:63-9:11, 10:53-67)(use of table to index annotations to video)(Ex-1008, 5:60-64)(Smith providing a "listing of contents"). For example, Zhou explains that "SMIL standard is an effective media description for video structuring and indexing, and its close connection to web makes it very convenient to build and present structured web-enabled multimedia content." (Ex-1005, 313). SMIL/XML involves a markup language style commonly used in the web and it would have been straightforward to use an SMIL/XML to perform Datar's indexing. (Ex-1005, 313)(Ex-1002, ¶76).

A PHOSITA would also have had a reasonable expectation of success in combining and storing annotations in the same file as the media file, as taught by Smith. (Ex-1002, ¶77). Incorporating the use of annotations which are saved in the same file as the media file into the combined system would have required nothing more than standard computer programming and represents a known method of annotating media content. (Ex-1004, ¶0003)(Ex-1008, 5:1-8)(Ex-1002, ¶77).

A "reasonable expectation of success" is required only for the limitations actually recited in the claims. *See Intelligent Bio Systems v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1367 (Fed. Cir. 2016).

The art in the relevant timeframe was predictable. (Ex-1002, ¶78). Specifically, in the relevant timeframe (no earlier than 2013), the basic components that made up networked systems like those disclosed in Datar, Zhou, and Smith had

been well-known in the art. For example, SMIL/XML, as described by Zhou, was well known. (Ex-1005, 312-313)(Ex-1002, ¶78). In particular, the '001 patent's general and high-level disclosures support this understanding of the relevant art. (*See, e.g.*, Ex-1001, 10:17-45, 2:33-35, 2:44-5:44); *see In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 2004)(Ex-1002, ¶79).

Petitioner notes that the '001 patent does not discuss the details of the creation and use of a table of contents, which further supports that the use of a table of contents for a video file is within the exercise of ordinary skill. (Ex-1001, 6:35-53, 8:16-46). Petitioner further notes that the '001 patent does not discuss the details of how to embed an annotation in a media file. Instead, its disclosures are similar to Smith's, stating that "annotations may be any known format and may include text, video, audio, pictures, or a combination thereof, and may be embedded directly into the Playable Media File or may be stored as a separate file." (Ex-1001, 6:10-14)(Ex-1002, ¶¶80-81).

Petitioner notes that in Patent Owner's 'claim chart' attached to its complaint asserting the '001 patent, Patent Owner argues that "[i]n order to allow creators of the original videos to see clips, YouTube necessarily must have a table of contents reflecting all clips made of the original video. (Ex-1015, 102, 103)(Ex-1002, ¶82). Patent Owner's own contentions demonstrate its understanding regarding the routine and obvious nature of the use of a table of contents.

D. Graham Factors

The **level of ordinary skill** in the art was equal to an undergraduate degree in electrical engineering, computer engineering, or computer science and two years of computer programming experience and experience with web-based digital media. Relevant practical experience could offset less or different education and vice versa. (Ex-1002, ¶¶35-36).

The **scope and content of the prior art** are discussed throughout the Ground.

The **differences between the prior art and the claims** are discussed throughout the Ground.

Petitioner is not aware of any **secondary considerations** that would make an inference of non-obviousness more likely. (Ex-1002, ¶86).

This discussion of Graham factors applies to all Grounds. (Ex-1002, ¶87).

E. Analogous Art

Datar, Zhou, and Smith are analogous art because they are in the same field as the '001 patent (relating to "assemblies, methods, devices, and systems for managing information," generally, which includes "sharing and annotating video data," Ex-1001, 1:14-18), and their methods would have been reasonably pertinent to a problem facing the named inventors, specifically "annotating Playable Media Files." (Ex-1001, 1:23-25)(Ex-1004, Title, Abstract, ¶0001)(Ex-1005, 307, 312-313)(Ex-1008, Abstract, 3:3-7, 3:28-52, 5:23-27, 9:38-57)(Ex-1002, ¶88). *See*

Wyers v. Master Lock Co., 616 F.3d 1231, 1238 (Fed. Cir. 2010).

F. Claim Mapping

This section maps the challenged claims to the relevant disclosures of Datar, Zhou, and Smith, where the claim text appears in bold-italics, and the relevant mapping follows.

CLAIM 1

"1[a]. A method to annotate Playable Media Files in a social network having a plurality of members, comprising:"

Datar discloses and renders obvious **a method to annotate Playable Media Files**. (Ex-1002, ¶90). Datar explains that its system "can [] be used to submit a new annotation. For example, a user can **create annotation content and associate it with a video**." (Ex-1004, ¶¶0074, 0075-0080). Petitioner thus references video (**a playable media file**) throughout, but notes that Datar's teachings apply broadly to different types of playable media files. (Ex-1004, ¶0020)(Ex-1002, ¶90).

When a user creates an annotation, Datar's system "transmits the new annotation to the annotation server 110 for storage." (Ex-1004, ¶0074). Datar stores the annotation by saving it in an electronic storage medium such as an "annotation repository." (Ex-1004, ¶¶0005, 0014, 0026, 0035, 0047, 0049, 0059, 0072, 0074, 0087-0089, 0100, Fig. 5, claim 18). The annotation can be "**associated with a media file**" which can be, *e.g.*, video. (Ex-1004, ¶¶0026, 0020, 0030-0035, 0040, 0047-0050, 0061-0062, Fig. 2, claims 1, 18, 30)(Ex-1002, ¶91).

Datar also discloses annotating playable media files in the context of **a social network having a plurality of members**. (Ex-1002, ¶92). Datar describes its system as "a collaborative community of annotation authors, editors, and consumers" and "a network connecting a community of video providers and consumers." (Ex-1004, ¶¶0006, 0009, 0020, 0021, Fig. 1)(*See also* Ex-1004, ¶0037)("[A]nnotations are written and edited in a collaborative community of users")(Ex-1004, ¶¶0090, 0093)("[T]he features described herein could be used in an online community in which users can author, edit, review, publish, and view annotations collaboratively."). Datar thus discloses and renders obvious that its users are **members** of a **social network** who can **receive** video files, create annotations, and provide information associated with those annotations to a network server. (Ex-1002, ¶92). Smith similarly discloses an annotation system in the context of a social network, and it would further be obvious to implement the annotation methods discussed herein in the context of a **social network** in view of Smith's teachings because Smith teaches the desirability of annotation sharing in the context of a social network. (Ex-1008, 1:9-12, 3:24-27, 6:18-20, 13:24-28, 14:5-8)(Ex-1002, ¶92).

Datar in view of Zhou and Smith renders obvious the claimed **method** for the reasons discussed herein. (Ex-1002, ¶93).

"[1b] receiving by a member of said social network a Playable

Media File;"

Datar discloses **receiving a Playable Media File** (e.g., a video). (Ex-1002, ¶94). In Datar's system, a user (via a "client") "may have access to video from a variety of sources." (Ex-1004, ¶¶0028, 0027, 0022, 0023, 0025, 0041, 0049, 0064). "Responsive to a request by a client 104 for a particular video (or a set of videos matching certain criteria), [Datar's] video server 106 transfers a video over the network 105 to the client 104," and thus the user of the client device **receive[s]** the video. (Ex-1004, ¶¶0023, 0027, 0028)("[T]he client 104A can **receive** video directly from the video source 102A or from the video server 106 via the network 105."). Additionally, "clients 104 can send video over the network 105. For example, the client 104B can **receive video** from the video source 102B and **transfer it through the network to another client**, such as the client 104D. Clients 104 can also send video through the network 105 to the video server 106. Video sent from a client 104 to the video server 106 is stored on an electronic medium and is available to other clients 104." (Ex-1004, ¶0025)(Ex-1002, ¶94). Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶95).

"[1c] creating by said member of said social network an annotation relating to said Playable Media File;"

Datar discloses **creating an annotation relating to said Playable Media File**. (Ex-1002, ¶96). "A user views, authors, and edits annotations using a client

104." (Ex-1004, ¶¶0021, 0039). A user can "**create annotation content and associate it with a video**." (Ex-1004, ¶¶0074-0080, 0071-0072, Fig. 7a, Fig. 7b). "In [an] example illustrated, the new annotation content includes some new annotation text 708. As shown in FIG. 7(b), as the user enters the description 'General MacArthur,' the new annotation text 708 is displayed. In response to a further user selection indicating the authoring of annotation content is complete, the new annotation is submitted." (Ex-1004, ¶0079). The annotation **relates to the Playable Media File** because it is "associated with a media file**"** which can be, *e.g.*, video. (Ex-1004, ¶¶0026, 0020, 0030-0035, 0040, 0047-0050, 0058-0062, 0074-0080, Fig. 2, Fig. 5, claims 1, 18, 30)(*See also* Ex-1004, ¶0076)("The annotation definition 704 graphically illustrates the spatial definition and/or the temporal definition of an annotation.")(Ex-1002, ¶96). Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶97).

"[1d] providing said annotation by said member of said social network to a network server;"

Datar discloses **providing said annotation to a network server**. (Ex-1002, ¶98). Datar explains that once a user creates (or modifies) an annotation, "**the new annotation is submitted,** for example, to the **annotation server 110**." (Ex-1004, ¶¶0079, 0071-0072, 0074)(Ex-1004, ¶0074)("The client 104 transmits the new annotation to the annotation server 110 for storage.")(Ex-1004, ¶0007)("[A] first

user submits to an annotation server annotations . . . ."). Annotation server 110 is a **network server**. (Ex-1004, ¶¶0009, 0020, 0022-0028, 0059, Fig. 1)(Ex-1004, ¶0026)("Annotation server 110 is connected to the network 105.")(*See also* Ex-1004, ¶¶0027-0028, 0059)(annotation server and video server can work in tandem and/or be the same server)(Ex-1002, ¶98). Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶99).

"[1e.1] providing a data profile by said member of said social network to said network server, wherein said data profile comprises a location in said Playable Media File where said annotation should be embedded;

[1e.2] embedding by said network server said annotation in the Playable Media File at said location;"

Datar discloses and renders obvious claim element [1e]. (Ex-1002, ¶100). Annotations can include "annotation content" and a "temporal definition" or a "spatial definition" which specify when or where an annotation should be displayed in a video. (Ex-1004, ¶¶0060-0063)(*See also* Ex-1004, ¶0036, Fig. 5). Together, these constitute a **data profile**. When an annotation is created by a user, a "temporal" and/or "spatial" association is created, which specifies where and/or when (**a location in**) the annotation is to be displayed (**embedded**) in connection with a video. (Ex-1004, ¶¶0030-0036, 0039, 0047-0048, 0074, 0077, Figs. 4-6)(Ex-1004, ¶0030)("[A]nnotations are associated temporally and/or spatially with a video

file and one or more frames of thereof.")(Ex-1004, ¶¶0076, 0077)("The annotation definition 704 graphically illustrates the spatial definition and/or the temporal definition of an annotation.")(Ex-1004, ¶0036)("During playback of a media file, the client 104 is adapted to **display the annotations** associated with the frames of the file.")(Ex-1002, ¶100). Datar thus teaches that when a video is played, associated annotations are displayed (and thus can be understood to be **embedded**) at the previously designated time and/or place in the video. (Ex-1004, ¶¶0060-0063, 0030-0037, 0039, 0043, 0047-0049, 0063, 0070, 0074, 0076-0077, Fig. 6, Figs., 7a, 7b)(Ex-1002, ¶100).

After an annotation is created or edited, a user via a client 104 **provide[s]** the annotation and associated information (**data profile**) to the annotation to server 110 (said **network server**). (Ex-1004, ¶¶0071-0073, 0079, 0074, 0077). Datar explains that "a user can create annotation content and associate it with a video. The user can also specify a spatial definition for the new annotation and choose a range of frames of the client instance of the video to which the annotation will be indexed. **The client 104 transmits the new annotation to the annotation server 110 for storage**." (Ex-1004, ¶0074)(*See also* Ex-1004, ¶0077). The spatial definition and temporal definition are part of the annotation (Ex-1004, ¶¶0060, 0062), and thus Datar's description of sending the annotation to the server (Ex-1004, ¶¶0071-0073, 0079, 0074, 0077) also includes the entire **data profile**. The **data profile** can include

"features" which allow the server to "index" the annotation to a "canonical instance of the video" and thereby determine where and/or when the annotation should be displayed. (Ex-1004, ¶¶0087-0089, 0072, 0006, 0051-0052, 0058-0063). A "feature can be, for example, a description of a characteristic in the time, spatial, or frequency domains." (Ex-1004, ¶0052). Datar thus discloses a **data profile** which **comprises a location in said Playable Media File where said annotation should be embedded** which is provided to the annotation server (**network server**). (Ex-1002, ¶101). Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶102).

Datar's system stores annotations by saving them on an annotation server in an electronic storage medium such as an "annotation repository." (Ex-1004, ¶¶0005, 0014, 0026, 0035, 0047, 0049, 0059, 0072, 0074, 0087-0089, 0100 Fig. 5, claim 18). Annotations are stored separately from the video files and are "indexed to instances of one or more media files or portions thereof." (Ex-1004, ¶¶0026, 0027, 0023, 0025, 0047, 0040, 0059). "For example, the annotations can be stored in the annotation server 110 and video can be stored in the video server 108." (Ex-1004, ¶0059)(Ex-1002, ¶103). The server **embeds** the annotation in the Playable Media File at the specific **location** by saving information associating the annotation with the appropriate location in the Playable Media File, per the information provided in the **data profile**. (Ex-1002, ¶103).

As to the term "**embedded**," to the extent that the claims require that the annotations be contained within the media file itself (to be considered to be **embedded**), it would be obvious for the server to do so in view of Smith. (Ex-1002, ¶104). Smith teaches that there are multiple different options for storing annotations—the annotation can be "embedded in a data file of the digital item, or otherwise associated with the digital item" or it can be stored separately in an "annotations database." (Ex-1008, 5:1-8). Embedding the annotations in the video file of Datar thus represents nothing more than the predictable use of prior art elements according to known methods to yield predictable results. (*See* Ex-1004, ¶0003)(Ex-1002, ¶104). As set forth above under the "Rationale (Motivation) to Combine" Section, it would have been obvious to combine the annotations in the same file as the media file itself and thus **embed** them in the file per Smith's teachings. (Ex-1002, ¶104). The server **embeds** the annotation in the Playable Media File at the specific **location** by saving the annotation in the Playable Media file at or in association with the appropriate location in the Playable Media File, per the information provided in the **data profile**. (Ex-1002, ¶104).

In the system of the combination, annotation server (**network server**) and video server can work in tandem and/or be implemented in the same server. (Ex-1004, ¶¶0027-0028)(annotation server and video server can work in tandem); (¶0059)("The annotation and repositories can be included in the same server, or they

can be included in different servers.) (Ex-1002, ¶105). As set forth above, a PHOSITA would have had a reasonable expectation of success modifying the combined system to **embed** annotations. (Ex-1002, ¶105).

"[1f] determining by said network server if said annotation is a first annotation submitted for said Playable media File;"

Datar discloses and renders obvious this claim element. (Ex-1002, ¶106). As explained under claim elements [1d] and [1e], a user can create an annotation for a video (**Playable media File**), and the system transmits that annotation to annotation server 110 (**network server**), which "stores the one or more annotations in association with the media file." (*See, e.g.*, Ex-1004, ¶¶0026, 0059). Annotations are stored "indexed to a canonical instance of video in an annotation server." (Ex-1004, ¶¶0058-0063, 0087, 0045, Fig. 5, Fig. 4a)(Ex-1002, ¶106).

Datar describes a scenario "when the annotation is the **first to be associated with a particular video**." (Ex-1004, ¶0087). Datar's system thus determines and it would have been obvious to determine whether an annotation is the first annotation submitted for a particular video. (Ex-1002, ¶107). Datar explains one reason why it makes such a determination—to assess whether a canonical instance of the video has already been identified to determine whether to designate a canonical instance of the video. (*Id.*). In the context of the claimed combination, it would further have been obvious to determine if the annotation is a first annotation submitted for the

video in order to determine whether to create a table of contents, as set forth under claim elements [1e], [1g], and [1h]. (Ex-1002, ¶108).

"[1g] if said annotation is not a first annotation submitted for said Playable Media File, encoding said data profile in a previously-created table of contents for said Playable Media File;" [4]

Datar in view of Zhou renders obvious this claim element. (Ex-1002, ¶109). Datar teaches that annotations are stored "indexed to a canonical instance of video in an annotation server." (Ex-1004, ¶¶0058-0063, 0067-0069, 0072, 0026, 0087, 0045, 0048, Fig. 5, Fig. 4a). As an alternative, "annotations are stored indexed to features of the instance of video used by the client that submitted that annotation." (Ex-1004, ¶¶0088, 0087). Datar explains that, for example, "[t]he association between the annotation and the specific frame is stored by indexing the annotation to a frame in a particular instance of the video. Annotation 404A, for example, is indexed to a frame of the canonical instance of video 406." (Ex-1004, ¶¶0047, 0048,

[4] Claim elements [1g] and [1h] involve the use of a table of contents. The creation of a table of contents when a first annotation for a media file is submitted is addressed under both claim elements because claim element [1g] assumes that a table of contents has been **previously created** and claim [1h] more explicitly refers to its creation.

0069, 0072, 0074). Datar does not discuss the specifics of this indexing, but a PHOSITA would already appreciate that Datar's reference to indexing refers to correlating annotations to times or frames in a video in a table or database structure, thus already suggesting the use of a table of contents to organize annotations. (*See* Ex-1004, ¶¶0030-0035, 0040, Fig. 2)(storing "annotation list" at client using a table)(*See also, e.g.*, Ex-1009, 66)(Ex-1002, ¶109).

Furthermore, Zhou teaches the claimed **table of contents**. In Zhou's "web-enabled video indexing system," "[f]or each video file, the system generates a table-of-contents indexing file" "which can be used for previewing and browsing video content online." (Ex-1005, 307, 308). Zhou explains: "The table-of-contents web-enabled indexing file generated by the tool is shown in Figure 9. Web users can browse and preview the video segments, and jump to a specified location from frame-level." (Ex-1005, 313, 314, Fig. 9)(*compare* Ex-1004, ¶¶0074-0078). Zhou thus expressly teaches that the function of "indexing" "keywords and conceptual attributes" which are annotations to video content (the same concept taught by Datar) can be carried out with a "table-of-contents indexing file". (Ex-1005, 307, 308)(Ex-1004, ¶0021)(Per Datar, "[a]n annotation is any data which can usefully supplement a media file.")(Ex-1002, ¶110).

As set forth above under the "Rationale (Motivation) to Combine" Section, a PHOSITA would have been motivated to **create** and use a "table of contents

indexing file" "for each video file" (**for said Playable Media File**) such as that described in Zhou, in order to index annotations to a canonical instance of the video, and thereby implement Datar's teachings. (Ex-1002, ¶111).

As set forth above, a PHOSITA would have had a reasonable expectation of success in using a table of contents indexing file, an example of which is taught in Zhou, to index annotations to a canonical instance of a video for the reasons set forth above. (Ex-1009, 66, 67)(use of table of contents to index and view annotations for video)(Ex-1006, 8:63-9:11, 10:53-67)(use of table to index annotations to video) (Ex-1005, 312-313)(Ex-1002, ¶112).

Accordingly, **if said annotation is not a first annotation submitted for said Playable Media File**, it would have been obvious to save that annotation (and associated information) (**encod[e] said data profile**) **in a previously-created table of contents for said Playable Media File** so that all the annotation data for a Playable Media File can be stored together in an organized fashion in a single location. (Ex-1002, ¶113).

> ***"[1h.1] if said annotation is a first annotation submitted for said Playable Media File: creating a table of contents by said network server for said Playable Media File;***
>
> ***[1h.2] encoding by said network server said data profile in said table of contents;"***

See claim elements [1f] and [1g]. In an instance where the **annotation is a**

first annotation submitted for said Playable Media File, it would have been obvious to **create** and use a table of contents as set forth under claim elements [1f] and [1g]. (Ex-1002, ¶114). As set forth above under the "Rationale (Motivation) to Combine" Section, it would have been obvious to **create** and use a table of contents in the manner as set forth in the claims. (Ex-1002, ¶114).

"[1i] wherein said Playable Media File is selected from the group consisting of an audio file, a video file, an audiovisual file, slide show, AVI file, MP3 file, MP4 file, WMA file, WAV file, Flash, MPEG file."

Datar discloses and renders obvious this claim element. (Ex-1002, ¶115). Data teaches annotating a **video file**. (Ex-1004, ¶0020). Datar further explains that "[v]ideo is used herein as an example of a media file with which annotation can be associated. This example is chosen for the purposes of illustration and is not limiting. **Other types of media files with which annotations can be associated include, but are not limited to, audio programs, Flash, movies (in any encoding format), slide presentations, photo collections, animated programs, and other documents**. Other examples will be apparent to one of skill in the art without departing from the scope of the present invention." (Ex-1004, ¶0020)(Ex-1002, ¶115).

CLAIM 2

"2. The method of claim 1, further comprising: receiving first

content;

forming said annotation using said first content."

See analysis for claim 1. Data teaches that "[a]nnotations can be of various data types, including text, audio, graphics, or other forms" and that "[a]n annotation also includes annotation content 511. Annotation content can include, for example, audio, text, metadata, commands, or any other data useful to be associated with a media file." (Ex-1004, ¶¶0002, 0021, 0036-0037, 0062-0063). The content of the annotation is **first content** which is **received** by the system used to **form an annotation**. (Ex-1002, ¶116).

CLAIM 3

"3. The method of claim 2, further comprising:

determining if said annotation comprises a first annotation embedded in said Playable Media File; when said annotation comprises a first annotation embedded in said Playable Media File, creating a table of contents including an entry for said annotation."

See claim elements [1e], [1f], and [1h]. Per claim element [1e], annotations can be **embedded** in said Playable Media File at the server when they are received, and thus the **determining** can also include assessing whether an annotation is a first annotation that has been or will be **embedded** in said Playable Media File. When a first annotation is received and then **embedded**, a table of contents is created. When the data profile is encoded in the table of contents, this creates an **entry for the**

annotation. (Ex-1002, ¶117).

CLAIM 4

"4. The method of claim 3, further comprising when said annotation does not comprises a first annotation embedded in said Playable Media File, updating a table of content an entry for said annotation."

See analysis for claim 3 and claim elements [1e] and [1g]. When a subsequent annotation is created (or modified) and then received and **embedded**, a table of contents is updated with a new or modified **entry** for that annotation. (Ex-1002, ¶118).

CLAIM 8

"8[a]. An article of manufacture comprising a non-transitory computer readable medium having computer readable program code encoded therein to annotate Playable Media Files in a social network having a plurality of members, the computer readable program code comprising a series of computer readable program steps to effect:"

See claim element [1a]. Petitioner notes that claim 8 lacks clarity because it refers to "[a]n article of manufacture" with code to effect certain steps, but the steps are performed by both a user and by a network server. (Ex-1002, ¶119).

Datar nonetheless discloses and renders obvious this claim element. (Ex-1002, ¶120). Datar discloses "an **apparatus** for performing the operations herein" which can include one or more "processor[s]." (Ex-1004, ¶¶0021, 0023, ¶¶0100, 0101, claims 28-30). The apparatus (**article of manufacture**) may be a computer

which can execute a "computer program" (**computer readable program code**) which can be "**stored** in a **computer readable storage medium**" (**non-transitory computer readable medium**). (*Id.*). Datar's server and client both perform relevant process steps. (Ex-1004, ¶¶0021, 0023, 0100, 0101, claims 28-30, Fig. 1). Datar states that the relevant "process steps and instructions of the present invention can be embodied in software, firmware or hardware" (**computer readable program code**). (Ex-1004, ¶0099). This code **effects** the claimed steps. (Ex-1002, ¶120).

Claim elements [8b] – [8h] are **identical** to the corresponding elements in claim 1 and are rendered obvious for the same reasons. (Ex-1002, ¶121)(Ex-1016)(illustrating differences between claims).

CLAIMS 9-11

Dependent claims 9-11 are the same as dependent claims 2-4 except that they are directed to an article of manufacture comprising a non-transitory computer readable medium having computer readable program code (except for differences explained under claim 8). These claims are rendered obvious for the reasons set forth under claim 8 and further under claims 2-4. (Ex-1002, ¶122)(Ex-1016)(illustrating differences between claims).

CLAIM 15

"15[a]. A computer program product encoded in a non- transitory computer readable medium and usable with a programmable computer processor to annotate Playable Media Files in a social network having a plurality of members, comprising: computer

readable program code which causes said programmable computer processor to"

See analysis for claim element 8[a]. Petitioner notes that claim 15 lacks clarity because it refers to "a programmable computer processor" comprising "code" which effects certain steps performed by both a user and a network server. (Ex-1002, ¶123). Datar discloses "an apparatus for performing the operations herein" which can include one or more "**processor[s]**." (Ex-1004, ¶¶0021, 0023, 0100, 0101, claims 28-30). Either or both of Datar's client devices and server contain **processors** which can run code which carries out the relevant steps. (Ex-1004, ¶¶0021, 0023, 0099, 0100, 0101, claims 28-30, Fig. 1)(Ex-1002, ¶123).

Claim elements [15b] – [15h] are the same as the corresponding elements in claims 1 and 8 except that they are directed to a computer program product usable with a programmable computer processor. Datar discloses and renders obvious the claimed computer readable program code which causes said programmable computer processor to effect the claimed steps as set forth under claim element 15[a]. They are obvious for the same reasons as set forth under claims 1 and 8. (Ex-1002, ¶124).

CLAIMS 16-18

See analysis for independent claims 1, 8, and 15. Dependent claims 16-18 are the same as dependent claims 2-4 and 9-11 (except for differences explained under claims 8 and 15). Datar discloses and renders obvious the claimed computer

readable program code which causes said programmable computer processor to effect the claimed steps as set forth under claim element 15[a]. These claims are rendered obvious for the reasons set forth under claim 1 and 8 and further under claims 2-4. (Ex-1002, ¶125)(Ex-1016)(illustrating differences between claims).

Ground 2. Claims 5-7, 12-14, and 19-21 are obvious over Datar, Zhou, and Smith, further in view of Gupta

Claims 5-7, 12-14, and 19-21 are obvious under AIA 35 U.S.C. § 103(a) over **Datar**, **Zhou**, and **Smith** as discussed under Ground 1 and incorporated herein, further in view of U.S. Pat. No. 7,051,275 B2 ("**Gupta**")(Ex-1006). (Ex-1002, ¶126).

Gupta is a U.S. Patent that issued on May 23, 2006. (Ex-1006)(Ex-1002, ¶127).

Gupta is prior art under pre-AIA 35 U.S.C. § 102(b) even to the earliest possible priority date for the '001 patent (January 31, 2013). (Ex-1002, ¶128).

Gupta was not cited during prosecution of any application leading to the '001 patent. (Ex-1002, ¶129).

A. Overview of the Ground

The challenged claims are obvious over the combination of Datar, Zhou, and Smith further in view of Gupta. (Ex-1002, ¶130). The dependent claims challenged under the present Ground are directed to the use of "discussion threads" which are "initiat[ed]" and "generated" "within said Playable Media File at" a "location in said

Playable Media File." (Ex-1002, ¶130). Gupta teaches a system for annotating media content where users can create discussion threads composed of related annotations. It would have been obvious to incorporate discussion threads as taught by Gupta into the combined system for the reasons set forth below. (Ex-1002, ¶130).

1. Overview of Gupta

Gupta describes a "system [having] an annotation server that maintains annotations corresponding to the multimedia content. . . . [T]he annotations are available to users being presented with any of the versions of the multimedia content, even though only one copy of the annotation is maintained by the annotation server." (Ex-1006, Abstract, 2:50-59, Figs. 1-3). Gupta's "[a]nnotation server 10 controls the storage of annotations and their provision to client computers 15" and "can receive and provide annotations via direct contact with a client computer." (Ex-1006, 4:1-13, 9:12-16)(Ex-1002, ¶131).

Gupta teaches that users of its system can respond to other users' annotations such that "**threads of discussion** can develop." (Ex-1006, 10:27-41). Gupta specifically teaches the use of **discussion threads** composed of "related" annotations. (*Id.*)(Ex-1002, ¶132).

B. Rationale (Motivation) Supporting Obviousness

A PHOSITA would have been motivated to incorporate the use of discussion threads as taught by Gupta into the combined system. (Ex-1002, ¶133).

Datar describes its system as "a collaborative community of annotation authors, editors, and consumers" and "a network connecting a community of video providers and consumers." (Ex-1004, ¶¶0006, 0009, 0020)(*See also* Ex-1004, ¶¶0037, 0090, 0093, 0021). Datar thus teaches and has the goal of facilitating collaboration between members of a community of users, including collaboration in the writing and editing of annotations. Smith similarly teaches a system for "collaborative annotations" and explains that a user may have the opportunity to "comment on the annotations." (Ex-1008, Title, 1:62-67, 14:16-21)(Ex-1002, ¶134).

While Datar discusses collaboration between users and editing of annotations by a community of users, Datar does not specifically discuss initiating a **discussion thread** within a video. However, it would have been obvious to allow for the creation and use of discussion threads in view of Gupta's teachings. (Ex-1002, ¶135).

Gupta's system is similar to Datar's and allows for a community of users to create and edit annotations for media content. (Ex-1006, Title, Abstract, 2:50-67, 2:4-9). Gupta's annotations include, *e.g.*, "comment[s]." (Ex-1006, 11:47-48). Gupta teaches that users of its system can respond to other users' annotations such that "**threads of discussion** can develop." (Ex-1006, 10:27-41, 11:47-48, Fig. 5). Gupta thus teaches the use of **discussion threads** composed of "related" annotations. (Ex-1002, ¶136). A PHOSITA would have found it desirable to incorporate the use

of discussion threads into the system of the combination in order to facilitate collaboration between users with respect to the creation and editing of annotations. (Ex-1002, ¶136).

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in incorporating the use of discussion threads, as taught by Gupta, into the system of Datar as modified by Zhou and Smith. (Ex-1002, ¶137).

The art in the relevant timeframe was predictable. (Ex-1002, ¶138). Specifically, in the relevant timeframe (no earlier than 2013), the basic components that made up networked systems like those disclosed in Gupta had been well-known in the art. (Ex-1002, ¶138). In particular, the '001 patent's general and high-level disclosures support this understanding of the relevant art. (*See, e.g.*, Ex-1001, 10:17-45, 2:33-35, 2:44-5:44); *see In re Epstein*, 32 F.3d at 1568 (Ex-1002, ¶139). Incorporating the use of discussion threads into the combined system would have required nothing more than standard computer programming and could have been accomplished by using one or more data fields (as in Gupta) to associate "related" annotations with each other. (Ex-1006, 10:27-41)(Ex-1002, ¶140).

D. Analogous Art

Gupta is analogous art because it is in the same field as the '001 patent (relating to "assemblies, methods, devices, and systems for managing information,"

generally, which includes "sharing and annotating video data," Ex-1001, 1:14-18), and its methods would have been reasonably pertinent to a problem facing the named inventors, specifically "annotating Playable Media Files." (Ex-1001, 1:23-25)(Ex-1006, Title, Abstract, 1:20-23, 1:26-2:46)(Ex-1001, Title, Abstract, 1:14-18)(Ex-1002, ¶141). *See Wyers*, 616 F.3d at 1238.

E. Claim Mapping

This section maps the challenged claims to the relevant disclosures of Datar, Zhou, Smith, and Gupta, where the claim text appears in bold-italics, and the relevant mapping follows.

CLAIM 5

"5. The method of claim 3, further comprising: receiving a request to initiate a discussion thread at a location within said Playable Media File; and generate an embedded discussion at said location within said Playable Media File."

See analysis for Ground 1, claims 1 and 3, which is incorporated herein. Claim 5 is directed to the use of a "discussion thread." The combination renders obvious this claim. (Ex-1002, ¶143).

Datar teaches that when a video is played, associated annotations are displayed at the previously designated time and/or place in the video. (Ex-1004, ¶¶0060-0063, 0030-0037, 0039, 0043, 0047-0049, 0063, 0070, 0074, 0076-0077, Fig. 6, Figs., 7a, 7b)(Ex-1004, ¶0036)("During playback of a media file, the client 104 is adapted to display the annotations associated with the frames of the file.")(Ex-

1002, ¶144). Datar further describes its system as "a collaborative community of annotation authors, editors, and consumers" and "a network connecting a community of video providers and consumers." (Ex-1004, ¶¶0006, 0009, 0020)(*See also* Ex-1004, ¶0037)("[A]nnotations are written and edited in a collaborative community of users")(Ex-1004, ¶¶0090, 0093, 0021, 0037)("[T]he features described herein could be used in an online community in which users can author, edit, review, publish, and view annotations collaboratively.")(*see also* Ex-1008, Title, 1:62-67, 14:16-21). Datar teaches that its "annotations" include "textual commentary." (Ex-1004, ¶¶0021, 0037). While Datar discusses collaboration between users and editing of annotations by a community of users, Datar does not specifically discuss initiating a **discussion thread** within a video. However, it would have been obvious to allow for the creation and use of discussion threads in view of Gupta's teachings. (Ex-1002, ¶144).

Gupta, like Datar, describes a system for annotating media content. (Ex-1006, Title, Abstract, 2:50-67). Gupta's system is discussed in further detail in the "Overview" Section above. Gupta teaches that users of its system can respond to other users' "related" annotations such that "**threads of discussion** can develop." (Ex-1006, 10:27-41, 11:47-48, Fig. 5). Gupta's annotations include, *e.g.*, "comment[s]." (Ex-1006, 11:47-48, 10:27-41). Gupta thus teaches the use of **discussion threads** composed of "related" annotations. (Ex-1002, ¶145).

In the proposed combination, the discussion thread is **at a location within said Playable Media File** because, per Datar, annotations can be displayed either superimposed on or in connection with, but in "a separate window or frame" from a video file. (Ex-1004, ¶0036, Fig. 2). Datar explains: "Annotations can be displayed, for example, as text superimposed on the video frame, as graphics shown along side the frame, or as audio reproduced simultaneously with video; annotations may also appear in a separate window or frame proximate to the video." (*Id.*)(Ex-1002, ¶146). In the combination, a discussion thread would thus be displayed in connection with or superimposed on a Playable Media File at a particular location. (Ex-1002, ¶146)(*see also* Ex-1001, 6:27-53). A user r**equests to initiate a discussion thread** and the system **receives** that request when a user seeks to create an annotation which responds to a prior annotation. A discussion at said location within said Playable Media File is **generated** when the responsive annotation is completed. (Ex-1002, ¶146). The discussion is an **embedded discussion** because the annotations are **embedded** as discussed under Ground 1, claim element [1e]. (Ex-1002, ¶146). To the extent this is required, it would further be obvious to embed, in the data profile, information regarding the relationship between the annotations (e.g., what comment replies to what other comment), as taught by Gupta (Ex-1006, 10:27-41), to further facilitate the comments' functioning as a discussion thread. (Ex-1002, ¶146).

As set forth above under the "Rationale (Motivation) to Combine" Section, a

PHOSITA would have been motivated to modify the system of the combination to incorporate the initiation and use of annotation-based discussion threads. (Ex-1002, ¶147). As set forth above, a PHOSITA would have had a reasonable expectation of success in modifying the combined system to incorporate the use of discussion threads. (Ex-1002, ¶147).

CLAIM 6

"6. The method of claim 5, further comprising: receiving second content; and adding said second content to said discussion."

See claim 5. The claimed **first content is** used in **forming an annotation** per claim 2, from which this claim ultimately depends. (Ex-1002, ¶148). The **second content** is the content of the second or any subsequent annotations which are **added to the discussion** and which comprise the discussion thread. (Ex-1002, ¶148).

CLAIM 7

"7. The method of claim 6, further comprising: receiving a plurality of additional content in a sequential order; and add said plurality of additional content in said sequential order."

See analysis for claims 5 and 6. This claim is rendered obvious for the same reasons as set forth with respect to claims 5 and 6. When the discussion thread grows as users respond to prior annotations, the system **receives a plurality of additional content** in some order, which is **in a sequential order**; and **adds said plurality of additional content in said sequential order**. (Ex-1006, 10:27-41)(Ex-1002, ¶149).

It would further have been obvious to add comments to a discussion thread in sequential order in order to facilitate intelligibility of the discussion. (Ex-1002, ¶149).

CLAIMS 9-11 and 19-21

Claims 9-11 and 19-21 are, respectively, similar to claims 5-7 (except for differences explained under Ground 1, claims 8 and 15), and are obvious for similar reasons. (Ex-1002, ¶150)(Ex-1016)(illustrating differences between claims).

Ground 3. Claims 1-21 are obvious over Friedlander in view of Mouilleseaux

Claims 1-21 are obvious under pre-AIA 35 U.S.C. § 103(a) over U.S. Pat. App. Pub. 2013/0145248 A1 ("**Friedlander**")(Ex-1007) in view of U.S. Pat. App. Pub. 2009/0327856 A1 ("**Mouilleseaux**")(Ex-1013)(Ex-1002, ¶151).

Friedlander is a U.S. patent application publication published on June 6, 2013, from an application filed on December 5, 2011. (Ex-1007)(Ex-1002, ¶152).

Mouilleseaux is a U.S. patent application publication published on December 31, 2009, from an application filed on June 28, 2008. (Ex-1013)(Ex-1002, ¶153).

Friedlander is prior art under pre-AIA 35 U.S.C. §102(e)(1) and Mouilleseaux is prior art under pre-AIA 35 U.S.C. § 102(b). (Ex-1002, ¶154).

Neither Friedlander nor Mouilleseaux was cited during prosecution of any application leading to the '001 patent. (Ex-1002, ¶155).

A. Overview of the Ground

Friedlander teaches a system that allows different users in a social network to

comment on video files. Friedlander, however, does not describe in detail how comments are stored. Mouilleseaux teaches a system to allow multiple users to comment on a video file, and describes several different ways to store comments. It would have been obvious to use a method of annotation storage taught by Mouilleseaux together with Friedlander's system, such that Friedlander checks for a first annotation, creates a table of contents, and stores a data profile in the table of contents. The combination of Friedlander and Mouilleseaux renders all claims obvious. (Ex-1002, ¶156).

Furthermore, to the extent that the claims require that the annotations be stored in the same file as the media content itself or combined together into the same file as the media content itself, it would be obvious to do so in view of Mouilleseaux's teachings. (Ex-1002, ¶157).

1. Overview of Friedlander

Friedlander teaches allowing users of a social network to comment on video files. (Ex-1007, Abstract, ¶¶0019, 0027-0032)(Ex-1002, ¶158). A user comment to a video is shown, for example, in Fig. 1, reproduced here:

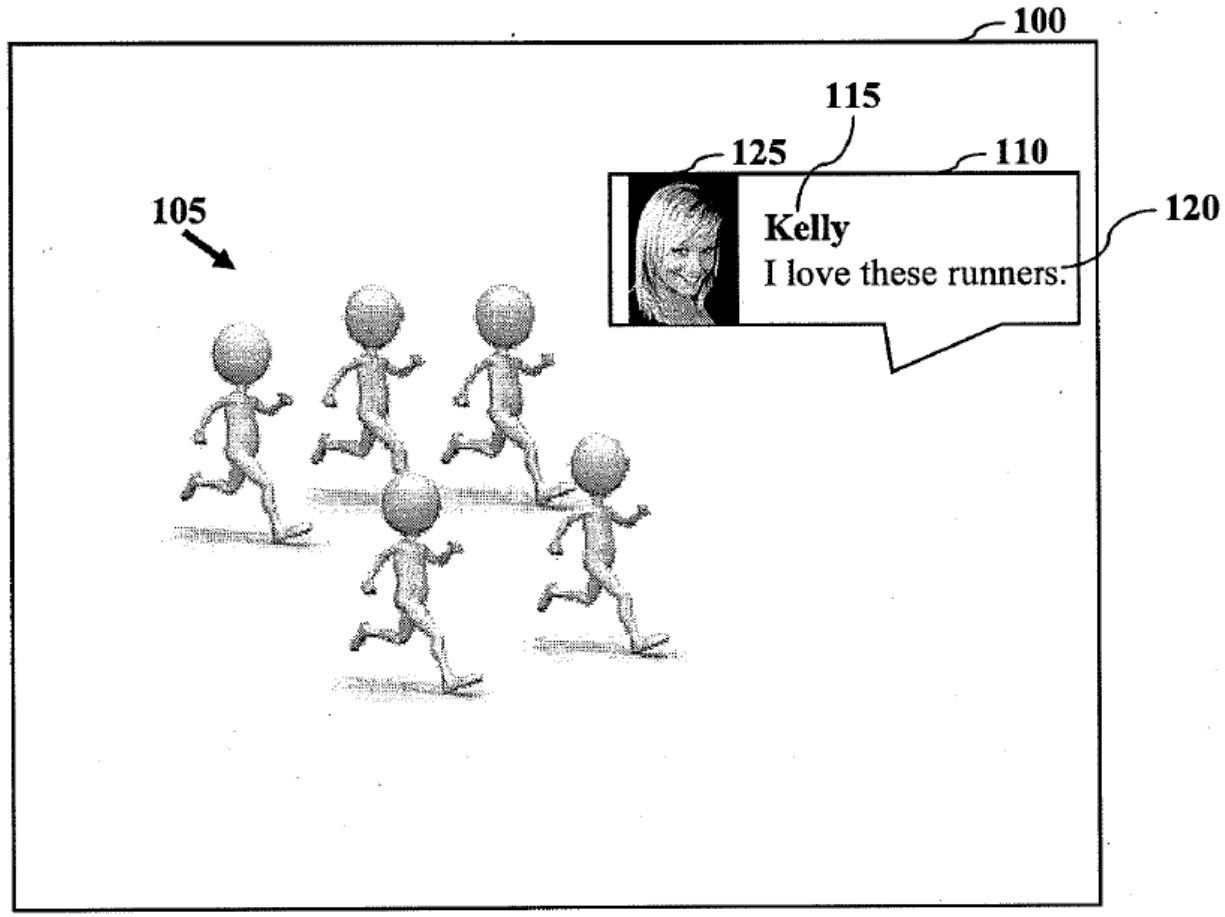


FIG. 1

(Ex-1007, Fig. 1, ¶¶0025-0032)(Ex-1002, ¶158). In Fig. 1, a video 105 is shown together with the comment ("I love these runners") of a user ("Kelly"). (Ex-1007, ¶0026)(Ex-1002, ¶158).

Users of a social network can add comments to a video. (Ex-1007, ¶0052). These comments, and data related thereto, are sent to a network server for storage. (Ex-1007, ¶¶0052, 0044)(Ex-1002, ¶159). A server 405, as well as a user display device 415 and user media player 420, are shown in Fig. 4, reproduced here:

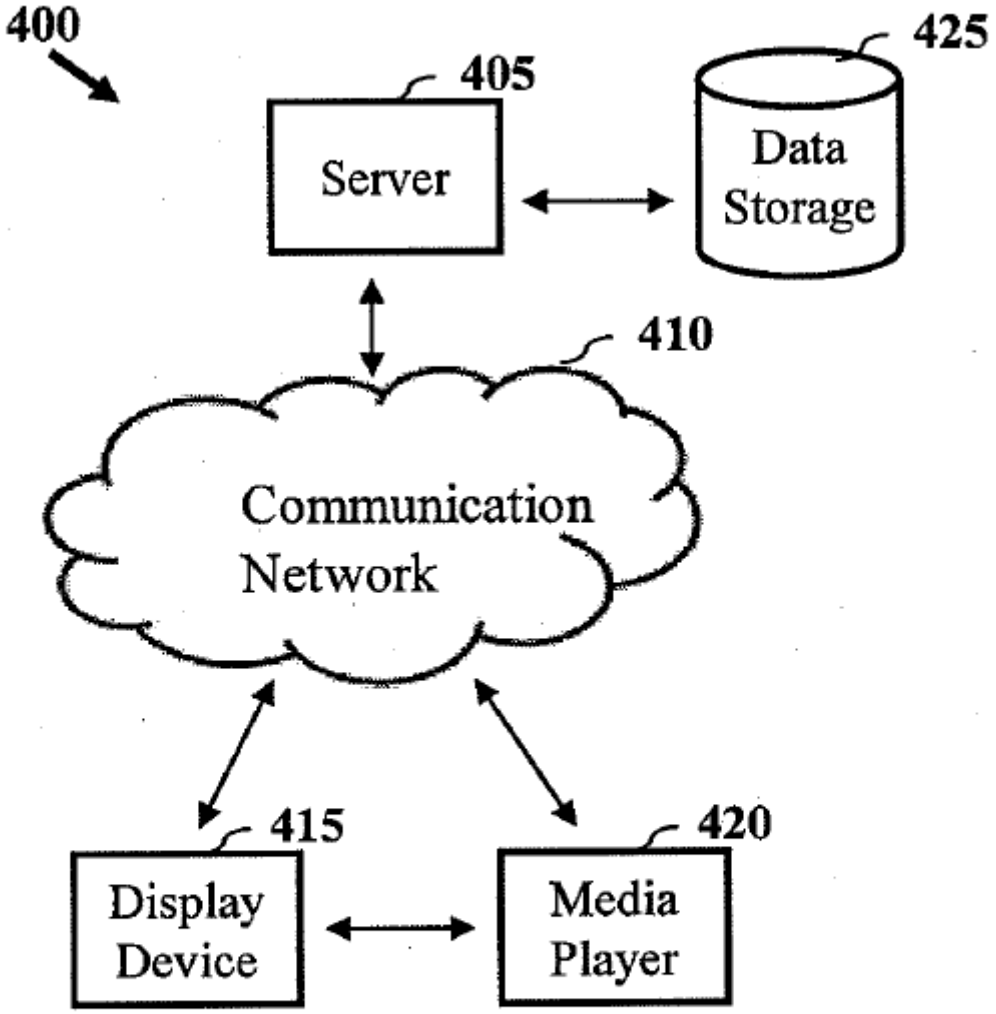


FIG. 4

(Ex-1007, ¶¶0043-0046, Fig. 4)(Ex-1002, ¶159).

When a user creates a comment for a video, data relating to the comment, including, *e.g.*, the content of the comment, the time code for the comment, the identification of the media file, and position and formatting data are provided to the

network server. (Ex-1007, ¶¶0052, 0044-0048)(Ex-1002, ¶160).

Other users may view the video and the first user's comments, and add their own comments. (Ex-1007, ¶0048)(Ex-1002, ¶161).

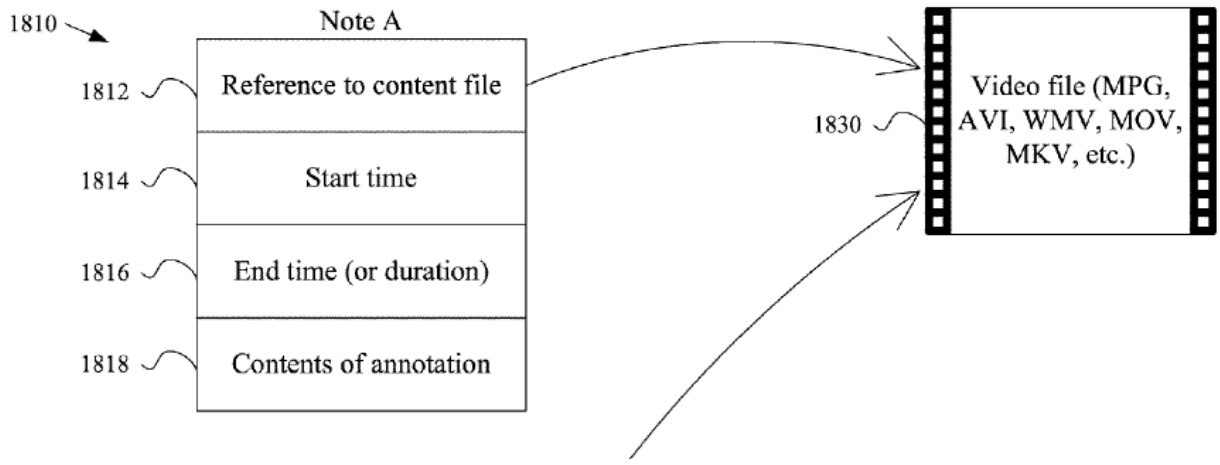
2. Overview of Mouilleseaux

Mouilleseaux states that its "invention is directed toward providing annotating systems for audio/video clips". (Ex-1013, ¶0001). Mouilleseaux is not expressly directed to social networks, but does allow different users to make annotations directed to the same video clip. (Ex-1013, ¶¶0033, 0036)(Ex-1002, ¶162).

Like Friedlander, users of Mouilleseaux's system make annotations with respect to certain parts of a video file. (Ex-1013, ¶0009)(Ex-1002, ¶163). Other users can then play back the video, with the annotations appearing at the correct times. (Ex-1013, ¶0010)("Some embodiments play an annotated digital clip while displaying one or more annotations (made for the clip) during the times within the clip to which the annotations apply."). To accomplish this, Mouilleseaux teaches storing data related to the annotation, such as the start and end times to which the annotation applies, and the position information of the annotation (where it should appear on the display). (Ex-1013, ¶¶0118-0119)(Ex-1002, ¶163).

Mouilleseaux teaches several ways to store annotation data. (Ex-1013, ¶¶0106-0123)(Ex-1002, ¶164). These methods can include storing the data within

the video file itself (*e.g.* as metadata, *see* ¶¶0112-0114), or storing the information in a file separate from the video file, as shown, *e.g.* in the top half of Fig. 18, reproduced here:



(Ex-1013, Fig. 18, ¶¶0116-0121)(Ex-1002, ¶164).

Figure 18 shows a data structure 1810 that can be used within a file that stores annotations. (Ex-1013, ¶¶0115-0118). The file containing multiple such data structures 1810 is a table of contents (Ex-1002, ¶165), that contains data profiles for multiple annotations. (Ex-1013, ¶¶0115-0118, 0121)(Ex-1002, ¶165).

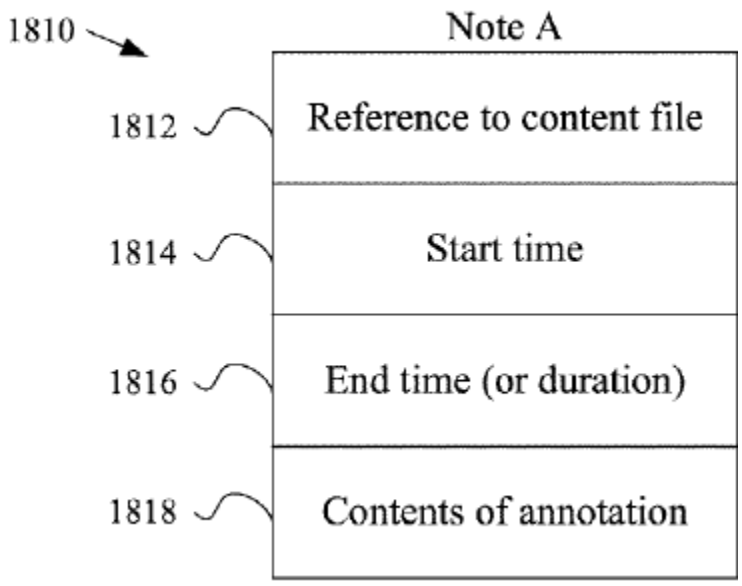
B. Rationale (Motivation) Supporting Obviousness

It would have been obvious to combine Mouilleseaux's methods of storage of comment data with Friedlander's annotation system. Friedlander and Mouilleseaux are broadly similar systems—both allow users to comment on a video file, store the comment data, and allow users to play back the video file while viewing comments at time and place within the video file specified by the commenter. (Ex-1007,

¶¶0050-0052, 0044-0045)(Ex-1013, ¶¶0009-0010, 0116-0119)(Ex-1002, ¶166).

Friedlander teaches storing comment data (including the comment contents, times, positions, etc.) at a server. (Ex-1007, ¶0032)("comments may be stored by a server of a social networking application"). While Friedlander does not specify the details of that storage, a PHOSITA would have immediately recognized that *some method* of storage was necessary, and that there were a finite number of predictable ways that data could be stored. (Ex-1002, ¶167).

Mouilleseaux teaches a variety of storage methods. (Ex-1013, ¶¶0106-0123). In one such method, discussed above, Mouilleseaux's system places annotation data in a file having data structure 1810. (Ex-1013, ¶¶0116-0119)(Ex-1002, ¶168). The data structure 1810 contains a reference to the video file to which the annotations pertain, and information (such as start time, end time, and the contents of the annotation), as shown in Fig. 18, the relevant portion of which is reproduced here:



(Ex-1013, Fig. 18, ¶¶0116-0121)(Ex-1002, ¶168). The file that holds data structure 1810 contains multiple annotations. (Ex-1013, ¶¶0115-0118). Specifically, Mouilleseaux describes in ¶0115 how annotations (plural) are saved into a separate file. As explained in ¶¶0116-0118, a separate file can use a data structure 1810. Together, these teachings indicate that multiple annotations are in the same file, and that data structure 1810 is used multiple times for different annotations. (Ex-1002, ¶168).

Mouilleseaux teaches that when annotations are stored in a separate file

> "the original video clip remains intact. The system also maintains the annotations in a form that allows them to be edited later. All the annotations are available in the separate file and can be retrieved in the same form as they were originally created."

(Ex-1013, ¶0115)(Ex-1002, ¶169).

A PHOSITA would have found it obvious and been motivated to use a storage method taught by Mouilleseaux in connection with data structure 1810. The information stored by Friedlander and Mouilleseaux is similar (annotation content, time, position). (Ex-1007, ¶¶0044, 0048, 0052)(Ex-1013, ¶¶0115-0123). A PHOSITA first would have known that some method of storage of comments of Friedlander was required, and that Mouilleseaux presented a number of suitable options. (Ex-1002, ¶170). A PHOSITA would have understood from Mouilleseaux's express teachings that its method of storage advantageously allowed the original video to remain intact and would have allowed annotations to be in a form where they can be edited later, and transmitted separately from the video content itself. (Ex-1013, ¶0115)(Ex-1002, ¶170). The latter advantage would have been appealing in certain social-media contexts, allowing video to be separately linked and/or downloaded from comments. (Ex-1002, ¶170). A PHOSITA could easily have made any modifications to the data structure desired, e.g. to incorporate information from Friedlander or remove unnecessary information. (Ex-1002, ¶170).

It furthermore would have been obvious, based on Mouilleseaux to check whether an annotation is a first annotation submitted, and if so, to create the annotation file (which is a table of contents, as discussed below in the claim mapping section) for similar reasons as set forth under Ground 1, in the section entitled "Rationale (Motivation) Supporting Obviousness" (incorporated herein, with the

exception of the citation to Datar at ¶0087). (*see also* Ex-1013, ¶¶0115-0118, 0121)(Ex-1002, ¶¶171-182)(*citing* Ex-1019, 1:50-2:46, 8:6-31, Fig. 2, claims 1-3; Ex-1020, 8:54-9:60, Fig. 16; Ex-1021, 9:41-10:12, 10:66-11:8, Fig. 5).

To the extent that the claims require that the comments be in the same file as the Playable Media File (referring to the term "**embedded"**), the combination also renders this obvious. Specifically, Mouilleseaux teaches that its comments can also be incorporated and saved within the same media file, *e.g.* in file metadata. (Ex-1013, Fig. 16, ¶¶0112-0116)(Ex-1002, ¶183). Mouilleseaux provides motivation for this, explaining that:

> "This process has the advantage that the original video clip remains intact. The system also maintains the annotations in a form that allows them to be edited later. All the annotations are available in the file and can be retrieved in the same form as they were originally created."

(Ex-1013, ¶0113). As compared to storage in a separate file, the storage of comments within the file metadata allows all annotations to be "within the file" (Ex-1013, ¶0113), allowing them to be more easily delivered together with the file to their destination, rather than as a separate download. (Ex-1002, ¶183). In the process, it would have been obvious to use a table of contents similar to Mouilleseaux's Fig. 18 (1810), except that the reference to the media file is not necessary, and to create the table of contents within the file metadata upon receiving

a first comment (i.e. when it is needed), (Ex-1013, Fig. 18)(Ex-1002, ¶183). The combination would have addressed Friedlander's desire that comments not be "limited to that of the author, or one particular entity." (Ex-1007, ¶0002)(Ex-1002, ¶183).

The modifications described above would also have been routine in the relevant timeframe (2013), and independently, would have represented known and predictable techniques for improving a known base system (Friedlander's) with predictable results. (Ex-1002, ¶184). *See KSR*, 550 U.S. at 417-21.

Other modifications that are minor or relate to dependent claims are discussed where relevant in the claim mapping section. (Ex-1002, ¶185).

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in making modifications discussed in this Ground, including for the advantages in making those modifications. Specifically, the obviousness contentions relate to storing data in different formats, the display of data, or transmitting information across a network, all which were routine by 2013. (Ex-1002, ¶186).

The art in the relevant timeframe was predictable. Specifically, in the relevant timeframe (no earlier than 2013), the basic components that made up networked systems like those disclosed in Friedlander and Mouilleseaux had been well-known in the art. (Ex-1002, ¶187). In particular, the '001 patent's general and high-level

disclosures support this understanding of the relevant art. (*See, e.g.*, Ex-1001, 10:17-45, 2:33-35, 2:44-5:44); *see In re Epstein*, 32 F.3d at 1568. (Ex-1002, ¶188).

Petitioner notes that the '001 patent does not discuss the details of the creation and use of a table of contents, which further supports that the use of a table of contents for a video file is within the exercise of ordinary skill. (Ex-1001, 6:35-53, 8:16-46). Petitioner further notes that the '001 patent does not discuss the details of how to embed an annotation in a media file. Instead, it states that "annotations may be any known format and may include text, video, audio, pictures, or a combination thereof, and may be embedded directly into the Playable Media File or may be stored as a separate file." (Ex-1001, 6:10-14)(Ex-1002, ¶189).

D. Graham Factors

The Graham factors were discussed under Ground 1. (Ex-1002, ¶190).

E. Analogous Art

Friedlander and Mouilleseaux are analogous art because they are in the same field as the '001 patent (relating to "assemblies, methods, devices, and systems for managing information," generally, which includes "sharing and annotating video data," Ex-1001, 1:14-19), and their methods would have been reasonably pertinent to a problem facing the named inventors, specifically "annotating Playable Media Files." (Ex-1001, 1:23-25)(Ex-1007, Title, Abstract, ¶¶0001, 0044-0045, 0050-0052)(Ex-1013, Title, Abstract, ¶¶0004-0005)(Ex-1002, ¶191). *See Wyers*, 616 F.3d

at 1238.

F. Claim Mapping

This section maps the challenged claims to the relevant disclosures of Friedlander and Mouilleseaux. The text of the claims is set forth in Grounds 1 and 2 and in the claims appendix.

CLAIM 1

1[a].

Friedlander teaches **a method to annotate a Playable Media File in a social network having a plurality of members**. (Ex-1007, ¶¶0032)("[C]omments may be **created** and stored by an application, such as a **social networking application**, or application widget, during **presentation of media**.")(*see also* Ex-1007, ¶¶0031, 0003, 0027, 0037, 0050-0052, 0032, 0019)(Ex-1002, ¶193).

A user comment to a video (an **annotation**) is shown, for example, in Fig. 1, reproduced here:

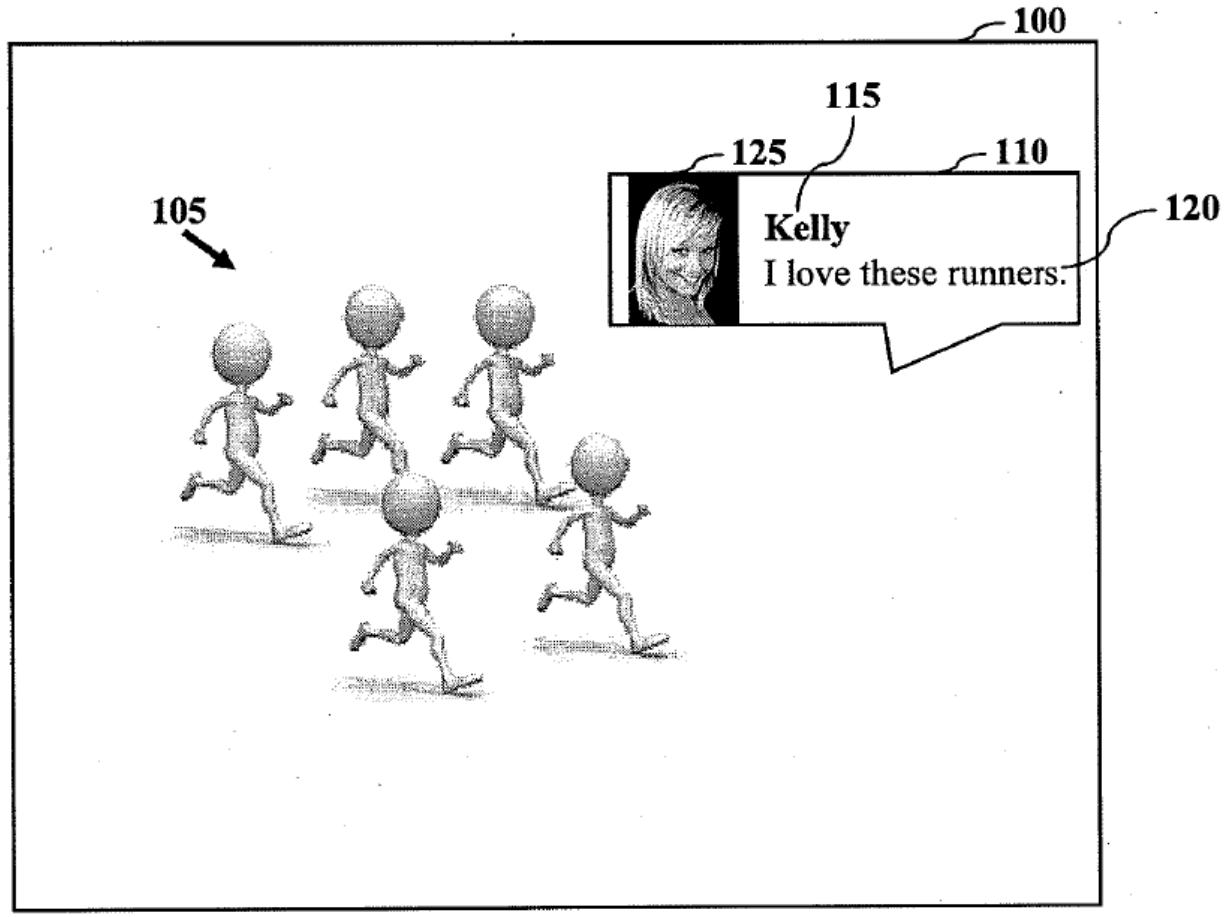


FIG. 1

(Ex-1007, Fig. 1, ¶¶0025-0032)(Ex-1002, ¶194). In Fig. 1, a video 105 is shown together with the comment ("I love these runners") of a user ("Kelly"). (Ex-1007, ¶0026)(Ex-1002, ¶194).

The **Playable Media File** is a video or audio file. (Ex-1007, ¶¶0033, 0039, 0026, 0045)(*Compare* Ex-1001, 1:25-29)(Ex-1002, ¶195).

Friedlander in view of Mouilleseaux renders obvious the claimed method for the reasons discussed herein. (Ex-1002, ¶196).

[1b].

Friedlander discloses **receiving a Playable Media File**. (Ex-1007, ¶0045)(Ex-1002, ¶197). Specifically, the Playable Media File is received by the display device of a user from the media player. (Ex-1007, ¶0045). Furthermore, Friedlander renders obvious "receiving" a playable media file, because the file is played by a media player associated with a user, which means that it was obviously received by the media player. (Ex-1007, ¶0030)(Ex-1002, ¶197). Friedlander further renders obvious the playing of a Playable Media File received over a network, to the extent Patent Owner argues this is required, because Friedlander discloses that users' computers are connected to the Internet, and that comments on media files are made in conjunction with a social network. (Ex-1007, ¶¶0027-0030)(Ex-1002, ¶197).

Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶198).

[1c].

Friedlander discloses creating an **annotation** (comments) relating to said Playable Media File. (Ex-1007, ¶0015)("A system and methods are provided for **creating**, selecting and presenting **comments associated with media**, where comments are generated by users of a device or application.")(*see also* Ex-1007,

Title, Abstract, ¶¶0001, 0003, 0025-0030, Figs. 1, 2, 6)(Ex-1002, ¶199).

Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶200).

[1d].

Friedlander discloses **providing said annotation to a network server**. (Ex-1007, ¶0052)("Data associated with the **comment** may be **transmitted to a server** at block 625. For example, the data may be transmitted including an identification of the media, the comment data, time code and information identifying a user of the social network.")(*see also* Ex-1007, ¶¶0043-0044, Figs. 4, 6)(Ex-1002, ¶201).

Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶202).

[1e].

Friedlander in view of Mouilleseaux renders obvious this claim element:

> "**Data associated with the comment** may be **transmitted to a server** at block 625. For example, the data may be transmitted including an identification of the media, the comment data, **time code** and information identifying a user of the social network."

(Ex-1007, ¶0052)(*see also* Ex-1007, ¶¶0044, 0049, Figs. 4, 6)(Ex-1002, ¶203). The "identification of the media, the comment data, time code and information

identifying a user of the social network" is a **data profile**, while the "time code" is **a location in said Playable Media File where said annotation should be embedded**. (Ex-1002, ¶203). Moreover, Friedlander teaches that comment data can include information on screen **location** (Ex-1007, ¶0036)("**[C]omments may include data for presentation** based on attributes selected by the creator of the comment. For example, a comment (e.g., comment 110) may be displayed based on a **position identified by a user when the comment is created** to inform viewers of specific elements of video data and allow for discussion of the identified elements of portion of a display screen.")(*see also* Ex-1007, ¶048)(Ex-1002, ¶203). The comment data is included information sent by the user to the server. (Ex-1007, ¶0052)(Ex-1002, ¶203).

Friedlander teaches making comments visible (and thus they can be understood to be **embedded**) at a time and position specified by the commenter. (Ex-1007, ¶0026, Figs. 1, 5A, 5B)("[C]omment 110 may be linked to video content 105 based on a time code, such that the comment is presented with display of a particular set of frames of the video content….Display of comment 110 may be based on a position identified by a user when the comment is created.")(*see also* Ex-1007, ¶¶0003, 0034-0036, 0048)(Ex-1002, ¶204).

As to the term "**embedded**," to the extent that the claims require that the annotations be contained within the media file itself (to be considered to be

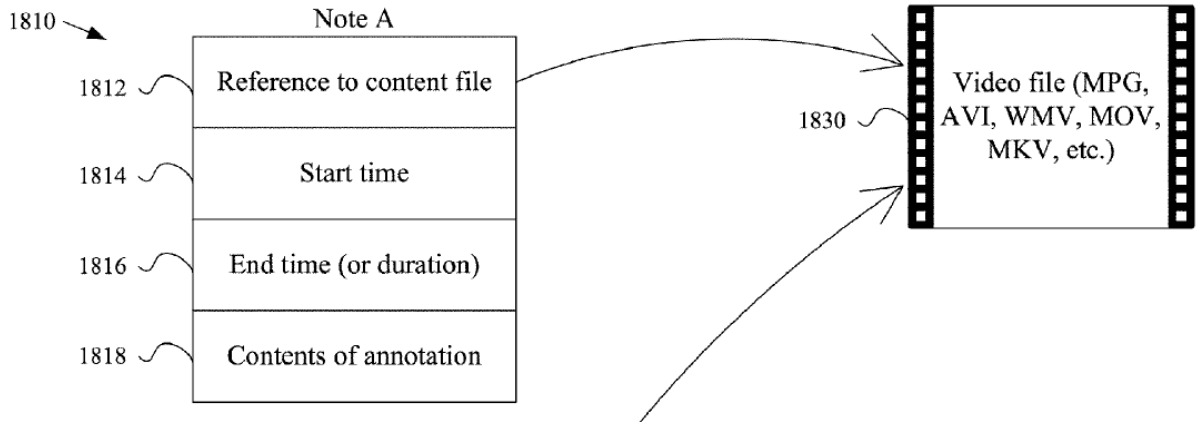
embedded), it would be obvious to do so in view of Mouilleseaux. (Ex-1002, ¶205). Mouilleseaux teaches that its annotations (comments) can also be saved within the same media file, *e.g.* in file metadata. (Ex-1013, Fig. 16, ¶¶0112-0116)(Ex-1002, ¶205). As set forth above under the "Rationale (Motivation) to Combine" Section, a PHOSITA would have been motivated to modify the system of the combination to save the comments (**annotations**) in the same media file as the media content and thus **embed** the comments in the Playable Media file and would have had a reasonable expectation of success modifying the combined system to do so. (Ex-1002, ¶205). The server **embeds** the annotation in the Playable Media File at the specific **location** by saving the annotation in the Playable Media File in connection with information corresponding to the location at which it should be displayed. (Ex-1002, ¶205).

Users are **members of a social network** as set forth under claim element 1[a]. (Ex-1002, ¶206).

[1f].

This claim limitation would have been obvious for the reasons provided above in this Ground, §§A-E (pages 51-63). In brief, Friedlander teaches storing comment data by a network server. (Ex-1007, ¶0046, *see also* Ex-1007, ¶0052, claim 12)(Ex-1002, ¶207). It would have been obvious, as explained above, to store that data using one of the storage options of Mouilleseaux, including the option of Fig. 18, using

file 1810 (shown here):



(Ex-1013, Fig. 18, ¶¶0115-0118). The annotations are stored in a single file. (Ex-1013, ¶¶0115-0118)(Ex-1002, ¶207). Because a single file is used to store the annotations, it would have been obvious, upon receiving the annotations, for the server to check whether an annotation file already exists, *e.g.,* to check **if said annotation is a first annotation submitted for said Playable media File**. (Ex-1002, ¶207). *See* pages 51-63, above.

[1g].

This claim limitation would have been obvious for the reasons provided above in this Ground, §§A-E (pages 51-63). In brief, Mouilleseaux teaches that multiple annotations are stored in a single file (1810). (Ex-1013, ¶¶0115-0118)(Ex-1002, ¶208). The file containing data structures 1810 is a **table of contents**, because it contains multiple annotations (Ex-1013, ¶¶0115-0118, 0121), each with a reference to the media file (1812) and a start time (1814) and end time (1816), which specify

a placement for the annotation. (Ex-1013, ¶¶0121, 0115-0118)(Ex-1002, ¶208). In addition, the annotation data itself can contain screen position data, as taught by both Mouilleseaux (Ex-1013, ¶0119) and Friedlander (Ex-1007, ¶¶0036, 0048). This file is a table of contents because it contains information about the contents of the annotations and media file, including relating annotations to their location in the media file. (Ex-1002, ¶208)(Ex-1001, 6:47-52). As explained above, if an annotation is not the first annotation, then the annotation would obviously be placed in **the previously-created table of contents** (file 1810) **for said Playable Media File**. (Ex-1013, ¶¶0115-0118)(Ex-1002, ¶209).

[1h].

This claim limitation would have been obvious for the reasons provided above in this Ground, §§A-E (pages 51-63). In brief, Mouilleseaux teaches that multiple annotations are stored in a single file (1810), which is a table of contents. (Ex-1013, ¶¶0115-0118)(Ex-1002, ¶210). It would have been obvious, as explained above, to **create the table of contents** if the annotation is a **first annotation** and to use a table of contents in the manner as set forth in the claims. (Ex-1002, ¶210).

As taught by Mouilleseaux, the data profile (*i.e.* elements 1812, 1814, 1816, and 1818) are encoded into said table of contents. (Ex-1013, ¶¶0118-0119)(Ex-1002, ¶211). It would have been obvious, as discussed above, for the **network server** to encode the **data profile** of Friedlander **into a table of contents** as taught

by Mouilleseaux. (Ex-1002, ¶211).

"[1i] wherein said Playable Media File is selected from the group consisting of an audio file, a video file, an audiovisual file, slide show, AVI file, MP3 file, MP4 file, WMA file, WAV file, Flash, MPEG file."

Friedlander teaches that the Playable Media File is an **audio file** or **video file**. (Ex-1007, ¶¶0039, 0033, 0017)(Ex-1002, ¶212). Mouilleseaux likewise teaches annotating video files, and provides the examples of "MPEG", "MP3", and "MPG, AVI, WMV, MOV, MKV, etc." (Ex-1013, Fig. 18, ¶¶0118, 0134)(Ex-1002, ¶212).

CLAIM 2

See analysis for claim 1. Friedlander teaches and renders obvious creating an annotation and providing an annotation and data profile to the network server. (Ex-1007, ¶¶0019, 0027-0032, 0048, 0052, claims 12, 23)(Ex-1002, ¶213). The content of the comment, such as text, is annotation content. (Ex-1007, ¶¶0035, 0049). This annotation content is **first content** which is **received** by the system used to **form an annotation**. (Ex-1002, ¶213).

CLAIM 3

See analysis for claim 2 and claim elements [1e], [1f], and [1h]. Per claim element [1e], annotations can be **embedded** in said Playable Media File at the server when they are received, and thus the **determining** can also include assessing whether an annotation is a first annotation that has been or will be **embedded** in said

Playable Media File. When a first annotation is received and then **embedded**, a table of contents is created. When the data profile is encoded in the table of contents, this creates an **entry for the annotation.** (Ex-1002, ¶214).

CLAIM 4

See analysis for claim 3 and claim elements [1e] and [1g]. (Ex-1002, ¶215). When a subsequent annotation is created (or modified) and then received and **embedded**, a table of contents is updated with a new or modified **entry** for that annotation. (Ex-1002, ¶215).

CLAIM 5

See analysis for claim 3. The combination renders claim 5 obvious. Specifically, Friedlander teaches using its system within the context of a social network, allowing multiple users to provide comments to the same media file. (Ex-1007, ¶¶0044, 0032, 0027, 0019, 0015, claims 5, 12, 15, 27)(Ex-1002, ¶216). Friedlander also teaches that comments from different users can be reply comments:

> "Presentation of comment 510 allows for a user to **receive commentary or reactionary responses by other users**. As such, commentary may provide a richer experience and provide **user reactions** that may be shared by the social network."

(Ex-1007, ¶0048)(Ex-1002, ¶216).

Friedlander thus teaches storing comments from multiple different users in relation to the same media file, and expressly teaches receiving reply comments. In

Friedlander, when a reply comment responds to another comment, a **discussion thread** is formed. (Ex-1002, ¶217). Further, it would have been obvious to **initiate a discussion thread** by storing the related comments from multiple users in connection with the same media file, in a manner that forms a discussion thread. (Ex-1002, ¶217). This would have been motivated by the express suggestions of Friedlander, and would have provided the advantage taught by Friedlander, namely "provid[ing] a richer experience and provid[ing] user reactions that may be shared by the social network." (Ex-1007, ¶0048)(Ex-1002, ¶217).

A user **requests to initiate a discussion thread** and the system **receives** that request when a user seeks to create an annotation which responds to a prior annotation. A discussion at said location within said Playable Media File is **generated** when the responsive annotation is completed. (Ex-1002, ¶218). The discussion is an **embedded discussion** because the annotations are **embedded** as discussed under claim element [1e]. To the extent this is required, it would further be obvious to embed, in the data profile, information regarding the relationship between the annotations (e.g., what comment replies to what other comment), to further facilitate the comments' functioning as a discussion thread. (Ex-1002, ¶218).

CLAIM 6

See claim 5. The claimed **first content is** used in **forming an annotation** per claim 2, from which this claim ultimately depends. (Ex-1002, ¶219). The **second**

content is the content of the second or any subsequent comments (annotations) which are **added to the discussion** and which comprise the discussion thread. (Ex-1002, ¶219).

CLAIM 7

See claims 5 and 6. This claim is rendered obvious for the same reasons as set forth with respect to claims 5 and 6. When the discussion thread grows as users respond to prior annotations, the system **receives a plurality of additional content** in some order, which is obviously **in a sequential order**; and **adds said plurality of additional content in said sequential order**. (Ex-1002, ¶220). It would have been obvious to add comments to a discussion thread in sequential order in order to facilitate intelligibility of the discussion. (Ex-1002, ¶220).

CLAIM 8

"8[a]. An article of manufacture comprising a non-transitory computer readable medium having computer readable program code encoded therein to annotate Playable Media Files in a social network having a plurality of members, the computer readable program code comprising a series of computer readable program steps to effect:"

See claim element [1a]. Petitioner notes that claim 8 lacks clarity because it refers to "[a]n article of manufacture" with code to effect certain steps, but the steps are performed by both a user and by a network server. (Ex-1002, ¶221).

Friedlander nonetheless teaches that its methods can be performed by one or more processors executing program code. (Ex-1007, ¶¶0022-0023, 0029-0030)(Ex-

1002, ¶222). Friedlander's server and client device both contain processors which perform the relevant process steps. (Ex-1007, ¶¶0037-0046, Fig. 3, Fig. 4)(Ex-1002, ¶222). Friedlander's computer system (**article of manufacture**) can execute "code segments" (**computer readable program code**) which can be "can be **stored in a processor readable medium**" (**non-transitory computer readable medium**). (*Id.*).

Claim elements [8b] – [8h] are **identical** to the corresponding elements in claim 1 and are rendered obvious for the same reasons. (Ex-1002, ¶223)(Ex-1016)(illustrating differences between claims).

CLAIM 15

See claim element 8[a]. Petitioner notes that claim 15 lacks clarity because it refers to "a programmable computer processor" comprising "code" which effects certain steps performed by both a user and a network server. (Ex-1002, ¶224). Either or both of Friedlander's client devices and server contain **processors** which can run code which carries out the relevant steps. (Ex-1007, ¶¶0022-0023, ¶¶0037-0046, Fig. 3, Fig. 4)(Ex-1002, ¶224).

Claim elements [15b] – [15h] are the same as the corresponding elements in claims 1 and 8 except that they are directed to a computer program product usable with a programmable computer processor. Friedlander discloses and renders obvious the claimed computer readable program code which causes said programmable

computer processor to effect the claimed steps as set forth under claim element 15[a]. They are obvious for the same reasons as set forth under claims 1 and 8. (Ex-1002, ¶¶225)(Ex-1016)(illustrating differences between claims).

CLAIMS 9-14, 16-21

Claims 9-14 and 16-21 are, respectively, similar to claims 2-7 (except for differences explained under claims 8 and 15) and are obvious for similar reasons. (Ex-1002, ¶226)(Ex-1016)(illustrating differences between claims)

IV. CONCLUSION

Petitioner respectfully requests that claims 1-21 of the '001 patent be canceled.

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Claim Listing Appendix – U.S. Patent No. 9,451,001 B2

Claim element	Claim text
1[a].	A method to annotate Playable Media Files in a social network having a plurality of members, comprising:
[1b]	receiving by a member of said social network a Playable Media File;
[1c]	creating by said member of said social network an annotation relating to said Playable Media File;
[1d]	providing said annotation by said member of said social network to a network server;
[1e]	providing a data profile by said member of said social network to said network server, wherein said data profile comprises a location in said Playable Media File where said annotation should be embedded; embedding by said network server said annotation in the Playable Media File at said location;
[1f]	determining by said network server if said annotation is a first annotation submitted for said Playable media File;
[1g]	if said annotation is not a first annotation submitted for said Playable Media File, encoding said data profile in a previously-created table of contents for said Playable Media File;
[1h]	if said annotation is a first annotation submitted for said Playable Media File: creating a table of contents by said network server for said Playable Media File; encoding by said network server said data profile in said table of contents;
[1i]	wherein said Playable Media File is selected from the group consisting of an audio file, a video file, an audiovisual file, slide show, AVI file, MP3 file, MP4 file, WMA file, WAV file, Flash, MPEG file.
2.	The method of claim 1, further comprising: receiving first content; forming said annotation using said first content.
3.	The method of claim 2, further comprising: determining if said annotation comprises a first annotation embedded in said Playable Media File; when said annotation comprises a first

	annotation embedded in said Playable Media File, creating a table of contents including an entry for said annotation.
4.	The method of claim 3, further comprising when said annotation does not comprises a first annotation embedded in said Playable Media File, updating a table of content an entry for said annotation.
5.	The method of claim 3, further comprising: receiving a request to initiate a discussion thread at a location within said Playable Media File; and generate an embedded discussion at said location within said Playable Media File.
6.	The method of claim 5, further comprising: receiving second content; and adding said second content to said discussion.
7.	The method of claim 6, further comprising: receiving a plurality of additional content in a sequential order; and add said plurality of additional content in said sequential order.
8[a].	An article of manufacture comprising a non-transitory computer readable medium having computer readable program code encoded therein to annotate Playable Media Files in a social network having a plurality of members, the computer readable program code comprising a series of computer readable program steps to effect:
[8b]	receiving by a member of said social network a Playable Media File;
[8c]	creating by said member of said social network an annotation relating to said Playable Media File;
[8d]	providing said annotation by said member of said social network to a network server;
[8e]	providing a data profile by said member of said social network to said network server, wherein said data profile comprises a location in said Playable Media File where said annotation should be embedded; embedding by said network server said annotation in the Playable Media File at said location;
[8f]	determining by said network server if said annotation is a first annotation submitted for said Playable media File;
[8g]	if said annotation is not a first annotation submitted for said Playable Media File, encoding said data profile in a previously-created table of contents for said Playable Media File;

[8h]	if said annotation is a first annotation submitted for said Playable Media File; creating a table of contents by said network server for said Playable Media File; encoding by said network server said data profile in said table of contents.
9.	The article of manufacture of claim 8, said computer readable program code further comprising a series of computer readable program steps to effect: receiving first content; forming said annotation using said first content.
10.	The article of manufacture of claim 9, said computer readable program code further comprising a series of computer readable program steps to effect: determining if said annotation comprises a first annotation embedded in said Playable Media File; when said annotation comprises a first annotation embedded in said Playable Media File, creating a table of contents including an entry for said annotation.
11.	The article of manufacture of claim 10, said computer readable program code further comprising a series of computer readable program steps to effect when said annotation does not comprises a first annotation embedded in said Playable Media File, updating a table of content an entry for said annotation.
12.	The article of manufacture of claim 10, said computer readable program code further comprising a series of computer readable program steps to effect: receiving a request to initiate a discussion thread at a location within said Playable Media File; and generate an embedded discussion at said location within said Playable Media File.
13.	The article of manufacture of claim 12, said computer readable program code further comprising a series of computer readable program steps to effect: receiving second content; and adding said second content to said discussion.
14.	The article of manufacture of claim 13, said computer readable program code further comprising a series of computer readable program steps to effect: receiving a plurality of additional content in a sequential order; and add said plurality of additional content in said sequential order.
15[a].	A computer program product encoded in a non-transitory computer readable medium and usable with a programmable

	computer processor to annotate Playable Media Files in a social network having a plurality of members, comprising: computer readable program code which causes said programmable computer processor to
[15b]	receive by a member of said social network a Playable Media File;
[15c]	computer readable program code which causes said programmable computer processor to create by said member of said social network an annotation relating to said Playable Media File;
[15d]	computer readable program code which causes said programmable computer processor to provide said annotation by said member of said social network to a network server;
[15e]	computer readable program code which causes said programmable computer processor to provide a data profile by said member of said social network to said network server, wherein said data profile comprises a location in said Playable Media File where said annotation should be embedded; computer readable program code which causes said programmable computer processor to embed by said network server said annotation in the Playable Media File at said location;
[15f]	computer readable program code which causes said programmable computer processor to determine by said network server if said annotation is a first annotation submitted for said Playable media File;
[15g]	computer readable program code which causes said programmable computer processor to if said annotation is not a first annotation submitted for said Playable Media File, encoding said data profile in a previously-created table of contents for said Playable Media File;
[15h]	computer readable program code which causes said programmable computer processor to if said annotation is a first annotation submitted for said Playable Media File: computer readable program code which causes said programmable computer processor to create a table of contents by said network server for said Playable Media File;

	computer readable program code which causes said programmable computer processor to encode by said network server said data profile in said table of contents.
16.	The computer program product of claim 15, further comprising: computer readable program code which causes said programmable computer processor to receive first content; computer readable program code which causes said programmable computer processor to form said annotation using said first content.
17.	The computer program product of claim 16, further comprising: computer readable program code which causes said programmable computer processor to determine if said annotation comprises a first annotation embedded in said Playable Media File; computer readable program code which, when said annotation comprises a first annotation embedded in said Playable Media File, causes said programmable computer processor to create a table of contents including an entry for said annotation.
18.	The computer program product of claim 16, further comprising computer readable program code which, when said annotation does not comprises a first annotation embedded in said Playable Media File, causes said programmable computer processor to update a table of content an entry for said annotation.
19.	The computer program product of claim 17, further comprising: computer readable program code which causes said programmable computer processor to receive a request to initiate a discussion thread at a location within said Playable Media File; and computer readable program code which causes said programmable computer processor to generate an embedded discussion at said location within said Playable Media File.
20.	The computer program product of claim 19, further comprising: computer readable program code which causes said programmable computer processor to receive second content; and computer readable program code which causes said programmable computer processor to add said second content to said discussion.
21.	The computer program product of claim 20, further comprising: computer readable program code which causes said programmable computer processor to receive a plurality of

	additional content in a sequential order; and computer readable program code which causes said programmable computer processor to add said plurality of additional content in said sequential order.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the foregoing petition for *inter partes* review, together with all exhibits and other documents filed therewith, was served by Priority Mail Express on August 12, 2025, on the Patent Owner's counsel of record at the United States Patent & Trademark Office having the following address:

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Date: August 12, 2025 /Matthew A. Smith/ (RN 49,003)

CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the foregoing petition for *inter partes* review contains 13,991 words according to the word processing program used to prepare it.

Date: August 12, 2025 /Matthew A. Smith/ (RN 49,003)