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

IPR2025-01406

Patent No. 10,609,442

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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Exhibit No.	Description
1001	U.S. Patent No. 10,609,442 B2 ("**the '442 patent**")
1002	Declaration of Dr. Henry Houh
1003	C.V. of Dr. Henry Houh
1004	Prosecution History of U.S. Application No. 15/479,774 (which Issued as the '442 Patent)
1005	U.S. Patent No. 8,826,117 B1 ("**Junee**")
1006	U.S. Patent Pub. No. 2018/0190323 A1 ("**De Jong**")
1007	Intentionally left blank
1008	Intentionally left blank
1009	U.S. Patent Pub. No. 2015/0139610 A1 ("**Syed**")
1010	Intentionally left blank
1011	U.S. Patent Pub. No. 2015/0180820 A1 ("**Lee**")
1012	U.S. Patent Pub. No. 2016/0350430 A1 ("**Kwon**")
1013	U.S. Patent No. 10,031,949 B2 ("**Giunio-Zorkin**")
1014	U.S. Patent No. 10,180,989 B2 ("**Dayan**")
1015	U.S. Patent No. 8,341,123 B2
1016	Marcus, "*Graphical user interfaces*." Handbook of human-computer interaction. North-Holland, 1997. 423-440.
1017	Jansen, "*The graphical user interface*." ACM SIGCHI Bulletin 30.2 (1998): 22–26.
1018	Galitz, "*The essential guide to user interface design: an introduction to GUI design principles and techniques*." John Wiley & Sons, 2007.

1019	Microsoft Press, "*Microsoft computer dictionary*." Microsoft Press, 2002.
1020	U.S. Patent No. 9,697,230 B2 ("**Houh**")
1021	Intl. Pub. No. WO2016/174524 A2
1022	Redline of Ex-1006 and Ex-1021
1023	U.S. Patent No. 7,801,910 B2
1024	Munford Librarian Declaration

Petitioner respectfully requests *inter partes* review under 35 U.S.C. § 311 of claims 1 and 5-11 of U.S. Patent No. 10,609,442 B2 ("the '442 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.

[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.

NOTICE OF RELATED MATTERS

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

The '442 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) and YouTube, LLC 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 yet ruled on that motion, held an initial case management conference, or entered a scheduling order. In addition, the parties have not served infringement or invalidity contentions.

In addition, Petitioner is concurrently requesting *inter partes* review of the other three patents at issue in that litigation: U.S. Patent No. 9,451,001 (IPR2025-01404), U.S. Patent No. 10,084,840 (IPR2025-01403), and U.S. Patent No. 10,681,103 (IPR2025-01405). Each of these patents is related to the '442 patent.

NOTICE OF SERVICE INFORMATION

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GROUNDS FOR STANDING

Petitioner certifies that the '442 patent is available for *inter partes* review, and that Petitioner is not barred or estopped from requesting an *inter partes* review on the grounds identified in the petition.

STATEMENT OF PRECISE RELIEF REQUESTED

Petitioner respectfully requests that claims 1 and 5-11 be canceled over the following Grounds:

Ground	Claims Challenged	35 U.S.C. §	References
1	1, 7	103	Junee, De Jong, Houh
2	5, 6	103	Junee, De Jong, Houh, Lee
3	8	103	Junee, De Jong, Houh, Syed, Giunio-Zorkin, Kwon
4	9	103	Junee, De Jong, Houh, Syed, Giunio-Zorkin, Kwon, Dayan
5	10, 11	103	Syed, Giunio-Zorkin, Kwon

I. INTRODUCTION

A. The '442 Patent Disclosure

The '442 patent is titled "Method and apparatus for generating and annotating virtual clips associated with a playable media file." Ex-1001. Its specification states:

"Applicants' system and method can be used by multiple members of a social network to associate annotations with a Playable Media File including a composite digital clip, and/or to initiate discussion threads associated with that Playable Media File including a composite digital clip." Ex-1001, 3:65-4:3. The '442 patent discloses "a plurality of virtual clips each associated with the playable media file" and "information associated with [the] playable media file" is displayed using a "[graphical user interface] GUI [that] enables the user to generate user inputs." Ex-1001, 1:26-27, 1:30-31, 1:38-39. Additionally, "[t]he virtual clip may be associated with the taxonomy tags to produce a searchable virtual clip." Ex-1001, 14:19-21; Ex-1002, ¶¶24-36, 41-45.

B. The Challenged Claims

The '442 patent has two independent claims. Independent claims 1 and 10 are directed to different methods related to annotated playable media files. In claim 1, the method includes displaying a GUI with (i) a first interactable graphical object displaying a timeline, and (ii) a second interactable graphical object displaying a plurality of displayable virtual clips. By contrast, claim 10's method includes (i) identifying one or more taxonomy tags from user input, and (ii) associating one or more taxonomy tags with a virtual clip. The claims are reproduced in the **Claim Listing Appendix**. Ex-1002, ¶¶37-40.

II. CLAIM CONSTRUCTION

Petitioner does not believe that the Board needs to construe the claims to apply the prior art herein. Petitioner reserves the right to propose constructions or indefiniteness in the co-pending litigation.

III. 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, ¶¶46, 90.

The **scope and content of the prior art** and **differences between the prior art and the claims** are discussed throughout the Grounds. Petitioner is not aware of any **secondary considerations** that would make an inference of non-obviousness more likely. These *Graham* factors apply to all Grounds. Ex-1002, ¶¶91-94.

IV. ASSERTED PRIOR ART

The Grounds rely on the following references that are prior art to the earliest possible priority date of the ’442 patent (July 20, 2016). None was cited during prosecution. Ex-1002, ¶¶47-52, 158-162, 189-194, 250-253, 287.

Reference (U.S. Pat./U.S. Pat. Pub.)	Exhibit No.	Issue/ Publication Date	Filing Date	Prior Art Basis

8,826,117 ("**Junee**")	1005	Sept. 2, 2014	Mar. 25, 2009	§102(a)(1), (2)
2018/0190323 ("**De Jong**")	1006	July 5, 2018	Priority[2] to Apr. 29, 2016	§102(a)(2)
9,697,230 ("**Houh**")	1020	July 4, 2017	Mar. 31, 2006	§102(a)(2)
2015/0180820 ("**Lee**")	1011	June 25, 2015	Mar. 4, 2015	§102(a)(1), (2)
2015/0139610 ("**Syed**")	1009	May 21, 2015	Nov. 14, 2014	§102(a)(1), (2)
10,031,949 ("**Giunio-Zorkin**")	1013	July 24, 2018	Mar. 3, 2016	§102(a)(2)
2016/0350430 ("**Kwon**")	1012	Dec. 1, 2016	May 25, 2016	§102(a)(2)
10,180,989 ("**Dayan**")	1014	Jan. 15, 2019	July 24, 2015	§102(a)(2)

The above references are **analogous art** because they are in the same field as the '442 patent (relating to "assemblies, methods, devices, and systems for managing information" generally, which includes "sharing and annotating content," Ex-1001, 1:18-22) and would have been reasonably pertinent to the problems facing the inventors. Ex-1002, ¶¶95, 176, 230, 272, 315.

[2] De Jong is a national phase application claiming priority to PCT/IB2016/000715. Ex-1021. No new matter was added between the PCT and De Jong. Ex-1022.

V. DETAILED EXPLANATION OF THE REASONS FOR UNPATENTABILITY

Ground 1. Claims 1, 7: Obviousness over Junee, De Jong, and Houh

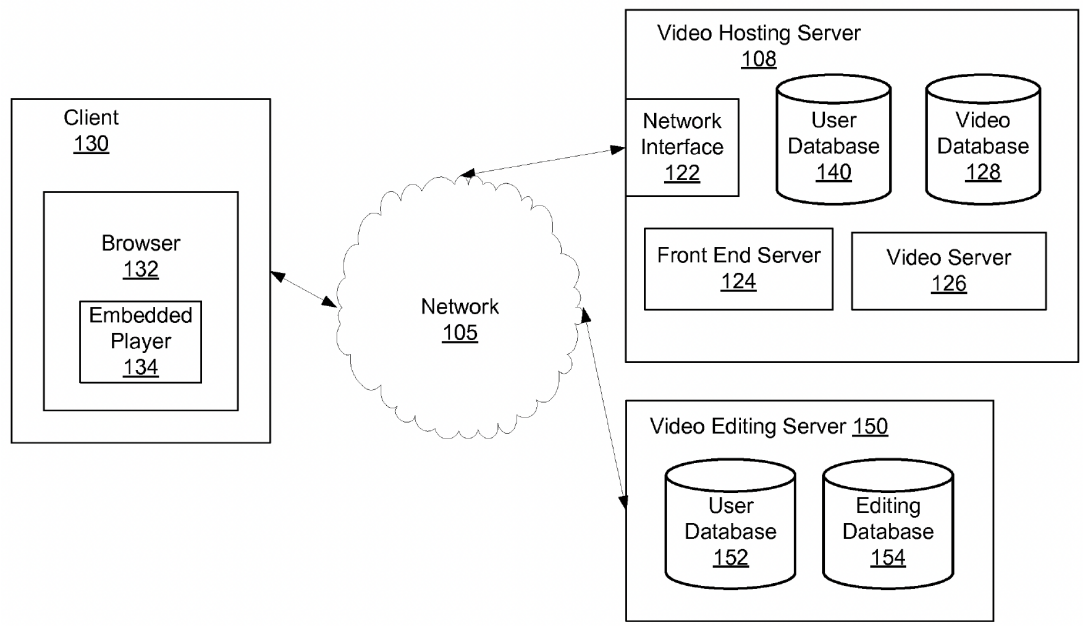
A. Overview of the Ground

Junee discloses or renders obvious most of the elements of claims 1 and 7. The remainder of the elements are rendered obvious by Junee in view of De Jong and Houh. De Jong discloses the overlay of semi-transparent playback controls onto a display window, a user interactable timeline, identification of multiple highlight clips based on a selected time, and display of the highlight clips in a GUI. Houh expressly discloses the overlay of semi-transparent icons overlaid onto video content in a GUI. Ex-1002, ¶¶53-56.

1. Overview of Junee

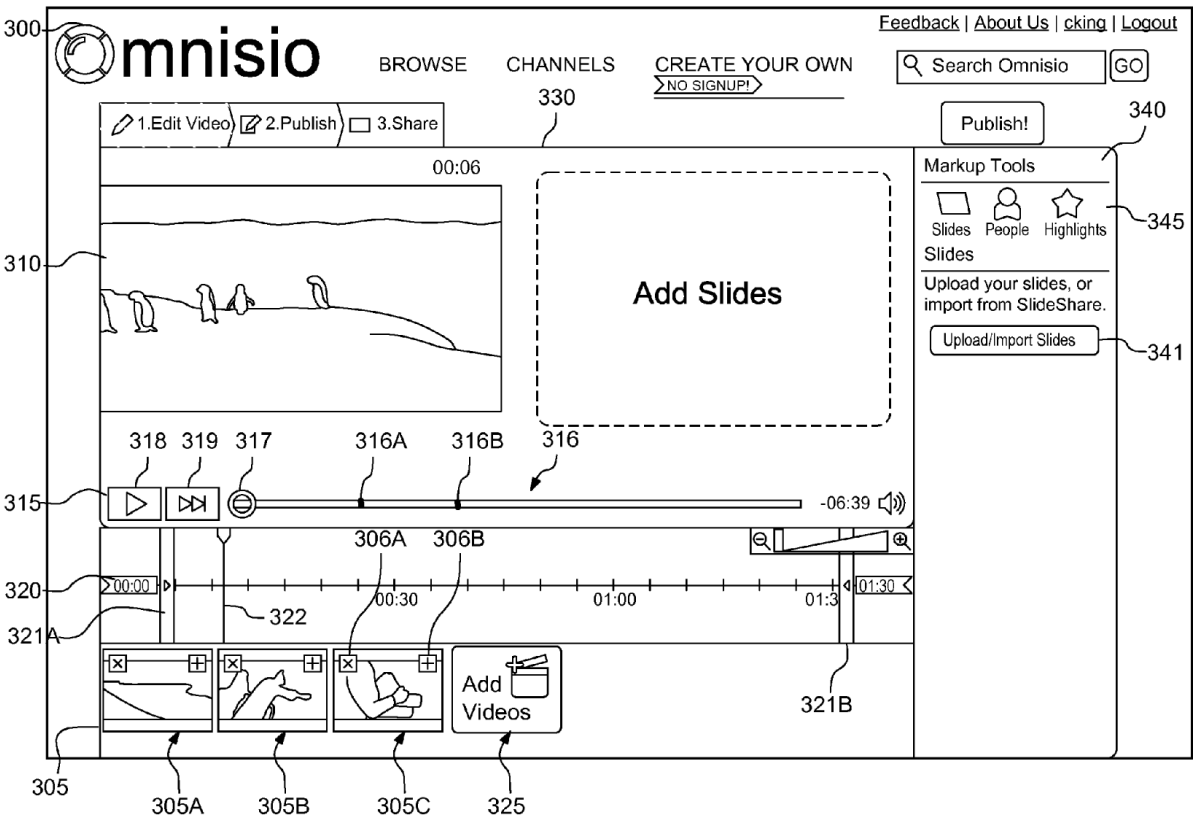
Junee is directed to "web-based editing, composition, and **annotation of digital videos**." Ex-1005, 1:5-6.[3] FIG. 1 of Junee shows "a block diagram of [the] system architecture." Ex-1005, 1:51.

[3] Emphases added throughout unless indicated otherwise.



Ex-1005, FIG. 1. Junee's system includes a "client 130," a "video hosting server 108," and a "video editing server 150," all connected via a "network 105." *Id*; Ex-1002, ¶57.

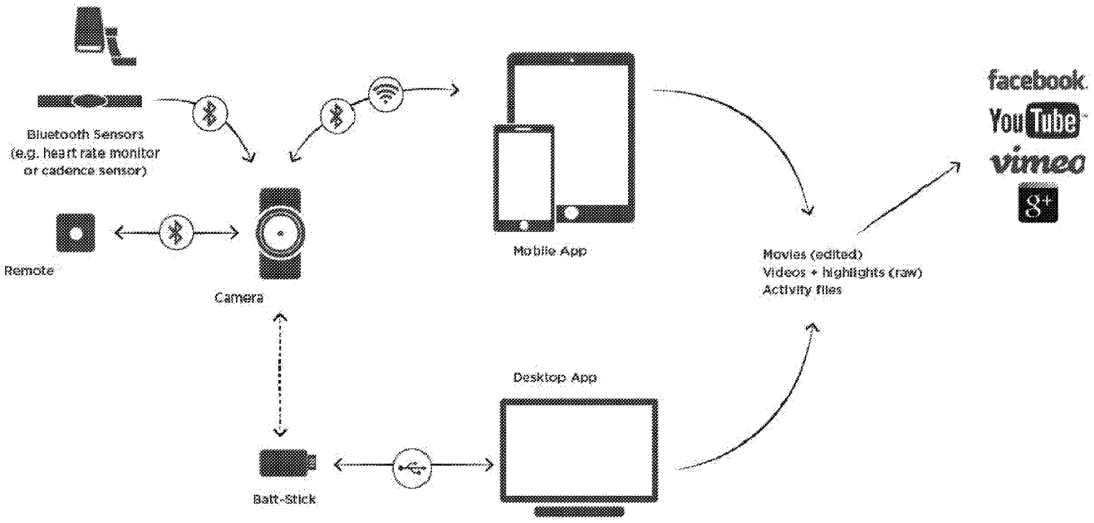
The "video editing server 150 provides the ability to create compilations from, and add annotation to, videos in the video database 128." Ex-1005, 3:51-53. Junee further provides a graphical editing interface, an example of which is shown below:



Ex-1005, FIG. 3A; Ex-1002, ¶¶58-63.

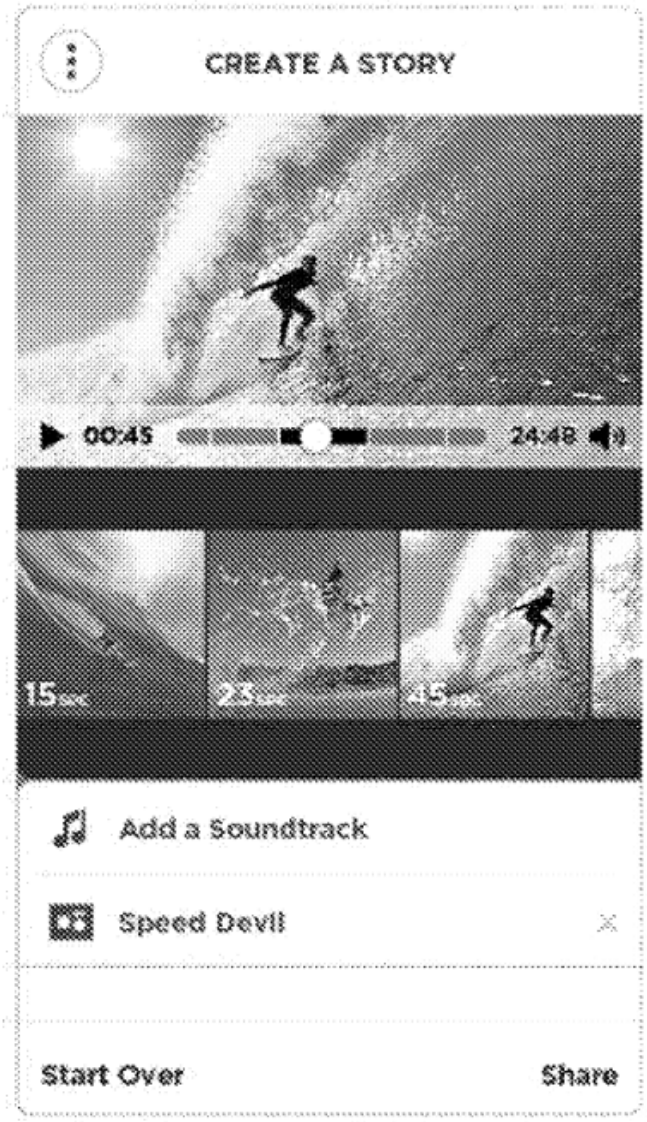
2. Overview of De Jong

De Jong discloses "methods and systems…related to…the creation of highlight data based on sensor data," which includes "one or more time periods in the video image data" referred to as a highlight clip. Ex-1006, Abstract, ¶0113. "The highlight clips can then be manipulated by a user to create a 'movie', *e.g.*, comprising several highlight clips." Ex-1006, ¶0379. De Jong's system is illustrated in FIG. 4:



Ex-1006, FIG. 4; Ex-1002, ¶¶64-65.

FIG. 19 of De Jong "shows an exemplary screen where the movie formed from the various highlights can be viewed by a user":



Ex-1006, ¶0380, FIG. 19; Ex-1002, ¶¶66-67.

3. Overview of Houh

Houh teaches "a computerized method and apparatus for dynamic presentation of advertising, factual, informational content and combinations thereof (hereinafter referred to as 'advertising content' generally)…[T]he advertising content is dynamically presented according to the playback of corresponding

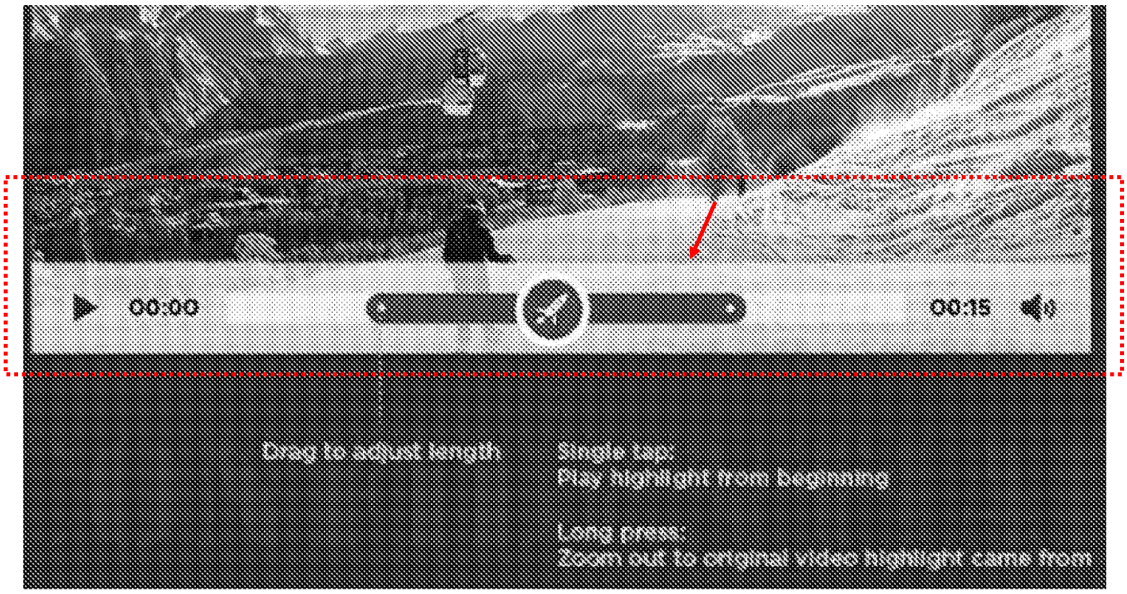
segments identified within a media file or stream." Ex-2020, 13:58-66. Ex-1002, ¶¶68-69.

B. Rationale (Motivation) Supporting Obviousness

Junee in view of De Jong and Houh renders obvious the following limitations. Ex-1002, ¶70-73.

Limitations [1j] and [1k]

De Jong's FIG. 13, reproduced below, shows a GUI with **a display window** that displays video content, and **an interactable graphical object** (playback controls indicated by the red arrow) overlaid onto a portion of the display window.



Ex-1006, FIG. 13 (red highlighting added). De Jong's playback controls are semitransparent such that a portion of the video content is visible behind the playback controls. Ex-1002, ¶74.

Houh discloses "**[s]emi-transparent icons can overlay a portion of video**

content to indicate the availability of additional content, such as advertisements, information or facts…Advertising content in the form of **text can overlay on top of video**." Ex-1020, 14:28-39. Thus, Houh explicitly discloses overlaying **an interactable graphical object** (semi-transparent icons) onto **a display window** (GUI element displaying video content). Ex-1002, ¶75.

It would have been obvious to overlay the playback control area 315 and the portion of Junee's GUI with thumbnail representations of the videos in the video set 305 onto the playback area 310 as taught by De Jong and Houh, to allow a larger-sized playback area 310 to view video content and annotations without sacrificing the playback controls in the playback control area 315 and the management of videos in the video set 305. *See* Ex-1016 at 430-431 (explaining overlapping windows can be used to "take advantage of existing spatial management skills to push one or more windows to the rear, or to bring one or more forward"); Ex-1017 at 23-24 (noting the amount of information a user can absorb from a GUI is limited and the GUI "should display only what the user needs to perform the current operation"); Ex-1024. It was well within the knowledge and skill of a PHOSITA to overlay graphical interface objects in a GUI that displays video content. *See* Ex-1018 at 590, 401; Ex-1002, ¶76.

By overlaying both the playback control area 315 and the portion with the thumbnail representations, a PHOSITA would have recognized the benefit of

controlling the visibility of these graphical interface objects to reduce obstructions to the playback area 310. Accordingly, it would have been obvious to modify Junee's GUI such that the portion of Junee's GUI with the thumbnail representations **is initially not displayed in the GUI** so users can initially view video content without this portion obstructing the playback area 310. Ex-1002, ¶123.

It also would have been obvious to limit the number of graphic elements displayed in the second interactable graphical object (the portion of Junee's GUI with the thumbnail representations) so that the graphic elements (thumbnail representations of the videos 305A-305C) remain intelligible and easily interactable for a user. A PHOSITA would have understood that the number of graphic elements that can be displayed in a GUI is limited by a variety of factors, such as the resolution and the size of a display screen. Ex-1002, ¶125.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by De Jong and Houh in the same way. Ex-1002, ¶¶77-78.

Limitations [1l] and [1m]

De Jong describes a video camera system that includes a computing device (*e.g.*, a desktop computer, laptop, tablet, mobile phone) with a GUI displaying a timeline. Ex-1006, ¶¶0178, 0179, 186. De Jong teaches "[t]he timeline preferably

further includes an icon (or slider) that moves along the timeline as the video is played, so as to show the location along the timeline of the video image data currently being displayed. The icon (or slider) can **preferably be manipulated by the user**, *i.e.* by **moving the icon along the timeline**, so as to **allow the user to select the video image data being displayed**." Ex-1006, ¶0232; Ex-1002, ¶79.

If Junee does not disclose or render obvious user interactions with a timeline and determination of a selected time based on said interaction, it would have been obvious to modify Junee's GUI to (1) allow user interactions with a display position on a timeline and (2) determine a selected time in a media file based on the display position as taught by De Jong. A PHOSITA would have recognized these features can help a user more easily navigate to different points of interest within a video. Ex-1002, ¶80.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by De Jong in the same way. Ex-1002, ¶¶81-82.

Limitations[1n], [1o] and [1p]

De Jong discloses that the GUI can display multiple highlight clips corresponding to different moments in time including clips preceding and subsequent to a selected time. "[T]he movie formed from the various highlights can be viewed by a user, at the same time as the user being able to manipulate the

highlights…The timeline of the movie is shown divided into a plurality of segments, each segment relating to a different highlight." Ex-1006, ¶0380; Ex-1002, ¶83.

If Junee does not disclose or render obvious the identification and display of a list of virtual clips, it would have been obvious to identify a plurality of displayable virtual clips according to De Jong's teachings and update Junee's GUI to display a list of the plurality of displayable virtual clips in the portion of Junee's GUI where thumbnail representations are displayed. A PHOSITA would have recognized that these features provide a mechanism to more easily select video clips to aid the creation of a video compilation. De Jong explains "[h]ighlight clips can…be used to give users a **quick and effortless** overview of the most interesting moments in the recordings they made." Ex-1006, ¶0369; Ex-1002, ¶84.

These modifications represent nothing more than the predictable combination and use of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by De Jong in the same way. Ex-1002, ¶¶85-86.

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in modifying Junee according to De Jong's teachings. The art in the relevant timeframe was predictable, and video compilations and GUIs like those disclosed in Junee and De Jong were well-known. The '442 patent's general and high-level disclosures

support this understanding of the relevant art. *In re Epstein*, 32 F.3d 1559, 1568 (Fed. Cir. 2004); Ex-1002, ¶¶87-89, 130, 136, 148.

D. Claim Mapping

CLAIM 1

Limitation 1[a]

Junee discloses or renders obvious **a method for displaying information associated with a Playable Media File**. Junee's system is directed to "editing, composition, and **annotation of digital videos**." Ex-1005, 1:5-6. Junee teaches "[a] graphical editing interface allows designating one or more videos to assemble into **a video compilation**…The graphical editing interface additionally allows the **association of annotations**—specifying, for example, slides, people, and highlights—**with portions of the video. The associated annotations alter the appearance of the video compilation** when it is played, such as by displaying slides, or text associated with the annotations, along with the video at times associated with the annotations." Ex-1005, Abstract; Ex-1002, ¶97.

Junee teaches that video compilations are "ordered collections of videos treated as a single composite video, and may include a single video." Ex-1005, 4:22-23. Petitioner references a video compilation as an example of **a playable media file** throughout, but notes that Junee's teachings apply broadly to different types of playable media files. Ex-1002, ¶98.

Limitation [1b]

Junee discloses or renders obvious **obtaining stored data describing the information**, which comprises, *e.g.*, annotations. Junee teaches a "video editing server 150 **keeps a record of various user video editing actions**, such as… annotating the videos with information about slides, people or events, adding popup visuals such as text boxes…It then **stores these records within an editing database 154**…The video editing server 150 also **provides to entities such as the client 130**…, for a given video, **records of editing actions stored within the editing database 154 for that video**." Ex-1005, 4:4-14; Ex-1002, ¶99.

Limitation [1c]

Junee discloses or renders obvious the stored data comprising **a storage location of the playable media file**. Junee describes "[t]he video database 128 **stores video content**." Ex-1005, 3:47. Junee further discloses "[t]he video editing server 150 **keeps a record** of various user video editing actions, such as **aggregating videos into a compilation**." Ex-1005, 4:4-6. For example, the "editing database 154 stores…**a unique compilation identifier**." Ex-1005, 4:24-25. Because Junee's system knows where to retrieve the video content and compilations, Junee's system thus provides a storage location (the servers 128 and 150 and the database 154) to store video content and compilations along with respective, unique identifiers for the

stored video content. Ex-1002, ¶100.

If this limitation is not disclosed in Junee, then a PHOSITA would have recognized the need for a file system to store the video content and compilations of Junee at storage locations in a server or a database for later retrieval. Conventional file systems typically include lookup tables containing identifiers for files on a storage volume. *See* Ex-1015, 1:17-21 ("Computer file systems have traditionally involved some mechanism of data storage at a physical location (for instance, a disk sector) and a lookup table…identifying the data and its physical address."). It would have been well within the knowledge and skill of a PHOSITA to implement a conventional file system in Junee to store a storage location of the playable media file. Ex-1002, ¶101.

Limitation [1d]

Junee discloses or renders obvious stored data comprising **a plurality of virtual clips each associated with the playable media file**. The '442 patent describes a "virtual clip" as "a set of data points that together delineate a particular subset of the content encoded in the media file"; "the virtual clip is comprised of **references** that identify specific content **in the corresponding media file**, but the virtual clip is not necessarily itself a stored media file containing the content data." Ex-1001, 9:60-66; Ex-1002, ¶102.

Junee's system allows users to "designat[e] **one or more videos** to assemble

into **a video compilation**." Ex-1005, Abstract. Junee teaches a "video editing server 150 keeps a record of various user video editing actions, such as **aggregating videos into a compilation**, **clipping videos to more restricted portions**." Ex-1005, 4:4-9. Junee further explains the "editing database 154 stores…**an identifier** of each video to be played as part of the compilation, as well as **an indicator** (such as a time range) of the portion of each video to be played." Ex-1005, 4:21-29. Thus, Junee discloses a plurality of virtual clips, *i.e.*, **references** (an identifier, an indicator) that identify content in a video, **associated with a playable media file** (a video compilation). *See* Ex-1019 at 410 (defining a pointer as a "variable that contains the memory location (address) of some data rather than the data itself"); Ex-1024; Ex-1002, ¶103.

Limitation [1e]

Junee discloses or renders obvious this limitation. FIG. 3A of Junee shows a "video segment bar 316 [that] displays **the relative lengths of each of the videos in the video set 305, with dividers 316A and 316B demarcating the boundaries of the videos**." Ex-1005, 5:19-22. Thus, Junee discloses **a first data element** (dividers 316A and 316B), which identifies **a first time** (playback location of dividers 316A and 316B correspond to start time of video clips 305A and 305B) within **the playable media file** (video compilation) where **the virtual clip** (videos 305A and 305B) **begins**. Ex-1002, ¶¶104-106.

If Junee does not disclose the first time, it would have been obvious to identify

the first time based on Junee's teachings. The editing database 154 of Junee "**stores information on video compilations**." Ex-1005, 4:21-22. This information includes "an indicator (such as **a time range**) of the portion of each video to be played and an indicator of **the order of the video** within the compilation." Ex-1005, 4:28-30. A PHOSITA would have determined the first time based on the time range of each video and the order of the videos in the video compilation. Ex-1002, ¶107.

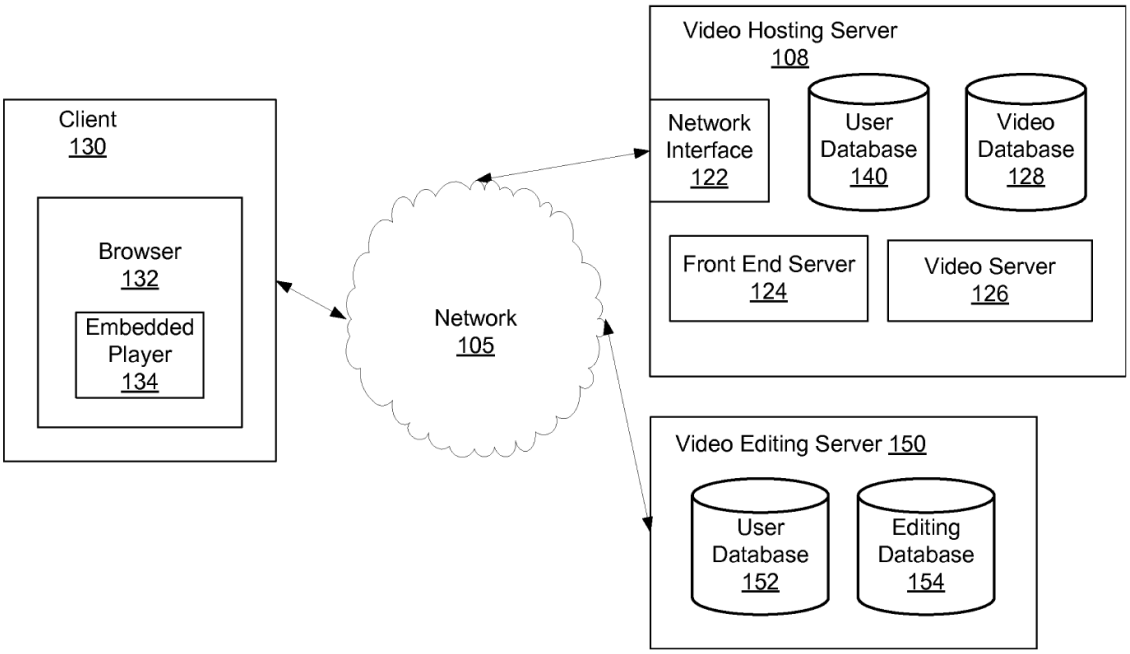
Limitation [1f]

Junee discloses this limitation. Junee explains "[t]he video editing server 150 keeps **a record of various user video editing actions**, such as **aggregating videos into a compilation**, **clipping videos to more restricted portions**… It then stores these records within an editing database 154 **in association with the user ID** from the user database 152." Ex-1005, 4:4-10. For example, the "editing database 154 stores…**an identifier of the user who created of the compilation**." Ex-1005, 4:24-26. Thus, Junee discloses **a second data element** (record stored in the editing database 154) identifying **a first user profile** (user ID) associated with creating **the corresponding virtual clip** (videos 305A-305C); Ex-1002, ¶108.

Limitation [1g]

Junee discloses this limitation. Users interface with Junee's system through a client 130, which "executes a browser 132, and connects to the front end server 124

[of a video hosting server 108] via a network 105." Ex-1005, 2:9-11, 2:30-31. The client 130 connects to the video editing server 150 via the network 105, as depicted in FIG. 1 below.



Ex-1005, FIG. 1; Ex-1002, ¶109.

The video database 128, which is in the video hosting server 108, "stores video content and associated metadata." Ex-1005, 3:47-48. Junee explains "[a] user can **access a video from the video hosting server 108**." Ex-1005, 2:49-50. Junee discloses "[t]he video editing server 150 also provides to… the client 130…for a given video, **records of editing actions stored within the editing database 154 for that video**." Ex-1005, 4:10-14. Thus, in Junee's system, the client 130 **accesses a playable media file** (a video compilation) **at a storage location** (video content stored in the video database 128 and editing actions stored in the editing database

154). Ex-1002, ¶¶110-111.

Limitation [1h]

Junee discloses this limitation. Junee discloses in FIGS. 3A-3E "an example **user interface** used for video editing," which is referred to as a GUI. Ex-1005, 1:56-57, 4:62, 9:20-22 ("A **graphical user interface** is then displayed…the **graphical user interface** including the video, a timeline associated with the video, and annotation tools."); *see also* Ex-1017 at 22 ("A GUI is a type of computer human interface on a computer"). Junee's GUI is displayed on a client 130, which "may include a variety of different **computing devices**." Ex-1005, 2:38-39. Thus, Junee discloses **a GUI** (the user interface 300) **displayed on a computing device of a user** (client device 130). Ex-1002, ¶112.

Junee's GUI supports a variety of user inputs. Junee discloses the GUI includes a video set 305. Ex-1005, 4:62-65. Each video in the video set 305 includes "a remove button 306A and a duplicate button 306B; **selection** of the former removes the video from the video set 305, and **selection** of the latter creates a new, separate instance of the video and adds it to the video set 305." Ex-1005, 5:1-4. Additional examples are discussed under limitations [1j] and [1k]. Thus, Junee discloses a GUI that enables users to **generate user inputs** (*e.g.*, addition and removal of videos from the video set 305) by **interacting** with the GUI (selection of the buttons 306A, 306B). Ex-1005, 41:56-57; Ex-1002, ¶113.

Limitation [1i]

Junee discloses this limitation. Junee shows a user interface 300 with a playback area 310 to display the video content of videos in a video compilation. Ex-1005, 5:7-11.

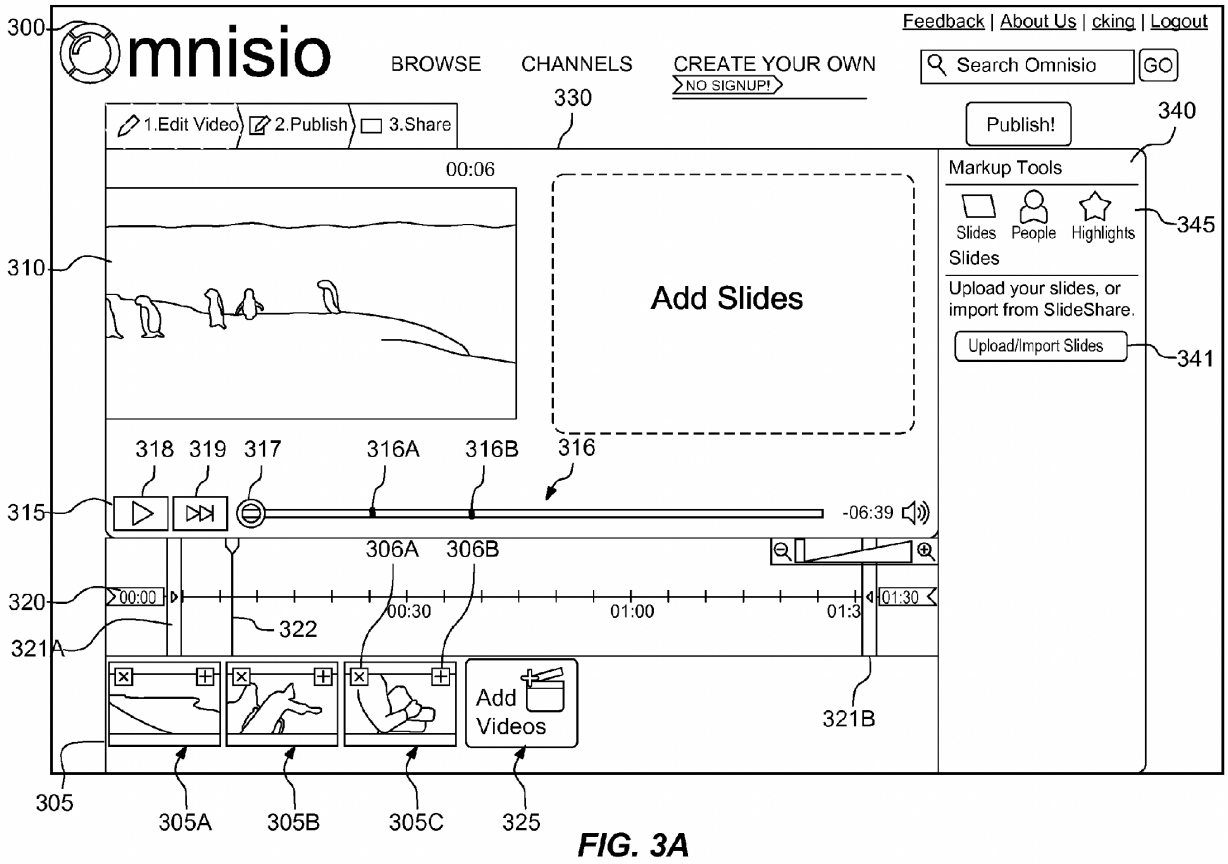


FIG. 3A

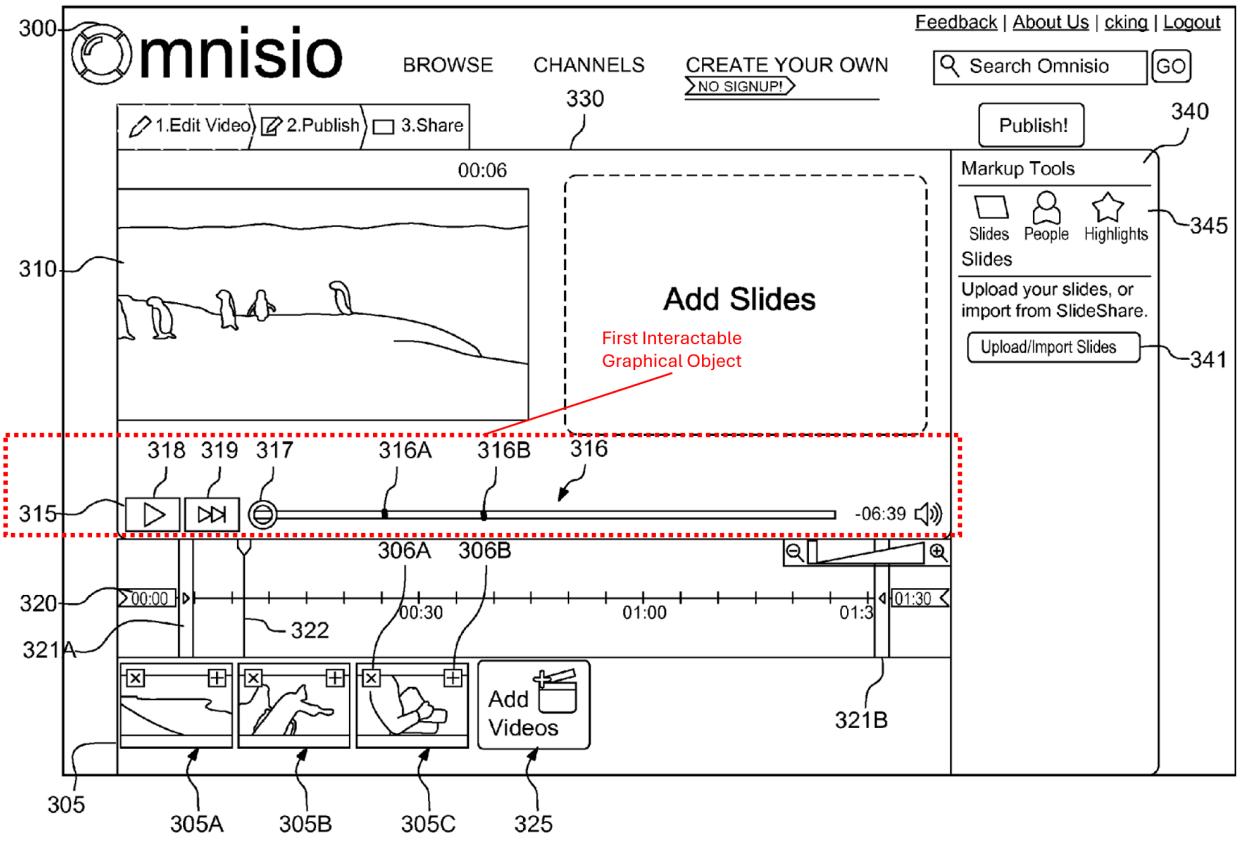
Ex-1005, FIG. 3A, Ex-1002, ¶114.

As shown, "[o]ne of the videos—video 305A in the example of FIG. 3A—… is shown in **playback area 310**." Ex-1005, 5:7-11. Junee's user interface 300 displays content in the video compilation via the playback area 310 with controls affecting the content displayed in the playback area 310. *Id*. Thus, Junee's user interface 300 comprises **a display window** (playback area 310) **for displaying**

content encoded by the playable media file (video content in the video compilation). Ex-1002, ¶115.

Limitation [1j]

Junee, De Jong, and Houh render obvious this limitation. Junee's playback control area 315 includes a "**video segment bar 316** [that] displays the relative lengths of each of the videos in the video set 305." Ex-1005, 5:19-21. Thus, Junee discloses a **first interactable graphical object** (playback control area 315), which **displays a timeline** (video segment bar 316) **representing a duration of the playable media file** (length of video segment bar 316 represents duration of the video set 305):

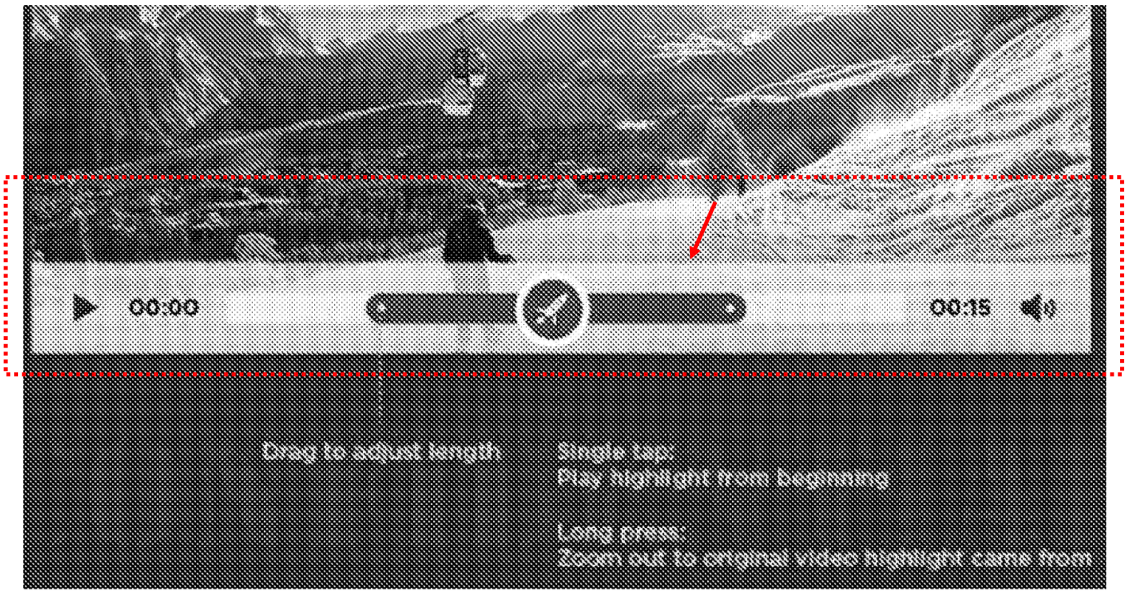


Ex-1005, FIG. 3A (red highlighting added); Ex-1002, ¶116.

The dividers 316A and 316B in FIG. 3A represent the start times for the videos 305B and 305C. Ex-1005, 5:19-22. Thus, Junee discloses **a plurality of clip indicators** (dividers 316A and 316B) **each associated with a corresponding virtual clip** (videos 305B and 305C), where each clip indicator **appears on the timeline** (video segment bar 316) at a **display position corresponding to the first time of the corresponding virtual clip** (start times for the videos 305B and 305C). Ex-1002, ¶117.

De Jong discloses a GUI with **a display window** that displays video content, and **an interactable graphical object** (playback controls indicated by the red arrow)

overlaid onto a portion of the display window:



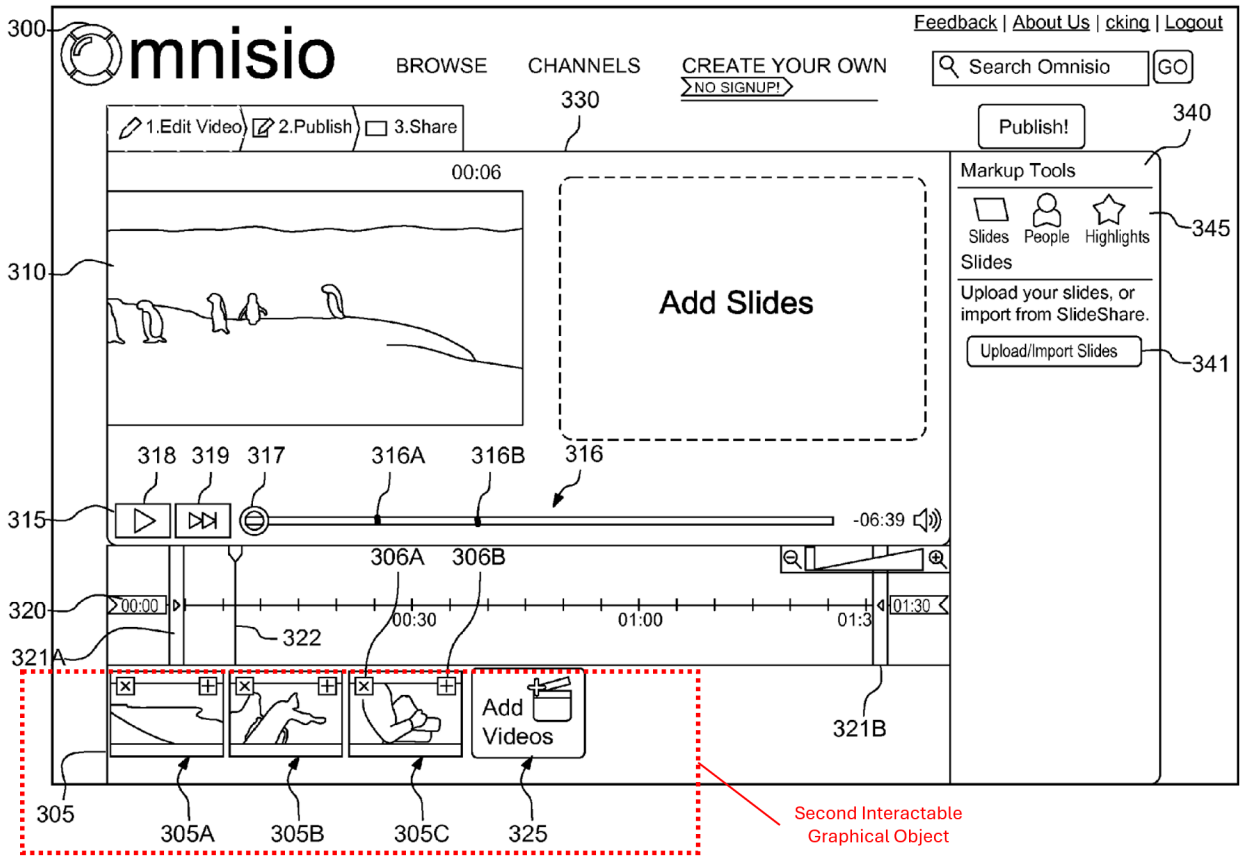
Ex-1006, FIG. 13 (red highlighting added). De Jong's playback controls are semitransparent such that a portion of the video content is visible behind the playback controls. Ex-1002, ¶118.

Houh teaches that "**[s]emi-transparent icons can overlay a portion of video content** to indicate the availability of additional content, such as advertisements, information or facts…Advertising content in the form of **text can overlay on top of video**." Ex-1020, 14:28-39. Thus, Houh explicitly discloses overlaying **an interactable graphical object** (semi-transparent icons) onto **a display window** (GUI element displaying video content). Ex-1002, ¶119.

A PHOSITA would have combined the teachings of Junee, De Jong, and Houh *supra* §V(Ground1)(B). Ex-1002, ¶¶74-78, 120.

Limitation [1k]

Junee, De Jong, and Houh render obvious this limitation. Junee teaches: "the compilation includes three videos 305A-C, which are depicted using **thumbnails representations of their content**." Ex-1005, 4:65-67. Thus, Junee teaches an example of **a second interactable graphical object** (portion of Junee's GUI with thumbnail representations of the videos 305A-305C) to display **a number of graphic elements** (thumbnail representations) each associated with **a virtual clip** (videos 305A-305C):



Ex-1005, FIG. 3A (red highlighting added); Ex-1002, ¶121.

De Jong and Houh each teach semi-transparent graphical interface objects overlaid onto a display window. A PHOSITA would have combined the teachings of Junee, De Jong, and Houh *supra* §V(Ground1)(B). Ex-1002, ¶¶74-78, 122-125.

Limitation [1l]

Junee alone or in view of De Jong renders obvious this limitation. Junee discloses the video segment bar 316 includes a "thumb marker 317," which "displays the current playback location, including both the video that is being played and the location within that video." Ex-1005, 5:25-27. Thus, Junee provides a graphical interface object (thumb marker 317) that tracks **a display position** along **a timeline** (video segment bar 316) as the video compilation is played. Ex-1002, ¶126.

If user interactions with the video segment bar 316 (*e.g.*, to select a particular playback location) is not disclosed in Junee, then it would have been obvious to configure the thumb marker 317 to be user interactable. This would provide users a convenient way to select a playback location within the video compilation according to Junee's teachings. Moreover, Junee already discloses **user interactable** graphical interface objects displayed on a timeline. *See* Ex-1005, 7:61-64; Ex-1002, ¶127.

De Jong discloses a "timeline of the movie…shown divided into a plurality of segments, each segment relating to a different highlight. An icon is shown on the timeline indicating the position within the movie currently being displayed." Ex-1006, ¶0380. "The icon (or slider) can **preferably be manipulated by the user**…to

allow the user to select the video image data being displayed." Ex-1006, ¶0232. Thus, De Jong teaches **receiving user input** (interactions with the icon) **indicating an interaction of the user with a first display position on the timeline** (location of icon along the timeline). Ex-1002, ¶128.

A PHOSITA would have combined the teachings of Junee and De Jong *supra* §V(Ground1)(B). Ex-1002, ¶¶79-82, 129-130.

Limitation [1m]

Junee alone or in view of De Jong renders obvious this limitation. Junee discloses a "thumb marker 317," which "displays the current playback location." Ex-1005, 5:25-26. The editing database 154 of Junee stores "**an indicator (such as a time range)** and **an indicator of the order of the video within the compilation**." Ex-1005, 4:28-30. It would have been obvious to **determine a selected time** using the current playback location, which graphically relates position with time, and the time range and the order of the videos in the video compilation. Ex-1002, ¶131.

If Junee does not render obvious this limitation, De Jong teaches "[t]he icon (or slider) [on a timeline] can **preferably be manipulated by the user**…to **allow the user to select the video image data being displayed**." Ex-1006, ¶0232. De Jong teaches "[o]ne end of the timeline indicates the start of the video…the other end of the timeline indicating the end of the video." *Id.*; Ex-1002, ¶132.

A PHOSITA would have combined the teachings of Junee and De Jong *supra*

§V(Ground1)(B). Ex-1002, ¶¶79-82, 132.

Limitation [1n]

Junee discloses this limitation. Junee discloses a "video segment bar 316 [that] displays **the relative lengths of each of the videos in the video set 305**." Ex-1005, 5:19-21. Because displaying the relative lengths of each video on the video segment bar 316 requires knowing which videos are in the video compilation, Junee's system provides identifying the plurality of displayable virtual clips. Ex-1002, ¶133.

Junee further teaches a GUI that displays a video set 305, which includes videos selected for inclusion in a video compilation. Ex-1005, 4:62-65. Junee discloses the videos in the video set 305 are "**selected** via the interface of FIG. 2," which allows the user to "**specify[] the videos to be included in the compilation**." Ex-1005, 44:46-47, 4:64-65. Thus, Junee discloses a mechanism for **identifying a plurality of displayable virtual clips** (videos 305A-305C). Ex-1002, ¶134.

If Junee does not disclose identifying a plurality of displayable virtual clips, then Junee and De Jong render it obvious. De Jong discloses "**the movie formed from the various highlights can be viewed by a user**, at the same time as the user being able to manipulate the highlights." Ex-1006, ¶0380. In FIG. 19 of De Jong, the highlight clips are arranged in chronological order and displayed beneath the timeline. Ex-1006, FIG. 19. Accordingly, De Jong discloses **identifying virtual**

clips (highlight clips) that span different portions of a timeline. Ex-1002, ¶135.

A PHOSITA would have combined the teachings of Junee and De Jong *supra* §V(Ground1)(B). Ex-1002, ¶¶83-86, 136.

Limitation [1o]

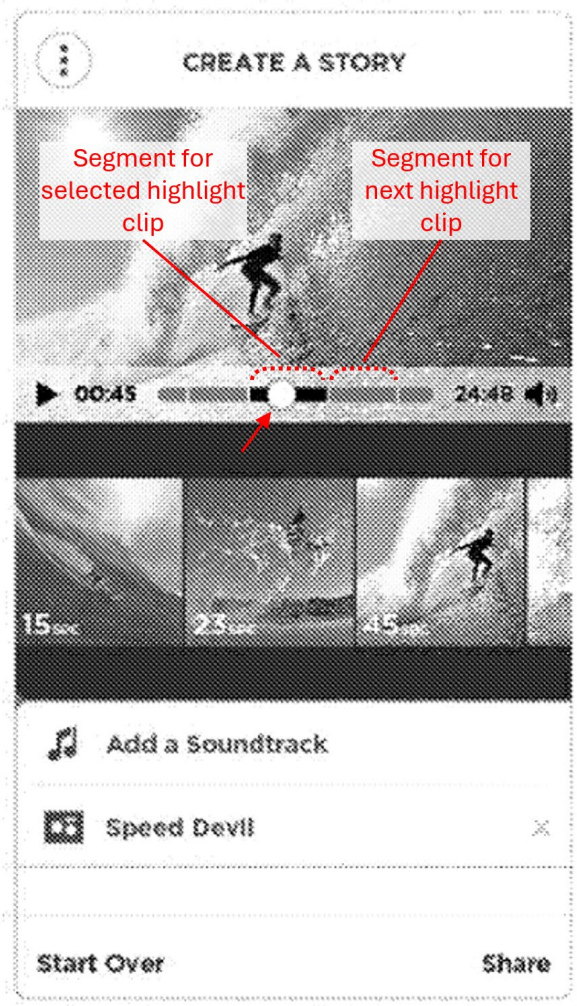
Junee alone or in view of De Jong renders obvious this limitation. Junee discloses the video segment bar 316 includes a "thumb marker 317," which "displays the current playback location, including both the video that is being played and the location within that video." Ex-1005, 5:25-27. Junee further discloses "the video segment bar 316 displays **the relative lengths of each of the videos in the video set 305, with dividers 316A and 316B demarcating the boundaries of the videos**." Ex-1005, 5:19-22; Ex-1002, ¶137.

In Junee, a video is a first virtual clip in accordance with this limitation when: (a) the display position of the thumb marker 317 overlaps the portion of the video segment bar 316 corresponding to the video; and (b) the display position is closer to the start time of the video than any other video. There may be videos preceding and/or subsequent to the selected video for any display position on the video segment bar 316. *See* Ex-1005, FIG. 3A. Even if the video that is being played does not qualify as a first virtual clip, the next video on the video segment bar 316 would qualify as a first virtual clip. Accordingly, Junee teaches **a first virtual clip** (video currently being played, next video) **of a plurality of virtual clips** (videos) where **a**

first time of the virtual clip (start time of each video) is closest to the selected time. Ex-1002, ¶138.

If June alone does not render obvious this limitation, De Jong teaches a GUI that includes a timeline and an icon where "[t]he icon (or slider) [on a timeline] can preferably be manipulated by the user, *i.e.* by moving the icon along the timeline, so as to allow the user **to select the video image data being displayed**." Ex-1006, ¶0232. Thus, the display position of the icon in De Jong represents a selected time in De Jong's movie. Ex-1002, ¶139.

De Jong further teaches "[t]he timeline of the movie [in FIG. 19] is shown divided into a plurality of segments, **each segment relating to a different highlight**. An icon is shown on the timeline indicating the position within the movie currently being displayed":



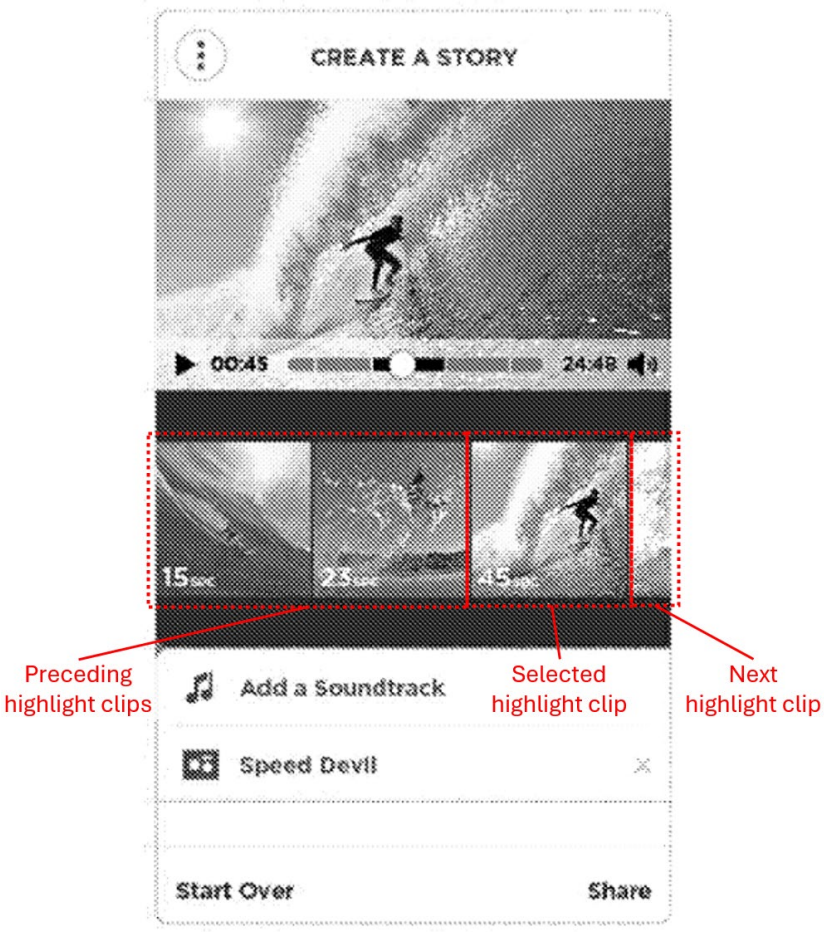
Ex-1006, ¶0380, FIG. 19 (red highlighting added). Thus, in De Jong, the display position of the icon on the timeline coincides with a segment corresponding to the selected highlight clip. Ex-1002, ¶140.

The highlight clip is a first virtual clip in accordance with this limitation when: (a) the display position of the icon overlaps the segment corresponding to the highlight clip; and (b) the display position is closer to the start time of the highlight clip than any other highlight clip. De Jong also shows multiple highlight clips are identified and displayed preceding and subsequent to the selected time. Ex-1006,

FIG. 19 (see display of multiple segments for highlight clips before and after selected time of 45 seconds). Even if the selected highlight clip does not qualify as a first virtual clip, the next highlight clip identified in De Jong would qualify as a first virtual clip. Accordingly, De Jong teaches **a first virtual clip** (selected highlight clip, next highlight clip) **of a plurality of virtual clips** (multiple highlight clips) where **a first time of the virtual clip** (beginning of each segment) is closest to the selected time. Ex-1002, ¶¶83-86, 141.

Limitation [1p]

See limitations [1n] and [1o]. Figure 19 of De Jong, reproduced below, shows multiple highlight clips are identified preceding and subsequent to the selected time in the format of a highlight reel:



Ex-1006, FIG. 19 (red highlighting added). There are two highlight clips shown as preceding and one highlight clip subsequent to the selected highlight clip at 45 seconds. Ex-1002, ¶¶142-143.

Thus, De Jong discloses **identifying** (i) **one or more of the virtual clips wherein the corresponding first time precedes and is approximate to the first time of the first virtual clip** (highlight clips preceding the selected highlight clip), and (ii) **one or more of the virtual clips wherein the corresponding first time is subsequent and approximate to the first time of the first virtual clip** (highlight clips following the selected highlight clip). FIG. 19 of De Jong further shows the

number of highlight clips displayed in a user interface is limited. Ex-1002, ¶144.

It would have been obvious to modify Junee's system to identify and display a limited number of highlight clips for selection to display highlight clips that are intelligible and easily interactable, which aids the creation of a video compilation pursuant to Junee's teachings. Ex-1002, ¶¶83-86, 145.

Limitation [1q]

Junee and De Jong render obvious this limitation. Junee discloses an example of **a second interactable graphical object** (portion of Junee's GUI with thumbnail representations of the videos 305A-305C), which displays a number of graphic elements (thumbnail representations) each associated with a virtual clip of the plurality (videos 305A-305C). A PHOSITA would have appreciated Junee's user interface provides support for multiple interactable graphical objects to display graphical elements associated with corresponding virtual clips. Ex-1002, ¶146.

It would have been obvious to update Junee's GUI to display a list of highlight clips according to De Jong's teachings because the display of multiple video clips in Junee would aid the creation of a video compilation pursuant to Junee's teachings. Ex-1002, ¶¶83-86, 147-148.

CLAIM 7

Limitation 7[a]

See claim 1. Junee and De Jong render obvious this limitation. De Jong discloses "receiving an **first input to cause the camera to start recording**." Ex-1006, ¶0097. De Jong further discloses "**storing highlight data** identifying one or more times of interest in the video image data." Ex-1006, ¶0100. Thus, De Jong discloses **causing a recording device** (camera) to begin capturing **a recording of live content** (recording from the camera) in response to a first input. Ex-1002, ¶149.

It would have been obvious to modify Junee's system to support the capture of a live video recording according to De Jong's teachings because this would enable users to incorporate live content in a video compilation as the live content is broadcast in real time. It would have also been obvious to modify Junee's system to include a recording device, such as De Jong's camera, to capture the recording, which can then be uploaded to the video hosting server 108 of Junee. Ex-1005, 3:15-18, 2:55-57. Example uses of Junee's modified system include: generation of instant replays with annotations during a live broadcast to share with other users of a social networking site; facilitating interactions between users during a livestream through the creation and publication of video compilations incorporating content from the livestream. Ex-1002, ¶¶150-151.

Limitation [7b]

Petitioner notes the recitations of "first position" and "second position" lack antecedent basis. The only other recitation of the term "position" is in claim 1, which recites a "display position" on a timeline corresponding to a user selected time. Petitioner assumes, while not conceding the claim language is not indefinite, the first position and the second position in this limitation refer to the start and the end, respectively, of the first virtual clip. Ex-1002, ¶155.

Junee and De Jong render obvious this limitation. De Jong discloses "[t]he highlight data can comprise…one or more time periods in the video image data…**each time period is referred to herein as a 'highlight'**." Ex-1006, ¶0113. De Jong further describes "[a] highlight…comprises…(iv) **a start time identifying the start of the highlight**…(v) **an end time identifying the end of the highlight**." Ex-1006, ¶0115; Ex-1002, ¶152.

De Jong discloses "one or more times of interest in the video image data can be determined based on received data **indicative of a manual input, *i.e.* a user input**." Ex-1006, ¶0117, ¶0119. De Jong further discloses "data indicative of such manual inputs will be received **during the recording of the video image data**." Ex-1006, ¶0119. Because De Jong discloses manually created highlights have a start time and an end time, De Jong obviously receives separate manual user inputs defining a start time and an end time for the highlight. Thus, De Jong teaches while

the recording device (camera) is **capturing a live event** (recording from the camera), **receiving user inputs** (manual inputs) to **create a virtual clip** (a highlight) with **a first time** (a start time) and **a second time** (an end time). Ex-1002, ¶¶153-154.

De Jong further teaches "[t]he timeline of the movie is shown divided into a plurality of segments, **each segment relating to a different highlight**." Ex-1006, ¶0380. Thus, De Jong discloses highlights having a first time corresponding to **a first display position** (beginning of the segment) and a second time corresponding to **a second display position** (end of the segment). Ex-1006, ¶0380, FIG. 19; Ex-1002, ¶156.

It would have been obvious to modify Junee's system to support the manual creation of videos for a video compilation while capturing a live recording as taught by De Jong because this would enable users to rapidly create videos, such as instant replays, in real time while controlling the portion of the live content included in the video. Ex-1002, ¶157.

Ground 2. Claims 5, 6: Obviousness over Junee, De Jong, Houh, and Lee

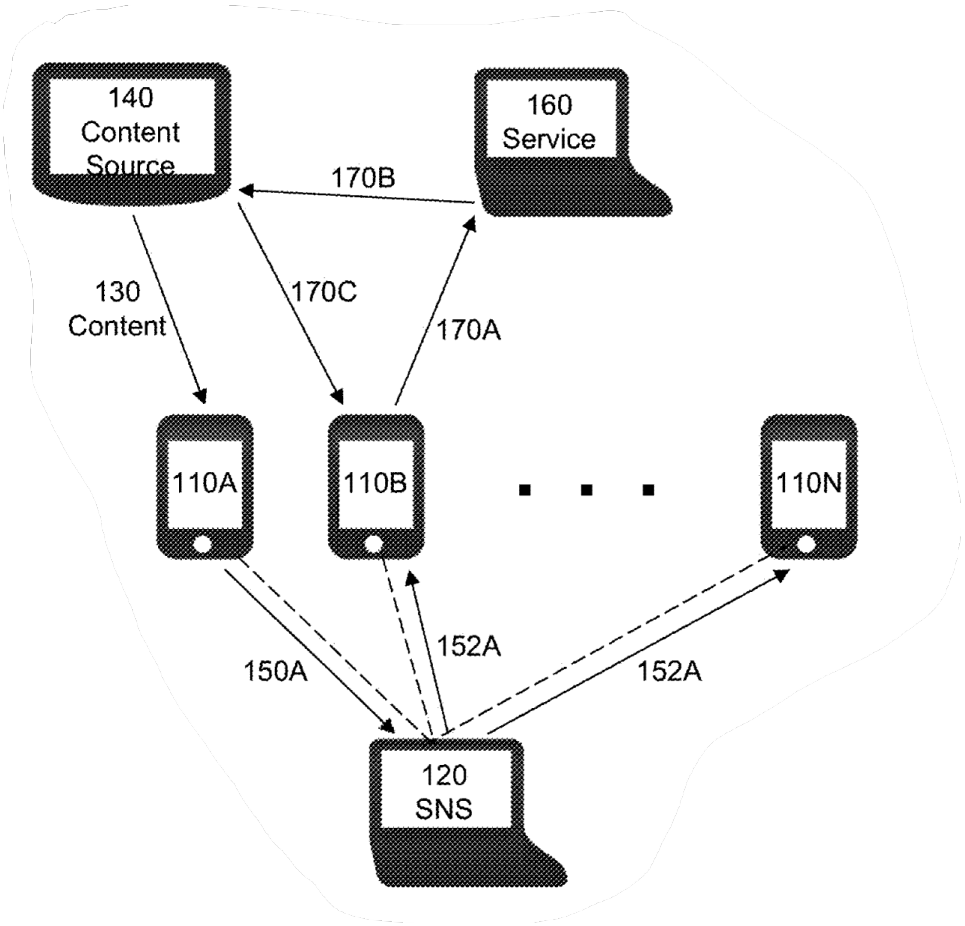
Claim 5 depends from claim 1. Claim 6 depends from claim 5. Claims 5 and 6 would have been obvious over **Junee**, **De Jong**, and **Houh** as set forth in Ground 1, further in view of **Lee**.

A. Overview of the Ground

Junee in view of De Jong, Houh, and Lee discloses or renders obvious the limitations of claim 5 directed to the display of a discussion thread. Lee teaches a user interface that displays a discussion thread associated with video content. Dependent claim 6 would have been obvious because Junee teaches user interactable thumbnail representations of videos and GUI elements that toggle the display of interactable graphical objects. Ex-1002, ¶163.

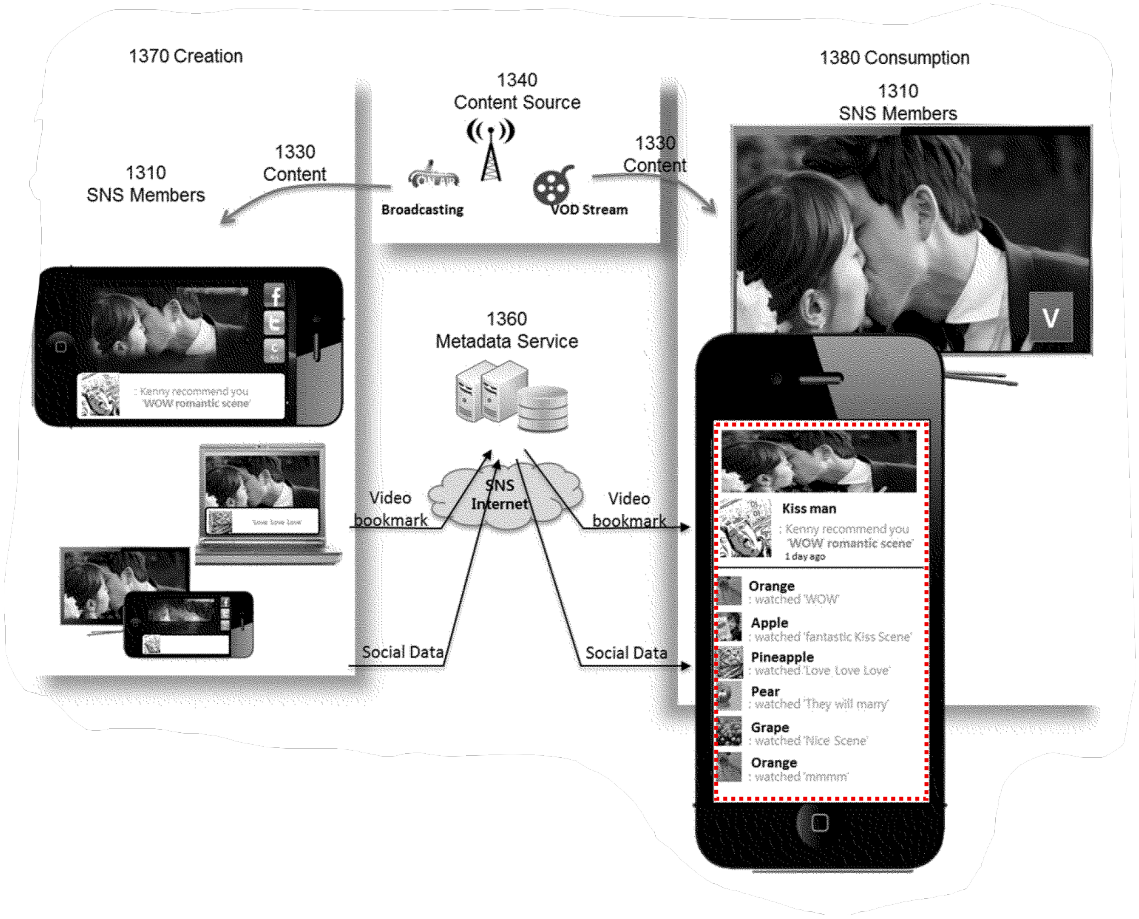
1. Overview of Lee

Lee discloses a system where "[m]embers of a social network service may share real-time comments about multimedia content they are viewing." Ex-1011, Abstract. Lee's system is illustrated in FIG. 1, reproduced below.



Ex-1011, FIG. 1. Lee explains that "the comments 150A are attached to bookmarks that mark corresponding time points in the content 130…The comments and bookmarks (collectively, referred to as **a discussion thread 152A**) are forwarded to other members 110B-N." Ex-1011, ¶0028; Ex-1002, ¶164.

FIG. 13 of Lee, reproduced below, shows an example discussion thread that "**appears in the SNS member's separate device**":



Ex-1011, ¶0057, FIG. 13; Ex-1002, ¶165.

B. Rationale (Motivation) Supporting Obviousness

Junee, De Jong, and Houh render obvious limitation 5[a]. Junee's GUI includes interactable graphical objects that each have a visible state and display annotations associated with a particular video in the video compilation. Ex-1005, 7:21-27 (menus 361A and 361B). Thus, Junee discloses examples of **a third interactable graphical object** (*e.g.*, menus 361A and 361B) having **a visible state** (visibility of the menus 361A and 361B is toggled by the icon set 362). It would have been obvious to add an additional menu to the menus 361A and 361B to display

other information associated with a video in the video compilation, such as a discussion thread as discussed under limitation [5b]. It would have also been obvious to overlay Junee's menus onto the playback area 310 according to the teachings of De Jong and Houh. This modification would allow for an even larger-sized playback area 310 to view video content without sacrificing the user's ability to display and interact with annotations. Ex-1002, ¶166.

Junee, De Jong, Houh, and Lee render obvious limitation 5[b]. Lee discloses a system where "[m]embers of a social network service may share real-time comments about multimedia content they are viewing." Ex-1011, Abstract. Lee explains the comments "are attached to bookmarks that mark corresponding time points in the content 130…**The comments and bookmarks (collectively, referred to as a discussion thread 152A)** are forwarded to other members 110B-N." Ex-1011, ¶0028. Thus, Lee discloses displaying **a discussion thread** (the discussion thread 152A) comprising **annotations** (comments and bookmarks) associated with **a selected virtual clip** (multimedia content). Ex-1002, ¶¶167-168.

It would have been obvious to modify a third interactable graphical object taught by Junee to display a discussion thread comprising annotations (comments and bookmarks) associated with a selected virtual clip according to Lee's teachings. The discussion thread can be implemented as an additional menu to the menus 361A and 361B to display comments by different users in a format that can be easily

viewed by the author during post-publication viewing. The selective display of a discussion thread for each video in a video compilation would also allow users to assess user engagement with different portions of the compilation, reduce the risk of cognitive overload, and obstructions to the playback area 310. Ex-1002, ¶169.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by Lee in the same way. Ex-1002, ¶¶170-171.

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in incorporating the use of a discussion thread, as taught by Lee, into the system of Junee as modified by De Jong and Houh. The art in the relevant timeframe was predictable, and basic features to create and display comments associated with media content, like those in Junee and Lee, were well-known. The '442 patent's general and high-level disclosures support this understanding of the relevant art. Ex-1002, ¶¶172-174, 184, 188.

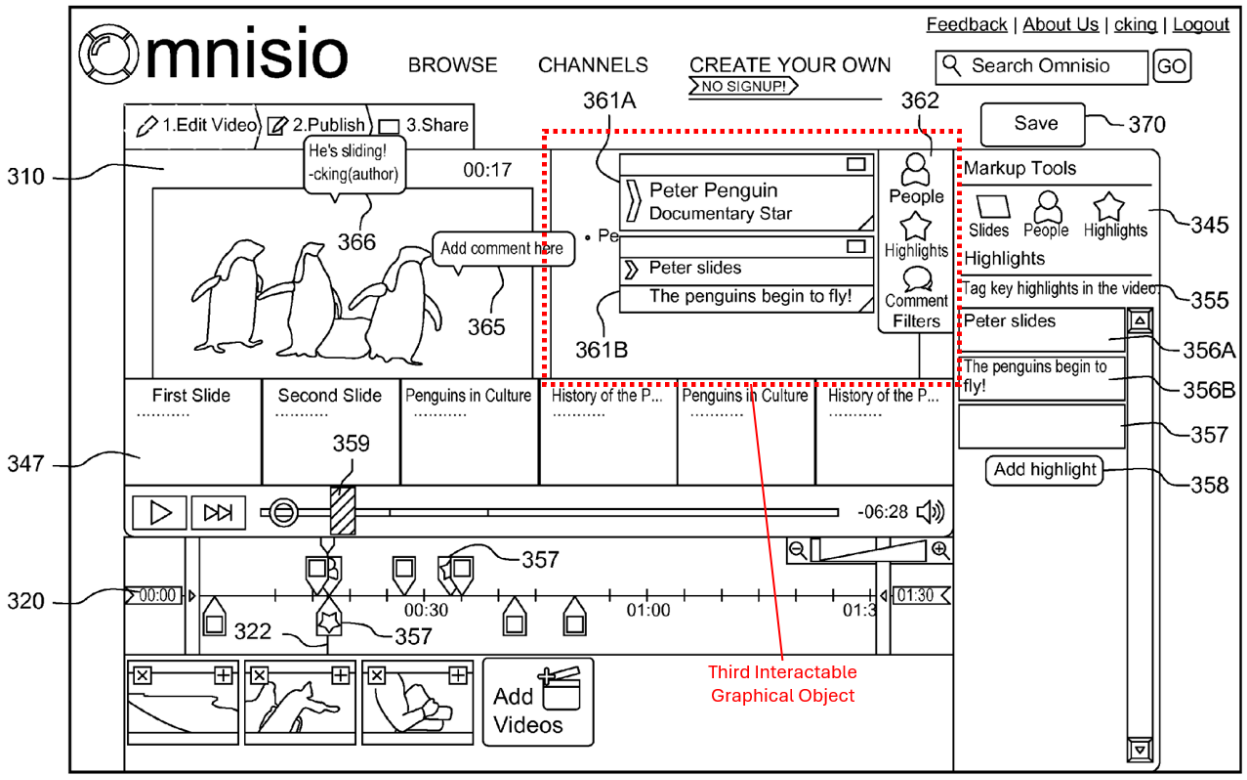
D. Claim Mapping

CLAIM 5

Limitation 5[a]

See claim 1. Junee, De Jong, and Houh renders obvious this limitation. Junee's GUI includes interactable graphical objects that each have a visible state and display

annotations associated with a particular video in the video compilation. Ex-1005, 7:21-27 (menus 361A and 361B). In FIG. 3E, reproduced below, "selecting the 'People' or 'Highlights' icons within icon set 362 **causes menus 361A and 361B to appear or disappear, respectively**. Menus 361 display the **people and highlights annotations**, respectively, with which **videos of the video compilation have been annotated**." Ex-1005, 7:21-27.



Ex-1005, FIG. 3E (red highlighting added). Thus, Junee discloses examples of **a third interactable graphical object** (*e.g.*, menus 361A and 361B) having **a visible state** (visibility of the menus 361A and 361B is toggled by the icon set 362). A PHOSITA would have extended the teachings of Junee *supra* §V(Ground2)(B). Ex-

1002, ¶178.

De Jong and Houh each teach semi-transparent graphical interface objects overlaid onto a display window. A PHOSITA would have combined the teachings of Junee, De Jong, and Houh *supra* §V(Ground2)(B). Ex-1002, ¶¶166, 179.

Limitation [5b]

Petitioner notes this limitation is not disclosed in the specification of the '442 patent. The '442 patent, when discussing the discussion thread, does not refer to annotations, but rather "entries" and "information." Ex-1001, 19:39-44. Accordingly, Petitioner interprets "annotations" to include entries and/or information, such as user comments. Ex-1002, ¶180.

Junee, De Jong, Houh, and Lee render obvious this limitation. Junee discloses when publishing a video compilation, "[r]elated information, such as…**whether users other than the author can provide comments**, can also be specified." Ex-1005, 8:2-7. Also, "**during post-publication viewing**, any previously-specified annotations are displayed" via the GUI of at least FIGS. 3D and 3E. Ex-1005, 8:12-13. Thus, users can add comments to a video compilation and the author can use Junee's GUI to view annotations associated with each video after publication. Ex-1002, ¶181.

Lee discloses a system where users "may share real-time comments about multimedia content they are viewing." Ex-1011, Abstract. The comments "are

attached to bookmarks that mark corresponding time points in the content 130…**The comments and bookmarks (collectively, referred to as a discussion thread 152A)** are forwarded to other members 110B-N." Ex-1011, ¶0028. "**[T]he discussion thread** appears in the SNS member's separate device" or "**the discussion thread** could appear within the playback screen." Ex-1011, ¶0057. Thus, Lee discloses displaying **a discussion thread** (discussion thread 152A) comprising **annotations** (comments and bookmarks) associated with **a selected virtual clip** (multimedia content). Ex-1002, ¶182.

A PHOSITA would have combined the teachings of Junee and Lee *supra* §V(Ground2)(B). Ex-1002, ¶¶167-171, 183-184.

CLAIM 6

Junee, De Jong, Houh, and Lee render obvious this claim. Junee discloses GUI elements (icon set 362) to receive user input that toggles the display of the menus 361A and 361B. *See* limitation [5a]. Ex-1002, ¶185.

It would have been obvious to include a GUI element that provides the same functionality as the icons in the icon set 362 taught by Junee to receive user input that toggles the display of the third interactable graphical object. This would allow users to toggle the third interactable graphical object on and off to view a discussion thread and to provide a less obstructed view of the playback area 310, respectively. Ex-1002, ¶186.

It also would have been obvious for a PHOSITA to integrate the GUI element into the thumbnail representations of the videos in the second interactable graphical object such that user interactions with a particular thumbnail representation triggers the display of a discussion thread for that video. Combining the GUI element responsible for toggling the display of the discussion thread and the user interactable thumbnail representations of Junee would reduce the number of GUI elements in Junee's GUI, thus minimizing obstructions to the playback area 310 when these GUI elements are visible. Ex-1002, ¶¶187-188.

Ground 3. Claim 8: Obviousness over Junee, De Jong, Houh, Syed, Giunio-Zorkin, and Kwon

Claim 8, which depends from claim 1, would have been obvious over **Junee**, **De Jong**, and **Houh** as set forth above in Ground 1, further in view of **Syed**, **Giunio-Zorkin**, and **Kwon**.

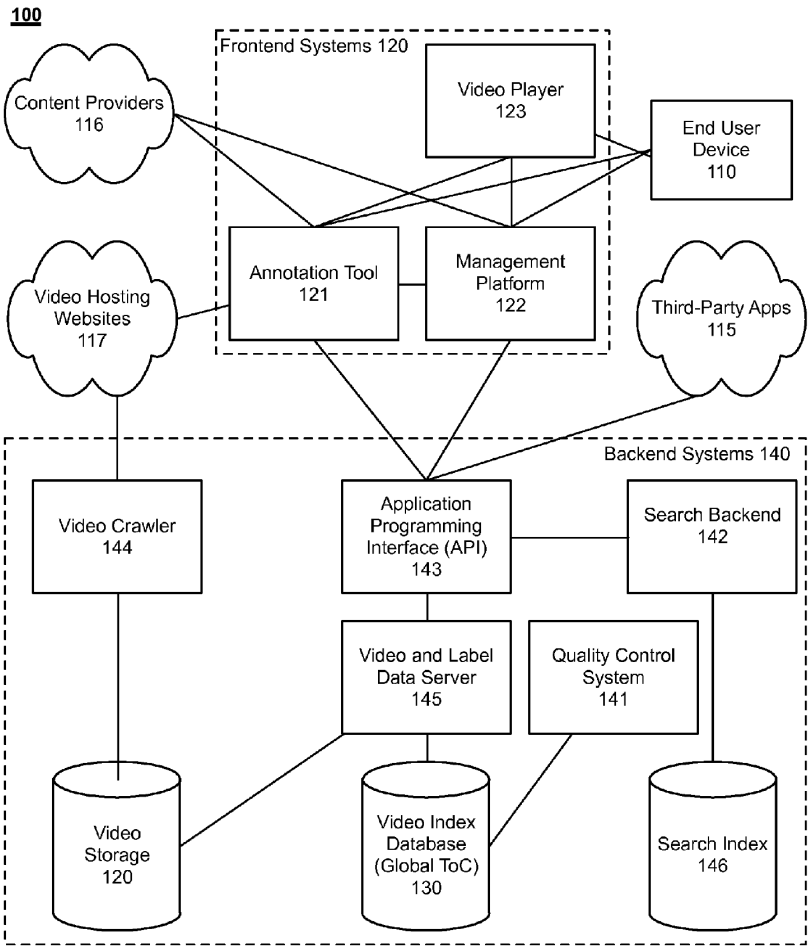
A. Overview of the Ground

Junee, De Jong, Houh, Syed, Giunio-Zorkin, and Kwon disclose or render obvious the limitations directed to determining a user input comprises a character string in a predetermined format, identifying one or more taxonomy tags from the user input, and associating a virtual clip with the one or more taxonomy tags to produce a searchable virtual clip. Syed teaches adding a tag to a video using a tag format comprising a tag identifier and a first tag, identifying a tag from user input, and associating tags with a virtual clip to create a searchable virtual clip. Giunio-

Zorkin teaches a taxonomy tag format with a first tag and multiple subtags separated by a delimiter. Kwon teaches identifying multiple tags from user input. Ex-1002, ¶195.

1. Overview of Syed

Syed is directed to "systems and methods for discovering and consuming video content." Ex-1009, ¶0004. Syed's system is illustrated in FIG. 1, reproduced below, which shows "a block diagram illustrating…a video consumption and discovery service 100." Ex-1009, ¶0049.

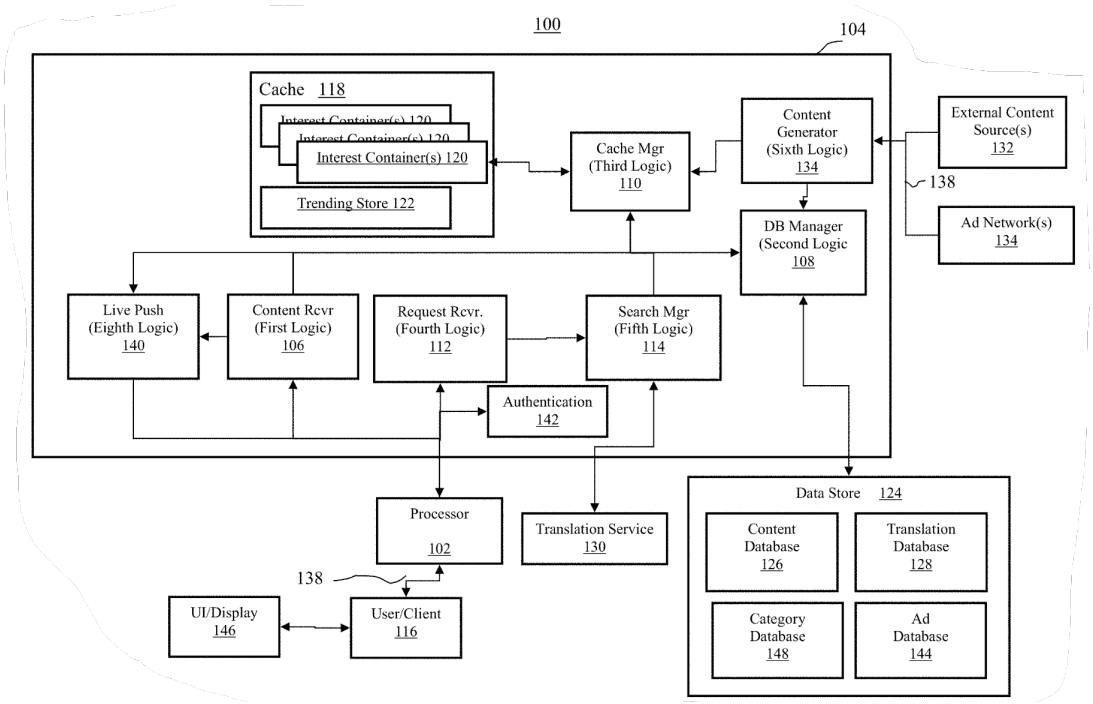


Ex-1009, FIG. 1. Syed's "annotation tool 121 is presented to users of client devices

(*e.g.*, end user device 110) while they are watching a video and allows users to communicate facts, opinions and/or emotions, collectively referred to herein as **annotations**, about specific moments, portions or segments of a video." Ex-1009, ¶0057. In Syed, annotations may include "**one or more of labels**, **tags**." Ex-1009, ¶0037. "[A] tag or a label may be in the form of **a hash tag that is similar to hash tags on Twitter**." *Id*. The terms "label" and "tag" are used interchangeably in Syed and thus are equivalent in the context of Syed's teachings. Ex-1002, ¶¶196-199.

2. Overview of Giunio-Zorkin

Giunio-Zorkin is directed to "systems and methods for efficiently and automatically distributing content among a plurality of users." Ex-1013, 4:46-48. Giunio-Zorkin's system is illustrated in FIG. 1, reproduced below, which shows "a block diagram of a system 100…for automated electronic distribution of a content item." Ex-1013, 6:5-7.



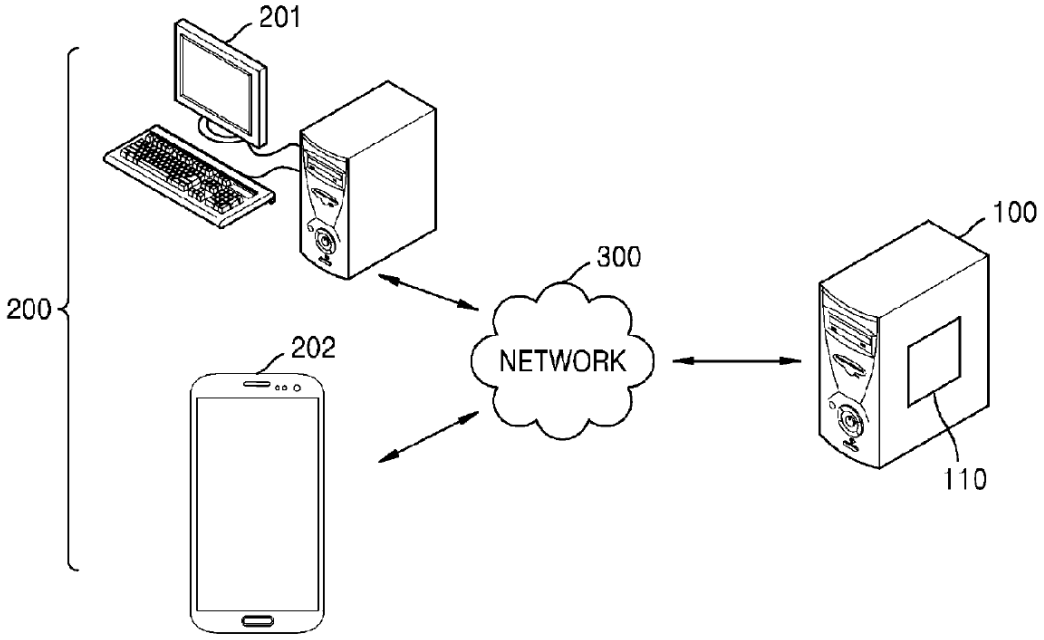
Ex-1013, FIG. 1. Giunio-Zorkin explains "a 'content item' may refer to a data item or data structure which includes content or links/references thereto, *e.g.*, data such as one or more text strings, images, etc." Ex-1013, 6:66-7:2; Ex-1002, ¶200.

Giunio-Zorkin discloses "**a taxonomy of tags**, *e.g.*, keyword metadata or keywords" to provide "semantics or a context" for the content items. Ex-1013, 11:59-60, 12:1. Giunio-Zorkin further teaches "**[c]ontent items are associated with data indicative of a subset of one or more of the keywords** selected from the plurality of keyword sets." Ex-1013, 12:30-32. Giunio-Zorkin further teaches that "[g]enerally, the association of keywords **facilitates the discovery of content** that is of interest to the user by enabling the system 100 to **correlate the interests of the user against the context/relevance of the available content items and content**

items related thereto." Ex-1013, 13:63-67; Ex-1002, ¶¶201-203.

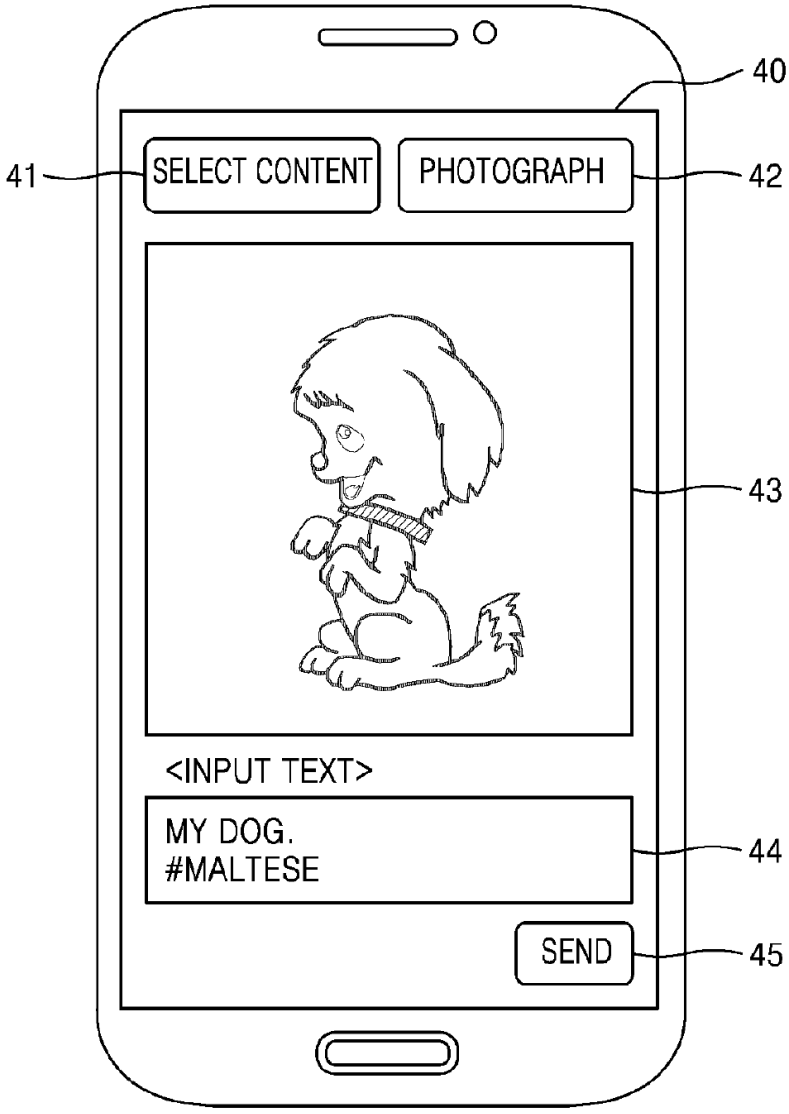
3. Overview of Kwon

Kwon is directed to "methods, apparatuses, and/or computer programs for managing content." Ex-1012, ¶0003. Kwon's system is illustrated in FIG. 1, reproduced below.



Ex-1012, FIG. 1. Kwon's system comprises "an apparatus 110 for managing contents," which "includes a receiver 111, a content registerer 112." Ex-1012, ¶0033, 0036. "The receiver 111…may receive content and a user tag from, for example, the user terminal 200…A type of the content may be an image, a video, or a sound source." Ex-1012, ¶0037; Ex-1002, ¶204.

Kwon discloses in FIG. 4, reproduced below, "an example of a screen 40 provided by the receiver 111." Ex-1012, ¶0059.



Ex-1012, FIG. 4. "**The user may input a tag to be assigned to the content 43 by using a certain identifier**. In FIG. 4, **the certain identifier may be a hash tag '#'**." Ex-1012, ¶0061; Ex-1002, ¶205.

B. Rationale (Motivation) Supporting Obviousness

Junee, De Jong, Houh, Syed, Giunio-Zorkin, and Kwon render obvious the following limitations. Ex-1002, ¶¶206-207.

Limitations [8b] and [8c]

Junee, De Jong, Houh, and Syed render obvious limitation [8b]. Syed describes an "annotation tool…which allows users to **specify content** and placement of **a label or tag**…**within a video**." Ex-1009, ¶0031. Syed states, "a tag or a label may be in the form of **a hash tag that is similar to hash tags on Twitter**." Ex-1009, ¶0037. Thus, Syed discloses **determining a user input comprises a character string in a predetermined format** (a tag or a label in the form of a hash tag). Syed further teaches "a label or a tag" can include "a short description of a video segment." Ex-1009, ¶0031. Thus, Syed discloses **determining a user input** (user input received by the annotation tool) **comprises a character string in a predetermined format** (a tag in the form of a hash tag), which includes **a tag identifier** ("#" symbol) and a **first tag** (short description of a video segment) following the tag identifier. Ex-1002, ¶¶208-209.

It would have been obvious to modify Junee's system to receive user input comprising a character string that conforms to a predetermined format, such as the hash tag format taught by Syed. This modification would allow users to associate annotations with the video compilation as metadata to facilitate retrieval in response to a query. This modification would not be limited to compilations with multiple videos, but would also apply to single videos. Ex-1005, 4:21-23 ("video compilations…may include a single video.") Thus, adding metadata to a video

compilation containing a single video is functionally equivalent to adding metadata directly to the single video. Ex-1002, ¶235.

If this limitation requires the tag identifier to indicate the user input includes taxonomy tags, then Junee, De Jong, Houh, Syed, and Giunio-Zorkin render obvious limitation [8b]. Furthermore, Junee, De Jong, Houh, Syed, and Giunio-Zorkin render obvious limitation [8c]. Giunio-Zorkin discloses "keyword metadata," which are "**keywords or tags associated with the content items**." Ex-1013, 11:15-16. Giunio-Zorkin teaches the keyword metadata may be in the form of "**a taxonomy of tags**" where "the available keyword metadata…is organized into a plurality of keyword sets/hierarchies, where **each keyword set includes a hierarchical sequence of keywords**." Ex-1013, 11:59-11:67. Giunio-Zorkin further discloses examples of keyword sets with delimiters (*e.g.*, ";", ":"). Ex-1013, 12:7-12:11. Thus, Giunio-Zorkin teaches a predetermined format that includes **one or more subtags** (keywords that follow the first keyword) **sequentially following a first tag** (first keyword in a keyword set) and **delimited by a delimiter character** (delimiters between the keywords). Ex-1002, ¶¶210-211.

It also would have been obvious to modify Junee's system to use the taxonomy tags taught by Giunio-Zorkin "for the purpose of distributing and/or facilitating discovery of that content item." Ex-1013, 11:6-7. Giunio-Zorkin's system "maps or otherwise correlates the interests of each user against the interest

classification(s) of content items to determine which content items to transmit to a user." Ex-1013, 11:10-13. The addition of taxonomy tags as metadata to a video compilation in Junee's system would facilitate retrieval of video compilations more aligned to the interests of the user submitting a query. Ex-1002, ¶212.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by Syed and Giunio-Zorkin in the same way. Ex-1002, ¶¶213-214.

Limitation [8d]

Syed discloses "automated label integration/filtering processing," which is "triggered as a result of the addition of a new label." Ex-1009, ¶0119. Because the automated label integration/filtering processing disclosed in Syed requires addition of a new label, this shows Syed's system provides a process to identify a label from user input to evaluate whether a new label was added. Ex-1009, ¶¶0037, 0119, FIG. 9. Thus, Syed discloses **identifying *one* taxonomy tag from the user input** (identifying tags from user input before label integration/filtering processing). Ex-1002, ¶215.

It would have been obvious to modify Junee to identify a tag from user input according to Syed's teachings because this would facilitate the use of taxonomy tags, such as by differentiating user input that includes a tag from other user input that

would otherwise not be eligible for use as a tag. Ex-1002, ¶216.

If this limitation requires the capability to identify multiple taxonomy tags in the user input, Kwon discloses "[t]he user may input text to be uploaded together with the content 43 to a text input region 44." Ex-1014, ¶0061. Kwon further discloses "[i]n FIG. 4, the user input one tag, but **the user may input a plurality of tags**. For example, **when the user inputs '#Maltese #Dog', both a tag 'Maltese' and a tag 'Dog' are input**." Ex-1014, ¶0061. Kwon further discloses "[u]pon receiving the content 43 and the text, the content registerer 112 may register the content 43 and the text in the DB 114...**us[ing] the identifier included in the text to distinguish the user tag**." Ex-1014, ¶0063. Because Kwon's system supports user inputs with multiple tags and includes a content register that identifies tags for registration in a database based on the presence of tag identifiers in the user input, it would have been obvious for Kwon's system to **identify *multiple* taxonomy tags from user input** (multiple tags that each have a tag identifier, such as "#Maltese #Dog"). Ex-1002, ¶217.

It would have been obvious to identify multiple tags from a single user input in Junee's system according to Kwon's teachings. Doing so would expedite the process of associating multiple tags with a video or a video compilation in Junee. By allowing multiple tags to be associated with the same video in Junee, the video and/or the video compilation would also be more readily discoverable in response to

different search queries, thus improving the quality and relevance of search results. Ex-1002, ¶218.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by Syed and Kwon in the same way. Ex-1002, ¶¶219-220.

Limitation [8e]

Syed discloses that "**[t]ags proposed by the subscribers to be associated with various portions of the video content** are received, processed and integrated within a global ToC for the video." Ex-1009, Abstract. Syed further discloses a "[s]earch text entry field 315 [that] allows the user to initiate **a keyword search**…with results in the form of labels and/or **clips**." Ex-1009, ¶0084. "Some embodiments allow the user to filter **annotations by the type of user** that provided it. For example, **users can filter by themselves**, everyone, friends." Ex-1009, ¶0064. In Syed, a video clip may be "defined by a user by **proposing a label to be associated with a particular time offset within the video**." Ex-1009, ¶0086; Ex-1002, ¶221.

In Syed, filtering annotations, such as a label, by user type is equivalent to filtering clips by user type when the clips are defined by the labels. Thus, Syed teaches **associating the first virtual clip** (clip) with **one or more taxonomy tags**

(tags/labels) to produce **a searchable virtual clip** (clip) delivered to a requesting device in response to **a query** (keyword search, filter) from the requesting device for **any of the plurality of virtual clips** (clips) are associated with the **user profile** (users that filter themselves) and the **one or more taxonomy tags** (tags/labels). Ex-1002, ¶222.

It would have been obvious to modify Junee's system by associating the taxonomy tags of Syed with a video in the video compilation to facilitate retrieval of the video in response to a query. It also would have been obvious to implement features that allow users to search for video content based on a particular user and the taxonomy tags to further improve the quality and relevance of search results. Ex-1002, ¶223.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by Syed in the same way. Ex-1002, ¶¶224-225.

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in modifying Junee based on the teachings of Syed, Giunio-Zorkin, and Kwon. The art in the relevant timeframe was predictable, and basic formats for annotations like those disclosed in Syed, Giunio-Zorkin, and Kwon were well-known. The '442 patent's general and high-level disclosures support this understanding of the relevant

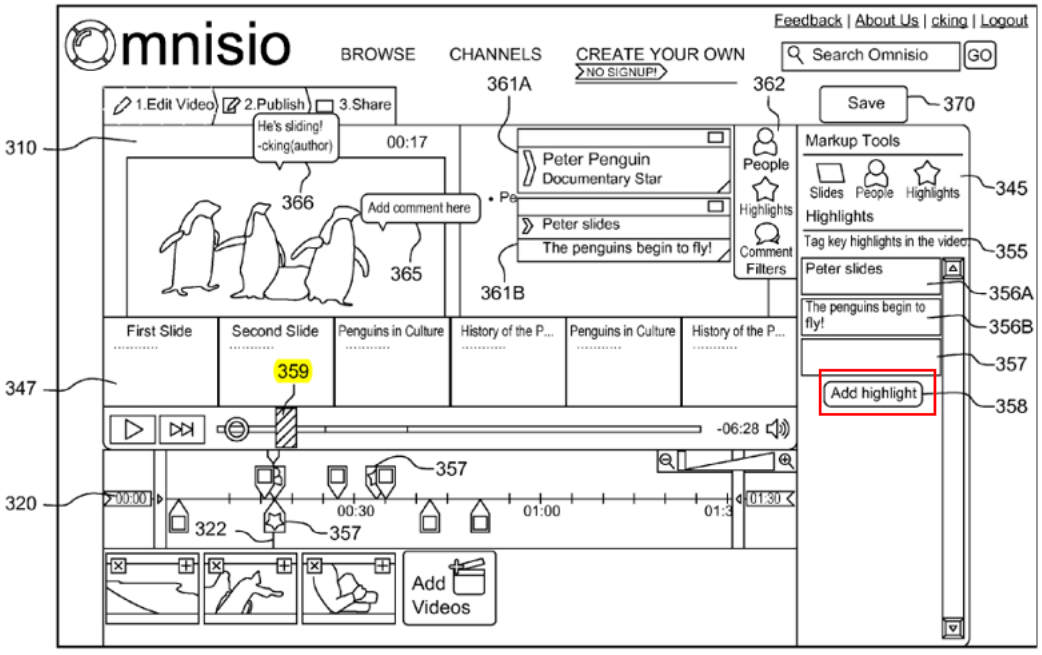
art. Ex-1002, ¶¶226-228, 236, 244, 246, 249.

D. Claim Mapping

CLAIM 8

Limitation 8[a]

See claim 1. Junee discloses this limitation. FIG. 3E of Junee, reproduced below, "depicts a user interface region 355 for **adding annotation related to highlights in a video**…**Selecting the button 358 creates a new highlight for the text within the current text field 357**, **associating it with the current time of the current video of the compilation**." Ex-1005, 7:6-14.



Ex-1005, FIG. 3E (red highlighting added). Thus, Junee discloses **receiving a second user input** (annotations related to highlights via text field 357 and button 358) **associated with a first virtual clip** (a video in the video compilation). Ex-

1002, ¶¶206, 232.

Limitation [8b]

Junee, De Jong, Houh, and Syed render obvious this limitation. Syed describes an "annotation tool…which allows users to **specify content** and placement of **a label or tag**…within a video." Ex-1009, ¶0031. "[A] tag or a label may be in the form of **a hash tag that is similar to hash tags on Twitter**." Ex-1009, ¶0037. Also, "a label or a tag" can include "a short description of a video segment." Ex-1009, ¶0031. Thus, Syed discloses **determining a user input** (user input received by the annotation tool) **comprises a character string in a predetermined format** (a tag in the form of a hash tag), which includes **a tag identifier** ("#" symbol) and a **first tag** (short description of a video segment) following the tag identifier. Ex-1002, ¶¶233-234.

A PHOSITA would have combined the teachings of Junee and Syed *supra* §V(Ground3)(B). Ex-1002, ¶¶208-214, 235-236.

If this limitation requires the tag identifier to indicate the user input includes taxonomy tags, then Junee, De Jong, Houh, Syed, and Giunio-Zorkin render it obvious. Giunio-Zorkin discloses "keyword metadata," which are "**keywords or tags associated with the content items**." Ex-1013, 11:15-16. Giunio-Zorkin teaches "**a taxonomy of tags**" where "the available keyword metadata…is organized into a plurality of keyword sets/hierarchies, where **each keyword set includes a hierarchical sequence of keywords**." Ex-1013, 11:59-11:67; Ex-1002, ¶¶237-238.

A PHOSITA would have further combined the teachings of Junee, Syed, and Giunio-Zorkin *supra* §V(Ground3)(B). Ex-1002, ¶239.

Limitation [8c]

Junee, De Jong, Houh, Syed, and Giunio-Zorkin render obvious this limitation. Giunio-Zorkin discloses examples of keyword sets as taxonomy tags: "Drinks; Alcohol; Wine; White; Pino Grigio; California; Berringer;" "World: North America: United States: Illinois: Cook County: Chicago: Lincoln Park." Ex-1013, 12:7-12:11. A PHOSITA would have recognized the foregoing examples include commonly-used delimiters (";") and (":"). *See* Ex-1019 at 152. Thus, Giunio-Zorkin teaches **one or more subtags** (keywords that follow the first keyword) **sequentially following a first tag** (first keyword in a keyword set) and **delimited by a delimiter character** (delimiters between keywords). Ex-1002, ¶¶240-241.

A PHOSITA would have combined the teachings of Junee and Giunio-Zorkin *supra* §V(Ground3)(B). Ex-1002, ¶¶208-214, 242.

Limitation [8d]

Junee, De Jong, Houh, and Syed render obvious this limitation. Syed's system includes a "video label integration and indexing module 247," which provides "automated label integration/filtering processing." Ex-1009, ¶0075. Syed "assumes automated label integration/filtering processing has been triggered as a result of the

addition of a new label." Ex-1009, ¶0119. Because the automated label integration/filtering processing requires addition of a new label, this shows Syed's system provides a process to **identify a tag from user input** to evaluate whether a new label was added. Ex-1009, ¶¶0037, 0119, FIG. 9. Thus, Syed discloses **identifying *one* taxonomy tag from the user input** (identifying a tag from user input before label integration/filtering processing). Ex-1002, ¶243.

A PHOSITA would have combined the teachings of Junee and Syed *supra* §V(Ground3)(B). Ex-1002, ¶¶215-216, 219-220, 244.

If this limitation requires the capability to identify *multiple* taxonomy tags from user input, then Junee, De Jong, Houh, Syed, and Kwon render it obvious. Kwon discloses "[t]he user may input text to be uploaded together with the content 43 to a text input region 44." Ex-1014, ¶0061. Kwon further discloses "**the user may input a plurality of tags**. For example, **when the user inputs '#Maltese #Dog', both a tag 'Maltese' and a tag 'Dog' are input**." *Id*. Kwon further discloses "[u]pon receiving the content 43 and the text, the content registerer 112 may register the content 43 and the text in the DB 114…**us[ing] the identifier included in the text to distinguish the user tag**." Ex-1014, ¶0063. Because Kwon's system supports user inputs with multiple tags and includes a content register that identifies tags based on tag identifiers in the user input, it would have been obvious for Kwon's system to **identify *multiple* taxonomy tags from user input** (multiple tags that each

have a tag identifier). Ex-1002, ¶245.

A PHOSITA would have combined the teachings of Junee, Syed, and Kwon *supra* §V(Ground3)(B). Ex-1002, ¶¶217-220, 246.

Limitation [8e]

Junee, De Jong, Houh, and Syed render obvious this limitation. In Syed's system, "**[t]ags proposed by the subscribers to be associated with various portions of the video content** are received, processed and integrated within a global ToC for the video." Ex-1009, Abstract. Thus, Syed discloses **associating a virtual clip** (portion of video content, *i.e.*, a clip) with **one or more taxonomy tags** (tags). Ex-1002, ¶247.

Syed further discloses a "[s]earch text entry field 315 allows the user to initiate **a keyword search**…with results in the form of labels and/or **clips**." Ex-1009, ¶0084. Syed "allow[s] the user to filter **annotations by the type of user** that provided it. For example, **users can filter by themselves**, everyone, friends." Ex-1009, ¶0064. In Syed, a video clip may be "defined by a user by **proposing a label to be associated with a particular time offset within the video**." Ex-1009, ¶0086. Thus, Syed teaches **a searchable virtual clip** (clip) delivered to a requesting device in response to **a query** (keyword search, filter) from the requesting device for **any of the plurality of virtual clips** (clips) associated with the **user profile** (users that filter themselves) and the **one or more taxonomy tags** (tags/labels). Ex-1002, ¶248.

A PHOSITA would have combined the teachings of Junee and Syed *supra* §V(Ground3)(B). Ex-1002, ¶¶221-225, 249.

Ground 4. Claim 9: Obviousness over Junee, De Jong, Houh, Syed, Giunio-Zorkin, Kwon, and Dayan

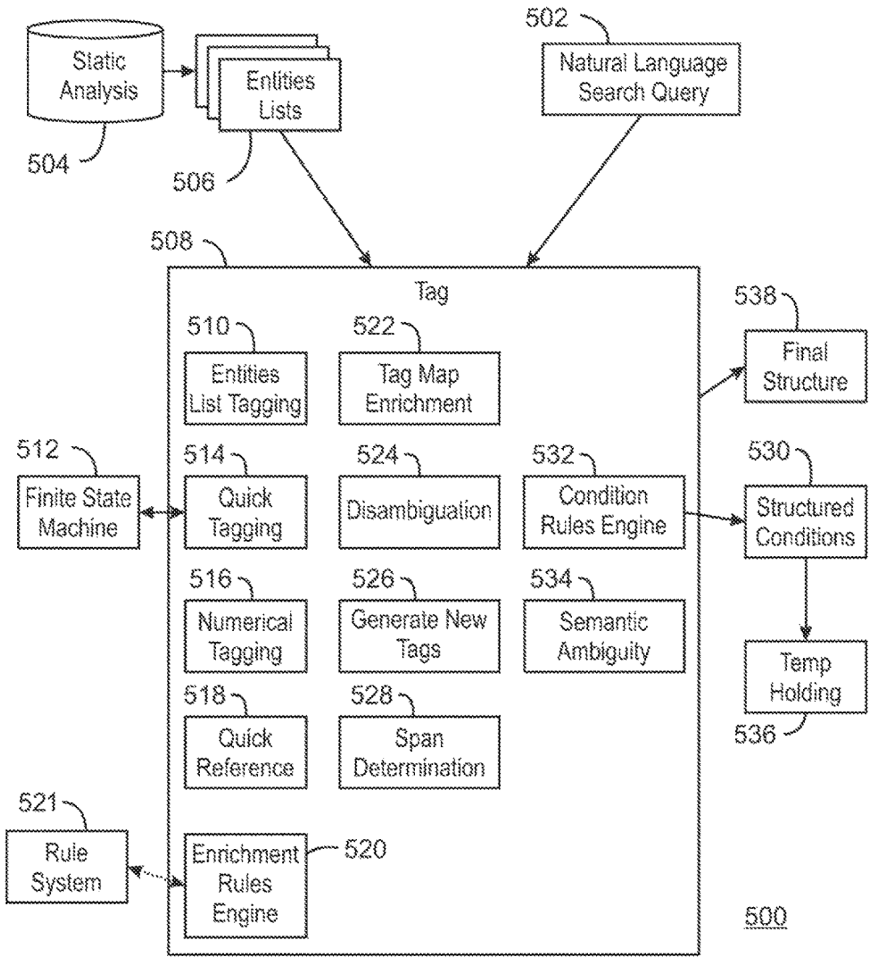
Claim 9, which depends from claim 8, would have been obvious over **Junee**, **De Jong**, **Houh**, **Syed**, **Giunio-Zorkin**, and **Kwon** as set forth above in Ground 3, further in view of **Dayan**.

A. Overview of the Ground

The term "directed relationship" in limitation [9a] is susceptible to multiple interpretations. Under a first interpretation—if "directed relationship" refers only to the sequence of the first and second taxonomy tags in the "second user input"—then claim 9 is obvious because Dayan teaches a system that generates search queries based on sequences of tags. Under a second interpretation—if "directed relationship" implies a hierarchical relationship between the first and second taxonomy tags—then claim 9 is obvious without Dayan. Ex-1002, ¶¶254-255.

1. Overview of Dayan

Dayan discloses "[t]echniques for generating query language statements for a document repository." Ex-1014, Abstract. Dayan's FIG. 5 shows "a block diagram illustration of an example system for generating a query language statement." Ex-1014, 2:46-47.



Ex-1014, FIG. 5. Ex-1002, ¶¶256-257.

B. Rationale (Motivation) Supporting Obviousness

Under the first interpretation of the term "directed relationship," Junee, De Jong, Houh, Syed, Giunio-Zorkin, Kwon, and Dayan render obvious claim 9. Dayan's system "convert[s] a natural language search query…into formal constraints" and uses the "formal constraints…to generate a query language statement to retrieve and display documents from a document repository." Ex-1014, 2:60-62, 2:64-67. Dayan teaches "the tag module 508…generate[s] a rule system 521 that searches for **sequences of tags**." Ex-1014, 12:55-58. Thus, Dayan discloses

a directed relationship between a first taxonomy tag and a second taxonomy tag sequentially following the first taxonomy tag (sequence of tags) and **retrieving a first virtual clip** (documents from a document repository) using **an ordered combination of first and second taxonomy tags** (a sequence of tags) as a **query** (search query). Ex-1002, ¶¶258-259.

Under the second interpretation, Junee, De Jong, Houh, Syed, Giunio-Zorkin, and Kwon render obvious claim 9. Giunio-Zorkin discloses keyword metadata may be in the form of "**a taxonomy of tags**." Ex-1013, 11:59. Giunio-Zorkin further discloses "keyword sets **may intersect, *i.e.* have one or more of the same keywords in common**." Ex-1013, 12:24-26. "Search requests…cause the system 100 to return specific content items. Search requests may be **manually generated by the user**." Ex-1013, 22:20-23. Thus, Giunio-Zorkin discloses **a directed relationship between a first taxonomy tag and a second taxonomy tag sequentially following the first taxonomy tag** (different keyword sets for association with a content item where the keyword sets are taxonomy tags and intersect one another) and **retrieving a first virtual clip** (content item) using **an ordered combination of first and second taxonomy tags** (multiple keywords from a plurality of keyword sets) as a **query** (manual query). Ex-1002, ¶¶263-264.

It would have been obvious under both interpretations to create a directed relationship between tags according to Dayan's teachings or Giunio-Zorkin's

teachings for association with a video in Junee and to retrieve a video in the video compilation of Junee using either a sequence of tags taught by Dayan or multiple keyword sets taught by Giunio-Zorkin. Doing so would produce search results that are more relevant to a query by providing semantic context. *See* Ex-1013, 12:1; Ex-1014, 11:5-11; Ex-1002, ¶¶260, 265.

Under both interpretations, these modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Junee's system based on a similar system taught by Giunio-Zorkin and Dayan in the same way. Ex-1002, ¶¶266-267.

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in modifying Junee to implement search queries that included ordered sequences of tags based on Dayan's teachings. The art in the relevant timeframe was predictable, and search queries with ordered sequences of words or phrases like those disclosed in Dayan were well-known. The '442 patent's general and high-level disclosures support this understanding of the relevant art. Ex-1002, ¶¶268-270.

D. Claim Mapping

CLAIM 9

Limitation 9[a]

See claim 8. The meaning of the term "directed relationship" in this limitation

is unclear. The ’442 patent does not provide any insight into the meaning of “directed relationship” with the term only appearing in the specification where the language of claim 9 is presented as prose without any further elaboration. Ex-1001, 14:27-36; Ex-1002, ¶274.

A first interpretation is that the directed relationship does not imply a hierarchical relationship between the first and second taxonomy tags. Instead, the directed relationship refers only to the sequence of the first and second taxonomy tags in the second user input, as suggested by the language “based on an **order** in the second user input of the one or more taxonomy tags. Ex-1001, cl. 9. Ex-1002, ¶275.

A second interpretation is that the directed relationship implies a hierarchical relationship between the first and second taxonomy tags. Under this interpretation, directed relationship is understood to mean the first and second taxonomy tags share common first tags and/or subtags and/or have a hierarchical relationship between respective first tag and/or subtags of the first and second taxonomy tags. Ex-1002, ¶276.

Notwithstanding the lack of clarity, this claim would have been obvious under both interpretations. Ex-1002, ¶277.

Under the first interpretation, Junee, De Jong, Houh, Syed, Giunio-Zorkin, Kwon, and Dayan render obvious this limitation. Dayan discloses a “tag

module 508 can generate a modified search query by adding structured data (also referred to herein as tags) to the search query." Ex-1014, 11:5-7. Dayan further teaches: "the tag module 508…generate[s] a rule system 521 that searches for **sequences of tags**." Ex-1014, 12:55-58. Thus, Dayan discloses **a directed relationship between a first taxonomy tag and a second taxonomy tag sequentially following the first taxonomy tag** (sequence of tags). Ex-1002, ¶278.

Under the second interpretation, Junee, De Jong, Houh, Syed, Giunio-Zorkin, and Kwon render obvious this limitation. Giunio-Zorkin discloses keyword metadata may be in the form of "**a taxonomy of tags**." Ex-1013, 11:59. Giunio-Zorkin further discloses "keyword sets **may intersect, *i.e.* have one or more of the same keywords in common**." Ex-1013, 12:24-26; Ex-1002, ¶282.

The intersection between keyword sets in Giunio-Zorkin shows a hierarchical relation can exist between the keyword sets. For example, if a first keyword set includes the keyword "Drinks" and a second keyword set includes the keywords "Drinks; Alcohol; Wine," the first and second keyword sets intersect because they share the keyword "Drinks." A hierarchical relationship also exists between the first and second keyword sets because the first keyword set includes a genus ("Drinks") and the second key word set includes a species ("Wine"). Thus, Giunio-Zorkin discloses **a directed relationship between a first taxonomy tag and a second taxonomy tag sequentially following the first taxonomy tag** (different keyword

sets associated with a content item where the keyword sets are taxonomy tags and intersect one another). Ex-1002, ¶283.

A PHOSITA would have combined the teachings of Junee with either Dayan or Giunio-Zorkin *supra* §V(Ground4)(B). Ex-1002, ¶¶258-267, 279, 284.

Alternatively, Junee, De Jong, Houh, Syed, Giunio-Zorkin, and Kwon render obvious this limitation under the first interpretation for the same reasons set forth under claim 11. Ex-1002, ¶¶261-262, 280-281, 339-343.

Limitation [9b]

See limitation 9[a]. Under the first interpretation, Junee, De Jong, Houh, Syed, Kwon, Giunio-Zorkin, and Dayan render obvious this limitation. Dayan's system "convert[s] a natural language search query…into formal constraints" and uses the "formal constraints…to generate a query language statement to retrieve and display documents from a document repository." Ex-1014, 2:60-62, 2:64-67. Thus, Dayan discloses **retrieving a first virtual clip** (documents from a document repository) using **an ordered combination of first and second taxonomy tags** (sequence of tags) as a **query** (search query). Ex-1002, ¶285.

Under the second interpretation of the term "directed relationship" discussed under limitation 9[a], Junee, De Jong, Houh, Syed, Kwon, and Giunio-Zorkin render obvious this limitation. Giunio-Zorkin discloses "[s]earch requests…cause the system 100 to return specific content items. Search requests may be **manually**

generated by the user." Ex-1013, 22:20-23. Giunio-Zorkin further discloses a method involving the steps of: "**identifying**…**based on the received request, one or more keywords selected from the plurality of keyword sets**." Ex-1013, 30:40-42. Thus, Giunio-Zorkin discloses **retrieving a first virtual clip** (content item) using **an ordered combination of first and second taxonomy tags** (multiple keywords from a plurality of keyword sets) as a **query** (manual query). Ex-1002, ¶286.

A PHOSITA would have combined the teachings of Junee with either Dayan or Giunio-Zorkin *supra* §V(Ground4)(B). Ex-1002, ¶¶258-267, 285-286.

Ground 5. Claims 10, 11: Obviousness over Syed, Giunio-Zorkin, and Kwon

Independent claim 10 and dependent claim 11 would have been obvious over **Syed** in view of **Giunio-Zorkin** and **Kwon**.

A. Overview of the Ground

The challenged claims would have been obvious over Syed in view of Giunio-Zorkin and Kwon. Syed discloses or renders obvious most of the elements of these claims. The remaining limitations would have been obvious over Syed in view of Kwon and Giunio-Zorkin. Giunio-Zorkin teaches a taxonomy tag format with a first tag and multiple subtags separated by a delimiter, and associating the taxonomy tags with user profiles to facilitate retrieval of virtual clips associated with the user profile and the taxonomy tags. Kwon teaches identifying multiple tags from user input. *See*

overviews of Syed, Giunio-Zorkin, and Kwon under Ground 3. Ex-1002, ¶¶288-294.

B. Rationale (Motivation) Supporting Obviousness

Syed, Giunio-Zorkin, and Kwon render obvious the following limitations. Ex-1002, ¶¶295-296.

Limitations [10e] and [10h]

If limitation [10e] requires the tag identifier to indicate the user input includes taxonomy tags, Syed and Giunio-Zorkin render it obvious. *See* analysis under limitation [8b]. It would have been obvious to modify Syed's system to include the taxonomy tags according to Giunio-Zorkin's teachings "for the purpose of distributing and/or facilitating discovery of that content item." Ex-1013, 11:6-7; Ex-1002, ¶¶297-299.

If limitation [10h] requires the capability to include one or more subtags in the "one or more tags," Syed and Giunio-Zorkin render it obvious. *See* analysis under limitations [8b] and [8c]. It would have been obvious to modify Syed to support user input with multiple tags separated by a delimiter as taught by Giunio-Zorkin to facilitate retrieval of videos more aligned to the interests of the user submitting a query. *Id*.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Syed's system based on a similar system taught by Giunio-Zorkin in the same way. Ex-1002,

¶¶300-301.

Limitation [10f]

If this limitation requires the capability to identify *multiple* taxonomy tags in the user input, Syed and Kwon render obvious this limitation. *See* analysis under limitation [8d]. It would have been obvious to modify Syed's system to identify multiple tags from a single user input according to Kwon's teachings. A process to identify tags provides a way to differentiate user inputs that include tags from other user inputs that do not include tags. The support and identification of multiple tags in a single user input would expedite the process of associating multiple tags with a video in Syed. Ex-1002, ¶¶302-303.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Syed's system based on a similar system taught by Kwon in the same way. Ex-1002, ¶¶304-305.

Limitation [10i]

Syed and Giunio-Zorkin render obvious this limitation. Syed discloses **associating the virtual clip** (video clips) with **one or more taxonomy tags** (tags/labels). *See* analysis under limitation [8e]. Ex-1002, ¶306.

Giunio-Zorkin discloses **"[u]sers are also associated with a subset of one or more of the keywords** selected form [sic] the plurality of keyword sets wherein the keywords are selected…based on their interests." Ex-1013, 12:47-50.

"**Associations between users or content items and keywords** are implemented by storing the associated identifiers of the selected keywords in association therewith." Ex-1013, 13:33-35. Thus, Giunio-Zorkin discloses **associating, in an account of the user** (user), **the virtual clip** (content item) with **each of the one or more taxonomy tags** (keywords from keyword sets). Ex-1002, ¶307.

It would have been obvious to modify Syed to store tags associated with video clips in an account of the user to provide media content to the user that is more aligned with their interests. Giunio-Zorkin teaches "content items are associated with one or more interest classifications" and its system "maps or otherwise correlates **the interests of each user against the interest classification(s) of content items to determine which content items to transmit to a user**." Ex-1013, 11:3-13; Ex-1002, ¶308.

These modifications represent nothing more than the predictable combination of prior-art elements, and the use of a known technique to improve Syed's system based on a similar system taught by Giunio-Zorkin in the same way. Ex-1002, ¶¶309-310.

C. Reasonable Expectation of Success

A PHOSITA would have had a reasonable expectation of success in modifying Syed based on the teachings of Giunio-Zorkin and Kwon. The art in the relevant timeframe was predictable, and basic formats for annotations like those

disclosed in Syed, Giunio-Zorkin, and Kwon were well-known. The '442 patent's general and high-level disclosures support this understanding of the relevant art. Ex-1002, ¶¶311-313, 326, 328, 330.

D. Claim Mapping

CLAIM 10

Limitation 10[a]

Syed discloses and renders obvious **a method of annotating a playable media file**. In Syed's system, "**a video is displayed to a user** (*e.g.*, a subscriber) of a video consumption and discovery service via a video player." Ex-1009, ¶0031. Syed further teaches an "annotation tool…**allows users to specify content and placement of a label or tag (*e.g.*, a short description of a video segment) within a video** while watching the video." *Id.*; Ex-1002, ¶317.

In Syed, "[t]he term 'annotation' broadly refers to **user-supplied or automatically generated content that is associated with a portion of video content or a video 'clip'**…**annotations** may include, but are not limited to, one or more of **labels, tags, comments** and additional content." Ex-1009, ¶0037; Ex-1002, ¶318.

Limitation [10b]

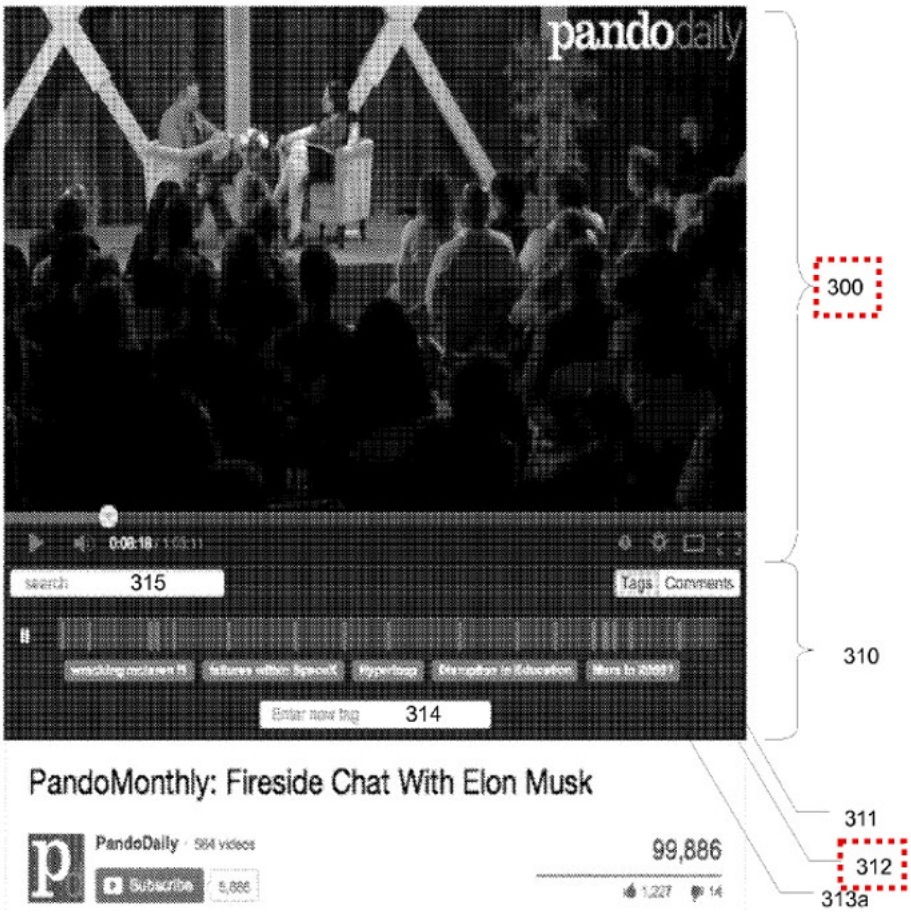
Syed discloses this limitation. The '442 patent describes a "virtual clip is comprised of references that identify specific content in the corresponding media

file, but the virtual clip **is not necessarily itself a stored media file containing the content data**." Ex-1001, 9:60-66. Thus, a virtual clip may optionally include content from a media file. *See* Ex-1001, 11:25-27. In Syed, "[t]he term 'clip' generally refers to **a continuous portion or segment of a video having a start time and an end time**." Ex-1009, ¶0040. Thus, Syed discloses a virtual clip, *i.e.*, **references identifying content in a video** (start time, end time), comprising **a first location** (start time) and **a second location** (end time) **within a playable media file** (video). Ex-1002, ¶319.

Syed further discloses **obtaining video clips**. Syed's "frontend systems 120 include three subsystems, an annotation tool 121, a management platform 122 and a video player 123." Ex-1009, ¶0056. "Management platform 122 may allow users to **view their video libraries, clips they have created**." Ex-1009, ¶0067. Syed further discloses an "API 143 may provide **methods to retrieve information**, such as…**video clips and playlists**." Ex-1009, ¶0051; Ex-1002, ¶320.

Limitation [10c]

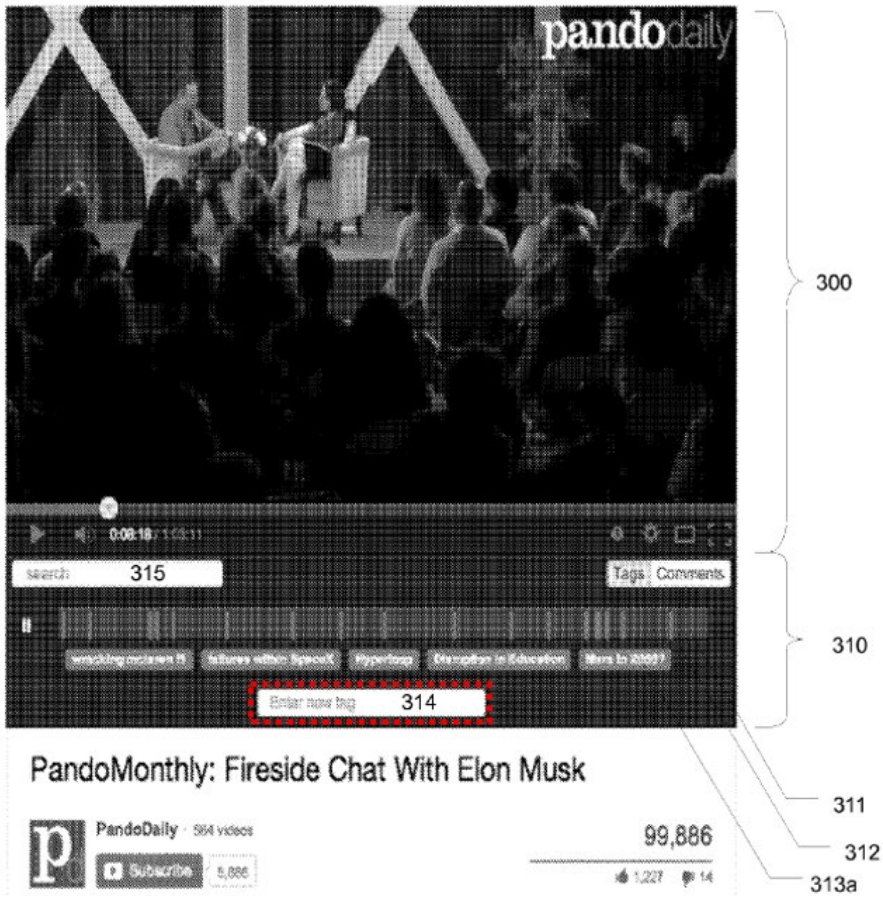
Syed discloses this limitation. FIG. 3A shows "**a video player 300**." Ex-1009, ¶0083.



Ex-1009, FIG. 3A (red highlighting added). Syed's "video consumption and discovery service 100 may **present the user with a video selected for viewing by the user within video player 300**." Ex-1009, ¶0083. Thus, Syed discloses **causing, using the virtual clip** (video)**, the clip to be displayed on a computing device of a user** (GUI of FIG. 3A). Ex-1002, ¶321.

Limitation [10d]

Syed discloses this limitation. FIG. 3A of Syed includes "an annotation tool 310." Ex-1009, ¶0083.



Ex-1009, FIG. 3A (red highlighting added). The "[a]nnotation tool 310 also includes…**a label text entry field 314**." Ex-1009, ¶0083. The "[l]abel text entry field 314 **allows the user to propose a new label for a portion of the video being played or edit an existing label**." Ex-1009, ¶0085. Thus, the label text entry field 314 of Syed receives **user input associated with a virtual clip**. Ex-1002, ¶322.

Limitation [10e]

Syed alone or in view of Giunio-Zorkin discloses or renders obvious this limitation. *See* analyses under limitations [8b] and [10d]. If this limitation requires the tag identifier to indicate the user input includes taxonomy tags, a PHOSITA

would have combined the teachings of Syed and Giunio-Zorkin *supra* §V(Ground5)(B). Ex-1002, ¶¶297-301, 323-326.

Limitation [10f]

Syed alone or in view of Kwon renders obvious this limitation. *See* analysis under limitation [8d]. If this limitation requires the capability to identify *multiple* taxonomy tags from user input, a PHOSITA would have combined the teachings of Syed and Kwon *supra* §V(Ground5)(B). Ex-1002, ¶¶302-305, 327-330.

Limitation [10g]

Syed discloses this limitation. Syed discloses user input that includes "**a tag or a label may be in the form of a hash tag**." Ex-1009, ¶¶0037, 0042. Thus, Syed discloses **a tag identifier** ("#" symbol) when the user input is in the form of a hash tag. Ex-1002, ¶331.

Limitation [10h]

Syed discloses this limitation. Petitioner notes the "subtags" recited in this limitation are optional; hence, this limitation only requires the "one or more tags" to include the "first tag" without any delimiters. Ex-1002, ¶332.

Syed discloses a **first tag** (the short description of a video segment) following the tag identifier when the user input is in the form of a hash tag. *See* analysis under

limitation [8b]. Ex-1002, ¶333.

If this limitation requires the capability to include one or more subtags in the "one or more tags," a PHOSITA would have combined the teachings of Syed and Giunio-Zorkin *supra* §V(Ground5)(B). Ex-1002, ¶¶297-301, 334-335.

Limitation [10i]

Syed and Giunio-Zorkin render obvious this limitation. Syed discloses **associating a virtual clip** (video clips) with **one or more taxonomy tags** (tags/labels). *See* analysis under limitation [8e]. Ex-1002, ¶¶306-310, 336.

Giunio-Zorkin discloses **"[u]sers are also associated with a subset of one or more of the keywords** selected form [sic] the plurality of keyword sets wherein the keywords are selected…based on their interests." Ex-1013, 12:47-50; *see also* 12:63-65, FIG. 14. "**Associations between users or content items and keywords** are implemented by storing the associated identifiers of the selected keywords in association therewith." Ex-1013, 13:33-35. Thus, Giunio-Zorkin discloses **associating, in an account of the user** (user), **the virtual clip** (content item) with **each of the one or more taxonomy tags** (keywords from keyword sets). Ex-1002, ¶337.

A PHOSITA would have combined the teachings of Syed and Giunio-Zorkin *supra* §V(Ground5)(B). Ex-1002, ¶¶306-310, 338.

CLAIM 11

It is unclear whether the limitation "arranging the one or more taxonomy tags according to the sequence in the user input of the one or more taxonomy tags" implies that a hierarchical relationship is created between the taxonomy tags associated with the virtual clip. Since this limitation only refers to arranging taxonomy tags based on a sequence of taxonomy tags in the user input, Petitioner assumes no hierarchical relationship is created and the virtual clip can be later retrieved if a user's query contains all the taxonomy tags in the one or more taxonomy tags in the same sequence. Ex-1002, ¶¶339-340.

Under this interpretation, Syed, Giunio-Zorkin, and Kwon render obvious this limitation. Kwon teaches "registering the content and the received user tag" (wherein "registering comprises, when a number of the received plurality of user tags is higher than a threshold number, **assigning the threshold number of user tags**, from among the plurality of user tags…**in an order in which the received plurality of tags are received**"). Ex-1012, cl. 1, 5. Thus, Kwon discloses **arranging one or more taxonomy tags** (assignment of the sequence of user tags) according to **a sequence in the user input of the one or more taxonomy tags** (order of the tags received). Ex-1002, ¶341.

It would have been obvious to modify Syed's system to associate a virtual clip with taxonomy tags arranged in the same sequence presented in user input according

to Kwon's teachings because this would produce search results that are more relevant to a query. Arranging taxonomy tags in the order presented is one of the simplest approaches of incorporating data on sequences of tags. Ex-1002, ¶¶342-343.

VI. CONCLUSION

Petitioner requests that claims 1 and 5-11 be canceled.

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CLAIM LISTING APPENDIX

1[a]. A method for displaying information associated with a Playable Media File, comprising:

[1b] obtaining stored data describing the information,

[1c] the stored data comprising a storage location of the playable media file and

[1d] a plurality of virtual clips each associated with the playable media file and including

[1e] a first data element identifying a first time within the playable media file at which a corresponding virtual clip begins, and

[1f] a second data element identifying a first user profile associated with creating the corresponding virtual clip;

[1g] accessing the playable media file at the storage location;

[1h] causing a graphical user interface (GUI) to be displayed on a computing device of a user, wherein said GUI enables the user to generate user inputs by interacting with the GUI, and

[1i] the GUI comprises: a display window for displaying content encoded by the playable media file;

[1j] a first interactable graphical object, wherein the first interactable graphical object overlays a first portion of the display window and displays a

timeline representing a duration of the playable media file and a plurality of clip indicators each associated with a corresponding virtual clip of the plurality of virtual clips, each clip indicator appearing on the timeline at a display position corresponding to the first time identified by the first data element of the corresponding virtual clip; and

[1k] a second interactable graphical object, wherein the second interactable graphical object overlays a second portion of the display window, is configured to display up to a first number of graphic elements each associated with a corresponding virtual clip of the plurality of virtual clips, and is initially not displayed in the GUI;

[1l] receiving a first user input indicating a first interaction of the user with a first display position on the timeline;

[1m] determining a selected time within the playable media file that corresponds to the first display position;

[1n] identifying, as a plurality of displayable virtual clips:

[1o] a first virtual clip of the plurality of virtual clips, the corresponding first time of the first virtual clip being the closest, of the plurality of virtual clips, to the selected time; and

[1p] one or more of the virtual clips wherein the corresponding first time precedes and is approximate to the first time of the first virtual clip, and one or more

of the virtual clips wherein the corresponding first time is subsequent and approximate to the first time of the first virtual clip, such that at most the first number of the plurality of virtual clips are selected as the plurality of displayable virtual clips; and

[1q] updating the user interface on the computing device to display a list of the plurality of displayable virtual clips in the second interactable graphical object.

5[a]. The method of claim 1, wherein the graphical user interface further comprises a third interactable graphical object overlaying a third portion of the display window, having a visible state controlling whether the third interactable graphical object is visible or hidden, and

[5b] when visible displaying a discussion thread comprising annotations associated with a selected virtual clip of the plurality of displayable virtual clips.

6. The method of claim 5, further comprising:

receiving a second user input describing an interaction with the selected virtual clip within the second interactable graphical object; and

responsive to the second user input, displaying the discussion thread within the third interactable graphical object.

7[a]. The method of claim 1, wherein obtaining the stored data comprises: causing a recording device to begin capturing, as the playable media file, a recording of live content;

[7b] while the recording device is capturing the live content, receiving a second user input at a first time, the recording device continuing to capture the live content subsequent to the second user input; while the recording device is capturing the live content, receiving on the user interface a third user input at a second time; and creating a first virtual clip of the plurality of virtual clips, the first virtual clip having the first time as the corresponding first position and the second time as the corresponding second position.

8[a]. The method of claim 1, further comprising: receiving a second user input associated with a first virtual clip of the plurality of virtual clips;

[8b] determining that the second user input comprises a character string in a predetermined format comprising: a tag identifier indicating that the user input includes one or more taxonomy tags; a first tag following the tag identifier; and

[8c] one or more subtags sequentially following the first tag and delimited by a delimiter character;

[8d] identifying one or more taxonomy tags from the second user input; and

[8e] associating, in the stored data, the first virtual clip with the one or more

taxonomy tags to produce a searchable virtual clip that is delivered to a requesting device in response to a query from the requesting device for any of the plurality of virtual clips that are associated with the user profile and the one or more taxonomy tags.

9[a]. The method of claim 8, wherein associating the first virtual clip with the one or more taxonomy tags comprises creating, based on an order in the second user input of the one or more taxonomy tags, a directed relationship between a first taxonomy tag and a second taxonomy tag sequentially following the first taxonomy tag in the character string,

[9b] the directed relationship enabling a user to retrieve the first virtual clip from the stored data using an ordered combination of the first and second taxonomy tags as the query.

10[a]. A method of annotating a playable media file, the method comprising:

[10b] obtaining a virtual clip comprising a first location within the playable media file and a second location within the playable media file, the first and second locations together defining a clip of the playable media file occurring between the first and second locations;

[10c] causing, using the virtual clip, the clip to be displayed on a computing

device of a user;

[10d] receiving a first user input associated with the virtual clip;

[10e] determining that the first user input conforms to a predetermined format defining taxonomy tags;

[10f] identifying one or more taxonomy tags from the user input, wherein identifying the one or more taxonomy tags comprises determining the one or more taxonomy tags using the predetermined format comprising:

[10g] a tag identifier indicating that the user input includes taxonomy tags; and

[10h] one or more tags following the tag identifier and separated from each other by a delimiter, the one or more tags including a first tag and zero or more subtags arranged in sequence; and

[10i] associating, in an account of the user, the virtual clip with each of the one or more taxonomy tags identified from the user input.

11. The method of claim 10, wherein associating the virtual clip with the one or more taxonomy tags comprises arranging the one or more taxonomy tags according to the sequence in the user input of the one or more taxonomy tags.

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 13, 2025, on the Patent Owner's counsel of record at the United States Patent & Trademark Office having the following address:

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CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the foregoing petition for *inter partes* review contains 14,000 words, excluding a table of contents, a table of authorities, mandatory notices, a certificate of service or word count, or appendix of exhibits or claim listing, according to the word processing program used to prepare it.

Date: 2025-08-13 /Matthew A. Smith/ (RN 49,003)