

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.

IPR2021-00530
Patent 9,792,365 B2

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

AMUNDSON, *Administrative Patent Judge*.

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

I. INTRODUCTION

Quantum Metric, Inc., Decibel Insight, Ltd., and Decibel Insight, Inc. (collectively “Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–23 in U.S. Patent No. 9,792,365 B2 (Exhibit 1001, “the ’365 patent”) under 35 U.S.C. §§ 311–319. Paper 3 (“Pet.”). Content Square Israel Ltd. (f/k/a Clicktale Ltd.) (“Patent Owner”) filed a Preliminary Response. Paper 18 (“Prelim. Resp.”).

In our Institution Decision, we instituted review based on all challenged claims and all grounds included in the Petition. Paper 19 (“Inst. Dec.”). We have jurisdiction under 35 U.S.C. § 6. We issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons explained below, Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–17, and 19–23 are unpatentable but has not shown by a preponderance of the evidence that claims 6 and 18 are unpatentable. *See* 35 U.S.C. § 316(e) (2018).

II. BACKGROUND

A. Procedural History

After we instituted review, Patent Owner filed a Response (Paper 24, “Resp.”), Petitioner filed a Reply (Paper 32, “Reply”), and Patent Owner filed a Sur-reply (Paper 38, “Sur-reply”). On June 9, 2022, we held an oral hearing, and the record includes the hearing transcript. Paper 42 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies the following entities as the real parties in interest: Quantum Metric, Inc., Medallia Inc., Decibel Insight, Ltd., and Decibel Insight, Inc. Pet. 71–72; Paper 7, 2. Patent Owner identifies the following entities as the real parties in interest: Content Square SAS and

Content Square Israel Ltd. Paper 6, 1. The parties do not raise any issue about real parties in interest.

C. Related Matters

Petitioner and Patent Owner identify the following civil actions where Patent Owner has asserted the '365 patent against an alleged infringer:

Content Square SAS et al. v. Quantum Metric, Inc., No. 1:20-cv-00832-LPS (D. Del. filed June 22, 2020); and *Content Square SAS et al. v. Decibel Insight, Ltd. et al.*, No. 1:20-cv-11184-FDS (D. Mass. filed June 22, 2020). Pet. 72; Paper 6, 2.

D. The '365 Patent (Exhibit 1001)

The '365 patent, titled “Method and System for Tracking and Gathering Multivariate Testing Data,” issued on October 17, 2017, from an application filed on December 29, 2014. Ex. 1001, codes (22), (45), (54). The patent claims priority to a provisional application filed on December 31, 2013. *Id.* at 1:8–10, code (60). The patent states that the “disclosure generally relates to techniques for evaluating changes to a website, and particularly to techniques for tracking and gathering multivariate testing data.” *Id.* at 1:14–16.

The '365 patent explains that a “website is a collection of webpages” and “typically includes a home page and a hierarchical order of follow-on webpages that are accessible through the home page.” Ex. 1001, 1:26–28. The patent also explains that website operators explore ways to increase website traffic through multivariate testing where “different versions of the same webpage are delivered to different users to determine whether users prefer a certain version of that webpage.” *Id.* at 1:42–52; *see id.* at 3:60–62. Multivariate testing may involve changing “the design of the website, the

layout of the website, the content provided by the website, or the content delivery method.” *Id.* at 1:45–48; *see id.* at 3:62–4:3.

According to the ’365 patent, “there is no tool for analyzing multivariate tests performed across different websites,” and “the ability to evaluate the changes to (or modified version of) a website is limited only to the one site.” Ex. 1001, 2:16–19. Hence, the invention endeavors to address those alleged deficiencies by providing a system and method “for tracking and gathering data respective of multivariate testing on a plurality of webpages.” *Id.* at 2:36–38, 2:48–50.

Figure 1 in the ’365 patent (reproduced below) depicts a system for tracking multivariate testing:

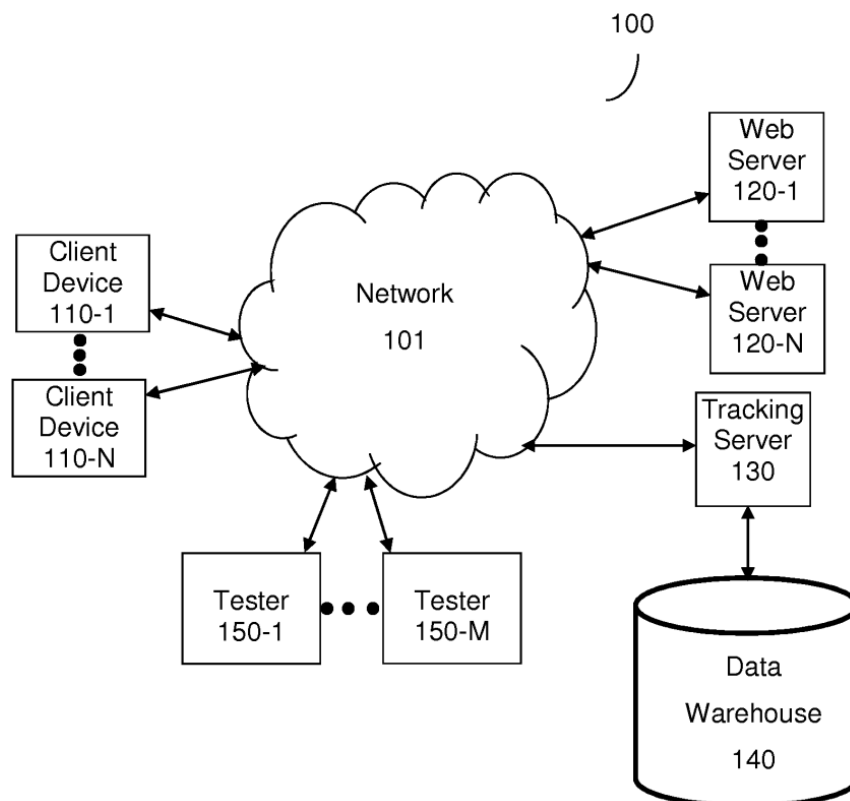


FIG. 1

Figure 1 illustrates system 100 including client devices 110-1 through 110-N, web servers 120-1 through 120-N, tracking server 130, data warehouse 140, and multivariate testers 150-1 through 150-M. Ex. 1001, 3:5–6, 3:35–47, Fig. 1. Client devices 110, web servers 120, tracking server 130, and multivariate testers 150 communicate via network 101. *Id.* at 3:37–47, Fig. 1.

The client devices “can access, download, and render webpages hosted by the web servers.” Ex. 1001, 3:48–49. The multivariate testers “run multivariate tests on the websites hosted by the web servers.” *Id.* at 3:59–60. For instance, tester 150-1 “is configured to test if a red color background of a webpage is ‘better’ . . . than a blue color background.” *Id.* at 4:4–10. Thus, “a client device 110-1 accessing the website can view one version (red color background) while the client device 110-N can view the blue color background.” *Id.* at 4:11–13. Further, tester 150-1 “is configured to collect statistics on users’ behavior with respect to the webpage’s content under testing conditions.” *Id.* at 4:13–15.

The multivariate tests “are performed by modifying the code (e.g., HTML or JavaScript code) of the webpages hosted by a web server 120 hosting the website under test.” Ex. 1001, 4:17–19. For example, “the webpage provided to the client device 110-1 may contain code that is different than the webpage provided to client device 110-2.” *Id.* at 4:19–22.

Figure 3 in the '365 patent (reproduced below) depicts a flowchart for a method for tracking multivariate testing:

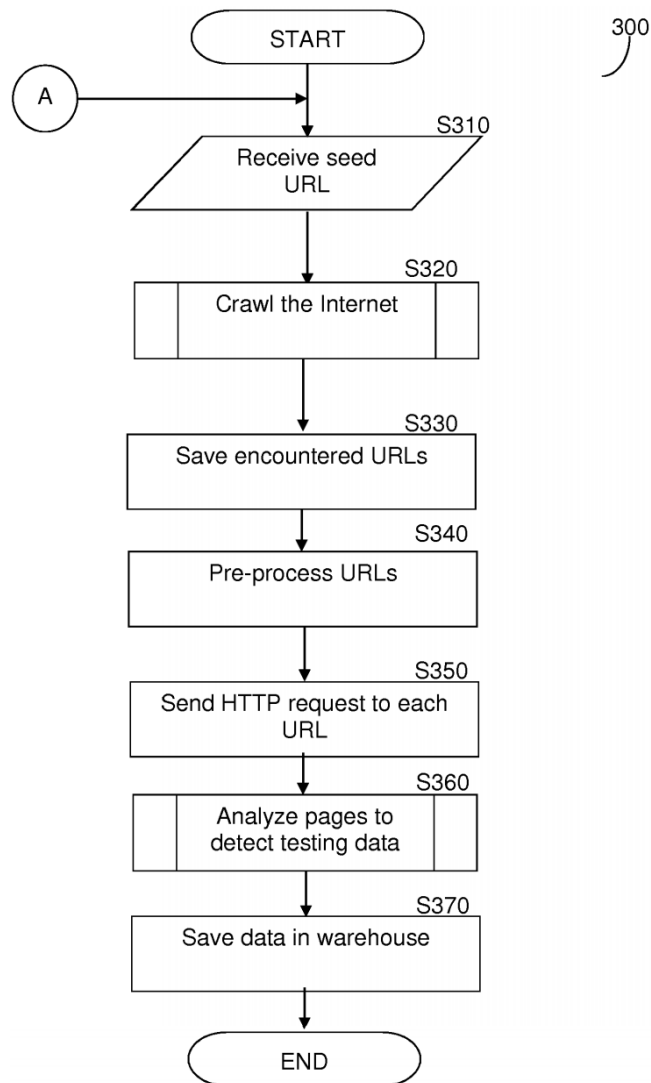


Fig. 3

Figure 3 illustrates flowchart 300 with steps S310 through S370 in “a method for tracking multivariate testing.” Ex. 1001, 3:8–10, 7:5–9, Fig. 3.

At step S310, “at least one seed URL is input to start the crawling process,” e.g., a URL of “specific interest to a user of the system such as, for example, a URL of a competitor’s website.” Ex. 1001, 7:10–13. At step S320, “a web crawling process is performed starting from the seed URL.”

Id. at 7:13–14. At step S330, “URLs of webpages encountered during the crawling process are saved.” *Id.* at 7:14–16. Optionally at step S340, “URLs are pre-processed to filter [out] URLs that may not include any testing information.” *Id.* at 7:17–19.

At step S350, “for each URL to be tested, one or more HTTP requests to the web server (identified by the URL) are sent to download the respective page.” Ex. 1001, 7:20–22. Different clients (browsers) may send HTTP requests “to render different page views on different browsers.” *Id.* at 7:22–24. “Alternatively or collectively, the HTTP request can be sent at predefined time intervals to render different page views at different timings.” *Id.* at 7:24–26.

At step S360, “the rendered webpages are analyzed to detect” multivariate testing, such as A/B tests and split tests. Ex. 1001, 7:27–28; *see id.* at 3:65–4:3. The analysis may include scanning the downloaded page views to “detect changes in the page views’ appearances over time, changes in content delivered to various different browsers, and the presence of testing services in the webpages.” *Id.* at 7:28–33; *see id.* at 5:15–18.

At step S370, “the analysis results, particularly the data related to the performed tests, are collected and saved in a data warehouse.” Ex. 1001, 7:35–37. The testing data may include “a test identifier (ID), test start time, service providers, and other identification parameters.” *Id.* at 7:37–40. The testing data may also include “which pages on the website are undergoing testing, the variations that are tested, what share of traffic each variation acquires, the test goal, the value of the goal, the goal of the test, the selected webpage variation (when the test is completed), and the attributes of the webpage variant.” *Id.* at 7:40–45.

E. The Challenged Claims

Petitioner challenges method independent claim 1, claims 2–11 that depend directly or indirectly from claim 1, independent computer-readable-medium claim 12, independent system claim 13, and claims 14–23 that depend directly or indirectly from claim 13. Pet. 2, 6–65. Claim 1 exemplifies the challenged claims and reads as follows (with formatting added for clarity and with numbers and letters added for reference purposes)¹:

1. [1pre] A method for tracking and gathering data respective of multivariate testing on a plurality of webpages, comprising:

[1a] crawling through a plurality of servers hosting the plurality of webpages;

[1b] for each uniform resource locator (URL) of a webpage of the plurality of webpages encountered during the crawling:

[1b] sending a request to download the webpage identified by the URL;

[1c] downloading at least one page view of the webpage;

[1d] analyzing the at least one downloaded page view to identify data related to at least a multivariate test; and

[1e] saving data identifying the at least multivariate test performed in the plurality of webpages in a data store.

Ex. 1001, 10:18–33.

¹ We use the same numbers and letters that Petitioner uses to identify the claim limitations.

F. The Asserted References

For its challenges, Petitioner relies on the following references:

Name	Reference	Exhibit
Seolas	US 8,365,062 B2, issued Jan. 29, 2013	1005
Krishnamoorthy	US 9,881,318 B1, issued Jan. 30, 2018 (based on an application filed Sept. 16, 2013)	1006
Paduroiu	US 2012/0259833 A1, published Oct. 11, 2012	1008
Jain	US 8,140,505 B1, issued Mar. 20, 2012	1010

Pet. 2. Patent Owner does not dispute that each reference qualifies as prior art. *See, e.g.*, Resp. 14–44.

G. The Asserted Challenges to Patentability

Petitioner asserts the following challenges to patentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–5, 7–17, 19–23	103	Seolas, Krishnamoorthy
6, 18	103	Seolas, Krishnamoorthy, Jain
1–5, 7–17, 19–23	103	Seolas, Krishnamoorthy, Paduroiu
6, 18	103	Seolas, Krishnamoorthy, Paduroiu, Jain

Pet. 2, 6–65.

H. Testimonial Evidence

To support its challenges, Petitioner relies on the following declarations: (1) Declaration of Dr. Jeremy Cooperstock (Exhibit 1003, “Cooperstock 1st Decl.”); and (2) Second Declaration of Dr. Jeremy Cooperstock (Exhibit 1041, “Cooperstock 2nd Decl.”). Dr. Cooperstock states that “I have been retained on behalf of Quantum Metric, Incorporated,

Decibel Insight, Ltd., and Decibel Insight, Inc. to offer technical opinions relating to” the ’365 patent. Ex. 1041 ¶ 1. Dr. Cooperstock explains that his qualifications include (1) a “B.Sc. in Electrical Engineering from the University of British Columbia,” (2) a “M.Sc. in Computer Science from the University of Toronto in 1992,” and (3) a “Ph.D. in Electrical and Computer Engineering from the University of Toronto in 1996.” Ex. 1003 ¶ 2.

To support its positions, Patent Owner relies on the Declaration of Christopher Schmandt in Support of Patent Owner’s Response (Exhibit 2005, “Schmandt Decl.”). Mr. Schmandt states that “I submit this Declaration” to “provide my expert opinion in support of Patent Owner’s Response to Petitioner’s Petition” relating to the ’365 patent. Ex. 2005 ¶ 2. Mr. Schmandt explains that his qualifications include (1) a “Bachelor of Science degree in Computer Science from M.I.T. in 1978,” (2) a “Masters of Science from M.I.T. in Visual Studies (Computer Graphics) in 1980,” and (3) “over 40 years of industry experience in the field of Media Technology.” *Id.* ¶¶ 4–5.

Additionally, Petitioner submits deposition testimony from Mr. Schmandt, and Patent Owner submits deposition testimony from Dr. Cooperstock. *See* Ex. 1042 (Feb. 17, 2022, Schmandt Dep. Tr.); Ex. 2007 (Dec. 7, 2021, Cooperstock Dep. Tr.); Ex. 2008 (May 5, 2022, Cooperstock Dep. Tr.).

I. Burden

In an *inter partes* review, a petitioner bears the burden of persuasion to prove “unpatentability by a preponderance of the evidence.” *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (quoting 35 U.S.C. § 316(e)); *see* 37 C.F.R. § 42.1(d) (2021).

III. PATENTABILITY ANALYSIS

A. Legal Principles: Obviousness

A patent may not be obtained “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103. An obviousness analysis involves underlying factual inquiries including (1) the scope and content of the prior art; (2) differences between the claimed invention and the prior art; (3) the level of ordinary skill in the art; and (4) where in evidence, objective indicia of nonobviousness, such as commercial success, long-felt but unsolved needs, and failure of others.² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18, 35–36 (1966); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1047–48 (Fed. Cir. 2016) (en banc). When evaluating a combination of references, an obviousness analysis should address “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

We analyze the obviousness issues according to these principles.

B. Level of Ordinary Skill in the Art

Factors pertinent to determining the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field.

² The record does not include evidence or arguments regarding objective indicia of nonobviousness.

Envtl. Designs, Ltd. v. Union Oil Co., 713 F.2d 693, 696–97 (Fed. Cir. 1983). Not all factors may exist in every case, and one or more of these or other factors may predominate in a particular case. *Id.* These factors are not exhaustive, but merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). Moreover, the prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Dr. Cooperstock testifies that a person of ordinary skill in the art would have had “at least a Bachelor’s Degree in an academic area emphasizing computer science, human computer interaction, and web technologies, and at least two years of experience related to these areas.” Ex. 1003 ¶ 12. Dr. Cooperstock also testifies that “[s]uperior education could compensate for a deficiency in work experience, and vice-versa.” *Id.*

Mr. Schmandt testifies that a person of ordinary skill in the art would have had “a Bachelor of Science (or equivalent degree) in Computer Science or Computer Engineering, in combination with at least 2 years of additional work experience with technologies related to media or web-based technology, or equivalent work experience.” Ex. 2005 ¶ 27.

The descriptions of an ordinarily skilled artisan articulated by Dr. Cooperstock and Mr. Schmandt differ mainly in the educational level, i.e., “at least a Bachelor’s Degree” according to Dr. Cooperstock and “a Bachelor of Science (or equivalent degree)” according to Mr. Schmandt. Ex. 1003 ¶ 12; Ex. 2005 ¶ 27.

We adopt Mr. Schmandt’s description of an ordinarily skilled artisan because it comports with the technology and claims in the ’365 patent as well as the asserted references. If the prior art renders the claimed subject

matter obvious to a person with less experience and less knowledge, then the prior art renders the claimed subject matter obvious to a person with more experience and more knowledge. *See Tokai Corp. v. Easton Enters., Inc.*, 632 F.3d 1358, 1369 (Fed. Cir. 2011). We note that our analysis would not change if we adopted Dr. Cooperstock’s description of an ordinarily skilled artisan.

C. Claim Construction

We construe claim terms “using the same claim construction standard” that district courts use to construe claim terms in civil actions under 35 U.S.C. § 282(b). *See* 37 C.F.R. § 42.100(b). Under that standard, “[c]laim terms are given their ordinary and customary meaning, which is the meaning the term would have to a person of ordinary skill in the art at the time of the invention.” *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 904 F.3d 965, 971 (Fed. Cir. 2018) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc)). The meaning of claim terms may be determined by “look[ing] principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner contends that “no formal claim constructions are necessary in this proceeding because ‘claim terms need only be construed to the extent necessary to resolve the controversy.’” Pet. 2 (quoting *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011)).

Patent Owner proposes that we construe one term included in dependent claims 3 and 15, i.e., “virtual client.” *See* Resp. 13–14. Patent

Owner also raises a claim-construction issue for the preambles in the independent claims, and we consider that issue below. *See infra* § III.D.3(a).

We determine that no claim term requires an explicit construction to decide the patentability issues. “[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

*D. Alleged Obviousness over Seolas and
Krishnamoorthy: Claims 1–5, 7–17, and 19–23*

Petitioner contends that claims 1–5, 7–17, and 19–23 are unpatentable under § 103 as obvious over Seolas and Krishnamoorthy. *See* Pet. 2, 6–47. Below, we provide overviews of Seolas and Krishnamoorthy, and then we consider the obviousness issues raised by the parties. As explained below, Patent Owner primarily disputes that Seolas and Krishnamoorthy teach (1) the preambles in the independent claims, (2) limitation [1d] and the corresponding limitations in independent claims 12 and 13, and (3) limitation [3b] and the corresponding limitation in claim 15. *See* Resp. 44–54. Patent Owner also disputes that an ordinarily skilled artisan would have been motivated to combine the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See id.* at 24–39. For the reasons explained below, we agree with Petitioner that claims 1–5, 7–17, and 19–23 are unpatentable under § 103 as obvious over Seolas and Krishnamoorthy.

1. OVERVIEW OF SEOLAS (EXHIBIT 1005)

Seolas is a U.S. patent titled “Auditing a Website with Page Scanning and Rendering Techniques,” filed on October 25, 2010, and issued on January 29, 2013. Ex. 1005, codes (22), (45), (54). Seolas states that the invention concerns “analysis of websites.” *Id.* at 1:24–25.

Seolas discloses a website-analysis system for “automatically reviewing a website and identifying various features of the website.” Ex. 1005, code (57); *see id.* at 2:23–64, 3:48–61. The system “allows a website operator to more easily understand and evaluate code (e.g., third party analytics code, or tags for the same) deployed on the website, or in a particular web page.” *Id.* at 4:20–25.

In one implementation, the website-analysis system uses “web page review (or scan)” techniques and “web page rendering” techniques to “identify and execute objects on web pages, including identifying and executing links between pages.” Ex. 1005, 2:27–30, 3:52–55. The system may generate “a site map for display in a user interface.” *Id.* at 2:59–61; *see id.* at 3:57–61. The site map may show “one or more link relationships between a plurality of web pages in the website” and further show “rendering results for the rendered one or more web pages.” *Id.* at 2:61–64.

The website-analysis system analyzes web page code to accomplish the following:

- (1) “identify web page content, including any metatags (and metatag content) that are found in raw web page HTML text”;
- (2) “determine if the text constitutes a link to another web page”;

- (3) “identify the types of information that the organization is requesting from a user in a web page’s fill in form”;
- (4) “identify the presence and content of executable objects, such as third party executables (or links to executables) for advertising content, website analytics content, tracking pixel references, or the like”;
- (5) “identify any values returned by the embedded or linked routines (e.g., which may be provided through dynamic content)”;
- (6) “inform the website owner about other items of interest related to website health”; and
- (7) perform “audits of website health” periodically.

Ex. 1005, 8:52–9:23, 9:59–62, 15:14–23; *see id.* at 2:27–43, 3:52–61, 5:9–12, 14:35–40, code (57). The system may analyze web page code periodically “to generate a new site map every few minutes, hours, or days, as desired.” *Id.* at 15:12–13; *see id.* at 15:17–19.

Further, the website-analysis system may “render the code of the web page” by (1) “generating the image information for how” the web page “should be displayed on a display device” and (2) “executing any scripts, routines, or programs that are embedded in or otherwise linked to or from the web page.” Ex. 1005, 9:36–42; *see id.* at 2:43–49, 12:10–39, 13:66–14:2, 14:41–53, Fig. 4. After rendering the web page, the system may “store a snapshot image of the rendered web page.” *Id.* at 10:3–5.

Seolas calls the website-analysis system a “rendering system.” *See, e.g.,* Ex. 1005, 2:23–64, 3:48–61, code (57). Seolas’s Figure 1 (reproduced below) depicts the environment for a rendering system:

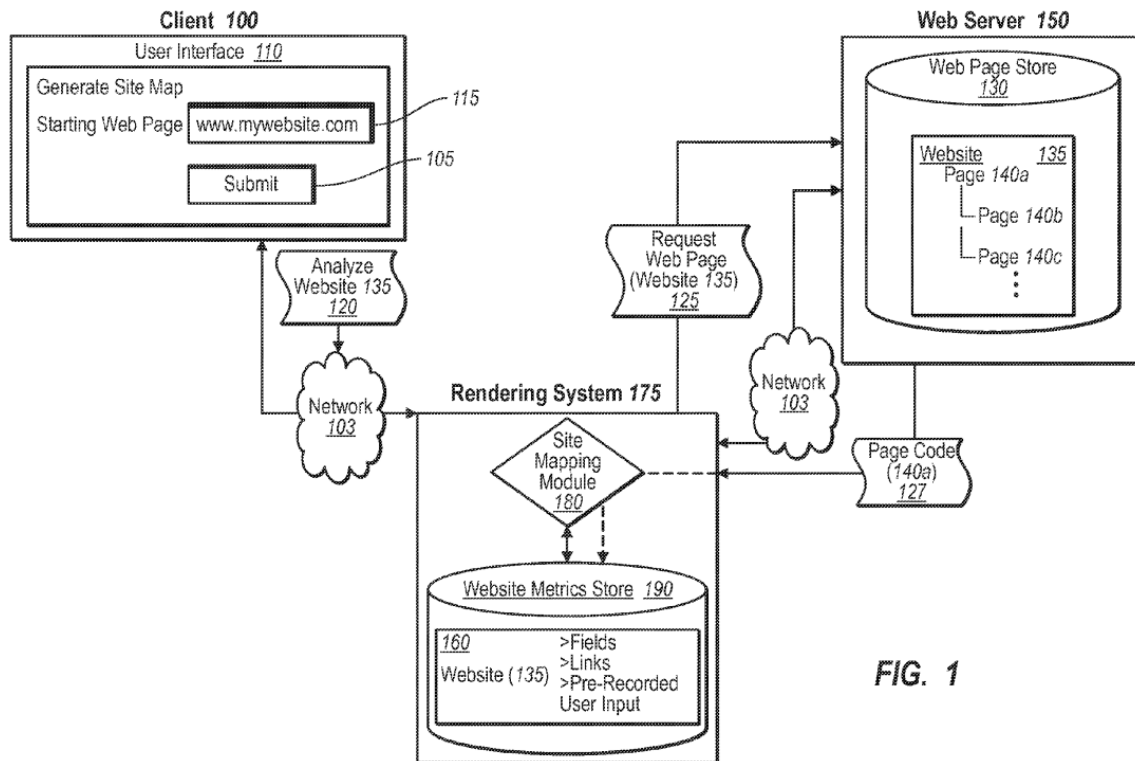


Figure 1 shows client system 100, web server 150, and rendering system 175 connected via network 103. *Id.* at 5:1–5, Fig. 1. A user of client system 100 may “analyze (e.g., map, detect health) one or more web sites (or corresponding web pages) hosted at web server 150 using rendering system 175.” *Id.* at 5:9–12.

Client system 100 includes user interface 110 with a “web page field” for specifying starting web pages and a “submit button.” Ex. 1005, 5:55–58, 6:30–36, Figs. 1–2. The user interface permits a user to “enter the URL (uniform resource locator) of the website of interest to be scanned for a site map.” *Id.* at 5:58–61; *see id.* at 5:12–15. The user interface may “receive multiple webpage or website entries.” *Id.* at 6:32–36.

Web server 150 may “comprise one or more local or remote web page stores 130 for hosting various one or more websites 135.” Ex. 1005, 5:19–22, Fig. 1. Figure 1 shows website 135 as “a collection of web pages 140 that are stored on or otherwise accessible through web server 150.” *Id.* at 5:22–25, Fig. 1.

Rendering system 175 may “comprise one or more site mapping modules 180 (or ‘analysis modules’), and one or more website metrics stores 190.” Ex. 1005, 5:28–30, Fig. 1. Site mapping module 180 may “comprise one or more sets of computer-executable instructions for processing analysis (e.g., site-mapping) requests, and for analyzing web page code.” *Id.* at 5:30–34. Website metrics store 190 may “comprise one or more components or modules for storing the results of any analysis by site mapping module 180, as well as for storing other metrics or characteristics for a particular web page that site mapping module 180 might use in its analysis.” *Id.* at 5:34–38.

Web server 150 and rendering system 175 “store, process and/or otherwise handle the requests executed through user interface 110.” Ex. 1005, 5:16–19. After a user enters one or more URLs into the user interface, “rendering system 175 sends one or more requests 125 to web server 150 for one or more web pages 140(a, b, c, etc.).” *Id.* at 5:61–65, 8:40–42, Fig. 1; *see id.* at 5:66–6:7, 6:26–32. Then, “web server 150 processes the one or more requests 125, and responds with web page code for at least one of the one or more web pages,” e.g., with “source code for web page 140a.” *Id.* at 8:43–49, Fig. 1; *see id.* at 6:7–8.

After receiving the web page code, rendering system 175 searches or scans “the raw text in the web page code to identify all links to other web

pages in the received one or more web pages.” Ex. 1005, 8:52–56; *see id.* at 2:27–30, 3:52–55, 8:57–61, 9:10–12, 9:63–67, 12:30–34, 14:35–40. After identifying links to other web pages, rendering system 175 may “request web pages corresponding to each discovered link.” *Id.* at 10:15–16, Fig. 3. For example, “upon discovering that web pages 140b and 140c, etc. are linked to web page 140a, rendering system 175 sends one or more additional requests 133 to web server 150 for a next web page 140b.” *Id.* at 10:17–20, Fig. 3.

“Once rendering system 175 completes processing the web pages for the indicated website, rendering system 175 can prepare the results for display to the end user.” Ex. 1005, 12:10–12; *see id.* at 12:12–39, Fig. 4. For instance, rendering system 175 may generate a site map showing multiple web pages in their “rendered form.” *Id.* at 2:59–64, 12:19–30, code (57), Fig. 4.

To identify “advertising content, website analytics content, tracking pixel references, or the like,” rendering system 175 may review “analytics source code,” e.g., “third party analytics code” or “tracking code,” embedded in a web page. Ex. 1005, 3:62–66, 4:20–25, 9:19–23, 15:17–23; *see id.* at 3:48–55. As an example of website analytics content, Seolas identifies tracking pixels that “website operators often embed” in “web pages so that they can track how visitors navigate the website.” *Id.* at 7:56–58; *see id.* at 1:64–2:6, 7:58–65, 15:19–23. Hence, rendering system 175 may review “analytics source code” to “determine which tracking pixels are present in the page.” *Id.* at 3:66–4:3; *see id.* at 7:56–65, 15:19–23. Rendering system 175 may also determine “the values of various variables associated with a tracking pixel, such as ‘pagename,’ server,

channel, campaign, events, products, property, ‘evar,’ and version.” *Id.* at 4:1–5.

Seolas’s Figure 2 (reproduced below) depicts a user interface for client system 100:

User Interface 110

Last Scan:	1 Jan 2009	200a
Next Scan:	1 Feb 2009	200b
	Scan Now	203
Starting Web Page(s)	www.mywebsite.com	115a
		115b
Max. Depth	3	205
Max. Number URLs Per Scan	1000	206
Link Filters	www.mywebsite.com	207a
		207b
Scan Speed	2	209
☒ Silent Mode (Tracking Pixels)		210
	Submit	105

FIG. 2

Figure 2 illustrates user interface 110 with various fields and buttons, such as submit button 105 and scan now button 203. Ex. 1005, 3:26–28, 6:16–29, 6:66–67, 8:25–31, Fig. 2.

Web page fields 115a and 115b accept “entries for web pages of interest.” Ex. 1005, 6:25–29. Max. depth field 205 permits a user to specify “the number of levels of a website that rendering system 175 crawls, or moves through.” *Id.* at 6:38–41; *see id.* at 7:67–8:1. Max. number field 206

permits a user to limit the total number of URLs per scan, which “can be a convenient method of increasing the speed of the site scan.” *Id.* at 6:49–60.

Link filter fields 207a and 207b permit a user to specify whether “a link found in a rendered web page should be further processed and included in the generated site map.” Ex. 1005, 6:66–7:4; *see id.* at 7:15–28. For instance, “rendering system 175 can compare each link found in a rendered web page against that specified in fields 207a and/or 207b to determine if the link should be processed.” *Id.* at 7:4–7. As an example, Figure 2 “shows a site scan of www.mywebsite.com and a link filter of www.mywebsite.com.” *Id.* at 7:7–9, Fig. 2. So “all of the pages residing at www.mywebsite.com will be included in the site map, such as www.mywebsite.com/page1.htm and www.mywebsite.com/page2.htm.” *Id.* at 7:9–12.

2. OVERVIEW OF KRISHNAMOORTHY (EXHIBIT 1006)

Krishnamoorthy is a U.S. patent titled “Attributing Web-Based User Actions to Multivariate Test Parameters Associated with Publisher Content,” filed on September 16, 2013, and issued on January 30, 2018. Ex. 1006, codes (22), (45), (54). Krishnamoorthy describes “multivariate testing” as “the process of testing multiple components of a web page or website.” *Id.* at 3:3–4. Krishnamoorthy explains that multivariate testing helps “determine which variation or presentation of content meets the defined goals of a website better than other variations.” *Id.* at 3:5–7, 10:7–10; *see id.* at 2:9–38, code (57).

Krishnamoorthy states that the invention relates to “attributing or associating a user’s actions with respect to web page content to multivariate test parameters.” Ex. 1006, 2:24–26, code (57); *see id.* at 2:9–11. For

example, a product purchased after clicking on an ad “may be attributed to multivariate test parameters corresponding to the placement of the ad, the size of the ad image, whether a border is placed around the ad, any number of attributes associated with the ad, the content in which the ad is placed, etc.” *Id.* at 2:26–32, code (57); *see id.* at 10:10–16.

Krishnamoorthy's Figure 1 (reproduced below) depicts a schematic diagram for attributing a user's actions to multivariate test parameters:

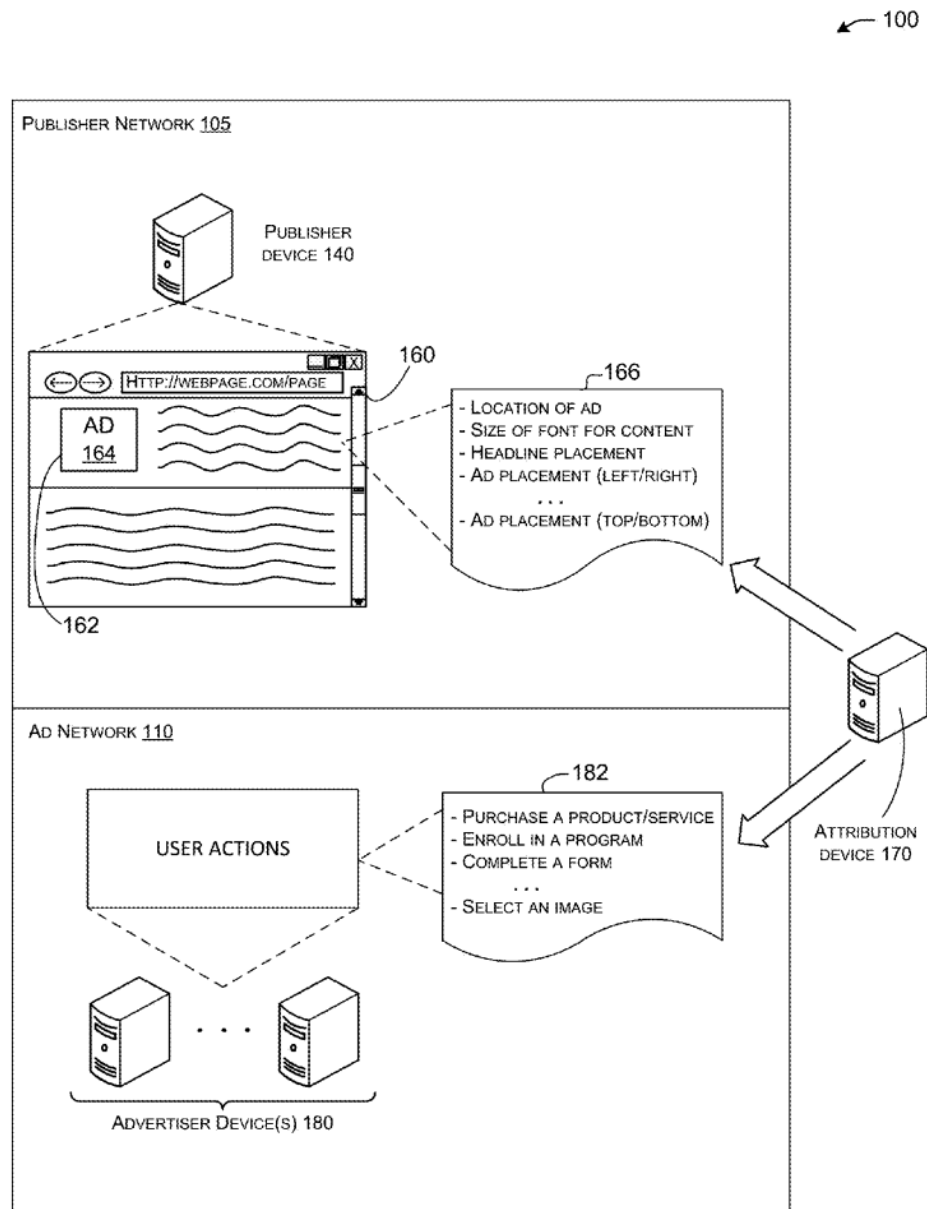


FIG. 1

Figure 1 illustrates computing environment 100 including publisher network 105, ad network 110, and attribution device 170. Ex. 1006, 1:29–32, 2:39–46, Fig. 1. Attribution device 170 may (1) attribute a user's actions to “multivariate testing variables” and (2) “serve as a bridge or link

between the publisher network 105 and the ad network 110 such that a device in the publisher network 105” may “identify which configurations of the web page 160 are optimal based on a user’s behavior with respect to the configurations.” *Id.* at 3:35–36, 3:40–46.

Krishnamoorthy describes Figure 1 as illustrating the following example multivariate test parameters 166: “the font size of text on the web page 160; the placement or position of a headline on the web page 160; and the location of an ad, such as whether the ad is above or below the fold, the placement of the ad from left-to-right and/or top-to-bottom, etc.” Ex. 1006, 3:10–16, Fig. 1; *see id.* at 10:10–16, code (57). Krishnamoorthy notes that “[a]ny number of multivariate test parameters 166 associated with any number of components or attributes for a web page may exist in other examples.” *Id.* at 3:16–18.

Additionally, Krishnamoorthy discloses (1) varying the multivariate test parameters “to ensure that variations of each desired web page component are tested” and (2) determining “whether a sufficient number of users accessed” the multivariate variations. Ex. 1006, 8:26–36, 10:19–23, Fig. 6 (step 620), Fig. 7 (step 726), Fig. 8 (step 826). For instance, “the number of users may be a predefined number of users based on a number of multivariate variations that may be generated for a multivariate test.” *Id.* at 8:31–34. Krishnamoorthy explains that analyzing “the multivariate test may include determining which multivariate test parameters are most effective at meeting objectives or goals associated with content on a web page.” *Id.* at 10:47–50; *see id.* at 2:34–38, 7:4–10, code (57).

To implement multivariate testing, a website operator may “embed a command or message in Hypertext Markup Language (HTML), JavaScript,

or other code for rendering web page content.” Ex. 1006, 2:53–56, 10:31–33. The embedded command or message may include “multivariate test parameters” or “an indication of a multivariate test that includes certain multivariate test parameters.” *Id.* at 2:56–58, 10:33–34. The embedded command or message may also include “an identification of a publisher of the web page content, information associated with a user who requested the web page content via a user device, other information that may facilitate the selection of a particular ad for the user, etc.” *Id.* at 2:58–62, 10:33–44; *see id.* at 20:3–9. When “executed by the user device,” the embedded command or message “may cause the user device to contact another device,” e.g., “to request an ad” for “display to the user.” *Id.* at 2:62–66; *see id.* at 20:9–11.

3. INDEPENDENT CLAIM 1

(a) Preamble [1pre]

Claim 1’s preamble recites “[a] method for tracking and gathering data respective of multivariate testing on a plurality of webpages.”

Ex. 1001, 10:18–19.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach claim 1’s preamble. *See* Pet. 11–14, 16; Ex. 1003 ¶¶ 14–25, 28. Specifically, Petitioner asserts that “Seolas teaches techniques to analyze and catalog components of web pages, such as embedded ‘third party analytics code,’ and Krishnamoorthy teaches that such ‘third party analytics code’ can be used to implement multivariate testing.” Pet. 14 (citing Ex. 1003 ¶ 25; Ex. 1005, 3:48–66, 4:12–22; Ex. 1006, 7:47–8:25); Reply 3; *see* Ex. 1003 ¶ 25; Ex. 1041 ¶ 8.

Petitioner provides more detail about the proposed combination. *See* Pet. 11–12, 15–17, 24–27; Reply 7–8, 18. First, “in the combination, Seolas

describes ‘mechanisms for automatically reviewing a website and identifying various features of the website’ by ‘crawl[ing]’ and analyzing the various web pages included in the website.” Pet. 16 (alteration by Petitioner) (quoting Ex. 1005, code (57)); *see* Ex. 1003 ¶¶ 14, 28. Also, “[i]n the combination, Seolas describes that its system ‘can also be used to automatically review a particular website on a periodic basis,’” e.g., used “to generate a new site map every few minutes, hours, or days, as desired.” Reply 18 (emphasis omitted) (quoting Ex. 1005, 15:8–13); *see* Ex. 1041 ¶ 31.

Second, “in the combination, Krishnamoorthy describes that a website owner may ‘embed a command or message in Hypertext Markup Language (HTML), JavaScript, or other code for rendering web page content’ in a web page.” Pet. 16 (quoting Ex. 1006, 2:54–56); *see* Ex. 1003 ¶¶ 19, 28. According to Petitioner, the embedded command or message may include “multivariate test parameters” and “an indication of a multivariate test.” Pet. 16 (quoting Ex. 1006, 2:56–58); *see* Ex. 1003 ¶ 28.

Petitioner explains that “[i]n the combination, the ‘multivariate test parameters’ of Krishnamoorthy are embedded into the webpage code, for example, in a similar manner to the ‘tracking pixel variables’ and other ‘third party analytics code’ described in Seolas.” Pet. 12 (citing Ex. 1003 ¶ 22; Ex. 1005, 1:64–66, 4:2–5, 7:56–62, 8:52–53, 9:19–23; Ex. 1006, 2:53–66, 10:31–33, 20:3–22, code (57)); *see* Ex. 1003 ¶¶ 22, 25, 28, 39. For instance, “[i]n the combination, the ‘tracking pixel references’ [described in Seolas] include the multivariate test parameters described in Krishnamoorthy.” Reply 7 (citing Pet. 25–27; Ex. 1041 ¶ 16); *see* Ex. 1041 ¶ 15. Petitioner also explains that in the combination, Seolas’s website-

analysis system would “parse and analyze” the embedded “multivariate test parameters” of Krishnamoorthy “in a similar manner to” analyzing “the tracking pixel variables and other ‘third party analytics code’” disclosed in Seolas. Pet. 12 (citing Ex. 1003 ¶ 22; Ex. 1005, 1:64–66, 4:2–5, 7:56–62, 8:52–53, 9:19–23; Ex. 1006, 2:53–66, 10:31–33, 20:3–22, code (57)); *see* Reply 4–5; Ex. 1003 ¶¶ 22, 39; Ex. 1041 ¶ 10.

Further, Petitioner asserts that “it would have been obvious” in view of Krishnamoorthy’s teachings to “modify the website crawling and analysis techniques of Seolas to identify information about multivariate tests embedded in the pages of the website.” Pet. 16; *see id.* at 26; Ex. 1003 ¶¶ 28, 39.

Patent Owner disputes that the combined disclosures in Seolas and Krishnamoorthy teach claim 1’s preamble. *See* Resp. 44–50; Ex. 2005 ¶¶ 145–153. Specifically, Patent Owner asserts that the preamble language “tracking and gathering data respective of multivariate testing on a plurality of webpages” provides “life, meaning, and vitality for the claimed subject matter, as well as an antecedent basis for limitations of the claims.” Resp. 45–46; *see* Ex. 2005 ¶ 145. Patent Owner asserts that the preamble language specifies “the express purpose of the invention” disclosed in the ’365 patent because the patent relates to “techniques for evaluating changes to a website, and particularly to techniques for tracking and gathering multivariate testing data.” Resp. 45–46 (quoting Ex. 1001, 1:14–16); *see* Ex. 2005 ¶ 146. According to Patent Owner, “tracking data respective of multivariate testing on a plurality of webpages is an essential element of the invention” in the ’365 patent and “provides life and meaning to the claims.” Resp. 46; *see* Ex. 2005 ¶ 147. Further, Patent Owner asserts that “the recitation of ‘a

plurality of webpages’ in the preamble of claim 1 provides antecedent basis for that term as recited in limitations [1a], [1b], and [1e] and corresponding limitations in independent claims 12 and 13.” Resp. 47; *see* Ex. 2005 ¶ 148.

Additionally, Patent Owner contends that tracking functionality involves detecting “changes across webpages over time to track data respective of multivariate testing.” Resp. 48; *see* Ex. 2005 ¶ 149. Patent Owner contends that Petitioner “has nowhere shown how this tracking functionality is taught in any of its proposed combinations.” Resp. 49; *see* Ex. 2005 ¶ 150. Patent Owner also contends that nothing indicates that “the tracking pixels in Seolas could be used for the tracking taught in” the ’365 patent. Resp. 50; *see* Ex. 2005 ¶ 153. According to Patent Owner, “periodically reviewing a website on which no multivariate testing is conducted inherently will not facilitate tracking of data respective of such testing.” Sur-reply 19 (citing Reply 49–50).

Generally, a preamble does not limit a claim. *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). We need not decide whether claim 1’s preamble limits the claim because we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach claim 1’s preamble. *See* Pet. 11–14, 16; Reply 18; Ex. 1003 ¶¶ 14–25, 28; Ex. 1041 ¶ 31.

As Petitioner asserts, “Seolas teaches techniques to analyze and catalog components of web pages, such as embedded ‘third party analytics code.’” *See* Ex. 1003 ¶¶ 14, 17, 25; Ex. 1005, 3:48–4:36, 5:28–34, 8:52–9:23, code (57), Fig. 1; Pet. 14 (quoting Ex. 1005, 4:23). Specifically, Seolas discloses rendering system 175 including “one or more site mapping modules 180 (or ‘analysis modules’)” for analyzing web page code.

Ex. 1005, 5:28–34, Fig. 1; *see* Ex. 1003 ¶ 14. Rendering system 175 may analyze web page code to “identify the presence and content of executable objects, such as third party executables (or links to executables) for advertising content, website analytics content, tracking pixel references, or the like.” Ex. 1005, 8:52–9:23; *see id.* at 2:27–30, 2:40–43, 3:52–55, 8:49–51, 15:19–23, code (57); Ex. 1003 ¶ 16.

To identify “advertising content, website analytics content, tracking pixel references, or the like,” rendering system 175 may review “analytics source code,” e.g., “third party analytics code” or “tracking code,” embedded in a web page. Ex. 1005, 3:62–66, 4:20–25, 9:19–23, 15:17–23; *see id.* at 3:48–55; Ex. 1003 ¶¶ 17, 20. For instance, rendering system 175 may review “analytics source code” to “determine which tracking pixels are present in the page and the values of various variables associated with a tracking pixel.” Ex. 1005, 3:66–4:4; *see id.* at 7:56–65, 15:19–23; Ex. 1003 ¶¶ 17, 20; Ex. 2005 ¶ 89.

Moreover, rendering system 175 may analyze web page code for multiple web pages, e.g., the web pages comprising a website. Ex. 1005, 15:7–13; *see id.* at 2:59–64, 12:19–30, code (57), Fig. 4; Ex. 1003 ¶¶ 29–30. Further, rendering system 175 may analyze web page code periodically “to generate a new site map every few minutes, hours, or days, as desired.” Ex. 1005, 15:12–13; *see id.* at 15:17–19; Ex. 1003 ¶ 46. Because rendering system 175 may analyze web page code for multiple web pages periodically, the system may detect changes in web pages over time. *See* Ex. 1041 ¶ 31. As Dr. Cooperstock testifies, Seolas’s periodic analysis “amounts to ‘tracking’ the website.” *Id.*

Additionally, Krishnamoorthy discloses detecting changes in web pages over time that relate to multivariate testing. *See* Inst. Dec. 27–28. Specifically, Krishnamoorthy discloses multivariate testing to “determine which variation or presentation of content meets the defined goals of a website better than other variations.” Ex. 1006, 3:5–7, 10:7–10; *see id.* at 2:9–38, code (57); Ex. 1003 ¶ 18; Ex. 2005 ¶ 93. To implement multivariate testing, a website operator may “embed a command or message in Hypertext Markup Language (HTML), JavaScript, or other code for rendering web page content.” Ex. 1006, 2:53–56, 10:31–33; *see* Ex. 1003 ¶¶ 19, 28; Ex. 2005 ¶¶ 95, 109. The embedded command or message may include “multivariate test parameters” or “an indication of a multivariate test that includes certain multivariate test parameters.” Ex. 1006, 2:56–58, 10:33–34; *see* Ex. 1003 ¶ 28; Ex. 2005 ¶¶ 95, 109. When “executed by the user device,” the embedded command or message “may cause the user device to contact another device,” e.g., “to request an ad” for “display to the user.” Ex. 1006, 2:62–66; *see id.* at 20:9–11; Ex. 1003 ¶¶ 19, 21; Ex. 2005 ¶ 109.

Krishnamoorthy also discloses (1) varying the multivariate test parameters “to ensure that variations of each desired web page component are tested” and (2) determining “whether a sufficient number of users accessed” the multivariate variations. Ex. 1006, 8:26–36, 10:19–23, Fig. 6 (step 620), Fig. 7 (step 726), Fig. 8 (step 826); *see* Ex. 1003 ¶ 60; Inst. Dec. 28. For instance, “the number of users may be a predefined number of users based on a number of multivariate variations that may be generated for a multivariate test.” Ex. 1006, 8:31–34; *see* Inst. Dec. 28. Krishnamoorthy explains that analyzing “the multivariate test may include determining which multivariate test parameters are most effective at meeting objectives or goals

associated with content on a web page.” Ex. 1006, 10:47–50; *see id.* at 2:34–38, 7:4–10, code (57); Inst. Dec. 28. That analysis involves detecting changes in web pages over time to determine “which multivariate test parameters are most effective” vis-à-vis a “number of users.” *See* Inst. Dec. 28.

Patent Owner’s contentions that (1) nothing indicates that “the tracking pixels in Seolas could be used for the tracking taught in” the ’365 patent and (2) “periodically reviewing a website on which no multivariate testing is conducted inherently will not facilitate tracking of data respective of such testing” disregard Petitioner’s reliance on the combined disclosures in Seolas and Krishnamoorthy for teaching claim 1’s preamble. *See* Pet. 11–14, 16; Inst. Dec. 27–28; Resp. 50; Sur-reply 19. Where obviousness rests on the combined disclosures in references, a patent owner cannot establish nonobviousness by attacking the references individually. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

(b) Limitation [1a]

Claim 1 recites “crawling through a plurality of servers hosting the plurality of webpages.” Ex. 1001, 10:20–21.

Petitioner contends that Seolas teaches this limitation. *See* Pet. 17–18; Ex. 1003 ¶¶ 14, 17, 29–30. Specifically, Petitioner asserts that rendering system 175 “‘crawls’ a specified ‘website to generate a site map.’” Pet. 17 (emphasis omitted) (quoting Ex. 1005, 7:67–8:1); *see* Ex. 1003 ¶¶ 14, 17, 29. Petitioner asserts that a user may “start the crawling of the [sic] ‘the web pages associated with the URL by selecting the submit button 105’” in a user interface. Pet. 17 (quoting Ex. 1005, 5:61–63); *see* Ex. 1003 ¶ 29. Petitioner also asserts that rendering system 175 may “map ‘large websites

with multiple servers,’ and that the described ‘crawling’ involves the ‘rendering system 175 send[ing] one or more requests to [a] web server 150 for one or more web pages 140 (a, b, c, etc.) corresponding to’ the specified website.” Pet. 18 (alterations by Petitioner) (emphases omitted) (quoting Ex. 1005, 7:45–46, 8:40–42); *see* Ex. 1003 ¶ 30.

Patent Owner makes no arguments specific to limitation [1a]. *See, e.g.,* Resp. 44–53.

We agree with Petitioner that Seolas teaches limitation [1a]. *See* Pet. 17–18; Ex. 1003 ¶¶ 14, 17, 29–30. Specifically, Seolas discloses client system 100 including user interface 110 with a “web page field” for specifying starting web pages and a “submit button.” Ex. 1005, 5:55–58, 6:30–36, Figs. 1–2; *see id.* at 5:12–15; Ex. 1003 ¶¶ 14, 29. The user interface may “receive multiple webpage or website entries” for analysis by rendering system 175. Ex. 1005, 6:32–36; *see* Ex. 1003 ¶ 29.

Additionally, Seolas discloses that rendering system 175 “crawls [a] website to generate a site map.” Ex. 1005, 7:67–8:1; *see id.* at 6:39–41; Ex. 1003 ¶¶ 14, 17, 29. Rendering system 175 may generate a site map showing multiple web pages in their “rendered form” and may map “large websites with multiple servers.” Ex. 1005, 2:59–64, 7:45–47, 8:40–43, 12:19–30, code (57), Figs. 1, 4; *see id.* at 2:23–59, 3:48–55, 6:30–32, 6:45–48; Ex. 1003 ¶ 30.

(c) Limitation [1b]

Claim 1 recites “for each uniform resource locator (URL) of a webpage of the plurality of webpages encountered during the crawling: sending a request to download the webpage identified by the URL.” Ex. 1001, 10:22–26.

Petitioner contends that Seolas teaches this limitation. *See* Pet. 19–22; Ex. 1003 ¶¶ 14–15, 31–33. Specifically, Petitioner asserts that Seolas discloses a user interface that permits a user to “enter the URL (uniform resource locator) of the website of interest to be scanned for a site map” in a “Starting Web Page(s)” field. Pet. 19 (quoting Ex. 1005, 5:59–61, Fig. 2); *see* Ex. 1003 ¶¶ 14, 31. Petitioner asserts that in response to user input ““rendering system 175 sends one or more requests 125 to [a] web server 150’ (corresponding to the URL entered by the user) ‘for one or more web pages 140 (a, b, c, etc.) corresponding to’ the specified website.” Pet. 20 (alteration by Petitioner) (emphases omitted) (quoting Ex. 1005, 8:40–42); *see* Ex. 1003 ¶¶ 15, 32. Petitioner also asserts that “web server 150 ‘responds with web page code for at least one of the one or more web pages.’” Pet. 20 (quoting Ex. 1005, 8:44–45); *see* Ex. 1003 ¶¶ 15, 32.

Further, Petitioner asserts that “rendering system 175 ‘searches (or “scans”) the raw text in the web page code to identify all links to other web pages in the received one or more web pages.’” Pet. 21 (emphasis omitted) (quoting Ex. 1005, 8:54–56); *see* Ex. 1003 ¶¶ 15, 33. Petitioner asserts that “upon discovering that web pages 140b and 140c, etc. are linked to web page 140a, rendering system 175 sends one or more additional requests 133 to web server 150 for a next web page 140b (e.g., over network 103).” Pet. 22 (emphasis omitted) (quoting Ex. 1005, 10:17–20); *see* Ex. 1003 ¶¶ 15, 33.

Patent Owner makes no arguments specific to limitation [1b]. *See, e.g.,* Resp. 44–53.

We agree with Petitioner that Seolas teaches limitation [1b]. *See* Pet. 19–22; Ex. 1003 ¶¶ 14–15, 29–33. Specifically, Seolas discloses client

system 100 including a user interface with a “web page field” for specifying starting web pages that permits a user to “enter the URL (uniform resource locator) of the website of interest to be scanned for a site map.” Ex. 1005, 5:53–65, 6:25–36, Figs. 1–2; *see id.* at 5:12–15; Ex. 1003 ¶¶ 14, 29; *supra* § III.D.3(b). After a user enters one or more URLs into the user interface, “rendering system 175 sends one or more requests 125 to web server 150 for one or more web pages 140(a, b, c, etc.).” Ex. 1005, 5:61–65, 8:40–42, Fig. 1; *see id.* at 5:66–6:7, 6:26–32; Ex. 1003 ¶¶ 15, 30, 32. Then, “web server 150 processes the one or more requests 125, and responds with web page code for at least one of the one or more web pages,” e.g., with “source code for web page 140a.” Ex. 1005, 8:43–49, Fig. 1; *see id.* at 6:7–8; Ex. 1003 ¶¶ 15, 32.

After receiving the web page code, rendering system 175 searches or scans “the raw text in the web page code to identify all links to other web pages in the received one or more web pages.” Ex. 1005, 8:52–56; *see id.* at 2:27–30, 3:52–55, 8:57–61, 9:10–12, 9:63–67, 12:30–34, 14:35–40; Ex. 1003 ¶¶ 15, 33. After identifying links to other web pages, rendering system 175 may “request web pages corresponding to each discovered link.” Ex. 1005, 10:15–16, Fig. 3; *see* Ex. 1003 ¶¶ 15, 33. For example, “upon discovering that web pages 140b and 140c, etc. are linked to web page 140a, rendering system 175 sends one or more additional requests 133 to web server 150 for a next web page 140b.” Ex. 1005, 10:17–20, Fig. 3; *see* Ex. 1003 ¶¶ 15, 33.

(d) Limitation [1c]

Claim 1 recites “downloading at least one page view of the webpage.” Ex. 1001, 10:27.

Petitioner contends that Seolas teaches this limitation. *See* Pet. 22–23; Ex. 1003 ¶¶ 15–16, 30, 32, 34, 59. Specifically, Petitioner asserts that Seolas discloses that “‘rendering system 175 sends one or more requests 125’ . . . ‘to [a] web server 150’ (corresponding to the URL entered by the user) ‘for one or more web pages 140 (a, b, c, etc.) corresponding to’ the specified website.” Pet. 22 (second alteration by Petitioner) (emphases omitted) (quoting Ex. 1005, 8:40–42); *see* Ex. 1003 ¶¶ 15, 32, 34. Petitioner also asserts that the “web server 150 ‘responds with web page code for at least one of the one or more web pages.’” Pet. 22 (emphasis omitted) (quoting Ex. 1005, 8:44–45); *see* Ex. 1003 ¶¶ 15, 32, 34.

Patent Owner makes no arguments specific to limitation [1c]. *See, e.g.,* Resp. 44–53.

We agree with Petitioner that Seolas teaches limitation [1c]. *See* Pet. 22–23; Ex. 1003 ¶¶ 15–16, 30, 32, 34, 59. Specifically, Seolas discloses that “rendering system 175 sends one or more requests 125 to web server 150 for one or more web pages 140(a, b, c, etc.).” Ex. 1005, 5:61–65, 8:40–42, Fig. 1; *see id.* at 5:66–6:7, 6:26–32; Ex. 1003 ¶¶ 15, 30, 32, 34. Then, “web server 150 processes the one or more requests 125, and responds with web page code for at least one of the one or more web pages,” e.g., with “source code for web page 140a.” Ex. 1005, 8:43–49, Fig. 1; *see id.* at 6:7–8; Ex. 1003 ¶¶ 15, 32, 34. “Once rendering system 175 completes processing the web pages for the indicated website, rendering system 175 can prepare the results for display to the end user.” Ex. 1005, 12:10–12; *see id.* at 12:12–39, Fig. 4.

In particular, the web page code received by rendering system 175 permits it to “render the code of the web page” by (1) “generating the image

information for how web page 140a should be displayed on a display device” and (2) “executing any scripts, routines, or programs that are embedded in or otherwise linked to or from the web page.” Ex. 1005, 9:36–42; *see id.* at 2:43–49, 10:3–5, 12:10–39, 12:56–58, 13:66–14:2, 14:41–53, Fig. 4; Ex. 1003 ¶¶ 16, 59. As Dr. Cooperstock explains, Seolas’s rendering system 175 “does not merely examine the source code for the web page” but also “renders the web page, including retrieving and analyzing dynamic content from other locations.” Ex. 1003 ¶ 59. Hence, a display device may “show[] the rendered image of the web page,” e.g., in “a web browser.” Ex. 1005, 12:34–36, 12:56–58, 13:66–14:2, 14:45–53, Fig. 4.

Because the web page code received by rendering system 175 permits it to “render the code of the web page” by “generating the image information” for display, the web page code received by rendering system 175 includes the claimed “page view of the webpage.” *See* Ex. 1003 ¶¶ 15–16, 32, 34, 59; Ex. 1005, 9:36–42, 12:10–39, 12:56–58, 13:66–14:2, 14:41–53, Fig. 4.

(e) Limitation [1d]

Claim 1 recites “analyzing the at least one downloaded page view to identify data related to at least a multivariate test.” Ex. 1001, 10:28–29.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach this limitation. *See* Pet. 23–27; Ex. 1003 ¶¶ 16–17, 20, 35–39. Specifically, Petitioner asserts that Seolas discloses that “rendering system 175 can process (analyze) the downloaded web page to ‘identify the presence and content of executable objects, such as third party executables (or links to executables) for advertising content, website analytics content, tracking pixel references, or the like.’” Pet. 24–25

(emphasis omitted) (quoting Ex. 1005, 9:19–23); Reply 7; *see* Ex. 1003 ¶ 36; Ex. 1041 ¶ 15. Petitioner asserts that Seolas also discloses that “rendering system 175, while crawling the pages of a website, ‘can determine which tracking pixels are present in the page and the values of various variables associated with a tracking pixel’ based on analyzing the code for the downloaded web page.” Pet. 25 (emphasis omitted) (quoting Ex. 1005, 4:2–4); *see* Ex. 1003 ¶ 37.

Further, Petitioner asserts that “Krishnamoorthy describes techniques for ‘attributing or associating a user’s actions with respect to web page content to . . . multivariate test parameters’ (data related to at least a multivariate test) associated with the web page.” Pet. 25 (alteration by Petitioner) (emphasis omitted) (quoting Ex. 1006, code (57)); *see id.* at 9; Ex. 1003 ¶¶ 18, 38. Petitioner explains that “in the combination, Krishnamoorthy’s features are implemented in combination with Seolas’ system just as they are in Krishnamoorthy’s.” Pet. 15; *see* Ex. 1003 ¶ 26.

Additionally, Petitioner contends that Krishnamoorthy discloses that a website operator or “other entity ‘may embed a command or message in Hypertext Markup Language (HTML), JavaScript, or other code for rendering web page content.’” Pet. 25–26 (quoting Ex. 1006, 2:54–56); *see* Ex. 1003 ¶ 38. According to Petitioner, “Krishnamoorthy describes that the ‘command or message may include multivariate test parameters (or an indication of a multivariate test that includes certain multivariate test parameters),’ utilizing a mechanism that is like the ‘tracking pixel variables’ included in the request for the ‘tracking pixel’” described in Seolas. Pet. 26 (emphasis omitted) (quoting Ex. 1006, 2:56–58); *see* Ex. 1003 ¶ 38.

Further, Petitioner asserts that “it would have been obvious” to “modify Seolas to identify and analyze multivariate test parameters embedded in the code of the downloaded webpage, as taught by Krishnamoorthy.” Pet. 26; *see id.* at 16; Ex. 1003 ¶¶ 28, 39.

Patent Owner disputes that the combined disclosures in Seolas and Krishnamoorthy teach limitation [1d]. *See* Resp. 50–53; Ex. 2005 ¶¶ 154–158. Specifically, Patent Owner asserts that (1) “Seolas does not mention any multivariate tests” and (2) “Krishnamoorthy does not teach analyzing webpage code for the presence of multivariate testing.” Resp. 50; *see* Ex. 2005 ¶ 154. According to Patent Owner, “[n]either reference teaches, suggests, or implies tracking whether multivariate testing is being run on websites as the ’365 Patent teaches.” Resp. 51; *see* Ex. 2005 ¶ 155.

Additionally, Patent Owner asserts that an ordinarily skilled artisan would have understood that the “proposed Seolas/Krishnamoorthy combination would not yield any additional functionality,” e.g., functionality according to limitation [1d], for two related reasons. *See* Resp. 51–52; Sur-reply 20; Ex. 2005 ¶ 156. First, “Krishnamoorthy teaches methods for communicating information to a server, including URL embedding.” Resp. 51–52; *see* Ex. 2005 ¶ 156. Second, “Seolas already discloses a tracking pixel in a webpage can be used to communicate information to the server hosting the tracking pixel.” Resp. 52; *see* Ex. 2005 ¶ 156.

Patent Owner also asserts that “[a]bsent an incorporation of the multivariate test parameters that is not suggested by Petitioner’s proposed Seolas/Krishnamoorthy combination, the rendering system in Seolas could not identify data related to at least a multivariate test as required by” limitation [1d]. Resp. 52; *see* Ex. 2005 ¶ 157. Patent Owner further asserts

that Petitioner “does not articulate why” an ordinarily skilled artisan “in possession of Seolas would look to Krishnamoorthy to include multivariate test parameters in a site map for a webpage that Seolas does not even disclose is under multivariate testing.” Resp. 52; *see* Sur-reply 20; Ex. 2005 ¶ 157.

We agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach limitation [1d]. *See* Pet. 23–27; Ex. 1003 ¶¶ 16–17, 20, 35–39. Specifically, Seolas discloses that web server 150 processes a request from rendering system 175 and responds by providing web page code to rendering system 175. Ex. 1005, 8:43–49; *see id.* at 6:4–8, Fig. 1; Ex. 1003 ¶¶ 15, 32, 34. Then, rendering system 175 may analyze the web page code to “identify the presence and content of executable objects, such as third party executables (or links to executables) for advertising content, website analytics content, tracking pixel references, or the like.” Ex. 1005, 9:19–23; *see id.* at 2:27–30, 2:40–43, 3:52–55, 8:49–51, 15:19–23, code (57); Ex. 1003 ¶¶ 16, 20, 36. To identify “advertising content, website analytics content, tracking pixel references, or the like,” rendering system 175 may review “analytics source code,” e.g., “third party analytics code” or “tracking code,” embedded in a web page. Ex. 1005, 3:62–66, 4:20–25, 9:19–23, 15:17–23; *see id.* at 3:48–55; Ex. 1003 ¶¶ 17, 20, 25. For instance, rendering system 175 may review “analytics source code” to “determine which tracking pixels are present in the page and the values of various variables associated with a tracking pixel.” Ex. 1005, 3:66–4:4; *see id.* at 7:56–65, 15:19–23; Ex. 1003 ¶¶ 17, 20, 37; Ex. 2005 ¶ 89.

As discussed above, Krishnamoorthy discloses multivariate testing to “determine which variation or presentation of content meets the defined

goals of a website better than other variations.” Ex. 1006, 3:5–7, 10:7–10; *see id.* at 2:9–38, code (57); Ex. 1003 ¶¶ 18, 38; Ex. 2005 ¶ 93; *supra* § III.D.3(a). To implement multivariate testing, a website operator may “embed a command or message in Hypertext Markup Language (HTML), JavaScript, or other code for rendering web page content.” Ex. 1006, 2:53–56, 10:31–33; *see* Ex. 1003 ¶¶ 19, 28, 38; Ex. 2005 ¶¶ 95, 109. The embedded command or message may include “multivariate test parameters” or “an indication of a multivariate test that includes certain multivariate test parameters.” Ex. 1006, 2:56–58, 10:33–34; *see* Ex. 1003 ¶¶ 28, 38; Ex. 2005 ¶¶ 95, 109. The claimed “data related to at least a multivariate test” encompasses the embedded “multivariate test parameters” of Krishnamoorthy in the proposed Seolas-Krishnamoorthy combination. *See* Ex. 1001, 7:40–45; Ex. 1003 ¶ 38.

As also discussed above, Petitioner explains that in the proposed Seolas-Krishnamoorthy combination, Seolas’s website-analysis system would “parse and analyze” the embedded “multivariate test parameters” of Krishnamoorthy “in a similar manner to” analyzing “the tracking pixel variables and other ‘third party analytics code’” disclosed in Seolas. *See* Pet. 12, 14, 16, 26; Ex. 1003 ¶¶ 22, 39; Ex. 1041 ¶ 10; *supra* § III.D.3(a). Moreover, similar to the way Seolas’s website-analysis system would “parse and analyze” the embedded “multivariate test parameters” of Krishnamoorthy, the ’365 patent discloses analyzing a downloaded web page “to detect tests based on code embedded by third party testing service providers,” e.g., by detecting the “presence of test code.” *See* Ex. 1001, 5:15–18, 5:42–44; Ex. 2005 ¶ 37. In the proposed combination, Seolas’s website-analysis system would, among other things, detect the presence of

test code for a multivariate test, e.g., particular multivariate test parameters embedded in a web page. *See* Ex. 1003 ¶¶ 22, 28, 39; Ex. 1005, 9:19–23, 15:19–23; Ex. 1041 ¶ 10.

Patent Owner’s assertion that (1) “Seolas does not mention any multivariate tests” and (2) “Krishnamoorthy does not teach analyzing webpage code for the presence of multivariate testing” does not respond to the proposed combination. *See* Pet. 11–12; Resp. 50. Petitioner cites Krishnamoorthy for teaching multivariate tests and Seolas for analyzing “third party executables (or links to executables)” embedded in a web page. *See, e.g.*, Pet. 6–12, 24–25; Ex. 1003 ¶¶ 14–22, 36. Seolas explains that the embedded “third party executables” may concern “advertising content, website analytics content, tracking pixel references, or the like.” Ex. 1005, 9:19–23; *see* Ex. 1003 ¶¶ 16, 36. An embedded command with “multivariate test parameters” according to Krishnamoorthy is another example of the embedded “third party executables” that Seolas’s website-analysis system already analyzes. *See* Ex. 1003 ¶ 24; Ex. 1005, 2:11–17, 3:62–4:25, 7:56–65; Ex. 1006, 2:53–66, 6:57–67; Tr. 41:20–42:8 (Patent Owner’s counsel stating, “I don’t think we’re contesting that the multivariate test parameters are like a third-party analytics code.”).

Additionally, we disagree with Patent Owner’s assertion that an ordinarily skilled artisan would have understood that the “proposed Seolas/Krishnamoorthy combination would not yield any additional functionality,” e.g., as required by limitation [1d]. *See* Resp. 51–52; Sur-reply 20. As discussed above, Petitioner explains that “in the combination, Krishnamoorthy’s features are implemented in combination with Seolas’ system just as they are in Krishnamoorthy’s.” *See* Pet. 15; Ex. 1003 ¶ 26.

As Petitioner asserts, Krishnamoorthy describes techniques for “attributing or associating a user’s actions with respect to web page content to multivariate test parameters.” Ex. 1006, 2:24–26, code (57); *see id.* at 2:9–11; Ex. 1003 ¶¶ 18, 38, 63; Ex. 2005 ¶ 108; Pet. 9, 25, 42. When implemented in the proposed Seolas-Krishnamoorthy combination, Krishnamoorthy’s techniques would have “identif[ied] data related to at least a multivariate test” as required by limitation [1d]. *See* Ex. 1003 ¶¶ 38–39.

Further, Patent Owner’s assertion that “[a]bsent an incorporation of the multivariate test parameters that is not suggested by Petitioner’s proposed Seolas/Krishnamoorthy combination, the rendering system in Seolas could not identify data related to at least a multivariate test as required by” limitation [1d] rests on the incorrect premise that no reason exists to combine the teachings of Seolas and Krishnamoorthy. *See* Resp. 52. As explained below, Petitioner identifies reasons that would have prompted an ordinarily skilled artisan to combine the teachings of Seolas and Krishnamoorthy. *See* Pet. 12–15; Reply 2–3; *infra* § III.D.3(g).

As for Patent Owner’s assertion that Petitioner “does not articulate why” an ordinarily skilled artisan “in possession of Seolas would look to Krishnamoorthy to include multivariate test parameters in a site map for a webpage that Seolas does not even disclose is under multivariate testing,” we address the reasons to combine the teachings of Seolas and Krishnamoorthy below. *See* Resp. 52; *infra* § III.D.3(g).

(f) Limitation [1e]

Claim 1 recites “saving data identifying the at least multivariate test performed in the plurality of webpages in a data store.” Ex. 1001, 10:31–33.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach this limitation. *See* Pet. 27; Ex. 1003 ¶ 40. Specifically, Petitioner asserts that rendering system 175 in Seolas “includes a ‘website metrics store 190 . . . for storing the results of any analysis by site mapping module 180, as well as for storing other metrics or characteristics for a particular web page that site mapping module 180 might use in its analysis.’” Pet. 27 (alteration by Petitioner) (emphases omitted) (quoting Ex. 1005, 5:34–38); Reply 7–8; *see* Ex. 1003 ¶ 40; Ex. 1041 ¶ 16. Petitioner also asserts that “the ‘multivariate test parameters (or an indication of a multivariate test that includes certain multivariate test parameters)’ taught by Krishnamoorthy” would have been processed by the system and then “stored in the ‘website metrics store 190’ along with the rest of the results of the analysis of the downloaded web page, as taught by Seolas.” Pet. 27 (quoting Ex. 1005, 5:34; Ex. 1006, 2:57–58); Reply 8; *see* Ex. 1003 ¶ 40; Ex. 1041 ¶ 16.

Patent Owner makes no arguments specific to limitation [1e]. *See, e.g.,* Resp. 44–53.

We agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach limitation [1e]. *See* Pet. 27; Ex. 1003 ¶ 40. As Petitioner asserts, rendering system 175 in Seolas includes website metrics store 190. Ex. 1005, 5:28–30, Fig. 1; *see* Ex. 1003 ¶ 40; Pet. 27. Website metrics store 190 may store “the results of any analysis” by the system and “other metrics or characteristics” used for analysis purposes. Ex. 1005, 5:34–38; *see id.* at 10:53–67, 14:2–5; Ex. 1003 ¶ 40. Also, as discussed above, Krishnamoorthy discloses multivariate testing to “determine which variation or presentation of content meets the defined goals of a website

better than other variations.” Ex. 1006, 3:5–7, 10:7–10; *see id.* at 2:9–38, code (57); Ex. 1003 ¶¶ 18, 38, 40; Ex. 2005 ¶ 93; *supra* §§ III.D.3(a), III.D.3(e). When implemented in the proposed Seolas-Krishnamoorthy combination, Seolas’s techniques would have “sav[ed] data identifying the at least multivariate test performed in the plurality of webpages in a data store” as required by limitation [1e]. *See* Ex. 1003 ¶ 40.

(g) Alleged Reasons for Combining the Teachings of the References

(i) The Proposed Combination

Petitioner explains that in the proposed combination, “the ‘multivariate test parameters’ of Krishnamoorthy are embedded into the webpage code, for example, in a similar manner to the ‘tracking pixel variables’ and other ‘third party analytics code’ described in Seolas.” Pet. 12 (citing Ex. 1003 ¶ 22; Ex. 1005, 1:64–66, 4:2–5, 7:56–62, 8:52–53, 9:19–23; Ex. 1006, 2:53–66, 10:31–33, 20:3–22, code (57)); *see* Ex. 1003 ¶¶ 22, 25, 28, 39. Petitioner describes the process for introducing the “multivariate test parameters” of Krishnamoorthy into the web page code in various ways, including the following:

- (1) “encode the ‘multivariate testing parameters’ of Krishnamoorthy into webpages using the ‘tracking pixel variables’ described in Seolas”;
- (2) “embedded into the URL included in the request for the remote resource”;
- (3) “multivariate tests embedded in the pages of the website”;
- (4) “multivariate test parameters embedded in the code of the downloaded webpage”; and

- (5) “the ‘tracking pixel references’ [described in Seolas] include the multivariate test parameters described in Krishnamoorthy.”

Pet. 12–14, 16, 26; Reply 2, 7, 9–10; *see* Ex. 1003 ¶¶ 23, 25, 28, 39; Ex. 1041 ¶¶ 7, 15, 19.

Petitioner also explains that in the proposed combination, Seolas’s website-analysis system would “parse and analyze” the embedded “multivariate test parameters” of Krishnamoorthy “in a similar manner to” analyzing “the tracking pixel variables and other ‘third party analytics code’” disclosed in Seolas. Pet. 12 (citing Ex. 1003 ¶ 22; Ex. 1005, 1:64–66, 4:2–5, 7:56–62, 8:52–53, 9:19–23; Ex. 1006, 2:53–66, 10:31–33, 20:3–22, code (57)); Reply 4–5; *see* Ex. 1003 ¶¶ 22, 39; Ex. 1041 ¶ 10.

(ii) Assertions in the Petition

Petitioner identifies reasons that would have prompted an ordinarily skilled artisan to combine the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Pet. 12–15. Dr. Cooperstock’s testimony supports Petitioner’s positions. *See* Ex. 1003 ¶¶ 22–26; Ex. 1041 ¶¶ 6–8, 10, 21.

Specifically, Petitioner asserts that an ordinarily skilled artisan would have been motivated to modify Seolas’s website-analysis system to analyze the embedded “multivariate test parameters” of Krishnamoorthy to “broaden the scope of the information about the scanned website included in the site map produced by” the system. Pet. 14; *see id.* at 16, 26; Tr. 19:3–6, 20:17–21; Ex. 1003 ¶¶ 25, 28, 39; Ex. 1041 ¶¶ 7, 19, 21. Petitioner further asserts that “the framework employed by Seolas would have expanded its analysis capabilities when modified to parse the multivariate testing parameters of Krishnamoorthy.” Pet. 14; *see* Ex. 1003 ¶ 25. According to

Petitioner, this modification comports with “one of the stated goals of Seolas: to ‘allow[] a website operator to more easily understand and evaluate code,’ including ‘third party analytics code,’ such as code used to perform multivariate testing.” Pet. 14 (alteration by Petitioner) (quoting Ex. 1005, 4:22–23; citing Ex. 1003 ¶ 25; Ex. 1005, 4:16–25; Ex. 1006, 7:47–8:25); *see* Ex. 1003 ¶ 25.

Additionally, Petitioner contends that an ordinarily skilled artisan “would have found it obvious to modify Seolas based on Krishnamoorthy’s teachings because doing so entails the use of known solutions to improve similar systems and methods in the same way.” Pet. 14–15; *see* Ex. 1003 ¶ 26. Petitioner also contends that an ordinarily skilled artisan “would have recognized that applying Krishnamoorthy’s teachings to Seolas’ site mapping system would have led to predictable results without significantly altering or hindering the functions performed by Seolas’ system.” Pet. 15; *see* Ex. 1003 ¶¶ 26–27.

Petitioner also asserts that an ordinarily skilled artisan “would have had a reasonable expectation of success in making this modification, and would have reasonably expected to reap the benefits of the multivariate testing parameter encoding scheme described in Krishnamoorthy.” Pet. 15; *see* Ex. 1003 ¶ 27.

(iii) Assertions in the Response

For several reasons, Patent Owner disputes that an ordinarily skilled artisan would have been motivated to combine the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Resp. 24–39.

Mr. Schmandt’s testimony supports Patent Owner’s positions. *See* Ex. 2005 ¶¶ 107–135.

First, Patent Owner asserts that Seolas and Krishnamoorthy solve fundamentally different problems in different ways using different data. Resp. 24, 27; *see* Ex. 2005 ¶ 112. According to Patent Owner, Seolas analyzes web-page health by scanning web-page code concerning content and layout, while Krishnamoorthy analyzes web-page effectiveness by “attributing multivariate test parameters responsive to user activity.” Resp. 27; *see* Ex. 2005 ¶¶ 111–112. Patent Owner asserts that “user engagement and other user activity” is “irrelevant to the technology disclosed by Seolas.” Resp. 27; *see* Ex. 2005 ¶ 111. According to Patent Owner, there would have been no reason for an ordinarily skilled artisan “in possession of Seolas to look to Krishnamoorthy’s multivariate test parameters” since “Seolas does not contemplate any multivariate testing.” Resp. 27; *see* Ex. 2005 ¶ 111.

Second, Patent Owner asserts that “the tracking pixels are not functional” in Seolas’s system because the system “does not actually utilize the tracking pixels to facilitate any tracking.” Resp. 28; *see* Ex. 2005 ¶¶ 113–114. According to Patent Owner, there would have been “no reason for a tracking pixel to be operational (i.e., to perform a tracking function) in Seolas because” (1) the server hosting the tracking pixel “would be tracking the rendering system” and (2) tracking the rendering system “would not provide any useful data about the website.” Resp. 29 (emphasis omitted); *see* Ex. 2005 ¶ 115.

Additionally, Patent Owner contends that Seolas’s disclosure of a “silent mode” that does not cause tracking pixels to operate shows that there would have been no reason for “introducing multivariate test parameters into Seolas’ tracking pixel variables.” Resp. 29; *see* Ex. 2005 ¶ 116. Patent

Owner also contends that “Petitioner proposes to encode the multivariate test parameters of Krishnamoorthy into the tracking pixel variables of Seolas without any change to [the] rendering system of Seolas and despite Seolas’ teaching that the tracking pixels and associated variables do not facilitate any useful functionality.” Resp. 30; *see id.* at 2–3, 20, 33, 36, 50, 63, 65; Ex. 2005 ¶¶ 117, 122, 128, 153, 183, 186.

Third, Patent Owner asserts that the proposed combination would fundamentally alter Seolas’s system because “the server hosting the tracking pixel would have to be in communication with the web server hosting the webpage for the communication of the multivariate test parameters to have any utility when sent by the rendering system as part of a tracking pixel request.” Resp. 31–32; *see id.* at 36; Ex. 2005 ¶¶ 120, 128. Patent Owner asserts that “the server hosting the tracking pixel would have no use for the multivariate test parameters because it is not performing or facilitating any attribution.” Resp. 34, 36; *see* Ex. 2005 ¶¶ 124, 127.

Additionally, Patent Owner contends that “scanning the multivariate test parameters, as taught by Seolas with respect to the tracking pixel variables, would not provide any useful information to” Seolas’s system because the system “would not have the contextual information required to interpret those parameters.” Resp. 32; *see id.* at 33–34; Ex. 2005 ¶¶ 121–123. Patent Owner also contends that Seolas’s system “could not make any determination regarding what is actually being tested based on extraction of test parameters from the webpage source code.” Resp. 33; *see* Ex. 2005 ¶ 123. According to Patent Owner, “embedding Krishnamoorthy’s multivariate test parameters into variables” in Seolas’s system and sending them to the “server hosting the tracking pixel would not solve any problem,

and in fact would not serve any purpose.” Resp. 35–37; *see* Ex. 2005 ¶¶ 127, 129.

Fourth, Patent Owner asserts that “since Seolas teaches a complete and working system for scanning webpage code to analyze webpage health, it is not clear why” an ordinarily skilled artisan would have modified Seolas’s system as Petitioner proposes “except in a hindsight effort to map to the Challenged Claims.” Resp. 39; *see id.* at 2–4, 15, 51; Ex. 2005 ¶ 134. According to Patent Owner, “Ppetitioner is, in essence, asserting that because both Seolas and Krishnamoorthy disclose a client-server model that has been implemented for decades,” an ordinarily skilled artisan would have combined the teachings of Seolas and Krishnamoorthy. Resp. 37–38 (citing Pet. 13).

(iv) Assertions in the Reply

Regarding the different problems addressed by Seolas and Krishnamoorthy, Petitioner asserts that the Supreme Court in *KSR* “noted that the idea that” an ordinarily skilled artisan “would ignore prior art directed to different problems ‘makes little sense.’” Reply 4 (quoting *KSR*, 550 U.S. at 420–21). Petitioner also asserts that Patent Owner’s position that “Seolas does not contemplate any multivariate testing” ignores the Supreme Court’s guidance in *KSR* that “reasons to combine need not come from the references themselves.” *Id.* at 5–6 (citing *KSR*, 550 U.S. at 418, 420).

Further, Petitioner asserts that Patent Owner mischaracterizes the proposed combination because Petitioner “did not propose combining the full system described in Seolas with the full system of Kirshnamoorthy.” Reply 4 (citing Pet. 11–12; Ex. 1003 ¶¶ 20–22; Ex. 1041 ¶ 11); *see* Ex. 1041

¶ 10. Petitioner again explains that in the proposed combination, Seolas’s website-analysis system would “parse and analyze” the embedded “multivariate test parameters” of Krishnamoorthy “in a similar manner to” analyzing “the tracking pixel variables and other ‘third party analytics code’” disclosed in Seolas. Reply 4–5; *see* Ex. 1041 ¶ 10.

Additionally, Petitioner contends that any “difference between the problems solved” by Seolas and Krishnamoorthy does not matter because “parsing and analyzing” the embedded “webpage code described in Krishnamoorthy” enhances Seolas’s “stated goal of ‘allow[ing] the rendering system to . . . obtain a complete picture of each web page in any website being processed, and allow[ing] a website operator to more easily understand and evaluate code (e.g., third party analytics code, or tags for the same) deployed on the website, or in a particular web page.’” Reply 5 (alterations by Petitioner) (emphasis omitted) (quoting Ex. 1005, 4:20–25); *see* Ex. 1041 ¶ 10. Petitioner also contends that by “Patent Owner’s logic, Seolas’ system would be limited to only parsing and analyzing web pages directed to solving the same problem to which it is directed,” i.e., web pages directed to “analyzing webpage health.” Reply 5; *see* Ex. 1041 ¶ 11.

Regarding Patent Owner’s assertion that “the tracking pixels are not functional” in Seolas’s system, Petitioner argues that if the “silent mode is not enabled, Seolas teaches that ‘when processing a page with tracking pixels, rendering system 175 can send a request to the server where the tracking pixel is located,’ exactly as a user’s web browser would do when rendering the webpage.” Reply 6 (emphasis omitted) (quoting Ex. 1005, 7:63–65); *see* Ex. 1041 ¶ 13. Petitioner also argues that Patent Owner’s assertions about enabling or disabling the “silent mode” for tracking pixels

do not relate to Petitioner’s positions because Petitioner does not rely on fetching tracking pixels from a server “to address any portion of the independent claims.” Reply 8; *see* Ex. 1041 ¶ 17. Petitioner explains that “[i]n the combination, the ‘tracking pixel references’ [described in Seolas] include the multivariate test parameters described in Krishnamoorthy.” Reply 7 (citing Pet. 25–27; Ex. 1041 ¶ 16); *see* Ex. 1041 ¶ 15.

Regarding Patent Owner’s assertion that the proposed combination would fundamentally alter Seolas’s system, Petitioner contends that (1) “a webpage implementing Krishnamoorthy’s multivariate tests could be modified to use tracking pixels to implement the tests” and (2) “a tracking pixel can be used to implement the multivariate tests.” Reply 9; *see* Ex. 1041 ¶ 18. Petitioner asserts that an ordinarily skilled artisan would have been motivated to modify Seolas’s system to analyze the embedded “multivariate test parameters” of Krishnamoorthy to “broaden the scope of the information about the scanned website included in the site map produced by” the system. Reply 9–10; *see id.* at 11; Ex. 1041 ¶¶ 7, 19, 21. Petitioner similarly asserts that “a website operator utilizing Krishnamoorthy’s multivariate tests would have been motivated to implement the tests using tracking pixels” to “make its webpages compatible with Seolas” and “obtain the benefits” of Seolas’s system. Reply 10; *see* Ex. 1041 ¶ 19.

Regarding Patent Owner’s assertion that the proposed combination rests on hindsight, Petitioner argues that Patent Owner ignores “the Petition’s stated reasons to perform the combination.” Reply 11; *see* Ex. 1041 ¶ 21. Petitioner reiterates that those reasons include (1) “broaden[ing] the scope of the information about the scanned website included in the site map produced by” the system and (2) furthering “one

of the stated goals of Seolas” to allow “a website operator to more easily understand and evaluate code.” Reply 11 (quoting Pet. 12; Ex. 1005, 4:22–23).

(v) Assertions in the Sur-reply

Patent Owner asserts that Petitioner “has not proffered any evidence regarding” a motivation to combine Krishnamoorthy’s multivariate test parameters with Seolas’s system “other than” to “broaden the scope of the information about the scanned website included in the site map produced by” the system. Sur-reply 4 (quoting Reply 2, 11); *see id.* at 12. Patent Owner asserts that “[t]his motivation theory could apply to essentially any reference relating to website content.” *Id.* at 12; *see id.* at 13. According to Patent Owner, “[a]ny information could have been included as tracking pixel variables,” but an ordinarily skilled artisan “would not have incorporated Krishnamoorthy’s multivariate test parameters because they would not have served any function.” *Id.* at 4 (emphases omitted).

Regarding the different problems addressed by Seolas and Krishnamoorthy, Patent Owner asserts that “incorporating Krishnamoorthy’s multivariate test parameters would not impact the presentation or operation of the webpage” and “would serve no purpose.” Sur-reply 5; *see id.* at 7–9. Patent Owner similarly asserts that (1) Petitioner proposes inserting Krishnamoorthy’s multivariate test parameters “into a webpage scanned by” Seolas’s system “with no other changes” and (2) “such an insertion would not alter the appearance or function of the webpage” or “inform any picture of the webpage.” *Id.* at 6–7 (emphasis omitted); *see id.* at 1–2, 24. According to Patent Owner, “no multivariate tests are implemented as a

result of incorporating Krishnamoorthy's multivariate test parameters into Seolas' tracking pixel variables." *Id.* at 10.

Regarding Petitioner's argument that enabling or disabling the "silent mode" for tracking pixels does not relate to Petitioner's positions, Patent Owner asserts that "Seolas teaches away from the combination" since, irrespective of "silent mode" operation, the tracking pixels in Seolas "are not used for a tracking function (which is why Seolas contemplates disabling tracking pixels)." Sur-reply 8. According to Patent Owner, there is no reason for Seolas's system "to request the tracking pixel, and thus no reason to send Krishnamoorthy's multivariate test parameters if those parameters were incorporated as tracking pixel variables." *Id.*

Regarding Petitioner's contentions that (1) "a webpage implementing Krishnamoorthy's multivariate tests could be modified to use tracking pixels to implement the tests" and (2) "a tracking pixel can be used to implement the multivariate tests," Patent Owner asserts that Petitioner advances "a new obviousness theory that expressly contradicts the obviousness theory in the Petition." Sur-reply 9 (emphasis omitted) (citing Reply 9). Patent Owner also asserts that "Petitioner's attempt to change its invalidity theory in Reply by inserting Seolas' tracking pixel variables into Krishnamoorthy's system (which is the reverse and opposite of the combination proposed in the Petition)" is "improper and an admission that the Petition's combination fails." *Id.* at 11. Patent Owner further asserts that Petitioner's new theory "lacks any motivation" to combine the teachings of Krishnamoorthy and Seolas in the way Petitioner proposes. *Id.*; *see id.* at 12.

Regarding hindsight, Patent Owner asserts that "Petitioner's exercise is classic impermissible hindsight" because Petitioner "provides no technical

or functional reason or benefit for combining Seolas and Krishnamoorthy as proposed.” Sur-reply 12–13; *see id.* at 2–5, 7.

(vi) Analysis

We agree with Petitioner that an ordinarily skilled artisan would have been motivated to combine the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Pet. 12–16, 26; Reply 2–8, 11–12; Ex. 1003 ¶¶ 22–28, 39; Ex. 1041 ¶¶ 6–8, 19, 21. As Petitioner asserts, “Seolas teaches techniques to analyze and catalog components of web pages, such as embedded ‘third party analytics code,’ and Krishnamoorthy teaches that such ‘third party analytics code’ can be used to implement multivariate testing.” *See* Ex. 1003 ¶ 25; Ex. 1005, 3:48–66, 4:12–22; Ex. 1006, 2:53–67, 7:47–8:25; Ex. 1041 ¶ 8; Pet. 14; Reply 3. As Petitioner explains, in the proposed combination Seolas’s website-analysis system would “parse and analyze” the embedded “multivariate test parameters” of Krishnamoorthy “in a similar manner to” analyzing “the tracking pixel variables and other ‘third party analytics code’” disclosed in Seolas. *See* Ex. 1003 ¶¶ 22, 39; Ex. 1041 ¶ 10; Pet. 12; Reply 4–5.

An ordinarily skilled artisan would have been motivated to modify Seolas’s website-analysis system to analyze the embedded “multivariate test parameters” of Krishnamoorthy to “broaden the scope of the information about the scanned website included in the site map produced by” the system and expand the system’s “analysis capabilities.” Ex. 1003 ¶ 25; Ex. 1041 ¶¶ 7, 19, 21. Analyzing the embedded “multivariate test parameters” of Krishnamoorthy would have furthered Seolas’s stated goals of (1) “obtain[ing] a complete picture of each web page in any website being processed” and (2) “allow[ing] a website operator to more easily understand

and evaluate code,” e.g., “third party analytics code” in a web page including “code used to perform multivariate testing.” Ex. 1003 ¶ 25; Ex. 1005, 4:20–25; Ex. 1041 ¶¶ 8, 10, 21. Additionally, as Petitioner contends, an ordinarily skilled artisan “would have found it obvious to modify Seolas based on Krishnamoorthy’s teachings because doing so entails the use of known solutions to improve similar systems and methods in the same way.” Ex. 1003 ¶ 26; *see* Pet. 14–15.

We also agree with Petitioner that an ordinarily skilled artisan “would have had a reasonable expectation of success in making this modification, and would have reasonably expected to reap the benefits of the multivariate testing parameter encoding scheme described in Krishnamoorthy.” *See* Pet. 15; Ex. 1003 ¶ 27.

Although Petitioner describes the process for introducing the “multivariate test parameters” of Krishnamoorthy into the web page code in various ways, Patent Owner does not contend that the different ways make a difference in the obviousness analysis. *See* Pet. 12–14, 16, 26; Resp. 24–39; Reply 2, 7, 9–10; Sur-reply 3–13.

Our analysis does not rely on Petitioner’s contentions in the Reply that (1) “a webpage implementing Krishnamoorthy’s multivariate tests could be modified to use tracking pixels to implement the tests” and (2) “a tracking pixel can be used to implement the multivariate tests.” *See* Reply 9. Hence, we need not decide whether Petitioner advances a new obviousness theory in the Reply (as Patent Owner asserts). *See* Sur-reply 9.

We disagree with Patent Owner’s assertion that there would have been no reason for an ordinarily skilled artisan “in possession of Seolas to look to Krishnamoorthy’s multivariate test parameters” since “Seolas does not

contemplate any multivariate testing.” *See* Resp. 27. Any “need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining” references. *KSR*, 550 U.S. at 420. Providing a website-analysis system with expanded “analysis capabilities” that furthers Seolas’s stated goals of (1) “obtain[ing] a complete picture of each web page in any website being processed” and (2) “allow[ing] a website operator to more easily understand and evaluate code” is a sound reason for combining the teachings of Seolas and Krishnamoorthy. *See* Ex. 1003 ¶ 25; Ex. 1005, 4:20–25; Ex. 1041 ¶¶ 8, 10, 21. The “desire to enhance commercial opportunities by improving a product or process is universal.” *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006).

We disagree with Patent Owner’s assertion that Seolas and Krishnamoorthy differ since “user engagement and other user activity” is “irrelevant to the technology disclosed by Seolas.” *See* Resp. 27. Seolas discloses that the website-analysis system may download and scan a web page “to check” if “analytics source code” is “complete and correct.” Ex. 1005, 3:62–65; *see* Ex. 1003 ¶¶ 16, 36; Ex. 1041 ¶ 15; Ex. 2007, 23:8–14. Seolas also discloses that “analytics source code” includes “tracking code,” such as tracking pixel references. Ex. 1005, 1:64–2:2, 3:62–4:5, 7:56–58, 9:19–23, 15:19–23. Seolas explains that “tracking code” comprises “functional code that, when executed, records helpful information about a given web page and how the customer or client uses the web page.” *Id.* at 1:64–2:2. Seolas similarly explains that tracking pixels track “how visitors navigate the website.” *Id.* at 7:56–58. So Seolas discloses analyzing web page code relating to “user engagement and other user activity,” e.g.,

code relating to “how the customer or client uses the web page” and “how visitors navigate the website.” *See id.* at 1:64–2:2, 7:56–58.

Additionally, Seolas discloses that the website-analysis system may perform “audits of website health,” including determining whether “tracking code” is “loading properly,” “correctly executable,” and “working as intended,” e.g., by “executing any scripts, routines, or programs that are embedded in or otherwise linked to or from the web page.” Ex. 1005, 9:36–42, 12:34–38, 15:17–27; *see id.* at 4:11–16, 11:36–40; Ex. 1003 ¶¶ 16, 51, 71. Insofar as Seolas’s system determines whether “tracking code” is “loading properly,” “correctly executable,” and “working as intended,” “user engagement and other user activity” is not “irrelevant to the technology disclosed by Seolas,” contrary to Patent Owner’s assertion. *See* Resp. 27.

And because Seolas’s system determines whether “tracking code” is “loading properly,” “correctly executable,” and “working as intended,” we disagree with Patent Owner’s assertion that “the tracking pixels are not functional” in Seolas’s system. *See* Resp. 28. Seolas’s disclosure of a “silent mode” that does not cause tracking pixels to operate indicates that tracking pixels are functional when the system operates in a different mode. Ex. 1005, 7:54–8:7, 9:36–42, 12:34–38, 15:17–27; *see id.* at 4:16–20, 9:59–62; Ex. 1041 ¶ 13.

Additionally, we disagree with Patent Owner’s contention that “Petitioner proposes to encode the multivariate test parameters of Krishnamoorthy into the tracking pixel variables of Seolas without any change to” Seolas’s system. *See* Resp. 30; *see also id.* at 2–3, 20, 33, 36, 50, 63, 65; Sur-reply 23–24. As discussed above, Petitioner explains that “in the combination, Krishnamoorthy’s features are implemented in combination

with Seolas' system just as they are in Krishnamoorthy's." *See* Pet. 15; Ex. 1003 ¶ 26; *supra* § III.D.3(e). For instance, Krishnamoorthy discloses features that Seolas's system lacks, such as techniques for "attributing or associating a user's actions with respect to web page content to multivariate test parameters." Ex. 1006, 2:24–26, code (57); *see id.* at 2:9–11; Ex. 1003 ¶¶ 18, 38; Ex. 2005 ¶ 108.

Further, we disagree with Patent Owner's assertion that the proposed combination would fundamentally alter Seolas's system. *See* Resp. 31–32; *see also id.* at 36. Seolas's system determines website health by, among other things, downloading and analyzing a website's web pages. Ex. 1005, 2:23–49, 4:11–25, 5:9–12, 5:28–34, 8:40–45, 15:14–16, code (57), Fig. 1; *see* Ex. 1003 ¶¶ 50–52; Ex. 2005 ¶¶ 86–87. The analysis includes executing "analytics source code," e.g., "third party analytics code" or "tracking code," embedded in a web page. Ex. 1005, 3:52–55, 3:62–66, 4:16–25, 9:19–23, 9:36–42, 11:36–40, 12:34–38, 14:50–53, 15:17–23, code (57); *see* Ex. 1003 ¶¶ 17, 20, 75. An embedded command with "multivariate test parameters" according to Krishnamoorthy is another type of "third party analytics code" that Seolas's website-analysis system already analyzes. *See* Ex. 1003 ¶ 24; Ex. 1005, 2:11–17, 3:62–4:25, 7:56–65; Ex. 1006, 2:53–66, 6:57–67; Tr. 41:20–42:8 (Patent Owner's counsel stating, "I don't think we're contesting that the multivariate test parameters are like a third-party analytics code."). Hence, in the proposed combination Seolas's system would execute an embedded command with "multivariate test parameters" according to Krishnamoorthy. *See* Ex. 1003 ¶¶ 21–22; Ex. 1006, 2:53–66, 20:9–11; Ex. 1041 ¶ 10.

When executed, an embedded command with “multivariate test parameters” according to Krishnamoorthy “may cause the user device to contact another device,” e.g., “to request an ad” for “display to the user,” and thus affect the displayed content. Ex. 1006, 2:62–66; *see id.* at 20:9–11; Ex. 1003 ¶¶ 19, 21, 24; Ex. 2005 ¶ 109. Because the embedded command with “multivariate test parameters” may affect the displayed content, we disagree with Patent Owner’s assertion that inserting such parameters “into a webpage scanned by” Seolas’s system “would not alter the appearance or function of the webpage” or “inform any picture of the webpage.” *See* Sur-reply 6–7; *see also* Resp. 64.

We also disagree with Patent Owner’s assertion that the proposed combination rests on hindsight. An explicit analysis “whether there was an apparent reason to combine” references reduces “the risk of . . . falling prey to hindsight bias.” *See KSR*, 550 U.S. at 418, 421. Here, Dr. Cooperstock’s explicit analysis of reasons to combine Seolas and Krishnamoorthy demonstrates that the proposed combination does not rest on hindsight. *See* Ex. 1003 ¶¶ 22–26; Ex. 1041 ¶¶ 6–8, 10, 21. As discussed above, providing a website-analysis system with expanded “analysis capabilities” that furthers Seolas’s stated goals of (1) “obtain[ing] a complete picture of each web page in any website being processed” and (2) “allow[ing] a website operator to more easily understand and evaluate code” is a sound reason for combining the teachings of Seolas and Krishnamoorthy. *See* Ex. 1003 ¶ 25; Ex. 1005, 4:20–25; Ex. 1041 ¶¶ 8, 10, 21.

We also disagree with Patent Owner’s assertion that “Seolas teaches away from the combination” since the tracking pixels in Seolas “are not used for a tracking function (which is why Seolas contemplates disabling tracking

pixels).” *See* Sur-reply 8. “A reference does not teach away . . . if it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)). Patent Owner has not shown how Seolas “criticize[s], discredit[s], or otherwise discourage[s]” parsing and analyzing the embedded “multivariate test parameters” of Krishnamoorthy “in a similar manner to” analyzing “the tracking pixel variables and other ‘third party analytics code’” disclosed in Seolas. *See* Pet. 12; Reply 4–5; Sur-reply 8; Ex. 1003 ¶¶ 22, 39; Ex. 1041 ¶ 10.

(h) Conclusion About Obviousness/Nonobviousness for Claim 1

For the reasons discussed above, the combined disclosures in Seolas and Krishnamoorthy teach claim 1’s subject matter. *See supra* §§ III.D.3(a)–III.D.3(f). Moreover, an ordinarily skilled artisan would have been motivated to combine the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes and would have had a reasonable expectation of success. *See supra* § III.D.3(g)(vi). Hence, Petitioner has shown by a preponderance of the evidence that claim 1 is unpatentable under § 103 as obvious over Seolas and Krishnamoorthy.

4. INDEPENDENT CLAIMS 12 AND 13

As Patent Owner asserts, “[i]ndependent claims 1, 12, and 13 include substantively identical limitations except that claim 1 is written in method form, claim 12 is written in a computer readable medium form, and claim 13 is written as a system claim with a processor that performs the steps of the method.” *See* Ex. 1001, 10:18–33, 11:27–65; Prelim. Resp. 4 n.2. Hence,

for the same reasons as claim 1, Petitioner has shown by a preponderance of the evidence that claims 12 and 13 are unpatentable under § 103 as obvious over Seolas and Krishnamoorthy. *See* Pet. 43–45; Ex. 1003 ¶¶ 28–40, 64; *supra* §§ III.D.3(a)–III.D.3(f), III.D.3(g)(vi).

5. DEPENDENT CLAIMS 2 AND 14

Claim 2 reads as follows (with formatting added for clarity and with numbers and letters added for reference purposes)³:

2. The method of claim 1, further comprising:
 - [2a] filtering the URLs encountered during the crawling;
 - [2b] saving a set of filtered URLs; and
 - [2c] processing only the set of filtered URLs.

Ex. 1001, 10:34–37. Claim 14 depends directly from claim 13 and recites subject matter similar to claim 2. *Id.* at 12:1–5.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 2 and 14. *See* Pet. 28–31, 45; Ex. 1003 ¶¶ 41–44.

In particular, Petitioner contends that Seolas teaches limitation [2a] and claim 14’s corresponding limitation, i.e., “[14a] filter the URLs encountered during the crawling.” *See* Pet. 28–30, 45; Ex. 1003 ¶¶ 41–42. First, Petitioner asserts that “Seolas describes that ‘rendering system 175 can use a set of one or more link filters to determine if a link’ (a URL) ‘found in a rendered web page should be further processed and included in the generated site map.’” Pet. 28 (emphases omitted) (quoting Ex. 1005, 7:1–4); *see* Ex. 1003 ¶ 41. Second, Petitioner asserts that Seolas (1) discloses that

³ We use the same numbers and letters that Petitioner uses to identify the claim limitations.

user interface 110 includes link filter fields 207a and 207b and (2) explains that “rendering system 175 can compare each link found in a rendered web page against that specified in fields 207a and/or 207b to determine if the link should be processed.” Pet. 28 (quoting Ex. 1005, 7:5–7); *see* Ex. 1003 ¶ 41.

To support its assertions, Petitioner provides the highlighted version of Seolas’s Figure 2 reproduced below (Pet. 29):

User Interface 110

Last Scan:	1 Jan 2009	200a
Next Scan:	1 Feb 2009	200b
	Scan Now	203
Starting Web Page(s)	www.mywebsite.com	115a
		115b
Max. Depth	3	205
Max. Number URLs Per Scan	1000	206
Link Filters	www.mywebsite.com	207a
		207b
Scan Speed	2	209
☒ Silent Mode (Tracking Pixels)		210
	Submit	105

Figure 2 illustrates user interface 110 with various fields and buttons, such as web page fields 115a and 115b and link filter fields 207a and 207b.

Ex. 1005, 3:26–28, 6:16–29, 6:66–67, 8:25–31, Fig. 2; *see* Ex. 1003

¶¶ 14, 41. This highlighted version of Figure 2 has yellow highlighting over three fields as follows: (1) web page field 115a containing the link

www.mywebsite.com; (2) link filter field 207a containing the link www.mywebsite.com; and (3) link filter field 207b containing no link. *See* Pet. 29; Ex. 1003 ¶ 41.

Petitioner contends that in the example depicted in Seolas's Figure 2 "all of the pages residing at www.mywebsite.com will be included in the site map, such as www.mywebsite.com/page1.htm and www.mywebsite.com/page2.htm," whereas "the link www.foreignwebsite.com/page1.htm found in the web page will not be included in the site map." Pet. 29–30 (quoting Ex. 1005, 7:9–14); *see* Ex. 1003 ¶¶ 41–42.

Petitioner contends that Seolas teaches limitation [2b] and claim 14's corresponding limitation, i.e., "[14b] save a set of filtered URLs." *See* Pet. 30, 45; Ex. 1003 ¶ 43. First, Petitioner asserts that "Seolas describes that 'rendering system 175 can use a set of one or more link filters to determine if a link' (a URL) 'found in a rendered web page should be further processed and included in the generated site map.'" Pet. 30 (emphases omitted) (quoting Ex. 1005, 7:1–4); *see* Ex. 1003 ¶ 43. According to Petitioner, the "set of links determined suitable for further processing" is "a set of filtered URLs" as claimed. Pet. 30; *see* Ex. 1003 ¶ 43. Second, Petitioner asserts that "Seolas further describes that '[u]nless there is any reason to disregard a particular link (e.g., based on link filters 207a, 207b), site mapping module 180 can store the identified link as part of the record 160 for the requested website 135.'" Pet. 30 (alteration by Petitioner) (emphasis omitted) (quoting Ex. 1005, 10:8–12); *see* Ex. 1003 ¶ 43.

Petitioner contends that Seolas teaches limitation [2c] and claim 14's corresponding limitation, i.e., "[14c] process only the set of filtered URLs." *See* Pet. 30–31, 45; Ex. 1003 ¶ 44. Specifically, Petitioner asserts that

“Seolas describes that only links that are determined suitable for further processing (the set of filtered URLs) are processed.” Pet. 31; *see* Ex. 1003 ¶ 44.

Patent Owner makes no arguments specific to claims 2 and 14. *See, e.g.,* Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock’s testimony, we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 2 and 14. *See* Pet. 28–31, 45; Ex. 1003 ¶¶ 41–44.

6. DEPENDENT CLAIMS 3 AND 15

Claim 3 reads as follows (with formatting added for clarity and with numbers and letters added for reference purposes)⁴:

3. The method of claim 1,

[3a] wherein sending the request to download the webpage identified by the URL further comprises: causing at least one virtual client to send the request,

[3b] wherein each virtual client downloads a different page view of the webpage.

Ex. 1001, 10:38–43. Claim 15 depends directly from claim 13 and recites subject matter similar to claim 3. *Id.* at 12:6–10.

(a) Petitioner’s Contentions

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 3 and 15. *See* Pet. 31–33, 45; Reply 19; Ex. 1003 ¶¶ 45–47; Ex. 1041 ¶¶ 32–33.

⁴ We use the same numbers and letters that Petitioner uses to identify the claim limitations.

In particular, Petitioner contends that Seolas teaches limitation [3a] and claim 15's corresponding limitation, i.e., "[15a] wherein the system is further configured to: cause at least one virtual client to send the request." *See* Pet. 31–32; Ex. 1003 ¶ 45. First, Petitioner asserts that "Seolas describes that 'rendering system 175 can comprise one or more site mapping modules 180' (at least one virtual client) 'compris[ing] one or more sets of computer-executable instructions for processing analysis (e.g., site-mapping) requests, and for analyzing web page code.'" Pet. 31 (alteration by Petitioner) (emphasis omitted) (quoting Ex. 1005, 5:28–34); *see* Ex. 1003 ¶ 45. According to Petitioner, "site mapping module 180 is a virtual client because it performs the actions of a client (retrieving the web page code from the server, rendering the web page) without presenting the web page to a user." Pet. 31; *see* Ex. 1003 ¶ 45.

Second, Petitioner asserts that each site mapping module 180:

- (1) "send[s] request 125 to web server 150 for a set of one or more web pages associated with website 135"; and
- (2) "renders the received data as it would ordinarily be displayed through, for example, a web browser."

Pet. 31–32 (alteration by Petitioner) (emphases omitted) (quoting Ex. 1005, 6:5–7, 13:67–14:2); *see* Ex. 1003 ¶ 45.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach limitation [3b] and claim 15's corresponding limitation, i.e., "[15b] wherein each virtual client downloads a different page view of the webpage." *See* Pet. 32–33, 45; Reply 19; Ex. 1003 ¶¶ 46–47; Ex. 1041 ¶¶ 32–33. First, Petitioner asserts that Seolas discloses that rendering system 175 may (1) "automatically review a particular website on a periodic basis" and (2) "generate a new site map every few minutes, hours,

or days, as desired.” Pet. 32 (emphasis omitted) (quoting Ex. 1005, 15:9–13); *see* Ex. 1003 ¶ 46. According to Petitioner, “[e]ach time a new site map is generated, a site mapping module 180 (virtual client) downloads and renders a view of the webpage.” Pet. 32 (citing Ex. 1003 ¶ 46; Ex. 1005, 15:7–13); *see* Ex. 1003 ¶ 46.

Second, Petitioner asserts that “Krishnamoorthy describes that multivariate testing involves ‘var[ying] components or attributes of a web page’ to determine [what] ‘variation or presentation of content meets the defined goals of a website better than other variations.’” Pet. 32 (first alteration by Petitioner) (quoting Ex. 1006, 3:5–9); *see* Ex. 1003 ¶ 47. According to Petitioner, the components or attributes of a web page that may vary in a multivariate test “can include, for example, ‘the font size of text on the web page 160; the placement or position of a headline on the web page 160; and the location of an ad, such as whether the ad is above or below the fold; the placement of the ad from left-to-right and/or top-to-bottom, etc.’” Pet. 32–33 (quoting Ex. 1006, 3:12–16); *see* Ex. 1003 ¶ 47.

Additionally, Petitioner contends that a “webpage under multivariate testing” could “vary each time it is retrieved from the server,” e.g., each time “a site mapping module 180 (virtual client) of Seolas downloads and renders the webpage.” Pet. 33 (citing Ex. 1003 ¶ 47; Ex. 1005, 15:7–13; Ex. 1006, 3:5–16); Reply 19; *see* Ex. 1003 ¶ 47; Ex. 1041 ¶ 32. Petitioner also contends that each rendered variation is “a different page view of the webpage” downloaded by “site mapping module 180 (virtual client)” according to limitations [3b] and [15b]. Pet. 33; Reply 19; *see* Ex. 1003 ¶ 47; Ex. 1041 ¶ 32.

(b) Patent Owner's Contentions

Patent Owner disputes that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 3 and 15. *See* Resp. 53–54; Sur-reply 20–22; Ex. 2005 ¶¶ 159–163. Specifically, Patent Owner asserts that Seolas's site mapping modules 180 do not correspond to the claimed “at least one virtual client” because the modules do not simulate “client side web browser functionality.” *See* Resp. 14, 53–54; Sur-reply 21; Ex. 2005 ¶¶ 65, 160–161. Patent Owner asserts that Seolas's site mapping modules 180 simply “process analysis requests and analyze webpage code.” Resp. 54; *see* Ex. 2005 ¶ 160. Patent Owner also asserts that Seolas's site mapping modules 180 do not (1) “execute or simulate any particular web browser” or (2) “execute or simulate different web browsers” as “indicated in the '365 Patent.” Resp. 54; *see* Ex. 2005 ¶ 161.

Additionally, Patent Owner contends that a “virtual client” according to claims 3 and 15 obtains “different versions of the same webpage . . . at the same time (i.e., in parallel) because different versions are provided to different web browsers that are simulated by the different virtual clients.” Resp. 54 (emphasis omitted); *see* Sur-reply 22; Ex. 2005 ¶ 161.

Patent Owner responds to Petitioner's contention that a “webpage under multivariate testing” could “vary each time it is retrieved from the server” by asserting that claims 3 and 15 require “a single request to download the same webpage identified by the same URL.” Sur-reply 21; *see* Pet. 33; Reply 19. Patent Owner also asserts that “[t]o obtain a different page view in response to a single request for the same webpage identified by the same URL, multiple virtual clients must simulate different web browsers, as expressly confirmed by the claim language (‘each virtual

client’) and disclosure of the ’365 Patent.” Sur-reply 21 (quoting Ex. 1001, 5:8–13).

Patent Owner notes that claim 4 recites “causing a single client to send the request at predefined time intervals to render different multiple page views at different timings.” Sur-reply 22 (quoting Ex. 1001, 10:44–49). Patent Owner then contends that “the patentee could have required the different page views of claim 3 to result from obtaining the webpage at different timings by a single virtual client, but expressly did not.” *Id.*

(c) Analysis

We agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 3 and 15. *See* Pet. 31–33, 45; Reply 19; Ex. 1003 ¶¶ 45–47; Ex. 1041 ¶¶ 32–33. For limitations [3a] and [15a], Seolas discloses rendering system 175 including “one or more site mapping modules 180 (or ‘analysis modules’)” for analyzing web page code. Ex. 1005, 5:28–34, Fig. 1; *see* Ex. 1003 ¶¶ 14, 45. Each site mapping module 180 “send[s] request 125 to web server 150 for a set of one or more web pages associated with website 135.” Ex. 1005, 6:5–7, Fig. 1; *see* Ex. 1003 ¶¶ 15, 45. After receiving the request, web server 150 retrieves the requested data and “responds with web page code for at least one of the one or more web pages.” Ex. 1005, 6:7–8, 8:43–45, Fig. 1; *see* Ex. 1003 ¶ 15. Each site mapping module 180 “renders the received data as it would ordinarily be displayed through, for example, a web browser.” Ex. 1005, 13:67–14:2; *see* Ex. 1003 ¶ 45. Hence, rendering system 175 causes “at least one” site mapping module 180 corresponding to

the claimed “virtual client” to “send the request” to “download the webpage” according to limitations [3a] and [15a]. *See* Ex. 1003 ¶ 45.

Contrary to Patent Owner’s assertion, site mapping module 180 corresponds to the claimed “virtual client” for two related reasons. *See* Resp. 14, 53–54; Sur-reply 21. First, site mapping module 180 may “comprise one or more sets of computer-executable instructions for processing analysis (e.g., site-mapping) requests, and for analyzing web page code.” Ex. 1005, 5:30–34; *see* Ex. 1003 ¶ 45. Second, site mapping module 180 functions like a client-side web browser by “retrieving the web page code from the server” and “rendering the web page,” thus simulating “client side web browser functionality.” Ex. 1003 ¶ 45; Ex. 1005, 6:5–8, 8:43–45, 13:67–14:2, Fig. 1.

Patent Owner’s assertion that Seolas’s site mapping modules 180 do not (1) “execute or simulate any particular web browser” or (2) “execute or simulate different web browsers” does not distinguish claims 3 and 15 from Seolas because the claims do not require that a virtual client (1) “execute or simulate any particular web browser” or (2) “execute or simulate different web browsers.” *See* Ex. 1001, 10:38–43, 12:6–10; Ex. 1041 ¶ 33; Resp. 54.

For limitations [3b] and [15b], Seolas discloses that rendering system 175 may (1) “automatically review a particular website on a periodic basis” and (2) “generate a new site map every few minutes, hours, or days, as desired.” Ex. 1005, 15:9–13; *see id.* at 15:17–19; Ex. 1003 ¶ 46. As discussed above, Krishnamoorthy discloses multivariate testing to “determine which variation or presentation of content meets the defined goals of a website better than other variations.” Ex. 1006, 3:5–7, 10:7–10;

see id. at 2:9–38, code (57); Ex. 1003 ¶¶ 18, 38, 47; Ex. 2005 ¶ 93; *supra* §§ III.D.3(a), III.D.3(e).

As Petitioner contends, a “webpage under multivariate testing” could “vary each time it is retrieved from the server,” e.g., each time “a site mapping module 180 (virtual client) of Seolas downloads and renders the webpage.” Ex. 1003 ¶ 47; Ex. 1041 ¶ 32; *see* Ex. 1005, 15:7–13; Ex. 1006, 3:5–16; Pet. 33; Reply 19. As Petitioner also contends, each rendered variation is “a different page view of the webpage” downloaded by “site mapping module 180 (virtual client)” according to limitations [3b] and [15b]. Ex. 1003 ¶ 47; Ex. 1041 ¶ 32; *see* Pet. 33; Reply 19.

We disagree with Patent Owner’s assertion that claims 3 and 15 require “a single request to download the same webpage identified by the same URL.” *See* Sur-reply 21. Claims 1 and 13 recite “sending [or send] a request to download the webpage.” Ex. 1001, 10:25–26, 11:57–58 (emphasis added). Claims 3 and 15 depend from claims 1 and 13, respectively, and further recite “causing [or cause] at least one virtual client to send **the** request.” *Id.* at 10:41, 12:8 (emphasis added).

The “indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’” *KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000). “That ‘a’ or ‘an’ can mean ‘one or more’ is best described as a rule, rather than merely as a presumption or even a convention.” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). “The subsequent use of definite articles ‘the’ or ‘said’ in a claim to refer back to the same claim term does not change the general plural rule, but simply reinvokes that non-singular meaning.” *Id.*

“The exceptions to this rule are extremely limited: a patentee must evince a clear intent to limit ‘a’ or ‘an’ to ‘one.’” *01 Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1297 (Fed. Cir. 2012).

Here, Patent Owner fails to identify evidence of a clear intent to limit “a” download request in claims 1 and 13 and “the” download request in claims 3 and 15 to a single download request. *See* Resp. 53–54; Sur-reply 20–22. Patent Owner quotes the following statement in the ’365 patent’s specification:

In yet another embodiment, a URL or a set of URLs are downloaded by different virtual clients (i.e., automated web clients capable of simulating full client side functionality of a webpage loading and processing as can be performed by a popular web browser) to analyze different versions of the same webpage.

Sur-reply 21 (emphasis omitted) (quoting Ex. 1001, 5:8–13). But the quoted statement concerns only one embodiment, i.e., “yet another embodiment,” not the claimed invention. *See* Ex. 1001, 5:8–13 (“[i]n yet another embodiment”), 5:21–23 (“[i]n one embodiment”), 5:31–34 (“[i]n one embodiment”). Generally, “limitations are not to be read into the claims from the specification.” *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). Consistent with that principle, the ’365 patent’s specification explains that (1) “the embodiments disclosed are only examples” and (2) “statements made in the specification . . . do not necessarily limit any of the various claimed inventions.” Ex. 1001, 3:25–29; *see id.* at 10:3–8.

Claims 4 and 16 depend directly from claims 1 and 13, respectively, and recite “causing [or cause] a single client to send the request at predefined time intervals to render different multiple page views at different timings.” Ex. 1001, 10:44–49, 12:11–16. As Patent Owner contends, “the

patentee could have required the different page views of claim 3 to result from obtaining the webpage at different timings by a single virtual client, but expressly did not.” *See* Sur-reply 22. But Patent Owner misplaces its reliance on what the patentee could have done because the patentee could also have required the different page views of claim 3 to result from obtaining the webpage “at the same time” by “different” virtual clients, but expressly did not.

Unlike claims 4 and 16, claims 3 and 15 do not specify any timing for “the” download request for the same webpage. Ex. 1001, 10:38–43, 12:6–10. Based on the claim language, claims 3 and 15 encompass download requests for the same webpage sent “at the same time” (as Patent Owner asserts) or at different times (as Petitioner asserts). *See* Ex. 1001, 10:25–26, 10:38–43, 11:57–58, 12:6–10; *Baldwin Graphic*, 512 F.3d at 1342. Hence, in the proposed combination, a “webpage under multivariate testing” could vary each time “a site mapping module 180 (virtual client) of Seolas downloads and renders the webpage,” and each rendered variation is “a different page view of the webpage” downloaded by “site mapping module 180 (virtual client)” according to limitations [3b] and [15b]. Ex. 1003 ¶ 47; Ex. 1041 ¶ 32; *see* Ex. 1005, 15:7–13; Ex. 1006, 3:5–16.

For the reasons discussed above, the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 3 and 15. *See* Ex. 1003 ¶¶ 45–47; Ex. 1041 ¶¶ 32–33. Patent Owner’s arguments to the contrary lack merit. *See* Resp. 53–54; Sur-reply 20–22.

7. DEPENDENT CLAIMS 4 AND 16

Claim 4 depends directly from claim 1 and recites “wherein sending the request to download the webpage identified by the URL further comprises: causing a single client to send the request at predefined time intervals to render different multiple page views at different timings.”

Ex. 1001, 10:44–49. Claim 16 depends directly from claim 13 and recites subject matter similar to claim 4. *Id.* at 12:11–16.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 4 and 16. *See* Pet. 33–34, 46; Ex. 1003 ¶¶ 48–49.

Specifically, Petitioner asserts that Seolas discloses that rendering system 175 may (1) “automatically review a particular website on a periodic basis” and (2) “generate a new site map every few minutes, hours, or days, as desired.” Pet. 33 (emphasis omitted) (quoting Ex. 1005, 15:9–13); *see* Ex. 1003 ¶ 48. According to Petitioner, “[e]ach time a new site map is generated, a site mapping module 180 (virtual client) downloads and renders a view of the webpage.” Pet. 33 (citing Ex. 1003 ¶ 48; Ex. 1005, 15:7–13); *see* Ex. 1003 ¶ 48.

Further, Petitioner asserts that “Krishnamoorthy describes that multivariate testing involves ‘var[ying] components or attributes of a web page’ to determine [what] ‘variation or presentation of content meets the defined goals of a website better than other variations.’” Pet. 33–34 (first alteration by Petitioner) (quoting Ex. 1006, 3:5–9); *see* Ex. 1003 ¶ 49. According to Petitioner, the components or attributes of a web page (multivariate test parameters) “can include, for example, ‘the font size of text on the web page 160; the placement or position of a headline on the web

page 160; and the location of an ad, such as whether the ad is above or below the fold; the placement of the ad from left-to-right and/or top-to-bottom, etc.” Pet. 34 (quoting Ex. 1006, 3:12–16); *see* Ex. 1003 ¶ 49.

Petitioner asserts that “[i]t would have been obvious” to an ordinarily skilled artisan to “vary the instances of a webpage as they are retrieved from a server, to facilitate that multivariate testing, such as when a site mapping module 180 (virtual client) of Seolas downloads and renders a webpage that is subject to multivariate testing.” Pet. 34 (citing Ex. 1003 ¶ 49; Ex. 1005, 15:7–13; Ex. 1006, 3:5–16); *see* Ex. 1003 ¶ 49. Petitioner also asserts that “[e]ach of these variations is a different page view of the webpage downloaded by a site mapping module 180 (virtual client).” Pet. 34; *see* Ex. 1003 ¶ 49.

Patent Owner makes no arguments specific to claims 4 and 16. *See, e.g.,* Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock’s testimony, we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 4 and 16. *See* Pet. 33–34, 46; Ex. 1003 ¶¶ 48–49.

8. DEPENDENT CLAIMS 5 AND 17

Claim 5 reads as follows (with formatting added for clarity):

5. The method of claim 1,

wherein analyzing the at least one downloaded page view further comprises: scanning the at least one downloaded page view to detect changes among page views associated with webpages of the plurality of webpages,

wherein the changes are related to at least one of: appearances over time, and content displayed in the page views.

Ex. 1001, 10:50–56. Claim 17 depends directly from claim 13 and recites subject matter similar to claim 5. *Id.* at 12:17–22.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 5 and 17. *See* Pet. 35, 46; Ex. 1003 ¶ 50.

Specifically, Petitioner asserts that Seolas discloses that rendering system 175 may perform “audits of website health” periodically, e.g., “every few minutes, hours, or days, etc.” Pet. 35 (quoting Ex. 1005, 15:17–19); *see* Ex. 1003 ¶ 50. Petitioner asserts that the auditing information may include the following:

- (1) “whether [a] certain tracking code is found on particular web pages, and the extent to which the tracking code is loading properly”; and
- (2) “whether expected website objects (executables, key words, etc.) are present, optimized in terms of content and layout, and otherwise working as intended (or in accordance with industry standards or organizational policy).”

Pet. 35 (alteration by Petitioner) (emphasis omitted) (quoting Ex. 1005, 15:23–27); *see* Ex. 1003 ¶ 50.

According to Petitioner, “[v]ariations in the optimization of the layout of the web pages are changes related to the appearances of the pages over time, and variations in the optimization of the content of web pages are changes related to content displayed in the page views over time.” Pet. 35; *see* Ex. 1003 ¶ 50.

Patent Owner makes no arguments specific to claims 5 and 17. *See*, e.g., Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock's testimony, we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 5 and 17. *See* Pet. 35, 46; Ex. 1003 ¶ 50.

9. DEPENDENT CLAIMS 7 AND 19

Claim 7 depends directly from claim 1 and recites "wherein analyzing the at least one downloaded page view further comprises: scanning the at least one downloaded page view to detect testing coded [sic] embedded by a testing service provider." Ex. 1001, 11:1–4. Claim 19 depends directly from claim 13 and recites subject matter similar to claim 7. *Id.* at 12:36–39.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 7 and 19. *See* Pet. 36, 46; Ex. 1003 ¶ 55.

First, Petitioner asserts that Seolas discloses that rendering system 175 may "scan the downloaded web page code to determine 'whether certain tracking code is found on' the web page, 'and the extent to which the tracking code is loading properly.'" Pet. 36 (quoting Ex. 1005, 15:21–23); *see* Ex. 1003 ¶ 55. Second, Petitioner asserts that Krishnamoorthy "teaches that such 'tracking code' can be embedded in a web page in order to perform multivariate testing on the web page." Pet. 36 (citing Ex. 1003 ¶ 55; Ex. 1006, 10:31–33, 20:3–22); *see* Ex. 1003 ¶ 55.

Patent Owner makes no arguments specific to claims 7 and 19. *See, e.g.,* Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock's testimony, we agree with Petitioner that the combined

disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 7 and 19. *See* Pet. 36, 46; Ex. 1003 ¶ 55.

10. DEPENDENT CLAIMS 8 AND 20

Claim 8 reads as follows (with formatting added for clarity and with numbers and letters added for reference purposes)⁵:

8. The method of claim 1, further comprising:

[8a] sending a request to the testing service provider to receive a resource file respective of the URL;

[8b] capturing a response sent from the testing service provider; and

[8c] inspecting the response to detect data related to the at least a multivariate test,

[8d] wherein the data included in the response specifies at least goals, tests, variations, and segments.

Ex. 1001, 11:5–13. Claim 20 depends directly from claim 13 and recites subject matter similar to claim 8. *Id.* at 12:40–49.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 8 and 20. *See* Pet. 36–40, 46–47; Ex. 1003 ¶¶ 56–60.

In particular, Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach limitation [8a] and claim 20’s corresponding limitation, i.e., “[20a] send a request to the testing service provider to receive a resource file respective of the URL.” *See* Pet. 36–37; Ex. 1003 ¶¶ 56–57. First, Petitioner asserts that Seolas discloses the following:

⁵ We use the same numbers and letters that Petitioner uses to identify the claim limitations.

- (1) “[w]hen a web browser prepares a web page with an embedded tracking pixel” (a resource file) “for display, the web browser sends a request to the server where the tracking pixel resides”; and
- (2) “when processing a page with tracking pixels, rendering system 175 can send a request to the server where the tracking pixel is located” (a request to receive a resource file).

Pet. 36–37 (alteration by Petitioner) (emphases omitted) (quoting Ex. 1005, 7:60–65); *see* Ex. 1003 ¶ 56. Second, Petitioner asserts that Krishnamoorthy discloses “that a mechanism similar to the tracking pixel described in Seolas can be used to send ‘multivariate test parameters’ in a request to the entity administering the multivariate test (a testing service provider) when the web page is rendered.” Pet. 37 (citing Ex. 1003 ¶ 57; Ex. 1006, 2:53–66, 10:31–33, 18:16–28, 20:3–22, code (57)); *see* Ex. 1003 ¶ 57.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach limitation [8b] and claim 20’s corresponding limitation, i.e., “[20b] capture a response sent from the testing service provider.” *See* Pet. 37–38; Ex. 1003 ¶¶ 58–59. First, Petitioner asserts that Krishnamoorthy discloses “that the entity administering the multivariate test (the testing service provider) responds to the request with ‘HTML or other program code’ including ‘multivariate test parameters.’” Pet. 37–38 (quoting Ex. 1006, 18:19–24); *see* Ex. 1003 ¶ 58. Second, Petitioner asserts that Seolas’s rendering system 175 “does not merely examine the source code for the web page” but also “renders the web page, including retrieving and analyzing dynamic content from other locations.” Pet. 38 (citing Ex. 1003 ¶ 59; Ex. 1005, 2:15–17, 7:58–65, 9:38–62); *see* Ex. 1003 ¶ 59.

Petitioner contends that Seolas teaches limitation [8c] and claim 20's corresponding limitation, i.e., "[20c] inspect the response to detect data related to at least a multivariate test." *See* Pet. 38–39; Ex. 1003 ¶ 59. Specifically, Petitioner asserts that Seolas's rendering system 175 "does not merely examine the source code for the web page" but also "renders the web page, including retrieving and analyzing dynamic content from other locations, such as the response from the testing service provider including the multivariate test parameters." Pet. 39 (citing Ex. 1003 ¶ 59; Ex. 1005, 2:15–17, 9:38–62; Ex. 1006, 2:53–66, 10:31–33, 18:16–28, 20:3–22, code (57)); *see* Ex. 1003 ¶ 59.

Petitioner contends that Krishnamoorthy teaches limitation [8d] and claim 20's corresponding limitation, i.e., "[20d] wherein the data included in the response specifies at least goals, tests, variations, and segments." *See* Pet. 39–40; Ex. 1003 ¶ 60. Specifically, Petitioner asserts that Krishnamoorthy discloses the following:

- (1) "multivariate test parameters" are "var[ied] . . . to ensure that variations of each desired web page component are tested";
- (2) the "multivariate test may include determining which multivariate test parameters are most effective at meeting objectives or goals associated with content on a web page";
- (3) the system may "associate or segment multivariate test parameters according to user actions"; and
- (4) the system may establish "an identification of [a] multivariate test that may correspond to a particular setting for each parameter associated with a multivariate test."

Pet. 40 (alterations by Petitioner) (emphases omitted) (quoting Ex. 1006, 10:20–26, 10:47–50, 10:52–53); *see* Ex. 1003 ¶ 60. Petitioner explains that “in the combination, the data in the response (the set of multivariate test parameters) specifies variations of the associated web page, goals associated with the content of the webpage, segments of the multivariate test parameters, and an identification of the multivariate test.” Pet. 40 (citing Ex. 1003 ¶ 60; Ex. 1006, 10:19–53); *see* Ex. 1003 ¶ 60.

Patent Owner makes no arguments specific to claims 8 and 20. *See, e.g.*, Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock’s testimony, we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 8 and 20. *See* Pet. 36–40, 46–47; Ex. 1003 ¶¶ 56–60.

11. DEPENDENT CLAIMS 9 AND 21

Claim 9 depends directly from claim 1 and recites “wherein the data related to the at least a multivariate test includes at least one of: a test identifier (ID), a test start time, a testing service provider, a website under testing, tested variations, a test goal, a value of the test goal, a selected webpage variation, and attributes of the webpage variant.” Ex. 1001, 11:14–19. Claim 21 depends directly from claim 13 and recites subject matter similar to claim 9. *Id.* at 12:50–56.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 9 and 21. *See* Pet. 40–41, 47; Ex. 1003 ¶ 61.

Specifically, Petitioner asserts that Krishnamoorthy discloses “multivariate test parameters” that may “include attributes of the particular

webpage variant represented by the present page,” such as the following attributes:

the location of an ad, the font size of content on the web page, the placement of a headline on the web page, the placement of an ad (for example, from left-to-right, or top-to-bottom), or any number of other attributes that may be associated with a web page or content on the web page.

Pet. 41 (quoting Ex. 1006, 10:11–16); *see* Ex. 1003 ¶ 61.

Petitioner asserts that Krishnamoorthy also discloses “that a ‘multivariate testing module 276 may also embed information into HTML, JavaScript, or other code associated with content on a web page’ such as ‘an identification of the publisher of the content’ (a testing service provider).”

Pet. 41 (quoting Ex. 1006, 10:31–35); *see* Ex. 1003 ¶ 61.

Patent Owner makes no arguments specific to claims 9 and 21. *See, e.g.*, Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock’s testimony, we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 9 and 21. *See* Pet. 40–41, 47; Ex. 1003 ¶ 61.

12. DEPENDENT CLAIMS 10 AND 22

Claim 10 depends directly from claim 9 and recites “wherein the at least a multivariate test further includes any one of: A/B tests, and split tests.” Ex. 1001, 11:20–22. Claim 22 depends directly from claim 21 and recites subject matter similar to claim 10. *Id.* at 12:57–59.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 10 and 22. *See* Pet. 41–42, 47; Ex. 1003 ¶ 62.

Specifically, Petitioner asserts that the '365 patent “does not provide any description of” A/B tests or split tests but “it was well-known in the art” that A/B tests and split tests “are just alternate names for ‘multivariate testing.’” Pet. 41–42 (citing Ex. 1003 ¶ 62; Ex. 1007 ¶ 5); *see* Ex. 1003 ¶ 62; Ex. 1007 ¶ 5. Petitioner also asserts that an ordinarily skilled artisan would have “understood that the techniques described in the Seolas-Krishnamoorthy combination would apply equally to multivariate tests, A/B tests, and split tests.” Pet. 42 (citing Ex. 1003 ¶ 62; Ex. 1007 ¶ 5); *see* Ex. 1003 ¶ 62; Ex. 1007 ¶ 5.

Patent Owner makes no arguments specific to claims 10 and 22. *See, e.g.*, Resp. 14–54, 62–67; Sur-reply 3–13, 17–25.

For the reasons stated by Petitioner and supported by Dr. Cooperstock’s testimony, we agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 10 and 22. *See* Pet. 41–42, 47; Ex. 1003 ¶ 62; Ex. 1007 ¶¶ 5, 63.

13. DEPENDENT CLAIMS 11 AND 23

Claim 11 depends directly from claim 1 and recites “wherein the system is further configured to: analyze the data saved in the database to provide various analytical measures about users’ preferences with respect to each of the plurality of websites.” Ex. 1001, 11:23–26. Claim 23 depends directly from claim 13 and recites subject matter similar to claim 11. *Id.* at 12:60–64.

Petitioner contends that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 11 and 23. *See* Pet. 42, 47; Reply 21; Ex. 1003 ¶ 63.

Specifically, Petitioner asserts that Krishnamoorthy discloses “‘attribut[ing] or associat[ing]’ user interactions ‘with a publisher’s web page content such that publishers may be made aware of the effectiveness of the placement, layout, orientation, etc., of their web page content based on how users reacted to such attributes.’” Pet. 42 (alterations by Petitioner) (quoting Ex. 1006, code (57)); Reply 21; *see* Ex. 1003 ¶ 63. Petitioner asserts that Krishnamoorthy also discloses “that ‘indications of user actions that are attributable to multivariate test parameters’ are stored in a database and ‘analyzed to determine the effectiveness of a content configuration according to the multivariate test parameters subject to the attribution.’” Pet. 42 (quoting Ex. 1006, 7:6–10; citing Ex. 1003 ¶ 63; Ex. 1006, 7:4–13, 13:8–11, 17:47–63); Reply 21; *see* Ex. 1003 ¶ 63.

Patent Owner disputes that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 11 and 23. *See* Resp. 62–67; Ex. 2005 ¶¶ 182–187. Specifically, Patent Owner asserts that Petitioner proposes “no modification” of Seolas’s rendering system 175. Resp. 63; *see id.* at 65; Sur-reply 23–24; Ex. 2005 ¶¶ 183, 186. Patent Owner asserts that in the proposed combination rendering system 175 would “send the multivariate test parameters along with the tracking pixel variables to a web server hosting the tracking pixel” before “any user activity reflecting a user preference could possibly occur with respect to the webpage.” Resp. 63–64; *see* Sur-reply 24; Ex. 2005 ¶¶ 184–185. Patent Owner also asserts that the “incorporation of the multivariate test parameters into the webpage source code in the manner proposed by Petitioner would not impact the appearance of the webpage or perform any function relating to webpage testing.” Resp. 64; *see* Sur-reply 24; Ex. 2005 ¶ 185.

Further, Patent Owner asserts that Seolas discloses no “attribution system” and that “[a]bsent attribution, the proposed combination cannot provide any data about any user preferences, let alone various analytical measures with respect to a plurality of websites.” Resp. 65; *see* Sur-reply 24; Ex. 2005 ¶ 186.

We agree with Petitioner that the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 11 and 23. *See* Pet. 42, 47; Reply 21; Ex. 1003 ¶ 63. Specifically, Krishnamoorthy discloses storing information in a database, including information about “multivariate test parameters” and other test information, e.g., publisher identification and device identification. Ex. 1006, 13:5–17, 17:51–58, Figs. 3, 5; *see* Ex. 1003 ¶ 63. Further, as discussed above, Krishnamoorthy describes techniques for “attributing or associating a user’s actions with respect to web page content to multivariate test parameters.” Ex. 1006, 2:24–26, code (57); *see id.* at 2:9–11; Ex. 1003 ¶¶ 18, 38, 63; Ex. 2005 ¶ 108; *supra* §§ III.D.3(e), III.D.3(g)(vi). Krishnamoorthy also discloses analyzing “user actions that are attributable to multivariate test parameters” to “determine the effectiveness of a content configuration according to the multivariate test parameters subject to the attribution.” Ex. 1006, 7:4–10; *see* Ex. 1003 ¶ 63. When implemented in the proposed Seolas-Krishnamoorthy combination, Krishnamoorthy’s analysis of “user actions that are attributable to multivariate test parameters” would have provided “analytical measures about users’ preferences” according to claims 11 and 23. *See* Ex. 1003 ¶ 63.

We disagree with Patent Owner’s assertion that Petitioner proposes “no modification” of Seolas’s rendering system 175. *See* Resp. 63; *see also id.* at 65; Sur-reply 23–24. As discussed above, Petitioner explains that

“in the combination, Krishnamoorthy’s features are implemented in combination with Seolas’ system just as they are in Krishnamoorthy’s.” *See* Pet. 15; Ex. 1003 ¶ 26; *supra* §§ III.D.3(e), III.D.3(g)(vi). As also discussed above, Krishnamoorthy discloses features that Seolas’s system lacks, such as techniques for “attributing or associating a user’s actions with respect to web page content to multivariate test parameters.” Ex. 1006, 2:24–26, code (57); *see id.* at 2:9–11; Ex. 1003 ¶¶ 18, 38; Ex. 2005 ¶ 108; *supra* § III.D.3(g)(vi).

Additionally, we disagree with Patent Owner’s contention that the “incorporation of the multivariate test parameters into the webpage source code in the manner proposed by Petitioner would not impact the appearance of the webpage or perform any function relating to webpage testing.” *See* Resp. 64; *see also* Sur-reply 24. For the reasons discussed above, in the proposed combination Seolas’s system would execute an embedded command with “multivariate test parameters” according to Krishnamoorthy. *See* Ex. 1003 ¶¶ 21–22; Ex. 1006, 2:53–66, 20:9–11; Ex. 1041 ¶ 10; *supra* § III.D.3(g)(vi). When executed, an embedded command with “multivariate test parameters” according to Krishnamoorthy “may cause the user device to contact another device,” e.g., “to request an ad” for “display to the user,” and thus impact the appearance of the web page. Ex. 1006, 2:62–66; *see id.* at 20:9–11; Ex. 1003 ¶¶ 19, 21, 24; Ex. 2005 ¶ 109; *supra* § III.D.3(g)(vi).

14. SUMMARY FOR THE DEPENDENT CLAIMS

For the reasons discussed above, the combined disclosures in Seolas and Krishnamoorthy teach the subject matter of claims 2–5, 7–11, 14–17, and 19–23. *See supra* §§ III.D.5–III.D.13. Moreover, an ordinarily skilled artisan would have been motivated to combine the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes and would have had a

reasonable expectation of success. *See supra* § III.D.3(g)(vi). Hence, Petitioner has shown by a preponderance of the evidence that claims 2–5, 7–11, 14–17, and 19–23 are unpatentable under § 103 as obvious over Seolas and Krishnamoorthy.

*E. Alleged Obviousness over Seolas,
Krishnamoorthy, and Jain: Claims 6 and 18*

Petitioner contends that claims 6 and 18 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, and Jain. *See* Pet. 2, 47–54. Above, we provided overviews of Seolas and Krishnamoorthy. *See supra* §§ III.D.1–III.D.2. Below, we provide an overview of Jain, and then we consider the obviousness issues raised by the parties. For the reasons explained below, we disagree with Petitioner that claims 6 and 18 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, and Jain.

1. OVERVIEW OF JAIN (EXHIBIT 1010)

Jain is a U.S. patent titled “Near-Duplicate Document Detection for Web Crawling,” filed on March 31, 2005, and issued on March 20, 2012. Ex. 1010, codes (22), (45), (54). Jain states that the invention “relate[s] generally to information retrieval and, more particularly, to the detection and processing of near-duplicate documents when crawling a network.” *Id.* at 1:7–10; *see id.* at 3:18–50.

Jain explains that “web-based information retrieval systems use web crawlers to identify information on the web.” Ex. 1010, 1:13–15. But a “problem that web crawlers face is how to handle near-duplicate content on the web.” *Id.* at 1:24–25. Jain also explains that “[b]ecause a near-duplicate document typically includes near-duplicate links, it may be beneficial for a web crawler to ignore the links in a near-duplicate document so as not to

waste computer, storage, and/or network resources.” *Id.* at 1:56–59; *see id.* at 3:33–35. To avoid “wasting resources” and “make web crawling more efficient,” Jain discloses techniques for detecting and processing “near-duplicate documents when crawling a network.” *See, e.g., id.* at 1:8–10, 1:63–2:35, 3:33–4:12, Figs. 1A–1B.

Specifically, Jain discloses a system that generates a “hash value” or “fingerprint” for a fetched document, such as a web page, encountered during the crawling process. Ex. 1010, 1:63–64, 3:25–26, 3:41–44, code (57). The system compares the hash value for a newly fetched document “with a set of stored hash values” for previously fetched documents. *Id.* at 1:64–2:1, 3:46–47, 5:53–57. If the hash value for the new document is “substantially similar” to a stored hash value, the system identifies the new document “as a near-duplicate of another document.” *Id.* at 2:1–6, 3:47–50, 5:55–57. Jain explains that a near-duplicate document “may be discarded and/or the outgoing links of the document may be ignored and not crawled.” *Id.* at 3:47–50, 5:57–60; *see id.* at 1:56–59, 3:51–67, Fig. 1A.

Jain notes that “a ‘near-duplicate’ document may refer to a document whose content is an exact duplicate, a substantial duplicate, or similar to the content of another document.” Ex. 1010, 3:35–38.

2. DIFFERENCES BETWEEN THE CLAIMED INVENTION AND THE PRIOR ART

Claim 6 reads as follows (with numbers and letters added for reference purposes)⁶:

⁶ We use the same numbers and letters that Petitioner uses to identify the claim limitations.

6. The method of claim 5, further comprising:

[6a] generating a unique sample for each page view by removing unique elements included in each page view;

[6b] checking if the unique samples are generated in a sequential order;

[6c] determining that the at least a multivariate test is not performed, when the unique samples are generated in a sequential order; and

[6d] computing a frequency of occurrence of each of the unique samples, when the at least a multivariate test is performed.

Ex. 1001, 10:57–67. Claim 18 depends indirectly from claim 13 and recites subject matter similar to claim 6. *Id.* at 12:23–34.

(a) Limitations [6a] and [18a]

Petitioner contends that the combined disclosures in Seolas and Jain teach limitation [6a] and claim 18’s corresponding limitation, i.e., “[18a] generate a unique sample for each page view by removing unique elements included in each page view.” *See* Pet. 50–51, 53; Reply 20; Ex. 1003 ¶¶ 71–73; Ex. 1041 ¶ 34. First, Petitioner asserts that Seolas discloses “that the ‘rendering system 175 can . . . perform . . . audits of website health on a . . . scheduled basis (every few minutes, hours, or days, etc.).” Pet. 50 (alterations by Petitioner) (quoting Ex. 1005, 15:17–19); *see* Ex. 1003 ¶ 71. According to Petitioner, the “audits involve retrieving the same web page multiple times according to the schedule to create a sample including multiple page views.” Pet. 50–51; *see* Ex. 1003 ¶ 71.

Second, Petitioner asserts that Jain discloses “techniques for ‘the detection and processing of near-duplicate documents when crawling a

network.” Pet. 51 (quoting Ex. 1010, 1:8–10); *see* Ex. 1003 ¶ 72.

According to Petitioner, Jain’s techniques include the following:

- (1) “generating a hash value for a fetched document” (e.g., a web page) encountered during the crawling process;
- (2) identifying a newly fetched document as a near duplicate of a previously fetched document if the hash values of the two documents are “substantially similar”; and
- (3) ignoring near-duplicate documents “so as not to waste computer, storage, and/or network resources.”

Pet. 51 (quoting Ex. 1010, 1:58–59, 1:64); *see* Ex. 1003 ¶ 72.

Third, Petitioner asserts that “it would have been obvious” to an ordinarily skilled artisan to “utilize the techniques described in Jain to remove ‘near-duplicate’ page views from the sample, thereby producing a sample including only unique versions of the web page (i.e., a unique sample).” Pet. 51 (emphasis omitted); Reply 20; *see* Ex. 1003 ¶ 73; Ex. 1041 ¶ 34. Petitioner explains that the “near-duplicate” elements removed from the sample “would actually be ‘unique’ to the sample, as they would not match any other element in the sample.” Reply 20; *see* Ex. 1041 ¶ 34.

Patent Owner disputes that the combined disclosures in Seolas and Jain teach limitations [6a] and [18a]. *See* Resp. 55–57; Sur-reply 22; Ex. 2005 ¶¶ 164–168. Specifically, Patent Owner asserts that “[s]ince Seolas does not suggest any removal from any asserted sample, Petitioner proposes that Jain addresses this deficiency” and that “Jain does not address this deficiency.” Resp. 55; *see* Ex. 2005 ¶¶ 165–166. Patent Owner also asserts that “Jain teaches removing (i.e., ignoring) entire near-duplicate webpages,” whereas “these claim limitations require removing unique

elements included in a plurality of page views to generate a unique sample for the page view.” Resp. 56 (emphases omitted); *see* Ex. 2005 ¶¶ 166–167.

Additionally, Patent Owner contends that “Petitioner nowhere asserts that introducing Jain into its proposed Seolas/Krishnamoorthy combination would remove ‘unique elements included in each page view,’ so there is no support in the Petition that this claim limitation is met.” Resp. 56; *see* Ex. 2005 ¶ 167. Patent Owner also contends that “by removing entire near-duplicate webpages in Petitioner’s proposed combination, Petitioner would read out the ‘unique elements included in each page view’ limitation.” Resp. 56–57; *see* Ex. 2005 ¶ 167.

The respective arguments present a dispute about the meaning of the phrase “removing unique elements included in each page view” in claims 6 and 18. *See* Pet. 50–51; Resp. 55–57; Reply 20; Sur-reply 22; Tr. 67:13–20. Yet neither party acknowledges that claim-construction dispute or provides a proposed construction for the disputed phrase. Because Petitioner has not shown by a preponderance of the evidence that the references teach other limitations in claims 6 and 18, we need not resolve that claim-construction dispute or decide whether the references teach limitations [6a] and [18a]. *See infra* §§ III.E.2(b)–III.E.2(d).

(b) Limitations [6b] and [18b]

Petitioner contends that Seolas teaches limitation [6b] and claim 18’s corresponding limitation, i.e., “[18b] check if the unique samples are generated in a sequential order.” *See* Pet. 51–53; Reply 20–21; Ex. 1003 ¶ 74; Ex. 1041 ¶ 35. Specifically, Petitioner asserts that Seolas discloses “that the ‘rendering system 175 can . . . perform . . . audits of website health on a . . . scheduled basis (every few minutes, hours, or days, etc.).” Pet.

51–52 (alterations by Petitioner) (quoting Ex. 1005, 15:17–19); *see* Ex. 1003 ¶ 74. According to Petitioner, the “rendering system 175, thus, retrieves the samples of the web pages according to a schedule (in a sequential order).” Pet. 52; *see* Reply 20–21; Ex. 1003 ¶ 74; Ex. 1041 ¶ 35.

Patent Owner disputes that Seolas teaches limitations [6b] and [18b]. *See* Resp. 57–58; Sur-reply 23; Ex. 2005 ¶¶ 169–171. Specifically, Patent Owner asserts that “[r]etrieving webpages according to a schedule as taught by Seolas does not disclose checking the webpages for anything” or “that the webpages that are retrieved according to the schedule are unique samples.” Resp. 58 (emphasis omitted); *see* Ex. 2005 ¶ 170. Patent Owner also asserts that “[c]hecking if unique samples are generated in a sequential order requires some comparison of two or more page views, which is neither disclosed nor suggested by” Seolas, Krishnamoorthy, or Jain. Resp. 58; *see* Sur-reply 23; Ex. 2005 ¶ 170.

We disagree with Petitioner that Seolas teaches limitations [6b] and [18b]. *See* Pet. 51–53; Reply 20–21. In the portions of Seolas cited by Petitioner, Seolas does not disclose “checking [or check] if the unique samples are generated in a sequential order” as required by limitations [6b] and [18b]. Ex. 1005, 15:17–19; *see* Ex. 2005 ¶¶ 170, 173; Pet. 51–52 (citing Ex. 1005, 15:17–19). As Patent Owner asserts, “[r]etrieving webpages according to a schedule as taught by Seolas does not disclose checking the webpages for anything,” such as generation “in a sequential order” as required by limitations [6b] and [18b]. *See* Ex. 1005, 15:7–19; Ex. 2005 ¶ 170; Resp. 58.

(c) Limitations [6c] and [18c]

Petitioner contends that Seolas teaches limitation [6c] and claim 18's corresponding limitation, i.e., "[18c] determine that the at least a multivariate test is not performed, when the unique samples are generated in a sequential order." *See* Pet. 52–53; Ex. 1003 ¶ 75. Specifically, Petitioner asserts that Seolas discloses that "the rendering system 175 can 'execute any scripts embedded in or linked to each web page 140 to identify if such code executed at all, and/or if the code executed to provide expected page names, or page descriptions, or the like.'" Pet. 52 (quoting Ex. 1005, 11:37–40); *see* Ex. 1003 ¶ 75. Petitioner asserts that "the rendering system 175 can also identify whether embedded code is 'present' in the retrieved web page." Pet. 52 (citing Ex. 1005, 15:23–27); *see* Ex. 1003 ¶ 75. Petitioner also asserts that in "the case of embedded multivariate testing code, the code not being present in the web page or not executing would indicate that the multivariate test was not performed in that particular sample of the web page." Pet. 52 (citing Ex. 1003 ¶ 75; Ex. 1005, 11:36–39, 12:65–66; Ex. 1006, 7:47–8:25); *see* Ex. 1003 ¶ 75.

Patent Owner disputes that Seolas teaches limitations [6c] and [18c]. *See* Resp. 59–61; Ex. 2005 ¶¶ 172–176. Specifically, Patent Owner asserts that "Seolas does not teach checking if unique samples are generated in a sequential order" and, therefore, "inherently cannot make any determination based on the outcome of such checking, let alone a determination that a multivariate test is not performed." Resp. 59–60; *see* Ex. 2005 ¶ 173. Patent Owner asserts that "Seolas does not teach that the scripts are executed to determine whether a multivariate test is not performed when unique samples are generated in a sequential order." Resp. 60; *see* Ex. 2005 ¶ 174.

Patent Owner further asserts that the “proposed embedding of multivariate testing parameter code in Seolas as suggested by Petitioner is irrelevant to any unique samples or sequential order.” Resp. 61; *see* Ex. 2005 ¶ 176.

We disagree with Petitioner that Seolas teaches limitations [6c] and [18c]. *See* Pet. 52–53. Because Seolas does not disclose “checking [or check] if the unique samples are generated in a sequential order,” Seolas does not disclose a determination made “when the unique samples are generated in a sequential order” as required by limitations [6c] and [18c]. *See* Ex. 1005, 11:36–39, 12:65–66, 15:7–27; Ex. 2005 ¶¶ 170, 173; *supra* § III.E.2(b).

(d) Limitations [6d] and [18d]

Petitioner contends that Seolas teaches limitation [6d] and claim 18’s corresponding limitation, i.e., “[18d] compute a frequency of occurrence of each of the unique samples, when the at least a multivariate test is performed.” *See* Pet. 52–54; Ex. 1003 ¶ 76. Specifically, Petitioner asserts that Seolas discloses “that the rendering system 175 ‘display[s] analytics scores such as 80% or 90%, or even provide[s] letter grades’ indicating the frequency with which a particular web page loads completely, including the presence and successful execution of embedded web page code (e.g., multivariate testing code).” Pet. 52–53 (first alteration by Petitioner) (quoting Ex. 1005, 13:8–9); *see* Ex. 1003 ¶ 76. According to Petitioner, the “presence and/or successful execution of the embedded multivariate testing code indicates that a multivariate test was performed for that page view, and thus, in the combination, analytics scores represent a frequency of occurrence of retrieved web pages (unique samples) on which a multivariate test was performed.” Pet. 53; *see* Ex. 1003 ¶ 76.

Patent Owner disputes that Seolas teaches limitations [6d] and [18d]. *See* Resp. 61–62; Ex. 2005 ¶¶ 177–181. Specifically, Patent Owner asserts that Seolas’s analytics scores “do not have anything to do with any frequency as Petitioner suggests” since the analytics scores “relate to various errors, not unique samples.” Resp. 62 (citing Ex. 1005, 12:40–13:12); *see* Ex. 2005 ¶ 179.

We disagree with Petitioner that Seolas teaches limitations [6d] and [18d]. *See* Pet. 52–54. Seolas’s analytics scores do not indicate “a frequency of occurrence” of a unique sample as required by limitations [6d] and [18d]. *See* Ex. 2005 ¶ 179. Instead, the analytics scores indicate how well a web page operates. *See* Ex. 1005, 12:40–13:12, 15:19–27, Fig. 4; Ex. 2005 ¶ 179. For instance, the analytics scores may indicate the following:

- (1) whether “the analytics code expected to be found . . . could be found”;
- (2) whether execution of third-party objects is “inconsistent with standards or goals for the web page”;
- (3) whether “certain objects, such as metatags, are positioned, formatted, or written in a sub-optimal way”; and
- (4) whether “code in (or linked to) the given web page does not execute with the optimal result.”

Ex. 1005, 12:42–44, 12:63–13:3; *see id.* at 15:19–27.

3. ALLEGED REASONS FOR COMBINING THE TEACHINGS OF THE REFERENCES

Petitioner explains that in the proposed combination, “the system of Seolas-Krishnamoorthy is modified such that the rendering system 175 identifies and discards near-duplicate pages, according to the teachings of

Jain, when creating a sample of page views as part of its website health audit process.” Pet. 48 (citing Ex. 1003 ¶ 66; Ex. 1005, 15:17–19; Ex. 1010, 1:8–10, 1:58–2:6); *see* Ex. 1003 ¶ 66.

Petitioner identifies reasons that would have prompted an ordinarily skilled artisan to combine Jain’s teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Pet. 48–50.

Dr. Cooperstock’s testimony supports Petitioner’s positions. *See* Ex. 1003 ¶¶ 67–70.

Patent Owner disputes that an ordinarily skilled artisan would have been motivated to combine Jain’s teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Resp. 40–42.

Mr. Schmandt’s testimony supports Patent Owner’s positions. *See* Ex. 2005 ¶¶ 136–139.

Because Petitioner has not shown by a preponderance of the evidence that Seolas, Krishnamoorthy, and Jain teach every limitation in claims 6 and 18, we need not decide whether an ordinarily skilled artisan would have been motivated to combine Jain’s teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See supra* §§ III.E.2(b)–III.E.2(d).

4. CONCLUSION

For the reasons discussed above, Petitioner fails to show that Seolas, Krishnamoorthy, and Jain teach limitations [6b], [6c], [6d], [18b], [18c], and [18d]. *See supra* §§ III.E.2(b)–III.E.2(d). And due to that failure, Petitioner fails show by a preponderance of the evidence that claims 6 and 18 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, and Jain.

*F. Alleged Obviousness over Seolas, Krishnamoorthy,
and Paduroiu: Claims 1–5, 7–17, and 19–23*

Petitioner contends that claims 1–5, 7–17, and 19–23 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, and Paduroiu. *See* Pet. 2, 54–65. Petitioner presents this ground to “augment” the proposed Seolas-Krishnamoorthy combination and address “a construction of the term ‘crawling’ (recited in independent claims 1, 12 and 13) that Patent Owner may advance.” *Id.* at 54. Above, we provided overviews of Seolas and Krishnamoorthy. *See supra* §§ III.D.1–III.D.2. Below, we provide an overview of Paduroiu, and then we consider the obviousness issues raised by the parties. For the reasons explained below, we agree with Petitioner that claims 1–5, 7–17, and 19–23 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, and Paduroiu.

1. OVERVIEW OF PADUROIU (EXHIBIT 1008)

Paduroiu is a U.S. patent application publication titled “Configurable Web Crawler,” filed on April 11, 2011, and published on October 11, 2012. Ex. 1008, codes (22), (43), (54). Paduroiu identifies “a mechanism for allowing a user to configure the speed and parallelism of a crawl to accommodate various levels of crawl” as desirable. *Id.* ¶ 12. Paduroiu states that the invention concerns a configurable web crawler that allows a user to specify a crawl configuration “comprising one or more of thread throttling rules, domain restriction rules, and crawling rules.” *Id.* ¶¶ 20–23, code (57).

Paduroiu's Figure 2 (reproduced below) depicts a configurable web crawler:

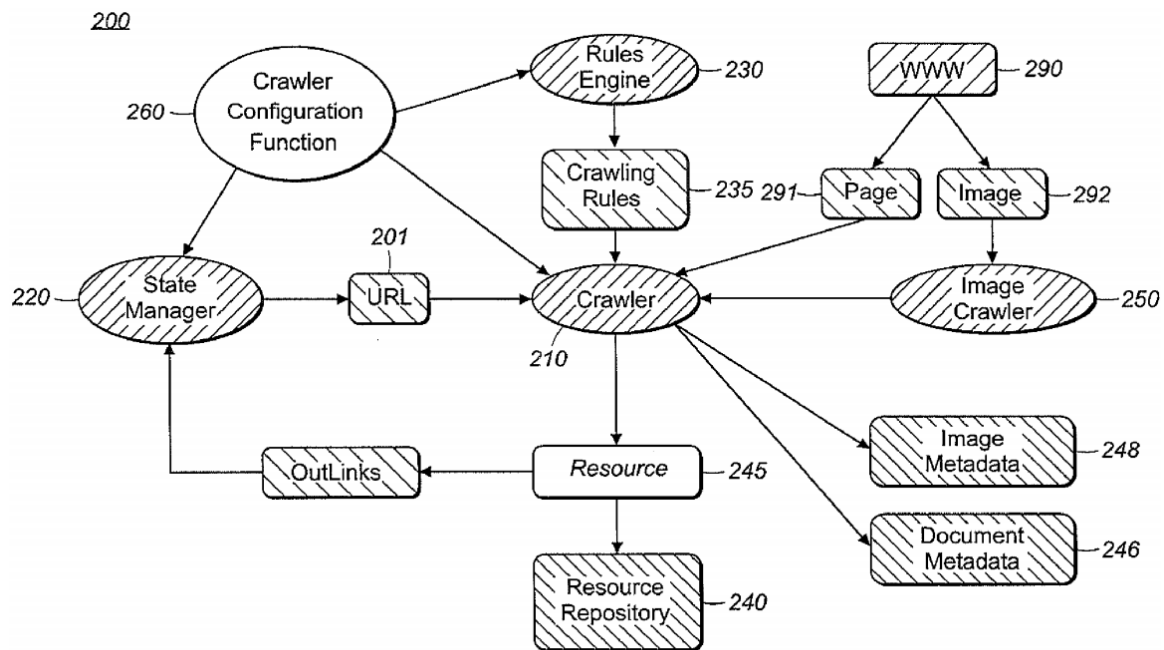


FIG. 2

Figure 2 is a block diagram of Crawler system 200 including Crawler engine 210 that “crawls a portion of a web system, such as the World Wide Web.” Ex. 1008 ¶¶ 15, 27, Fig. 2. “Crawler engine 210 crawls the Web starting with the input URL(s) 201 and fetches resources 245,” such as “text documents (e.g., web page HTML documents, ASPX forms), image documents, or other types of documents renderable by a browser.” *Id.* ¶ 28. Crawler Configuration Function 260 provides “a user interface allowing a user (e.g., a site administrator) to enter one or more URLs 201 to be crawled.” *Id.* ¶ 31; *see id.* ¶ 32.

Crawler Configuration Function 260 permits a user to “select thread throttling options.” Ex. 1008 ¶¶ 31, 34. Thread throttling options include the number of individual page crawler threads used in parallel to fetch web pages because “spawning multiple individual threads” makes “the best use

of available computing resources and memory.” *Id.* ¶¶ 33–34, 36; *see id.* ¶¶ 10–12, 38, 71. Thread throttling options also include the page pause time for a particular thread to wait between fetching web pages. *Id.* ¶¶ 35, 71.

Crawler Configuration Function 260 permits a user to specify “domain restrictions and/or page blacklists.” Ex. 1008 ¶ 31. Domain restrictions prevent “Crawler engine 210 from crawling more than it should” by listing “all domains to be included in a crawl rather than the millions of domains that are to be excluded from the crawl.” *Id.* ¶¶ 39–40. Page blacklists “exclude certain pages 291 on the crawled website from ever being visited.” *Id.* ¶ 41.

Crawler Configuration Function 260 permits a user to “define crawling rules.” Ex. 1008 ¶¶ 31, 44. Crawling rules “specify crawling behavior,” such as “Whether to Follow Links,” “Excluded Pages (add/remove),” and “Accepted Domains (add/remove).” *Id.* ¶¶ 45–54.

Crawler system 200 “begins by initializing the Crawler system State Manager 220 (and any other system services).” Ex. 1008 ¶ 71, Fig. 3.

Crawler system 200 receives:

- (1) “the configuration for the crawl from the Crawler Configuration Function 220”;
- (2) “the URL seed(s) from which to begin the crawl”;
- (3) “the search depth (how many links deep to search)”;
- (4) “any thread throttling information for the crawl.”

Id. ¶ 71.

After receiving this information, Crawler system 200 spawns page crawler threads according to the thread throttling information for the crawl. Ex. 1008 ¶ 72, Fig. 3. The page crawler threads “fetch and process

resources, depositing, where valid, the resources 245 and/or associated information into the resource repository 240.” *Id.* ¶ 72. “The page crawler threads also process the page resource to extract and send outgoing links to the State Manager 220 for addition to the crawl.” *Id.*

State Manager 220 “monitors the current state, including current crawl depth and processed and unprocessed URLs in the crawl.” Ex. 1008 ¶ 73, Fig. 3. “Outgoing links received by the page crawling threads are added to a queue of unprocessed URLs for the next depth.” *Id.* ¶ 73. After State Manager 220 “determines that all URLs for the current depth have been processed,” State Manager 220 next “determines whether the specified crawling depth has been reached.” *Id.* ¶ 73, Fig. 3. If not, State Manager 220 “instructs the threads to crawl the next depth, processing URLs from the queue of unprocessed URLs for the next depth.” *Id.* ¶ 73, Fig. 3. “After the threads have crawled the specified number of levels, (i.e., the specified Crawling Depth for the crawl), the crawl is complete.” *Id.* ¶ 73.

2. DIFFERENCES BETWEEN THE CLAIMED INVENTION AND THE PRIOR ART

Petitioner asserts that “the Seolas-Krishnamoorthy-Paduroiu combination renders obvious” the following limitation in claim 1 and the corresponding limitations in claims 12 and 13: “[1a] crawling through a plurality of servers hosting the plurality of webpages.” *See* Pet. 58–60, 63–64; Ex. 1003 ¶¶ 83–84. In particular, Petitioner contends that “in the combination, Seolas teaches a ‘rendering system 175’ that ‘crawls’ a specified ‘website to generate a site map.’” Pet. 58 (emphasis omitted) (quoting Ex. 1005, 7:67–8:1); *see* Ex. 1003 ¶ 83. In addition, Petitioner contends that “in the combination, Paduroiu describes a technique for

‘crawling’ web pages starting at one or more ‘seed URLs.’” Pet. 59 (quoting Ex. 1008 ¶ 32); *see* Ex. 1003 ¶ 84. According to Petitioner, “Paduroiu describes that ‘[o]ne or more crawling threads . . . fetch and process resources’ (e.g., web pages) and ‘extract . . . outgoing links’ included in the pages ‘addition to the crawl’” and that the “outgoing links ‘are added to a queue of unprocessed URLs for the next depth.’” Pet. 58–60 (alterations by Petitioner) (quoting Ex. 1008 ¶¶ 72–73); *see* Ex. 1003 ¶ 84.

Further, Petitioner relies on Paduroiu for disclosing the following limitations in claim 2 and the corresponding limitations in claim 14: “[2a] filtering the URLs encountered during the crawling; [2b] saving a set of filtered URLs; and [2c] processing only the set of filtered URLs.” *See* Pet. 61–62, 64–65; Ex. 1003 ¶¶ 85–86. Specifically, Petitioner asserts that “Paduroiu describes a ‘page blacklist’ feature that ‘exclude[s] certain pages 291 on the crawled website from ever being visited’” and that this “‘page blacklist’ feature ‘is implemented using the unprocessed URL queue.’” Pet. 61 (alteration by Petitioner) (emphasis omitted) (quoting Ex. 1008 ¶ 41); *see* Ex. 1003 ¶ 85.

Then, Petitioner quotes the following explanation in Paduroiu’s paragraph 74:

A thread will continue to execute so long as there are unprocessed URL(s) to fetch from the unprocessed URL queue 201 (step 402). If there is at least one unprocessed URL, a given thread retrieves the next URL to crawl from the queue 201 of unprocessed URL(s) (step 404). The thread then determines if the retrieved URL was previously visited, invalid, or blacklisted (step 406). If so, the thread returns to fetching the next URL from the unprocessed URL queue (step 402).

Pet. 61 (emphasis omitted) (quoting Ex. 1008 ¶ 74); *see* Ex. 1003 ¶ 85.

Based on that explanation in *Paduroiu*, Petitioner contends that “*Paduroiu* teaches that only non-blacklisted (and valid) URLs are processed,” thus “skipping over” and “filtering” the blacklisted URLs. Pet. 61–62; *see* Ex. 1003 ¶¶ 85–86. To support its contention, Petitioner provides the highlighted excerpt from *Paduroiu*’s Figure 4 reproduced below (Pet. 62):

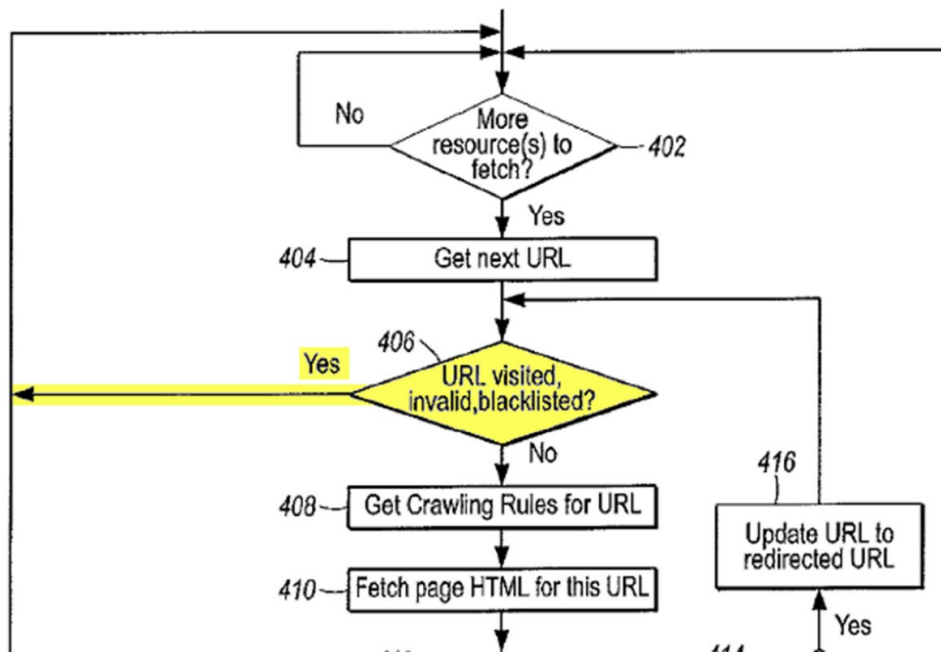


Figure 4 “is an operational flowchart of an exemplary process executed by a page crawler thread.” Ex. 1008 ¶ 74, Fig. 4; *see id.* ¶ 17. The above highlighted excerpt has yellow highlighting over (1) step 406 for “determin[ing] if the retrieved URL was previously visited, invalid, or blacklisted” and (2) a line for a “Yes” determination leading to the left from step 406. *See* Pet. 62; Ex. 1003 ¶ 85; Ex. 1008 ¶ 74.

Patent Owner makes no arguments specific to limitation [1a], the corresponding limitations in claims 12 and 13, or the limitations in claims 2 and 14. *See, e.g.*, Resp. 5, 23, 42–44.

For the reasons stated by Petitioner and supported by Dr. Cooperstock's testimony, we agree with Petitioner that the combined disclosures in Seolas and Paduroiu teach limitation [1a], the corresponding limitations in claims 12 and 13, and the limitations in claims 2 and 14. *See* Pet. 58–65; Ex. 1003 ¶¶ 83–86; Ex. 1005, 5:58–63, 6:25–37, Figs. 1–2; Ex. 1008 ¶¶ 10–12, 20–23, 27–36, 38–41, 44, 71–76, code (57), Figs. 2–4.

3. ALLEGED REASONS FOR COMBINING THE TEACHINGS OF THE REFERENCES

Petitioner explains that in the proposed combination, “the rendering system 175 of Seolas is modified to crawl the specified website using the configurable process of Paduroiu.” Pet. 56 (citing Ex. 1003 ¶ 79; Ex. 1005, 6:38–41, 7:67–8:1; Ex. 1008 ¶¶ 31, 71–76, code (57), Figs. 3–4); *see* Ex. 1003 ¶ 79; Ex. 1041 ¶ 25. Petitioner also explains that in the proposed combination, “the retrieved web pages are still analyzed according to the techniques described in Seolas and Krishnamoorthy.” Pet. 56; Reply 13; *see* Ex. 1003 ¶ 79; Ex. 1041 ¶ 25.

Petitioner identifies reasons that would have prompted an ordinarily skilled artisan to combine Paduroiu's teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Pet. 56–58. Dr. Cooperstock's testimony supports Petitioner's positions. *See* Ex. 1003 ¶¶ 79–82; Ex. 1041 ¶¶ 25–26.

Specifically, Petitioner asserts that an ordinarily skilled artisan would have been motivated to modify the Seolas-Krishnamoorthy system to “obtain the greater performance offered by the multithreaded crawling system of Paduroiu.” Pet. 56; *see* Ex. 1003 ¶ 80. Petitioner asserts that “[u]tilizing multiple threads to fetch pages as described in Paduroiu would

allow the system to ‘crawl multiple areas of web in parallel and to make best use of available CPU and memory.’” Pet. 57 (quoting Ex. 1008 ¶ 10); *see* Ex. 1003 ¶ 80. Then, Petitioner quotes Paduroiu’s disclosure that “[e]ach thread requests a single page, but since multiple threads are spawned, crawlers are much more aggressive at fetching content than a regular user, and can process that content at a much faster rate.” Pet. 57 (alteration by Petitioner) (quoting Ex. 1008 ¶ 10).

Petitioner also asserts that an ordinarily skilled artisan “would have had a reasonable expectation of success in making this modification, and would have reasonably expected to reap the benefits of the multithreaded web crawling techniques described in Paduroiu.” Pet. 57–58; *see* Ex. 1003 ¶ 82.

Patent Owner disputes that an ordinarily skilled artisan would have been motivated to combine Paduroiu’s teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Resp. 42–44; Sur-reply 16. Mr. Schmandt’s testimony supports Patent Owner’s positions. *See* Ex. 2005 ¶¶ 140–144.

In particular, Patent Owner contends that Paduroiu “teaches away from any monitoring or tracking of webpage appearance” because Paduroiu’s web crawlers:

- (1) “ignore JavaScript and CSS code, for example”;
- (2) “are not interested in the appearance of webpages”; and
- (3) “are instead only concerned with their contents.”

Resp. 42–44; *see id.* at 5, 23; Sur-reply 16; Ex. 2005 ¶¶ 140–141, 144.

Patent Owner also contends that “Paduroiu specifically teaches that, in the process of obtaining the contents of the URL, ‘a web request is created with

the URL as a target’ and ‘[n]o . . . JavaScript or cascading style sheets (CSS) are allowed.’” Resp. 43 (alterations by Patent Owner) (emphasis omitted) (quoting Ex. 1008 ¶ 75); *see* Ex. 2005 ¶ 141.

Further, Patent Owner asserts that the proposed combination would have been “inoperable” for “monitoring or tracking of webpage appearance” for the websites analyzed by the Seolas-Krishnamoorthy system because “Paduroiu disallows webpage code and functionality, such as JavaScript and CSS, that impact webpage presentation.” Resp. 43–44; *see id.* at 23; Sur-reply 16; Ex. 2005 ¶¶ 143–144.

Petitioner responds by asserting that Patent Owner “ignores the Petition’s description of the combination, which states that ‘the rendering system 175 of Seolas is modified to crawl the specified website using the configurable process of Paduroiu’ and ‘the retrieved web pages are still analyzed according to the techniques described in Seolas and Krishnamoorthy.’” Reply 13 (emphasis omitted) (quoting Pet. 56); *see* Ex. 1003 ¶ 79; Ex. 1041 ¶ 25. Petitioner also asserts that Patent Owner “completely fails to address the reasons to combine” the references stated in the Petition, such as “[u]tilizing multiple threads to fetch pages as described in Paduroiu would allow the system to ‘crawl multiple areas of web in parallel and to make best use of available CPU and memory.’” Reply 14 (quoting Pet. 57 (quoting Ex. 1008 ¶ 10)).

We agree with Petitioner that an ordinarily skilled artisan would have been motivated to combine Paduroiu’s teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes. *See* Pet. 56–58; Reply 13–14; Ex. 1003 ¶¶ 79–82; Ex. 1041 ¶¶ 25–26. Paduroiu explains that “web crawlers are typically multi-threaded in order to crawl multiple

areas of web in parallel and to make best use of available CPU and memory” because multiple threads “are much more aggressive at fetching content than a regular user, and can process that content at a much faster rate.” Ex. 1008 ¶ 10; *see id.* ¶ 33; Ex. 1003 ¶ 80; Ex. 1041 ¶ 26. Hence, an ordinarily skilled artisan would have been motivated to modify the Seolas-Krishnamoorthy system to use a configurable web crawler with multiple threads according to Paduroiu to “obtain the greater performance offered by the multithreaded crawling system of Paduroiu.” Ex. 1003 ¶¶ 79–80; *see* Ex. 1008 ¶¶ 10, 31–34, 71–76, Figs. 3–4; Ex. 1041 ¶ 26.

We also agree with Petitioner that an ordinarily skilled artisan “would have had a reasonable expectation of success in making this modification, and would have reasonably expected to reap the benefits of the multithreaded web crawling techniques described in Paduroiu.” Pet. 57–58; *see* Ex. 1003 ¶ 82.

As for Patent Owner’s criticism of the proposed combination, “[c]ombining the *teachings* of references does not involve an ability to combine their specific structures.” *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973) (emphasis by the court). As discussed above, Seolas discloses that rendering system 175 “crawls [a] website to generate a site map” and obtains “web page code for at least one of the one or more web pages” in the website. Ex. 1005, 7:67–8:1, 8:43–49, Fig. 1; *see id.* at 6:7–8, 6:39–41; Ex. 1003 ¶¶ 14–15, 17, 29, 32; *supra* §§ III.D.3(c)–III.D.3(d). Paduroiu discloses a configurable web crawler with multiple threads the “crawl multiple areas of web in parallel.” Ex. 1008 ¶¶ 10, 31–34; *see id.* ¶¶ 71–76, code (57), Figs. 3–4; Ex. 1003 ¶ 80; Ex. 1041 ¶ 26; Ex. 2005 ¶ 102. For

instance, Paduroiu states that “all page crawler threads execute the same process in parallel.” Ex. 1008 ¶ 74.

As Petitioner explains, in the proposed combination “the retrieved web pages are still analyzed according to the techniques described in Seolas and Krishnamoorthy.” *See* Ex. 1003 ¶ 79; Ex. 1041 ¶ 25; Pet. 56; Reply 13. An ordinarily skilled artisan would have been able to adapt Paduroiu’s web-crawling techniques to the Seolas-Krishnamoorthy system. *See* Ex. 1003 ¶¶ 79, 82. “The rationale of *KSR* does not support [the] theory that a person of ordinary skill can only perform combinations of a puzzle element A with a perfectly fitting puzzle element B.” *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1219 (Fed. Cir. 2016). That “it would take some creativity to carry out the combination does not defeat” an obviousness determination. *Facebook, Inc. v. Windy City Innovations, LLC*, 953 F.3d 1313, 1333 (Fed. Cir. 2020).

Additionally, we disagree with Patent Owner’s contention that Paduroiu “teaches away from any monitoring or tracking of webpage appearance.” *See* Resp. 5, 23, 44; Sur-reply 16. “A reference does not teach away . . . if it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.” *DePuy Spine*, 567 F.3d at 1327. Patent Owner has not shown how Paduroiu “criticize[s], discredit[s], or otherwise discourage[s]” modifying the Seolas-Krishnamoorthy system to use a configurable web crawler with multiple threads crawling in parallel. *See* Resp. 5, 23, 42–44; Sur-reply 16.

That “JavaScript or cascading style sheets (CSS)” in a web page may serve no purpose in Paduroiu’s system does not mean that such web page

code serves no purpose in the Seolas-Krishnamoorthy system. *See* Ex. 1005, 5:30–34, 6:4–8, 8:43–57, 13:67–14:2, Fig. 1; Ex. 1008 ¶ 75. As discussed above, Seolas discloses that “rendering system 175 sends one or more requests 125 to web server 150 for one or more web pages” and that web server 150 “responds with web page code for at least one of the one or more web pages.” Ex. 1005, 5:61–65, 8:40–49, Fig. 1; *see id.* at 5:66–6:8, 6:26–32; Ex. 1003 ¶¶ 15, 30, 32, 34; *supra* §§ III.D.3(c)–III.D.3(d). As also discussed above, in the proposed combination “the retrieved web pages are still analyzed according to the techniques described in Seolas and Krishnamoorthy.” *See* Ex. 1003 ¶ 79; Ex. 1041 ¶ 25; Pet. 56; Reply 13.

4. CONCLUSION

For the reasons discussed above, the combined disclosures in Seolas, Krishnamoorthy, and Paduroiu teach the subject matter of claims 1–5, 7–17, and 19–23, with Paduroiu disclosing certain limitations in claims 1, 2, and 12–14 and with Seolas and Krishnamoorthy disclosing the other limitations in those claims as well as the limitations in claims 3–5, 7–11, 15–17, and 19–23. *See supra* §§ III.D.3–III.D.4, III.D.6–III.D.13, III.F.2. Moreover, an ordinarily skilled artisan would have been motivated to combine Paduroiu’s teachings with the teachings of Seolas and Krishnamoorthy in the way Petitioner proposes and would have had a reasonable expectation of success. *See supra* § III.F.3. Hence, Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–17, and 19–23 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, and Paduroiu.

*G. Alleged Obviousness over Seolas,
Krishnamoorthy, Paduroiu, and Jain: Claims 6 and 18*

Petitioner contends that the combined disclosures in Seolas, Krishnamoorthy, Paduroiu, and Jain render the subject matter of claims 6 and 18 obvious “for the same reasons” that the combined disclosures in Seolas, Krishnamoorthy, and Jain render the claimed subject matter obvious. Pet. 65; *see id.* at 50–54; *supra* §§ III.E.2(a)–III.E.2(d).

Patent Owner contends that “Petitioner does not cite Paduroiu at all for any element of claims 6 and 18.” Resp. 62 (citing Pet. 50–54).

For the reasons discussed above, Petitioner fails to show that Seolas, Krishnamoorthy, and Jain teach limitations [6b], [6c], [6d], [18b], [18c], and [18d]. *See supra* §§ III.E.2(b)–III.E.2(d). Petitioner does not rely on Paduroiu to address the deficiencies in the other references for claims 6 and 18. *See* Pet. 50–54, 65; Ex. 1003 ¶¶ 71–76, 87. Hence, Petitioner fails show by a preponderance of the evidence that claims 6 and 18 are unpatentable under § 103 as obvious over Seolas, Krishnamoorthy, Paduroiu, and Jain.

IV. CONCLUSION

Based on the evidence presented with the Petition, the evidence introduced during the trial, and the parties’ respective arguments, Petitioner has shown by a preponderance of the evidence that claims 1–5, 7–17, and 19–23 are unpatentable under § 103 as obvious over either (1) Seolas and Krishnamoorthy or (2) Seolas, Krishnamoorthy, and Paduroiu. Petitioner has not shown by a preponderance of the evidence that claims 6 and 18 are

unpatentable under § 103 as obvious over either (1) Seolas, Krishnamoorthy, and Jain or (2) Seolas, Krishnamoorthy, Paduroiu, and Jain.⁷

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–5, 7–17, 19–23	103	Seolas, Krishnamoorthy	1–5, 7–17, 19–23	
6, 18	103	Seolas, Krishnamoorthy, Jain		6, 18
1–5, 7–17, 19–23	103	Seolas, Krishnamoorthy, Paduroiu	1–5, 7–17, 19–23	
6, 18	103	Seolas, Krishnamoorthy, Paduroiu, Jain		6, 18
Overall Outcome			1–5, 7–17, 19–23	6, 18

⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding after the issuance of this Final Written 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).

V. ORDER

Accordingly, it is

ORDERED that claims 1–5, 7–17, and 19–23 in the '365 patent are determined to be unpatentable;

ORDERED that claims 6 and 18 in the '365 patent are not determined to be unpatentable; and

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

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