

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUANTUM METRIC, INC., DECIBEL INSIGHT, LTD., AND
DECIBEL INSIGHT, INC.,
Petitioner,

v.

CONTENT SQUARE ISRAEL LTD. (f/k/a CLICKTALE LTD.),
Patent Owner.

IPR2021-00464
Patent 7,941,525 B1

Before KARL D. EASTHOM, STEVEN M. AMUNDSON, and
MICHAEL T. CYGAN, *Administrative Patent Judges*.

CYGAN, Administrative Patent Judge.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. BACKGROUND

A. *Background and Summary*

Quantum Metric, Inc., Decibel Insight, Ltd., and Decibel Insight, Inc. (“Petitioner”) filed a Petition for *inter partes* review (“IPR”) of claims 1–18 of U.S. Patent No. 7,941,525 (Ex. 1001, “the ’525 patent”). Paper 3 (“Pet.”). Patent Owner, Content Square Israel Ltd., f/k/a Clicktale Ltd., (“Patent Owner”), filed a Preliminary Response. Paper 12 (“Prelim. Resp.”). Institution of an *inter partes* review is authorized by statute when “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). An *inter partes* review may not be instituted on fewer than all claims challenged in the Petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

Having considered the Petition and the Preliminary Response, we determined that the information presented in the Petition established that there is a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–18 of the ’525 patent as unpatentable under 35 U.S.C. § 103(a). Pursuant to § 314, we instituted an *inter partes* review as to claims 1–18 of the ’525 patent on all grounds raised in the Petition. Paper 21 (“Dec. on Inst.”).

During the course of trial, Patent Owner filed a Response to the Petition. Paper 36 (“Resp.”). Petitioner filed a Reply to the Response. Paper 43 (“Reply”). Patent Owner filed a Sur-reply to Petitioner’s Reply. Paper 46 (“Sur-reply”). An oral argument was held on April 20, 2022, and a transcript of the oral argument is included in the record. Paper 50 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of claims 1–18 of the '525 patent. For the reasons we identify below, we determine that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims are unpatentable under § 103(a).

B. Real Parties in Interest

Petitioner identifies itself and Medallia Inc. as comprising the only real parties in interest to this IPR petition. Pet. 86; Paper 7, 2. Patent Owner identifies itself and Content Square SAS as the real parties in interest. Paper 6, 1.

C. Related Matters

The parties indicate that the '525 patent is involved in *Content Square SAS v. Quantum Metric, Inc.*, 1-20-cv-000832 (D. Del.), and *Content Square SAS v. Quantum Metric, Inc.*, 1-20-cv-11184 (D. Mass.). Pet. 86; Exs. 1039, 1040; Resp. 8. The parties indicate that additional patents (US 10,063,645, US 9,508,081, US 9,792,365, and 10,079,737) are at issue in the above-listed proceedings, and are the subject of *inter partes* review proceedings IPR2021-00364, IPR2021-00363, IPR2021-00530, and IPR2021-00416, respectively. Pet. 86; Paper 6, 2–3. Patent Owner indicates that U.S. Patent 10,749,976 and pending U.S. Patent Application 16/931,064 claim the benefit of priority to the '525 patent. Paper 6, 2.

D. The '525 Patent

The '525 patent (Ex. 1001) generally relates to tracking user activity during a visit to a web page. Ex. 1001, 5:25–36. The tracking system includes an interface receiving user activity information, which is information representative of activities performed by the user during the

user's visit to the web site. *Id.* at 5:27–30. User activities may include “load, unload, scroll, mousemove, . . . click, resize, keydown, keypress, . . . submit, error, abort, etc.” *Id.* at 7:46–51, 9:16–22. Each activity is associated with multiple properties, or attributes; for example, “mouse events are transmitted with x,y coordinates of the cursor and the state of the mouse buttons; click events are transmitted with the type and URL of the object or link that was clicked on.” *Id.* at 7:52–60, 9:22–24. The tracking system's interface further receives web page information representative of web page content displayed to the user. *Id.* at 5:30–32. Web page information may include “URL [Uniform Resource Locator], referrer, browser type, platform type, screen resolution and depth.” *Id.* at 6:49–53.

The tracking system further includes a processor to generate user visit information in response to the user activity information and web page content information. *Id.* at 5:32–36. The processor further compensates for a difference between a visual representation of the web page on a tracking display and a visual representation of the web page on another display. *Id.* at 5:37–40.

Due to potential disparities between the tracking display and the other display, absolute coordinates of the tracking display may not correspond to the same location on the other display. *Id.* at 10:41–47. Thus, the coordinates may be transferred in an invariant form; i.e., relative to other elements in the web page. *Id.* at 10:47–49.

E. Challenged Claims

Petitioner challenges claims 1–18 of the '525 patent. Claim 1, reproduced below (with bracketed identifying labels added), is an independent claim:

1. [1pre] A method for tracking an activity of a user, comprising:
 - [1a] downloading, over a network, web page content that comprises a tracking code;
 - [1b] tracking, at least partially by executing the tracking code by a user computer, user activities that are responsive to at least a portion of the downloaded web page content;
 - [1c] associating each user activity with properties of the user activity;
 - [1d] [i] generating user activity information consisting of each tracked activity and its associated properties, [ii] wherein the properties of the user activity are associated with a position and size of each element of a portion of web page related to the user activity, [iii] thereby providing the user activity information an invariant form in which the user activity information is relative to the position and size of the each associated elements of the portion of the web pa[g]e;
 - [1e] [i] wherein the user activity information in the invariant form further allow for a compensation of differences between visual representations, [ii] wherein the compensation comprises converting, in a non-linear transformation, information within the user activity information representative of the position and size of the each associated element of the portion of the web page to a different position and a different size for a playback display, [iii] wherein the non-linear transformation comprises converting the each associated element of the portion of the web page in a piece-wise-linear fashion;
 - [1f] compressing and buffering a portion of the user activity information; and
 - [1g] transmitting to a tracking entity, at least a compressed portion of the user activity information when a first transmission criterion is fulfilled.

Ex. 1001, 16:59–17:26.

F. Prior Art Relied Upon

Petitioner relies upon the prior art references listed below. Pet. 1–2.

U.S. Patent Application Publication 2005/0177401 A1 (filed Apr. 15, 2005; published Aug. 11, 2005) (“Koepfel,” Ex. 1005);
U.S. Patent 6,877,007 B1 (filed Oct. 16, 2001; patented Apr. 5, 2005) (“Hentzel,” Ex. 1006);
U.S. Patent 7,484,182 B1 (filed June 30, 2005; patented Jan. 27, 2009) (“Smith,” Ex. 1007);
U.S. Patent 8,832,055 B1 (filed June 16, 2006; patented Sept. 9, 2014) (“Zwicky,” Ex. 1017);
U.S. Patent 6,345,307 B1 (filed Nov. 12, 1999; patented Feb. 5, 2002) (“Booth,” Ex. 1018);
U.S. Patent 7,526,530 B2 (filed May 5, 2006; patented Apr. 28, 2009) (“Thomason,” Ex. 1019); and
U.S. Patent Application Publication 2004/0103215 A1 (filed Nov. 26, 2002; published May 27, 2004) (“Ernst,” Ex. 1020).

Based on the record, we determine Petitioner has shown that these references are prior art patents or printed publications under 35 U.S.C.

§ 102. *See* Pet. 3–4; Ex. 1005, codes (22), (43); Ex. 1006, codes (22), (45); Ex. 1007, codes (22), (45); Ex. 1017, codes (22), (45); Ex. 1018, codes (22), (45); Ex. 1019, codes (22), (45); Ex. 1020, codes (22), (43).

G. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–18 of the ’525 patent on the following grounds (Pet. 1–2):

Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)
1, 2, 4, 6, 8–9, 12–16, 18	103(a)	Koepfel, Hentzel, Smith

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the application from which the ’525 patent issued was filed before this date, the pre-AIA versions of §§ 102 and 103 apply.

3, 5, 17	103(a)	Koeppel, Hentzel, Smith, Zwicky
7	103 (a)	Koeppel, Hentzel, Smith, Booth
10	103(a)	Koeppel, Hentzel, Smith, Thomason
11	103(a)	Koeppel, Hentzel, Smith, Ernst

II. DISCUSSION

A. *Legal Standard: § 103(a)*

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations).² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze the asserted grounds based on obviousness with these principles in mind.

B. *Level of Skill in the Art*

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are

² Neither party presents evidence or arguments regarding objective evidence of non-obviousness in this proceeding.

made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Further, the prior art itself can reflect the appropriate level of ordinary skill in the art. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Petitioner offers an assessment as to the level of skill in the art as of the time the ’525 patent was filed. Pet. 4. Relying upon a Declaration of Dr. Jeremy Cooperstock (hereinafter, the “Cooperstock Declaration”), Petitioner asserts a person of ordinary skill in the art would have had a “Bachelor of Science (or equivalent degree) in Computer Science, Computer Engineering, or another discipline emphasizing the design/development of web-related technologies, in combination with at least 1-2 years of work experience with web-related technologies” and that “[s]uperior education could compensate for a deficiency in work experience, and vice-versa.” *Id.* (citing Ex. 1003 ¶¶ 20–21 (Cooperstock Decl.)). Patent Owner would require “a Bachelor of Science (or equivalent degree) in Computer Science or Computer Engineering, in combination with at least 2 years of additional experience with technologies related to media or web-based technology, or equivalent work experience.” We do not perceive a significant difference between the two standards. We accept the assessment offered by Petitioner as it is supported by the Cooperstock Declaration and is consistent with the ’525 patent and the asserted prior art. We note that our analysis would not change if we accepted the assessment offered by Patent Owner.

C. Claim Construction

Petitioner submits that no constructions are necessary because the evidence and the art’s description of the claimed elements are similar to that

of the '525 patent's specification. Pet. 4. Patent Owner does not propose any explicit claim constructions. Resp. 17.

We apply the same standard that is used to construe a patent claim in a civil action under 35 U.S.C. § 282(b), and construe each claim in accordance with the ordinary and customary meaning of such claim, as understood by one of ordinary skill in the art in the context of the patent, and the prosecution history pertaining to the patent, as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). See 37 C.F.R. § 42.100(b) (2021).

“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). We do not find it necessary to expressly construe any claim terms beyond our discussion of the parties’ arguments below.

D. Asserted Obviousness of Claims over Koeppel, Hentzel, and Smith

Petitioner contends that claims 1, 2, 4, 6, 8, 9, 12–16, and 18 of the '525 patent are unpatentable as obvious under 35 U.S.C. § 103(a), over the combined teachings of Koeppel, Hentzel, and Smith. Pet. 6.

Petitioner also relies upon the Cooperstock Declaration to support its positions. Ex. 1003. We begin our analysis with a brief overview of Koeppel, Hentzel, and Smith.

1. *Overview of Koepfel*

Koepfel relates to monitoring and collecting user responses to Web-based content. Ex. 1005 ¶ 3. Figure 1, as annotated by Petitioner, is reproduced below. Pet. 7.

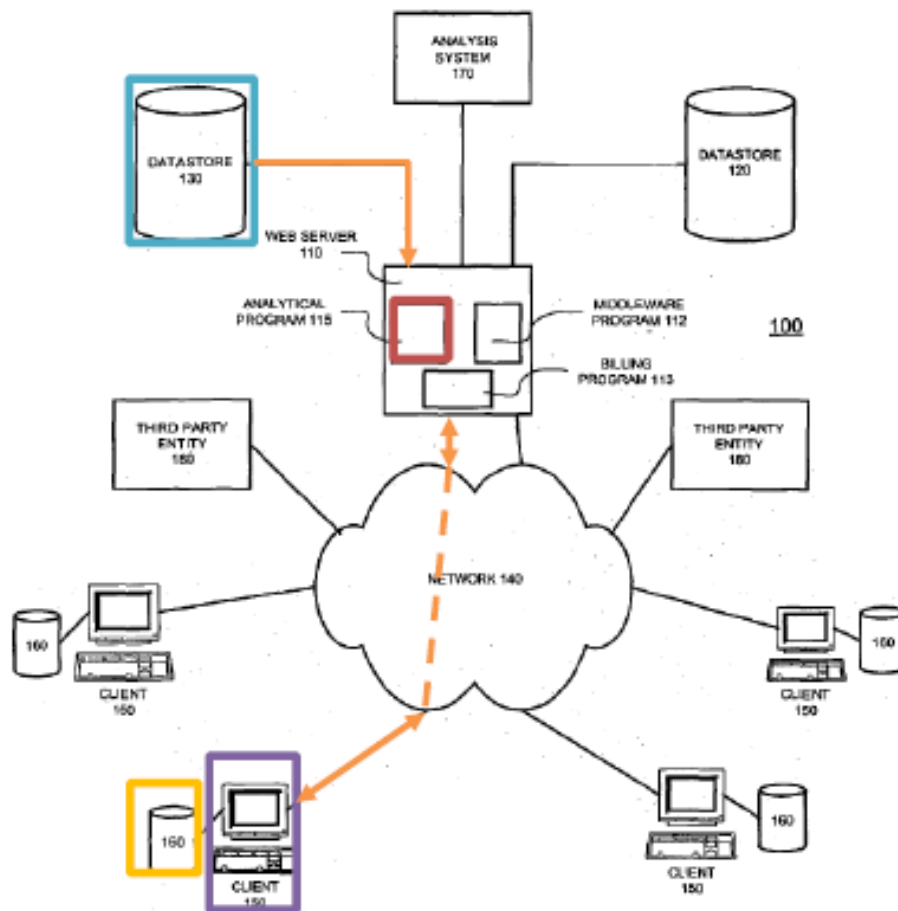


FIGURE 1

Figure 1, as annotated by Petitioner, portrays elements of a Web-based network. Ex. 1005 ¶ 26. A client-side data store 160, highlighted by Petitioner in orange, collects user activity such as “click-throughs,” screen scrolling, and mouse movements. *Id.* ¶¶ 21, 45. Activity data indicated by

Petitioner's orange lines is sent, via client computer 150 and network 140, to Web server 110. *Id.* ¶¶ 21, 45–46.

On Web server 110, analytical program 115 determines in-view characteristics of the content at client computers 150. *Id.* ¶ 49. Data store 130 (highlighted by Petitioner in blue), connected to Web server 110, stores content and rules for rendering content. *Id.* ¶ 52. The content may include attributes associated with content renderings, such as document structure, size, and positioning. *Id.*

2. Overview of Hentzel

Hentzel relates to tracking a user's interaction with a computer resource to recreate and display the user's interactive session. Ex. 1006, 2:8–25. Through such efforts, a resource such a Web page can be improved to make it more user friendly, more easily navigable, and more effective in communicating its advertising to the user. *Id.* at 2:59–65. Figure 1, as annotated by Petitioner, is reproduced below. Pet. 10–11.

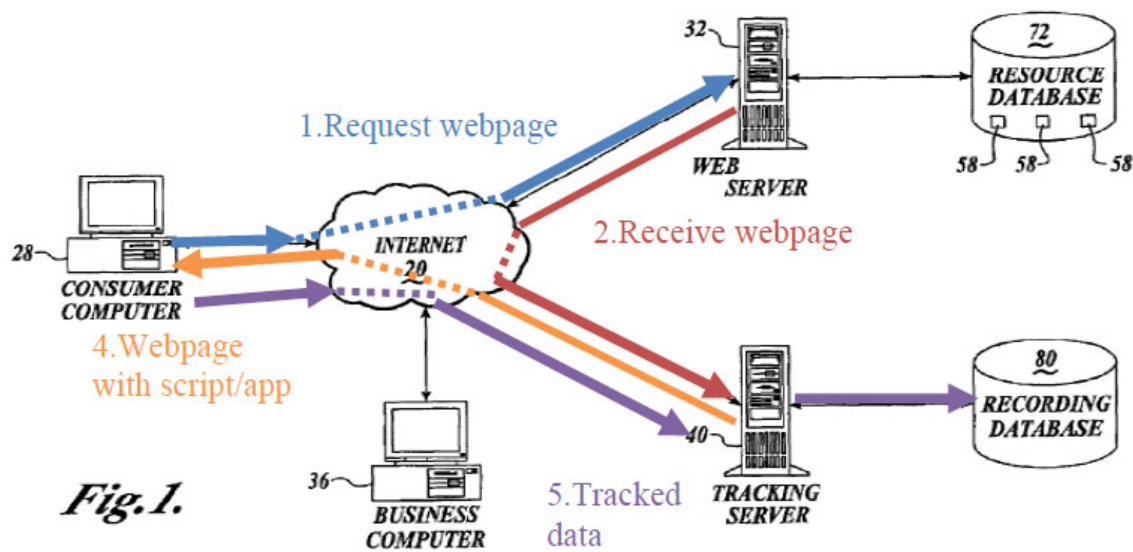


Figure 1, as annotated by Petitioner, portrays a system for tracking a user's interaction with a resource such as a Web page. Ex. 1006, 3:27–30. A user at computer 28 requests a Web page 58 from Web server 32, as annotated by Petitioner with blue arrows. *Id.* at 3:30–33. Web server 32 redirects the user to tracking server 40, as annotated by Petitioner with a red arrow. *Id.* at 3:33–36. Tracking server 40 records the user's interaction with the Web page, including mouse movements, button clicks, and typing. *Id.* at 3:55–59. Subsequently, the recorded session may be analyzed by a business using computer 36. *Id.* at 3:59–61.

3. *Overview of Smith*

Smith relates to graphical layout management techniques including resizing of graphical user interfaces. Ex. 1007, 3:24–32. According to Smith, when a graphical user interface is resized, determining the sizing and placement of panels within that window is “complicated for a sophisticated developer and may be beyond the skill level of some designers.” *Id.* at 2:23–27. In Smith's technique, a designer provides at least two graphical layouts of different sizes. *Id.* at 3:33–42, 4:60–63. The graphical layouts, or “constraint images,” are then operated upon by computer programming to resize the user interface window. *Id.* at 7:41–48. Using dynamic interpolation or extrapolation, the programming may render a plurality of different sized interfaces. *Id.* at 3:26–32, 7:49–8:20. The interpolative and extrapolative formulas may include absolute and proportional values of the window, portions of the window, and proportions relative to other panes within the window. *Id.* at 8:21–32.

4. *Claim 1*

a) *Limitations [1a], [1b], [1c], [1f], and [1g]*

With respect to the preamble of claim [1pre], “[a] method for tracking an activity of a user,” Petitioner contends this claim language is met by teachings of the combination, including Koeppel’s teaching of client nodes requesting and receiving web pages from a Web server. Pet. 29 (citing Ex. 1005 ¶¶ 21, 37–45, 54; Ex. 1003 (Cooperstock Decl.) ¶ 152). Petitioner points to both Koeppel and Hentzel for the inclusion of client-side scripts or applets that monitor, collect, and store user activity information such as scrolling, mouse movements, and page resizing. *Id.* at 30 (citing Ex. 1005 ¶¶ 18–21, 38–41, 81–94, 154–158; Ex. 1006, 3:33–58, 7:45–50, 8:48–11:8, 12:54–13:15; Ex. 1003 ¶¶ 153–154). Petitioner further points to Koeppel’s teaching of collection of data relating to whether selected content is actually in-view, including “coordinate and size information related to the browser window, the Web-page rendered within the browser window and components rendered within the Web page.” *Id.* at 30–31 (citing Ex. 1005 ¶ 82; Ex. 1003 ¶ 155).

Petitioner proposes a combination that implements Hentzel’s tracking server components either within Koeppel’s Web server 110 or a separate tracking server 40, and collected or stored data is analyzed by Web server 110 or used during playback. *Id.* at 31 (citing Ex. 1005, Abstr., ¶¶ 22, 39, 49, 67–75, 157–181; Ex. 1006, Figs. 1–4, 1:28–2:25, 10:15–11:40, 13:30–14:27); Ex. 1003 ¶¶ 156–160). Patent Owner does not specifically contest that this recitation in the preamble is taught by the combination of references. *See generally* Resp. To the extent this language is limiting,

which we do not need to determine, we agree with Petitioner and determine that it is taught by the combination of Koeppel and Hentzel.³

With respect to limitation [1a], “downloading, over a network, web page content that comprises a tracking code,” Petitioner points to both teachings of Koeppel and Hentzel, including Koeppel’s teaching of a network 140 that connects the client nodes 150 to web server 110, wherein a browser on the client node downloads a requested page from the server. *Id.* at 32–33 (citing Ex. 1005, Abstr., ¶¶ 21, 37–47, 54, 150, Ex. 1003 ¶¶ 161–165). Petitioner further points to Koeppel’s client-side script, applet, or application, which collects event information, and to Hentzel’s embedding of scripts, applets, or applications with a tracked page. *Id.* at 33 (citing Ex. 1005 ¶¶ 164–165).

With respect to limitation [1b], “tracking, at least partially by executing the tracking code by a user computer, user activities that are responsive to at least a portion of the downloaded web page content,” Petitioner contends Koeppel further teaches user activities (e.g., mouse clicks) that are responsive to the web page being browsed. *Id.* at 33–34 (citing Ex. 1005 ¶¶ 21, 81–154; Ex. 1003 ¶¶ 166–169).

With respect to limitation [1c], “associating each user activity with properties of the user activity,” Petitioner contends this claim language is met by Koeppel’s teaching of user activities triggering the collection of, i.e., “are associated with[,] ‘coordinate and size information related to the

³ Throughout this Final Written Decision, we consider the reasons to combine the references as argued by the parties as part of our determination. *See infra* § II.D.c.

browser window, the Web-page rendered within the browser window and components rendered within the Web Page.” *Id.* at 34–35 (citing Ex. 1005 ¶¶ 3, 38–41, 55, 82–156, 177–181; Ex. 1003 ¶¶ 170–175). Specifically, Petitioner characterizes Koeppel’s scrolling and mouse movements as being associated with properties such as screen scrolling position and time data and mouse position and time data, respectively. *Id.* at 35 (citing Ex. 1005 ¶¶ 83–87, 154, 178; Ex. 1003 ¶ 172).

With respect to limitation [1f], “compressing and buffering a portion of the user activity information,” Petitioner asserts that this limitation is met by Koeppel’s teaching of storing (buffering) and both Koeppel’s and Hentzel’s teaching of compression. *Id.* at 46–47 (citing Ex. 1003 ¶ 202; Ex. 1005, Abstr., ¶¶ 38–41, 45–55, 81–84, 153–156, 165–176; Ex. 1006, 9:65–10:7, 12:21–43).

With respect to the recitation in limitation [1g], “transmitting to a tracking entity, at least a compressed portion of the user activity information when a first transmission criterion is fulfilled,” Petitioner asserts that this limitation is met by Koeppel’s teaching of a client-side trigger event, such as data store 160 being filled to a threshold limit or a user’s selection of another Web page, that causes the client-side script, applet, or application to transmit the collected, compressed data in data store 160 to an associated storage device. *Id.* at 47–48 (citing Ex. 1005 ¶¶ 38–41, 155; Ex. 1003 ¶ 207).

Patent Owner does not specifically contest that limitations [1a], [1b], [1c], [1f], and [1g] are taught by the combination of references. *See generally* Resp. In view of the record, we agree with Petitioner and find these limitations to be taught by the combination of Koeppel, Hentzel, and Smith.

b) *Limitations [1d] and [1e]*

Limitation [1d] recites:

[i] generating user activity information consisting of each tracked activity and its associated properties, [ii] wherein the properties of the user activity are associated with a position and size of each element of a portion of web page related to the user activity, [iii] thereby providing the user activity information an invariant form in which the user activity information is relative to the position and size of the each associated elements of the portion of the web pa[g]e[.]

Ex. 1001, 17:1–9.

Petitioner contends that both Koeppel and Hentzel teach a client-side tracking script or application that generates user activity information consisting of tracked activity and their respective properties, as discussed with respect to limitation [1c], wherein Koeppel teaches that the activity and properties are associated with each other by being collected and stored “along with” each other. Pet. 36–37 (citing Ex. 1005, Abstr. ¶¶ 3, 18, 38–55, 70–75, 82–86, 153–181; Ex. 1006, 3:33–65, 7:45–8:61, 10:67–11:8, 12:54–13:15; Ex. 1003 ¶¶ 176–184).

Specifically, Petitioner points to Koeppel’s determination of whether a mouse pointer is positioned over a web page component, characterizing that determination as generating information that associates the position of the mouse pointer with the position and size of the web page component. *Id.* at 37–38 (citing Ex. 1005, claim 14, ¶¶ 83–85, 154, 178; Ex. 1003 ¶ 181). Petitioner further contends that, because the position of the mouse pointer is relative to the position and size of the web page component, this information about the user activity and its associated properties is provided in “an

invariant form.” *Id.* at 38 (citing Ex. 1003 ¶¶ 183–184; Ex. 1001, 10:45–55).

Patent Owner first argues that Koeppel’s storage of size and position of web page component data along with user activity events, in the same memory but without any particular link, fails to teach the claimed association. Resp. 48–49. Patent Owner argues that Koeppel’s storage will not provide the activity information in an invariant form “necessary for accurate replay of the user activity on a browser window or display of a different size or with different display characteristics.” *Id.* at 52 (citing Ex. 2009 ¶ 192 (Schmandt Decl.)). Patent Owner points to support in the Specification, which states that transferring coordinates in an invariant form allows coordinate mapping where the absolute coordinates at recording do not point to the correct location at a later time of analysis or playback. *Id.* (citing Ex. 1001, 10:45–53; Ex. 2009 ¶ 194). Patent Owner argues that simple storage of information in the same memory does not yield this type of association. *Id.* at 53.

Petitioner disputes Patent Owner’s characterization of Koeppel. Reply 18. Petitioner points to Koeppel’s description of recorded user activities being associated with both the page’s components and the activities’ properties. *Id.* (citing Pet. 36–37; Ex. 1005, Abstr. ¶¶ 18, 175–178; Ex. 1003 ¶¶ 177–178). Petitioner further points to Koeppel’s description of collecting size and position data of page elements and components to determine features that are “in-view,” to determine whether the content specified by user activity data, such as mouseovers or clickthroughs, are in-view. *Id.* (citing Ex. 1005 ¶¶ 82–84; Ex. 2010, 134:20–135:18). Petitioner contends that this provides the requisite association of

the size and position of elements with the activities. *Id.* at 18–19. Petitioner further points to Koeppel’s description of scrolling and resizing the window triggering the collection of coordinate (position) and size information of the window and the components (elements). *Id.* at 20 (citing Ex. 1005 ¶¶ 84–87; Ex. 1003 ¶ 180; Ex. 1001, 7:64–8:8).

Patent Owner, in turn, argues that Koeppel’s in-view feature stores the size and position for all webpage components at the time of an event such as a mouseover, but does not indicate that any particular webpage component is related to the mouseover event or other user activity. Sur-reply 16–17 (citing Ex. 1005 ¶ 84). With respect to clickthroughs, Patent Owner argues that Koeppel merely monitors the number and rate of clickthroughs, and such is not associated with any particular user event or webpage element. *Id.* (citing Ex. 1005 ¶ 75). With respect to Koeppel’s scrolling and resizing, Patent Owner argues that the coordinate and size of a window is irrelevant to the coordinate and size of an element, as claimed. *Id.* Patent Owner further argues that information is collected for all in-view elements upon the occurrence of an event, such that there is no relationship between a scrolling activity event and information on any related webpage element. *Id.* at 17–18). Patent Owner contrasts Koeppel with the description in the ’525 patent that “scroll events are transmitted with the position of the scroll bars”). *Id.* at 18 (citing Ex. 1001, 7:57–58). Finally, Patent Owner characterizes Koeppel as concerned with identifying which webpage elements, such as advertisements, were in view when user activity occurred for the purpose of producing billing records, but not that any user activity was associated with the position or size of any related webpage element. *Id.* (citing Ex. 1005, Abstr.).

We determine, based on a preponderance of the evidence, that Koeppel teaches the properties of the user activity are associated with a position and size of each element of a portion of web page related to the user activity. Both parties characterize Koeppel as identifying which webpage elements were in view when a particular user activity occurred. Reply 18; Sur-reply 16–17. Both parties further agree that Koeppel’s in-view feature stores the size and position for all webpage components at the time of an event such as a mouseover. *Id.* Although Patent Owner argues that Koeppel teaches collecting information on all webpage elements in view, not just a specific element, this merely shows that the size and position of multiple elements may be associated with a particular user activity. Patent Owner has not explained how associating the size and position on multiple elements with a user event would not teach associating the size and position on each of those individual elements with that user event. Accordingly, we disagree with Patent Owner’s argument.

Patent Owner also argues that Petitioner’s combination cannot teach user activity information in the claimed invariant form, “in which the user activity information is relative to the position and size of the each associated elements of the portion of the web page.” Resp. 53 (citing Ex. 1001, 17:5–9, 18:29–3; Ex. 2009 ¶ 195). Patent Owner points to a description in the ’525 patent of calculating invariant coordinates from element position data and recording space coordinates. *Id.* (citing ex. 1001, 11:13–18). Patent Owner argues that the claims require such calculation of invariant coordinates, which appears nowhere in Koeppel. *Id.* at 54–57 (citing Ex. 2009 ¶ 206).

Petitioner disputes this characterization, which it terms an implicit claim construction that does not take into account the description of

“invariant coordinates” appearing in the claim. Reply 22. Petitioner points to the claim phrase “an invariant form *in which* the user activity information is relative to the position and size of the each associated elements.” *Id.* Petitioner asserts that this language provides the appropriate framework for determining “invariant form.” *Id.* Petitioner further asserts that Mr. Schmandt explained that the claims’ generated “tracked activities” correspond to recording space coordinates instead of invariant coordinates. *Id.* at 23 (citing Ex. 1049, 27:3–10). Petitioner further asserts that Patent Owner characterizes the “calculating” of the invariant form in the Specification as an “example,” rather than as limiting the claim scope. *Id.* (citing Resp. 54). Petitioner further notes that the Specification describes events such as keyboard activities – which do not have coordinates – as an activity encompassed by invariant form activities. *Id.* at 23–24.

Patent Owner responds to Petitioner’s assertions by arguing that the Specification describes that “invariant coordinates . . . are relative to position and size of the . . . elements,” and that such is not taught by the combined prior art. Sur-reply 19. With respect to keyboard activities, Patent Owner argues that the claim should not be read to encompass keyboard activity, which does not have size, position, or coordinates. *Id.* at 20.

We determine, based on a preponderance of the evidence, that Koeppel teaches generating user activity information thereby providing the user activity information an invariant form in which the user activity information is relative to the position and size of the each associated elements of the portion of the web page. Patent Owner describes its calculation as an “example,” which indicates that the claims are not limited thereto. Resp. 54 (citing Ex. 1001, 11:13–18). Patent Owner’s declarant,

Mr. Schmandt, merely cites the same exemplary language. Ex. 2009 ¶ 206.

Nor does the claim itself recite any such calculation. The claim itself describes the contours of its “invariant form” as one “*in which* the user activity information is relative to the position and size of the each associated elements.” Ex. 1001, 17:6-8. Furthermore, because claim 9 recites that the tracking comprises user activity information representative of “keyboard strokes,” the tracking in its parent claim 1 must be broad enough to also encompass keyboard stroke activity, which Patent Owner admits to not have size, position, or coordinates. Ex. 1001, 17:54–58; Sur-reply 20; *see* 35 U.S.C. § 112 ¶ 4 (“a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed”) (2006). Absent a requirement for such calculation, Petitioner’s assertions are supported by Koeppel, which describes recognition of “the placement of a user’s mouse over targeted components of a rendered Web page, . . . stored as user events.” Ex. 1005 ¶ 83. We agree with Petitioner’s assertion that because the position of Koeppel’s mouse pointer is relative to the position and size of the web page component, such that this information about the user activity and its associated properties is provided in “an invariant form.”

With respect to limitation [1e],

[i] wherein the user activity information in the invariant form further allow for a compensation of differences between visual representations, [ii] wherein the compensation comprises converting, in a non-linear transformation, information within the user activity information representative of the position and size of the each associated element of the portion of the web page to a different position and a different size for a playback display, [iii] wherein the non-linear transformation comprises

converting the each associated element of the portion of the web page in a piece-wise-linear fashion[.]

Petitioner points to the provision of user activity in an invariant form, taught by the combination of Koeppel and Hentzel as described, *supra*, and Smith's resizing of elements on a web page through non-linear transformation of each element in a piecewise, linear fashion. Pet. 39–40 (citing Ex. 1005 ¶¶ 5–9, 21, 37–45, 54–55, 61–66, 87, 98, 154–158, Figs. 4A–4H; Ex. 1006, 3:33–58, 7:45–50, 8:48–61, 10:67–11:8, 12:54–13:15; Ex. 1007, 6:16–43, 7:30–52; Ex. 1003 ¶¶ 185–200). Specifically, Petitioner points to Smith's code generation component 213 that uses default resizing parameters to control aspects of elements while resizing the window to otherwise adjust the elements proportionately. *Id.* at 40 (citing Ex. 1007, 6:16–43, 7:30–52; Ex. 1003 ¶ 188). Petitioner contends that this would be understood by a person of ordinary skill in the art as resizing different elements using different linear scales, i.e., piecewise, while the web page as a whole would be non-linearly resized (transformed). *Id.* at 40, 42–43 (citing Ex. 1003 ¶¶ 188, 190–194). Alternately, Petitioner contends that the code generation component 213 would use layout information from multiple client nodes in resizing the page and its elements for display. *Id.* at 41 (citing Ex. 1005, Fig. 1, ¶¶ 37–51, 155–165, 176–178; Ex. 1007, 7:53–9:10, 10:36–54, 4:4–15, 6:21–32, Abstr.; Ex. 1003 ¶ 189).

Petitioner further points to the use of a linear interpolative or extrapolative function used by code generation component 213 to resize the elements and components of the page for display on a separate display having different dimensions. *Id.* (citing Ex. 1007, 7:53–8:50, 10:36–54; Ex. 1003 ¶¶ 190–192). Thus, Petitioner contends that the combined

teachings of Koeppel, Hentzel, and Smith result in code “adapted to dynamically provide” user interface resizing as a function of the components’ positions and sizes (characterized as layout information or resizing constraints) displayed at the client node. *Id.* at 43 (citing Ex. 1007, 6:16–20, 7:30–52, 3:23–55, claims 1, 9, 17, 23; Ex. 1003 ¶¶ 193–194).

Patent Owner asserts that neither Koeppel nor Hentzel teaches compensating for differences between visual representations on different displays. Resp. 58 (citing Ex. 2009 ¶ 211). Further addressing Smith, Patent Owner argues that Smith’s teachings are limited to defining “*a priori* how certain webpage items are to be adjusted based on characteristics of a dynamically resized user interface,” i.e., by constraint images. *Id.* at 58–59. (citing Ex. 1007, 3:55–59, 7:41–45; Ex. 2009 ¶¶ 212–214). Patent Owner argues that Smith does not teach how to resize elements in a client/server context, and does not collect any layout information that would permit it to do so. *Id.* (citing Ex. 2009 ¶¶ 213–214). Patent Owner adds that the operation of any such combination with Hentzel is unexplained by Petitioner, and would not achieve accurate session replay across devices having different display characteristics so as to meet the limitation. *Id.* at 60, 62–64. (citing Ex. 2009 ¶¶ 222–225). Patent Owner points to a specific example in Smith in which not all items are resized, arguing that this would result in inaccurate presentation on a second screen, such that the playback would not reflect the location of associated user activity. *Id.* at 62–64 (citing Ex. 1007, 6:39–43; Ex. 2009 ¶¶ 226–231). Patent Owner further argues that altering Smith to use layout information as a resizing constraint would frustrate Smith’s purpose. *Id.* (citing Ex. 2009 ¶ 220).

Petitioner disputes Patent Owner’s characterization, arguing that

“compensating,” viewed in light of the express limitations of the claim and the examples set forth in the Specification, can include a non-linear transformation that resizes or converts the page as a whole by converting information regarding each page element, in a piece-wise linear fashion, to a different position and a different size for a playback display. Reply 25–26 (citing Pet. 5–6, 39, E. 1001, 10:1–10, 10:56–64, 11:59–12:41, Fig. 11C, Ex. 1050, 6, Ex. 1048, 27:19–28:3; Ex. 1003 ¶¶ 49–51, 186). Petitioner emphasizes that the conversion described in the Specification operates on page elements, not user activity. *Id.* at 25 (citing Ex. 1001, 12:38–41), 28–29 (citing Pet. 44–46). Petitioner argues that the asserted Koeppel-Hentzel-Smith combination, as explained in the Petition, sets forth such compensating. *Id.* at 26–27 (citing Pet. 39–44; Ex. 1048, 59:17–60:1; Ex. 1003 ¶¶ 185–194). Petitioner argues that Patent Owner’s arguments improperly would require that Smith be bodily incorporated into Koeppel and Hentzel. *Id.* at 27. Petitioner further argues that (1) Smith expressly describes multiple layouts for non-linear or piecewise-linear resizing, and (2) Koeppel discloses collection of layout information from multiple devices, contrary to Patent Owner’s argument that a person of ordinary skill would not use two different layouts for page resizing. *Id.* (citing Pet. 25–29, 39–43, Ex. 1003 ¶¶ 140–150, 185–190).

Patent Owner responds by arguing that user activity is required by the claim, when considered as a whole in light of the limitations “[a] method for tracking an activity of a user,” “tracking, at least partially by executing the tracking code by a user computer, user activities,” and “generating user activity information consisting of each tracked activity.” Sur-reply 21 (citing Ex. 1001, 15:59, 16:63–64, 17:1–2). Patent Owner argues that the

claim can only be understood by interpreting the limitation, “a playback display,” as replaying tracked user activity. *Id.* at 22 (citing Ex. 1001, 17:17, 18:41). Patent Owner argues that Petitioner does not contend that the proposed combination would accurately track or replay user activity, and therefore, cannot teach the claim when properly read as a whole. *Id.* at 22–23, 41–42, 44–45. Patent Owner further argues that Petitioner’s reliance on prior art of record, other than Koeppel, Hentzel, and Smith, to show tracking is improper because Petitioner uses the other prior art⁴ to meet complex claim limitations for complicated technology, and fails to provide any motivation why a person of ordinary skill in the art would have looked to those references. *Id.* at 25–26 (citing Resp. 9–13, 39; *Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337–38 (Fed. Cir. 2020) (“invoking ‘common sense . . . to supply a limitation that was admittedly missing from the prior art’ should generally only be done when ‘the [missing] limitation in question [is] unusually simple and the technology particularly straightforward’”)).

Patent Owner further argues that Smith provides its constraint images before the user webpage is ever served to a user device – and therefore, could not work in the combination as asserted by Petitioner which requires information about the device that the webpage is being displayed upon. *Id.* at 23, 41, 43–44. Patent Owner admits that Smith would allow an application or webpage to resize and rearrange user interface elements upon start or loading, but does not relate to future playback on another computer,

⁴ Patent Owner refers to Exhibits 1008, 1011, 1012, and 1013. Sur-reply 25.

and would not be aligned with any stored user actions. *Id.* at 41 (citing Ex. 2009 ¶¶ 153–155). Patent Owner further argues that Smith is argued to not perform its “piece-wise linear transformation” on single images (as would be required by Petitioner’s combination), or generate an invariant form. *Id.* at 23–25, 45–47. Patent Owner further argues that Smith does not describe how its code would be implemented in a system such as Koeppel/Hentzel. *Id.* at 42, 44–45. Patent Owner further argues that Petitioner has not shown how the combination could be implemented “to achieve the desired results, *i.e.*, that user actions will appear at the proper webpage element on the display computer as they were on the user computer.” *Id.*

We determine that the combination of Koeppel, Hentzel, and Smith proposed by Petitioner teaches the [1e] limitations of claim 1. Smith provides a flexible approach to dynamically resizing content for differently sized displays. Resizing is performed by using resizing constraints that capture position and proportion information. Ex. 1007, 6:1–20. The resizing constraints may be captured from a single constraint image, multiple constraint images, and/or default resizing parameters. *Id.* at 21–44. Dr. Cooperstock provides evidence that a person having ordinary skill in the art would have understood, or found obvious, the use of these constraints of Smith to non-linearly resize or transform a web page as a whole. Ex. 1003 ¶¶ 188–194. Patent Owner’s expert, Mr. Schmandt, provides evidence supporting Smith’s application to transforming web pages. Ex. 2009 ¶ 154 (stating, “Applying the teachings of Smith would allow a web server to make a page look different on a different sized display.”).

With respect to different-size displays, Petitioner’s assertions are

further supported by Patent Owner's declarant as well as its own. Mr. Schmandt states that at the critical time, different sizes of device displays were known that would differently display web pages. Ex. 1048, 23:4–11, 28:1–6. Mr. Schmandt further characterizes Hentzel as describing rendering the display of one computer in differently sized dimensions on a second computer, in order to eliminate visual representation differences by matching the dimensions of the browser window on the first computer. *Id.* at 60:12–61:8; Ex. 2009 ¶ 135. Mr. Schmandt further states that based on Smith's teachings, Hentzel's resizing would "render a user interface based on a constraint image selected according to the dimensions of the window in which the user interface was displayed," such that the user interface would be resized. Ex. 1048, 60:4–11.⁵ Dr. Cooperstock states that a person of ordinary skill in the art would have sought a resizing solution, such as taught by Smith, to dynamically resize elements of a web page or application for display on a differently sized computer, including a computer with a smaller-sized display requiring smaller-dimensioned elements. Ex. 1003 ¶¶ 137–139, 150. Although Mr. Schmandt describes this statement as "conjecture," Mr. Schmandt's own statements tend to support both the presence of differently sized displays and the effect of Hentzel-Smith to render a resized user interface based upon the dimensions of the display window.

With respect to Patent Owner's argument that the combination would frustrate the purpose of Smith, the test for obviousness is "what the

⁵ Ex. 1048 here cites to the discussion of Hentzel in Mr. Schmandt's declaration in IPR2021-00363.

combined teachings of the references would have suggested to those of ordinary skill in the art.” *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Here, Petitioner applies the teachings of Smith to provide an advantage to the combined teachings of Koeppel and Hentzel; i.e., to use Smith’s feature resizing to further Koeppel and Hentzel’s goal of accurately representing what images appear on a remote computer’s screen. Pet. 18, 24, 28. Accordingly, we do not agree with Patent Owner’s argument based upon an alleged lack of improvement to Smith alone.

Similarly, we do not agree with Patent Owner’s arguments against Smith alone, including its arguments that Smith does not generate an invariant form or describe how its code would be implemented in a different system such as a web server. Resp. 23–25, 41–47. These arguments address Smith alone, rather than the combined teachings of the applied references as viewed by one having ordinary skill in the art, and similarly fail. “Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *Keller*, 642 F.2d at 425.

To the extent that Patent Owner addresses Smith in combination regarding alleged inoperability of the combination because Petitioner has not shown Smith’s code to be operable on a web server (Resp. 41–42), Patent Owner’s declarant provides contradictory evidence. Mr. Schmandt states, “[a]pplying the teachings of Smith would allow a web server to make a page look different on a different sized display.” Resp. 41 (citing Ex. 2009 ¶ 154). Thus, Patent Owner’s own declarant contradicts its argument that one having ordinary skill would not be able to translate the code of Smith to other environments, including a web server. Consequently, these arguments

are unavailing.

Further, we disagree with Patent Owner's arguments that the claimed "compensation of differences between visual representations . . . converting . . . information representative of the position and size of the each associated element of the web pa[g]e to a different position and a different size for a playback display" necessarily involves compensation of any user action information. Resp. 22–23, 41–42, 44–45. First, claim 1's compensating is explicitly stated to be only of "the position and size" portion of the user activity information, and not the "each tracked activity and its associated properties" of the user activity information. Ex. 1001, 17:1–2, 17:10–17. Second, we agree with Petitioner's cited support from the Specification illustrating conversion of the page elements, not the tracked activity. Reply 25–26; Pet. 5–6, 39; Ex. 1001, Fig. 11C. Third, because claim 9 recites that the tracking comprises user activity information representative of "keyboard strokes," the tracking in its parent claim 1 must be broad enough to also encompass keyboard stroke activity, and Patent Owner has stated that keyboard activity does not have size, position, or coordinates. Sur-reply 20. Fourth, the claim's storage of user tracked activity information is claimed to be stored "relative to the position and size" of the associated page elements in step [1d] to ensure the proper association of tracked activity and resized page elements. Patent Owner's arguments do not explain why this claimed association would also require size and position conversion of tracked activity, including keyboard activity not having size or position, in step [1e].

Consequently, we do not agree that the claim requires the tracked user activity to be converted in step [1e]. Because we determine that the claim does not require converting the tracked activity data, we do not address

whether such is taught by the “non-ground” references; i.e., Exhibits 1008, 1011, 1012, and 1013 discussed by Petitioner as teaching mapping activity data with the web page. Pet. 44–46.⁶ For the same reason, we do not agree with Patent Owner’s arguments against the Petitioner’s reason to combine the references, including inoperability of the combination, that are based upon such an alleged claim requirement of converting tracked user activity.

Nor do we agree with Patent Owner’s argument that Smith’s reliance on initial constraints could not be combined to operate with constraints from the screen displays of Koeppel combined with Hentzel. Resp. 42–44. Petitioner relies upon Smith for teaching the use of “a web application’s element/item layout information to resize the layout/appearance of elements for a particular-sized window.” Pet. 25 (citing Ex. 1007, 6:1–7:8, 7:30–9:10, 10:36–54, 4:4–15; Ex. 1003 ¶ 139). Petitioner further states that “the system taught by Koeppel in view of Hentzel collects similar type of data as Smith’s resizing constraints.” *Id.* at 27–28 (citing Ex. 1003 ¶ 147). Thus, Petitioner relies upon the teachings of Smith subsequent to entry of the resizing parameter data; that is, not including the generation of data from the developer that is supplied to the resizing program. Instead, Petitioner relies upon the teachings of Koeppel and Hentzel to supply the resizing parameter data.

Further supporting the operability of the combination, Mr. Schmandt states in a deposition that based on Smith’s teachings, Hentzel’s resizing

⁶ Nor need we consider Petitioner’s objection to Patent Owner’s Sur-reply addressing the “non-ground” reference issue. Paper 38; Tr. 29–40 (agreeing that absent a finding that user activity is built into the compensating step, no prejudice is created against Petitioner due to arguments in the Sur-reply).

would “render a user interface based on a constraint image selected according to the dimensions of the window in which the user interface was displayed.” Ex. 1048, 60:4–11. Dr. Cooperstock also presents such a combination as “amount[ing] to the use of a known technique to improve similar devices in the same way, and combining prior art elements according to known methods to yield predictable results,” and that such a modification would have been “straightforward.” Ex. 1046 ¶¶ 145–147.

Consequently, the evidence of record supports Petitioner’s assertion that one having ordinary skill in the art would have recognized the applicability and operability of Smith’s constraints to Hentzel’s resizing, and thus to the combined teachings of Koeppel and Hentzel. Thus, we determine that Petitioner has shown, by a preponderance of the evidence, that the limitations of [1e] are taught by the combined teachings of Koeppel, Hentzel, and Smith.

c) Motivation to Combine

With respect to the reason to combine the teachings of Koeppel, Hentzel, and Smith, Petitioner provides reasons to modify the teachings of Koeppel based on the teachings of Hentzel and Smith. Pet. 18–29. We determine that Petitioner has shown, by the preponderance of the evidence, that a person of ordinary skill would have had reason to combine the references.

(1) Koeppel and Hentzel

With respect to compression of data prior to transmission, allegedly taught by Hentzel, Petitioner states that such compression would have been obvious to implement in Koeppel, because Koeppel discusses that an enormous amount of user data is transmitted and such is controlled by the

client-side script, and because compression would have enabled such control through a straightforward, known modification of Koeppel. *Id.* at 18–19 (citing Ex. 1005 ¶¶ 154, 168; Ex. 1003 ¶¶ 119–120). With respect to session playback or visualization for assessing the effectiveness of content, allegedly taught by Hentzel, Petitioner states that it would have been obvious to implement such in Koeppel to enable an in-depth analysis of user interactions, providing a robust system that provides additional, complementary insight regarding user behaviors. *Id.* at 20–22 (citing Ex. 1003 ¶¶ 128–130). Petitioner contends that both such modifications of Koeppel would have amounted to the use of a known technique to improve similar devices in the same way, and combining prior art elements according to known methods to yield predictable results. *Id.* at 20, 22 (citing Ex. 1003 ¶¶ 124, 130–131).

Patent Owner argues that Petitioner has not shown that a person of ordinary skill in the art would have been motivated to combine Koeppel with Hentzel’s reply and visualization teachings. Resp. 32–34. Patent Owner argues that Koeppel relates to determining whether web content is in the view of a user’s browser to appropriately track user activities and bill for viewed advertising. *Id.* at 33 (citing Ex. 1005 ¶¶ 21, 84; Ex. 2009 ¶ 125). Patent Owner argues that Koeppel does not describe any display of user activity on a second device for further analysis, and attempts to avoid issues created by further analysis. *Id.* (citing Ex. 1005 ¶ 16; Ex. 2009 ¶ 127). Patent Owner argues that inserting Hentzel’s playback/visualization functionality into Koeppel does not benefit Koeppel’s system, and is inconsistent with Koeppel’s goal of streamlined and real-time automated

content adjustment. *Id.* at 34, 38 (citing Ex. 1005 ¶¶ 15–16, 20–22; Ex. 2009 ¶ 131); Sur-reply 4–5.

Although Patent Owner argues that Koeppel is designed to avoid the complexity of further analysis, the Federal Circuit has recognized that “[a] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine. *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). Further, “simplicity of the prior art is rarely a characteristic that weighs against obviousness of a more complicated device with added function.” *In re Dance*, 160 F.3d 1449, 1344 (Fed. Cir. 1998). Thus, we have considered Patent Owner’s argument that adding Hentzel’s playback and visualization functionality adds complexity, but find that it does not obviate Petitioner’s provided reason to combine based on an advantage; namely, providing a more in-depth analysis, through visualization of user interactions with web page content, of how content can be optimized. Pet. 21–22. Nor does it obviate Petitioner’s other reason to combine, in that implementing Hentzel’s playback functionality in Koeppel “would have amounted to the use of a known technique to improve similar devices in the same way, and combining prior art elements according to known methods to yield predictable results—providing a visualization and statistical analysis of a user’s interactions.” *Id.* at 22.

Petitioner’s reasons to combine are supported by the record, as furthering Koeppel’s goal of determining of the “‘effectiveness’ of particular content based on user activities with respect to that content,” by monitoring “[d]etailed user responses associated with” the content to adjust the content for targeted advertising. Ex. 1005 ¶¶ 21, 39; Resp. 30; Sur-reply 7 (Koeppel

collects data “while users are accessing Web sites, and automatically adjusts the content presented in the Web site to target selected users.”). Petitioner also points to statements of Patent Owner’s declarant, Mr. Schmandt, indicating that Koeppel does collect and analyze user activity data. *Id.* (citing Ex. 1043, 64:13–17 (Koeppel’s “software can change the appearance of the page for the next visitor or visitors.”), 71:15–73:1 (Koeppel’s “program has access to the detailed activities that were recorded. And it uses that to perform the rest of its processing.”)).

With respect to the reason to combine Hentzel’s reviewer-based system with Koeppel’s automated, real-time system, Petitioner asserts Patent Owner’s cited “time consuming” activities of Koeppel relate to adjusting web page content, e.g., the content of the advertisements, not analyzing user activity data as would be modified by the teachings of Hentzel. Reply 4–5 (citing Ex. 1005 ¶ 15). Further, Petitioner points to a non-automatic embodiment of Koeppel that “describes a content provider being provided user activity statistics and ‘suggestions’ on how to modify content—without such changes being automatically applied,” by providing a content effectiveness record for review. Reply 5 (citing Ex. 1005 ¶¶ 178–180). Patent Owner argues that the content effectiveness record does not itself provide the reason to combine Hentzel’s playback and visualization in view of Koeppel’s otherwise automated system (Sur-reply 5–8). However, Koeppel’s embodiment of a content effectiveness record that suggests, but does not automatically implement, content changes undercuts Patent Owner’s argument that Koeppel seeks to avoid any further analysis and that a person of ordinary skill viewing Koeppel would be uninterested in improvements that are not strictly related to automated content replacement.

Consequently, the purported “streamlined” nature of Koeppel does not undermine Petitioner’s showing as to its reasons to combine the teachings of Hentzel. We find that the presented evidence, including the advantages of data compression for efficient transmission, and additional, complementary insight regarding user behaviors, sufficiently provides a reason for a person having ordinary skill in the art to combine the teachings of Koeppel and Hentzel.

(2) *Koeppel, Hentzel, and Smith*

With respect to modifying the combined teachings of Koeppel and Hentzel in view of the teachings of Smith, Petitioner contends that a person having ordinary skill in the art would have understood or found obvious that a difference in the relative dimensions of remote and local displays, as known in the art at the pertinent time, could necessitate resizing of objects therein, and that Smith provides a specific manner of doing so. Pet. 24–25 (citing Ex. 1003 ¶¶ 136–138); Reply 6–7. Petitioner contends that such a modification would have amounted to the use of a known technique to improve similar devices in the same way, and combining prior art elements according to known methods to yield predictable results, which would have been straightforward because the system taught by Koeppel in view of Hentzel collects data similar to Smith’s resizing constraints. Pet. 27–28 (citing Ex. 1003 ¶ 147). Petitioner further points to the well-known nature of resizing web pages for different displays, and to enabling dynamic resizing for a playback computer, as reasons to combine the teachings of Smith to modify the teachings of Koeppel in view of Hentzel. *Id.* at 28–29 (citing Ex. 1003 ¶¶ 149–150).

Further, in Petitioner’s combined system, Smith’s resizing program

applies different resizing techniques—linear or non-linear resizing, or piece-wise linear resizing—based on the number of tracked client nodes 150 of Koeppel, i.e., constraint images. Pet. 48–50 (citing Ex. 1007, 7:53–8:20, 8:37–50, 10:36–54, Abstr., 4:4–15, 6:21–32, 9:4–10). Petitioner asserts that the multiple client nodes whose information is tracked by Koeppel’s web server could each include different-sized displays, which information would need to be resized for the business computer’s display. *Id.* at 26 (citing Ex. 1003 ¶ 143).

Patent Owner argues that Koeppel does not describe any compensation for different visual representations, or any use of differently sized displays. Resp. 33, 35, 38–39; Sur-reply 10. Patent Owner argues that Hentzel’s technique of exactly reproducing the browser size and placement on a remote screen does not contemplate any difference in display dimensions, but instead is focused on maintaining browser window dimensions. Resp. 37; Sur-reply 10. Patent Owner dismisses as “pure conjecture” Petitioner’s argument that the remote computer may have a larger display than the local computer, and therefore would motivate resizing. Resp. 37–38; Sur-reply 10. Patent Owner argues that the existence of devices having different size displays does not address why a person having ordinary skill in the art would have been motivated to add Smith’s resizing feature. Sur-reply 10–11. Patent Owner further argues that none of Koeppel, Hentzel, and Smith supply this motivation. Resp. 39–40.

Patent Owner’s arguments are unavailing. As discussed in both Koeppel and Hentzel, computerized displays were known to exist in many different sizes at the critical time. Pet. 24–25; Ex. 1006, 5:10–6:5, 7:27–41; Ex. 1005 ¶ 45; Reply 8. Dr. Cooperstock and Mr. Schmandt both confirmed

the prevalence of differently sized displays at the critical time. Reply 8–9 (citing Ex. 1048, 23:4–25:6; Ex. 2009 ¶ 23). Dr. Cooperstock states that such differently sized displays could cause difficulties with Hentzel’s objective of providing a browser window (e.g., user interface) on the local display that has the “same dimensions” as on a remote display, when the local display is smaller than the remote display. Ex. 1003 ¶¶ 136–138, 147–150. Dr. Cooperstock states that a person having ordinary skill in the art would have found it obvious to resize to a smaller window displayed on the local display. *Id.* ¶ 138. We find this consistent with Hentzel’s goal of “recreat[ing] the events [on the remote display] as accurately as possible so that the browser will be unable to differentiate between a replayed mouseclick and an actual user click.” Ex. 1006, 10:37–41

Patent Owner considers Dr. Cooperstock’s reasoning to be speculative because no reference explicitly sets forth such a situation and states that resizing would be desirable. Resp. 40 (citing Ex. 2009 ¶¶ 150–151); Ex. 2009 ¶ 139 (“a POSITA would have no motivation to address different display sizes because that problem is not even contemplated by Koeppel or Hentzel.”). However, a reason to combine references in an obviousness inquiry is not limited to the cited references, but can be based on “articulated reasoning with some rational underpinning,” and may “take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 550 US 398, 418 (2007). We find that the evidence of record supports Petitioner’s reasoning that a person of ordinary skill in the art, faced with replicating displayed windows on displays of different sizes, would recognize the advantages of window resizing such as taught by Smith.

Therefore, Petitioner has shown, by a preponderance of the evidence, that it would have been obvious to an ordinarily skilled artisan to combine the constraint-based resizing teachings of Smith into the combined system of Koeppel and Hentzel.

5. *Claims 2, 4, 6, 8, 9, 12–16, and 18*

With respect to claims 2, 4, 6, 8, 9, 12–16, and 18, Petitioner points to specific teachings from Koeppel, Hentzel, and Smith as meeting the additional limitations set forth in those claims. Pet. 48–62. Patent Owner makes no arguments specific to these claims. *See generally* Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

With respect to claims 2 and 16, Petitioner points to Koeppel’s description of “collecting ‘detailed user response information’ and ‘in-view’ data when ‘commands’ in the ‘client side script[s]’ (provided to client node 150) detect ‘*selected*’ events’ performed by users.” Pet. 48–49 (citing Ex. 1003 ¶ 210; Ex. 1005 ¶¶ 82–88). Petitioner additionally, or alternatively, points to Hentzel’s teaching that “[w]hen a resource 58 [i.e., a web page] to be tracked is requested at block 120,” the web server “*determines whether or not to track the resource at block 122.*” *Id.* at 49 (citing Ex. 1006, 9:6–30; Ex. 1003 ¶¶ 211–216. Petitioner further points to both Hentzel and Koeppel as providing for tracking activities through activation of commands in the client-side code following a determination that activities should be tracked. *Id.* (citing Ex. 1005 ¶¶ 82–88; Ex. 1006, 9:6–30; Ex. 1003 ¶¶ 211–216; Ex. 1043, Abstr., 6:4–7:7).

With respect to claims 4 and 18, Petitioner points to Hentzel’s

description of the tracking determination “as the result of a random process—i.e., ‘randomly’ determining to track ‘a percentage of the users requesting the [page].” *Id.* at 50 (citing Ex. 1005 ¶¶ 82–88; Ex. 1006, 9:6–30; Ex. 1003 ¶¶ 219–221).

With respect to claim 6, Petitioner points to Koeppel’s collection of “user response information”/“user activity information,” including “user identification data such as, user ID, . . . and other general information associated with the user.” *Id.* at 50 (citing Ex. 1005 ¶¶ 13, 78–79; Ex. 1006, 13:36–50, 10:8–22; Ex. 1003 ¶ 223). Petitioner further points to Koeppel’s association of a timestamp to user activity information. *Id.* at 51 (citing Ex. 1005 ¶ 75, claim 20; Ex. 1003 ¶¶ 225–226). Petitioner further points to Hentzel’s identification of recorded sessions by “session data,” including “*clickstream*”/“*session*” and “*date and length of session.*” *Id.* (citing Ex. 1006, 8:13–10:22, 12:21–43, 14:40–50; Ex. 1003 ¶ 224).

With respect to claim 8, Petitioner points to both Koeppel’s and Hentzel’s collection of mouse position data that specifies a location (e.g., coordinates) representing mouse movement, and data about mouse clicks. *Id.* at 52–53 (citing Ex. 1005 ¶¶ 21–55, 70–75, 82–84, 154–158, claim 20; Ex. 1006, Abstr., 3:55–59, 10:35–41; Ex. 1003 ¶¶ 227–231).

With respect to claim 9, Petitioner points to Hentzel’s recording of user’s key strokes on a keyboard. *Id.* at 53–54 (citing Ex. 1006, 10:23–41, 14:12–35; Ex. 1003 ¶¶ 235–236; Ex. 1026, 8:1–43).

With respect to claim 12, Petitioner points to Koeppel’s transmission of user activity information stored in the client-side data store 160 when a first transmission criterion is fulfilled, such as when the data store 160 is “filled up to a threshold limit.” *Id.* at 54 (citing Ex. 1005, Abstr. ¶¶ 155–

156; Ex. 1003 ¶ 238). Petitioner further points to Koeppel's disclosure of "an enormous amount" of user activity data that is collected by the tracking code and this data is being "continuously"/"dynamically" transmitted to the web server 110/tracking server 40. *Id.* at 54–55 (citing Ex. 1005 ¶¶ 155–156; Ex. 1003 ¶¶ 238–239).

With respect to claim 13, Petitioner points to Koeppel's collection of information on scrolling and scroll bar position. *Id.* at 55–56 (citing Ex. 1005, Figs. 4A–4J, ¶¶ 21–38, 41–55, 82–84, 98, 121–158, claim 20; Ex. 1003 ¶¶ 241–245).

With respect to claim 14, Petitioner points to Koeppel's Web server 110 transmitting "a copy of the most recent version of the [web page] requested by the user," and Hentzel's tracking server 40 that "permanently stores" such a page. *Id.* at 56–57 (citing Ex. 1003 ¶ 246; Ex. 1006, 9:31–48; Ex. 1005 ¶¶ 37–38, 40–41, 56–57). Petitioner further points to Hentzel's description of tracking server 40 transmitting the web page to business computer 36, and to Koeppel's transmission of a page from Web server 110 to client node 150. *Id.* at 57 (citing Ex. 1006, 13:56–66; Ex. 1003 ¶¶ 246–248; Ex. 1005 ¶¶ 21, 37–41, 54).

With respect to claim 15, Petitioner points to Koeppel's software-driven Web server 110 and Hentzel's teaching that web servers (such as tracking server 40) and client nodes (such as client node 150) include a processor (such as processing units 78 and 46) and memory (such as memories 84 and 52) that stores instructions that include the server software. *Id.* at 58 (citing Ex. 1003 ¶¶ 250–254; Ex. 1005 ¶ 44; Ex. 1006, 6:15–7:26, 7:57–8:47, Figs. 4–5). Because Petitioner has shown these limitations of the preamble of claim 15 in the prior art combination, we need not determine

whether the preamble is limiting.

Upon review of the record, we agree with this assessment of the applied references, and we determine that Petitioner has shown, by a preponderance of the evidence, that these claims are taught or suggested by the Koeppel-Hentzel-Smith combination.

6. *Conclusion*

According to our summary above, Petitioner has demonstrated that the combination of Koeppel, Hentzel, and Smith as applied to claims 1, 2, 4, 6, 8, 9, 12–16, and 18 teaches or suggests each limitation of the claims, supported by Petitioner’s persuasive showing of rationale to combine the references with a reasonable expectation of success. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4, 6, 8, 9, 12–16, and 18 would have been obvious over the combination of Koeppel, Hentzel, and Smith.

E. Obviousness of Claims 3, 5, 7, 10, 11, and 17

Petitioner contends that claims 3, 5, 7, 10, 11, and 17 of the ’525 patent are unpatentable as obvious under 35 U.S.C. § 103(a) in view of the teachings or suggestions of the base combination of Koeppel, Hentzel, and Smith, further in view of either Zwicky (claims 3, 5, and 17), Booth (claim 7), Thomason (claim 10), or Ernst (claim 11). Pet. 62–80. Patent Owner makes no arguments specific to claims 3, 5, 7, 10, 11, and 17. *See* Resp. 65–67. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Petitioner provides a detailed analysis supported by Dr. Cooperstock’s testimony to show how the references teach the limitations in the claims. *Id.* With respect to claims 3, 5, and 17, Petitioner relies on the ’525 patent’s

specification in asserting that the claimed “feature of the user” includes whether the user is a returning user, or a “specific user action.” Pet. 65–66 (citing Ex. 1001, 6:29–42; Ex. 1003 ¶ 271). Petitioner points to Zwicky’s description of determining whether a user is a repeat visitor, and determining whether to record data for that visit based on the result of the determination. *Id.* (citing Ex. 1017, 11:52–62; Ex. 1003 ¶¶ 272–275). Petitioner asserts that incorporating Zwicky’s teaching into the Koeppel-Hentzel-Smith combination would “result in a more resource efficient system (where resources are not expended to track/store data for repeat sessions), and entails the use of known solutions to improve a similar system (e.g., Hentzel’s user tracking determination) in the same way. *Id.* at 63–64 (citing Ex. 1017, 11:52–62; Ex. 1003 ¶¶ 268–269). Petitioner’s declarant further states that such visitor tracking is well known in the art, such that combining Zwicky’s teachings into those of Koeppel-Hentzel-Smith amounts to combining known elements according to known methods to yield predictable results, and such that a person of ordinary skill in the art would have had a reasonable expectation of success in effectuating such a combination. *Id.* at 64 (citing Ex. 1003 ¶ 270).

With respect to claim 7, Petitioner points to Booth’s teaching of variable length compression of IP/HTTP messages to reduce the amount of data in request or response messages, using an entropy coding scheme. *Id.* at 66 (citing Ex. 1018, 3:15–20, 3:31–35). Petitioner asserts that an entropy coding scheme constitutes variable length codewords. *Id.* (citing Ex. 1023). Petitioner asserts that the significant reduction in data transfer resulting from such compression would motivate one having ordinary skill in the art to apply Booth’s compression scheme to the Koeppel-Hentzel-Smith

combination. *Id.* at 68 (citing Ex. 1018, Abstr., 1:10–20, 3:12–22, 4:23–65; Ex. 1003 ¶ 280). Further, Petitioner’s declarant states that such variable-length compression schemes were well known, and require only an application of a known technique to known devices that would have yielded a predictable result. *Id.* at 68 (citing Ex. 1003 ¶¶ 280–281).

With respect to claim 10, Petitioner points to Thomason’s teaching of hashing data as part of a caching technique. Pet. 69–71 (citing Ex. 1019, Figs. 1–2, 1:5–9, 2:8–67, 4:24–67, 5:7–67). Petitioner asserts that such page-caching techniques are well known to provide significant bandwidth and network resource efficiencies. *Id.* at 71 (Ex. 1003 ¶ 285; Ex. 1041, Abstr.). Petitioner asserts that the additional security provided by hashing would have motivated one having ordinary skill in the art to apply Thomason’s caching and hashing scheme to the Koeppel-Hentzel-Smith combination. *Id.* at 71–72 (citing Ex. 1019, 1:25–45, 4:51–67; Ex. 1003 ¶ 286). Further, Petitioner’s declarant states that such hashing of web pages was well known, and required only an application of a known technique to known devices that would have yielded a predictable result that can be achieved in a straightforward manner within the skillset of a person having ordinary skill in the art. *Id.* at 71–72, 74 (citing Ex. 1003 ¶¶ 286–290).

With respect to claim 11, Petitioner points to Ernst’s teaching of transmitting an uncompressed portion of data based on various attributes of the transmitted data, the approximate data transfer rate between a browser and a web server, and the resources of the processing unit performing compression. Pet. 75–76 (citing Ex. 1020 ¶¶ 20–23). Petitioner asserts that the addition of a selective-compression technique as taught by Ernst in the normally compressed-data combined teachings of Koeppel, Hentzel, and

Smith would optimize data transmission and reduce unwanted load on the processing unit. *Id.* at 77 (citing Ex. 1020 ¶¶ 8, 19–23; Ex. 1003 ¶¶ 296–297). Petitioner further asserts that such a combination would have amounted to the use of a known technique to improve similar devices in the same way, and combining prior art elements according to known methods to yield predictable results, and within the skillset of a person having ordinary skill in the art. *Id.* at 78–79 (citing Ex. 1003 ¶ 299).

Thus, Petitioner has provided an explanation of how each limitation of these claims is taught or suggested by the applied combination of prior art. *Id.* Petitioner has further provided a rationale for each combination, as well as an explanation how each combination would be accomplished with a reasonable expectation of success. *Id.* at 63–64, 67–68, 71–74, 77–79. Upon the record, we agree with Petitioner’s assessment.

For the above-described reasons, we determine that Petitioner has shown by a preponderance of the evidence that claims 3, 5, 7, 10, 11, and 17 would have been obvious in view of the applied combinations of prior art.

III. CONCLUSION⁷

For the foregoing reasons, we determine Petitioner has established by a preponderance of the evidence the unpatentability of claims 1–18 of the '525 patent. In summary,

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 2, 4, 6, 8, 9, 12– 16, 18	103(a)	Koeppel, Hentzel, Smith	1, 2, 4, 6, 8, 9, 12–16, 18	
3, 5, 17	103(a)	Koeppel, Hentzel, Smith, Zwicky	3, 5, 17	
7	103(a)	Koeppel, Hentzel, Smith, Booth	7	
10	103(a)	Koeppel, Hentzel, Smith, Thomason	10	
11	103(a)	Koeppel, Hentzel, Smith, Ernst	11	

⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
Overall Outcome			1–18	

IV. ORDER

For the foregoing reasons, it is:

ORDERED that Petitioner *has shown* based on a preponderance of evidence that claims 1–18 of U.S. Patent No. 7,941,525 B1 **Error!**

Reference source not found. are unpatentable; and

FURTHER ORDERED because this is a final written decision, the parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2021-00464
Patent 7,941,525 B1

FOR PETITIONER:

Walter Renner
axf-ptab@fr.com

Thomas Rozylowicz
tar@fr.com

Karan Jhurani
jhurani@fr.com

Michael Zoppo
zoppo@fr.com

FOR PATENT OWNER:

Gunnar Leinberg
gunnar.leinberg@troutman.com

Nicholas Gallo
nicholas.gallo@troutman.com