

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FACEBOOK, INC., SAP AMERICA, INC., EBAY INC., EXPEDIA, INC.,
HOMEAWAY.COM, INC., SQUARESPACE, INC., WIX.COM, LTD.,
WIX.COM, INC., and GOOGLE LLC,¹
Petitioner,

v.

EXPRESS MOBILE, INC.,
Patent Owner.

IPR2021-01226
Patent 7,594,168 B2

Before JEFFREY S. SMITH, MITCHELL G. WEATHERLY, and
DANIEL J. GALLIGAN, *Administrative Patent Judges*.

GALLIGAN, *Administrative Patent Judge*.

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

¹ SAP America, Inc. filed a motion for joinder and a petition in Case IPR2022-00518. Expedia, Inc., eBay Inc., Homeaway.com, Inc., Squarespace, Inc., Wix.com, Ltd., and Wix.com, Inc. filed a motion for joinder and a petition in Case IPR2022-00572. Google LLC filed a motion for joinder and a petition in Case IPR2022-00597. All of these parties have been joined as petitioners in IPR2021-01226.

I. INTRODUCTION

In this *inter partes* review, Facebook, Inc., SAP America, Inc., Expedia, Inc., eBay Inc., Homeaway.com, Inc., Squarespace, Inc., Wix.com, Ltd., Wix.com, Inc., and Google LLC (collectively “Petitioner”) challenge the patentability of claims 1–4 and 6 of U.S. Patent No. 7,594,168 B2 (Ex. 1001, “the ’168 patent”), which is assigned to Express Mobile, Inc. (“Patent Owner”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision, issued pursuant to 35 U.S.C. § 318(a), addresses issues and arguments raised during the trial in this *inter partes* review. For the reasons discussed below, we determine that Petitioner has proven by a preponderance of the evidence that claims 1–4 and 6 of the ’168 patent are unpatentable. *See* 35 U.S.C. § 316(e) (2018) (“In an *inter partes* review instituted under this chapter, the petitioner shall have the burden of proving a proposition of unpatentability by a preponderance of the evidence.”).

A. Procedural History

Facebook, Inc. filed a Petition (Paper 1, “Pet.”) challenging claims 1–4 and 6 of the ’168 patent on the following grounds:

Claims Challenged	35 U.S.C. §	References/Basis
1–4, 6	103(a)	Reynolds, ² Lemay Web, ³ Lemay Java, ⁴ Perry, ⁵ Witkowski ⁶

² US 6,052,717, issued Apr. 18, 2000 (Ex. 1003).

³ L. Lemay, *Teach Yourself Web Publishing with HTML 3.2 in a Week*, 3rd ed. © 1996 (Ex. 1004).

⁴ L. Lemay and C. Perkins, *Teach Yourself JAVA in 21 Days*, © 1996 (Ex. 1005).

⁵ G. Perry, *C++ Programming 101*, © 1992 (Ex. 1006).

⁶ US 6,125,360, issued Sept. 26, 2000 (Ex. 1007).

Claims Challenged	35 U.S.C. §	References/Basis
1–4, 6	103(a)	Reynolds, Lemay Web, Lemay Java, Perry, Witkowski, Coombs ⁷

Pet. 10. Patent Owner filed a Preliminary Response. Paper 7. A trial was instituted on the asserted grounds of unpatentability. Paper 8 (“Inst. Dec.”) at 27–28.

During the trial, Patent Owner filed a Response (Paper 19, “PO Resp.”), Facebook filed a Reply (Paper 21, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 30, “PO Sur-reply”).

After institution, SAP America, Inc. filed a motion for joinder and a petition in IPR2022-00518. Expedia, Inc., eBay Inc., Homeaway.com, Inc., Squarespace, Inc., Wix.com, Ltd., and Wix.com, Inc. filed a motion for joinder and a petition in IPR2022-00572. Google LLC filed a motion for joinder and a petition in IPR2022-00597. We joined all of these parties as petitioners in this proceeding. Papers 24–26.

An oral hearing was held on October 13, 2022, a transcript of which appears in the record. Paper 41 (“Tr.”).

Petitioner relies on testimony from Dr. Vijay K. Madisetti. Exs. 1002 (Declaration), 1030 (Reply Declaration). Patent Owner relies on testimony from Dr. Sam Malek. Ex. 2005. The parties have entered in the record transcripts for depositions of these declarants. Exs. 2007 (Madisetti First Deposition), 2014 (Madisetti Second Deposition), 1031 (Malek Deposition).

⁷ J. Coombs et al., *Setting Up an Internet Site for Dummies*, 3rd ed. © 1998 (Ex. 1008).

Before institution, Patent Owner relied on testimony from Mr. Glenn Weadock (Ex. 2001), but Patent Owner has not relied on this testimony during the trial. *See* PO Resp.; PO Sur-reply.

B. Real Parties in Interest

The following are the identified real parties in interest on the petitioner side of the proceeding, accounting for all of the joined parties: Facebook, Inc., SAP SE, SAP America, Inc., SAP Labs, LLC, eBay Inc., Expedia, Inc., Homeaway.com, Inc., Expedia Group, Inc., VRBO Holdings, Inc., Squarespace, Inc., Wix.com, Ltd., Wix.com, Inc., and Google LLC. Pet. 1; IPR2022-00518, Paper 2 at 1; IPR2022-00572, Paper 1 at 1; IPR2022-00597, Paper 1 at 1.

Patent Owner identifies itself as the real party in interest. Paper 4 at 1.

C. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), the parties identify various related matters, including an *ex parte* reexamination of the '168 patent. Pet. 1–7; Paper 4, 1–10; *see* Reexamination Control No. 90/014,583. Also, we are concurrently issuing a final written decision in IPR2021-01224, involving U.S. Patent 6,546,397 B1 (“the '397 patent”), of which the '168 patent is a continuation.

D. The '168 Patent and Illustrative Claim

The '168 patent states that it “is directed to computing systems, and more particularly to methods and apparatus for building a web site using a browser-based build engine.” Ex. 1001, 1:13–15. Independent claim 1, from which claims 2–4 and 6 depend, is reproduced below with bracketed identifiers for the claim recitations.

1. A system for assembling a web site comprising:
 - [a] a server comprising a build engine configured to:
 - [b] accept user input to create a web site, the web site comprising a plurality of web pages, each web page comprising a plurality of objects,
 - [c] accept user input to associate a style with objects of the plurality of web pages, wherein each web page comprises at least one button object or at least one image object, and wherein the at least one button object or at least one image object is associated with a style that includes values defining transformations and time lines for the at least one button object or at least one image object; and
 - [d] wherein each web page is defined entirely by each of the plurality of objects comprising that web page and the style associated with the object,
 - [e] produce a database with a multidimensional array comprising the objects that comprise the web site including data defining, for each object, the object style, an object number, and an indication of the web page that each object is part of, and
 - [f] provide the database to a server accessible to web browser;
 - [g] wherein the database is produced such that a web browser with access to a runtime engine is configured to generate the web-site from the objects and style data extracted from the provided database.

II. ANALYSIS

A. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) any secondary considerations, if in evidence.⁸ *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Citing the testimony of its declarant, Dr. Madisetti, Petitioner contends that a

person of ordinary skill in the art as of December 1999 would have possessed at least a bachelor's degree in software engineering, computer science, computer engineering, or electrical engineering with at least two years of experience in web-based software application development, including experience in developing software and systems for storing, retrieving, and transmitting information (such as text and images) over a computer network such as the Internet (or equivalent degree or experience). (EX1002, ¶17.) A person could also have qualified as a person of ordinary skill in the art with some combination of (1) more formal education (such as a master's of science degree) and less technical experience or (2) less formal education and more technical or professional experience in the fields listed above. Acquired as part of the person's basic computer education and/or experience, as the '168 patent makes clear, a person of ordinary skill in the art would have had a working knowledge about various ways to implement websites and providing webpages to browsers upon request. (*Id.*)

Pet. 12–13.

⁸ Patent Owner does not present any objective evidence of nonobviousness (i.e., secondary considerations) as to any of the challenged claims.

Patent Owner's declarant, Dr. Malek, testifies that

a person of ordinary skill in the art of the patent-in-suit would include someone who had a bachelors or graduate degree in computer science, mathematics, engineering, or a similar discipline together with knowledge of software development and web design, together with approximately two or three years of experience in the field relating to web design and development. The required levels of educational and industry experience are on a sliding scale relative to each other. For example, a person of ordinary skill could potentially have no educational degree but more industry experience or, conversely, could have something higher than an undergraduate degree with fewer years of industry experience.

Ex. 2005 ¶ 16. This is the same skill level that Patent Owner presented before institution. Ex. 2001 ¶ 18.

The parties' assessments are substantially similar. Both call for a technical degree and some practical experience, but both also acknowledge that more experience can offset less formal education. Petitioner's proposed assessment, however, limits the technical degree to one of four disciplines. We are not persuaded that the educational requirements should be so restrictive, and we favor Patent Owner's assessment as it acknowledges that a person of ordinary skill in the art may have a degree in a "similar discipline" to computer science, math, or engineering. In addition, Petitioner's use of the language "at least" expands the ranges of education and experience indefinitely without an upper bound. The Institution Decision applied Patent Owner's proposed level of skill, and Petitioner did not further address this issue during trial. *See* Inst. Dec. 5–6.

Thus, consistent with the Institution Decision and for the reasons stated above, we apply Patent Owner's assessment. We also note that we

would reach the same determinations on Petitioner’s patentability challenges in §§ II.D–E below if we adopted Petitioner’s assessment.

C. Claim Construction

We interpret claim language using

the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b) (2021).

We address the constructions of “runtime engine” and “style” below, and we determine that no other terms require express construction. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

1. Runtime Engine

Claim 1 recites “wherein the database is produced such that a web browser with access to a runtime engine is configured to generate the web-site from the objects and style data extracted from the provided database.” The parties have provided several definitions of the term “runtime engine” from various district court cases. Pet. 16 (citing Exs. 1016, 1017, 1020, 1021); PO Resp. 18–19 (citing Exs. 1016, 1017, 1020, 1021). In three cases, the district court construed “runtime engine” to mean a “file that is executed at runtime that reads information from the database and generates commands to display a web page or website.” Ex. 1016 at 7–8; Ex. 1020 at 1; Ex. 1021 at 17. In another case, a court set

forth a similar construction as follows: a “file that is executed at runtime that facilitates the retrieval of information from the database and generates commands to display a web page or website.” Ex. 1017. The minor differences in wording have no impact in this proceeding.⁹ As discussed below in § II.D.2.f, Petitioner has shown that the asserted combination renders the subject matter of recitation 1g obvious under both constructions.

The parties’ dispute about “runtime engine” actually centers on a different term that is not recited in any claim of the ’168 patent, specifically “run time file.” Patent Owner acknowledges that “[t]he term ‘run time file’ does not itself appear in the ’168 patent’s challenged claims,” but, according to Patent Owner, these two terms “must be considered together as the definition of ‘run time engine’ is dependent upon the definition of ‘run time file.’” PO Resp. 17. In particular, Patent Owner notes that courts that have construed the term “at least one run time file,” which appears in claims of the related ’397 patent, as “one or more files, including a run time engine, that are downloaded or created when a browser is pointed to a web page or website.” PO Resp. 18 (quoting Exs. 1017, 1020, 1021). Patent Owner takes the position, therefore, that, because “run time engine” is included in the definition of “run time file,” “[t]his means that ‘run time engine’ incorporates at least the constructions of ‘run time file,’ along with any other constructions of the term ‘run time engine’ specifically.” PO Resp. 38 (citing Ex. 2005 ¶ 71).

Petitioner argues that “Patent Owner’s logic is entirely backwards” (Pet. Reply 12), and we agree. Under the district courts’ constructions for

⁹ Patent Owner indicated that the Exhibit 1017 construction was the same as the other three constructions (PO Resp. 18–19), which underscores that there is no meaningful difference for our purposes.

these terms (*see* PO Resp. 18–19), the definition of a “run time file” directly references and incorporates a “runtime engine,” but the reverse is not true. Patent Owner asserts that “Petitioner cannot credibly claim that a ‘runtime engine’ is not subject to the definition of ‘run time file’ when it admits a ‘runtime engine’ is part of a ‘run time file.’” PO Sur-reply 14 (citing Pet. Reply 13). Patent Owner is incorrect. In particular, Petitioner argues that the ’168 patent specification “describes the ‘runtime engine’ as merely one small piece of a larger run time file,” citing disclosures of run time files that include a runtime engine as one piece. Pet. Reply 13 (citing Ex. 1001, 5:49–53, 7:55–58, 8:21–22). The patentee chose to recite the smaller piece—the “runtime engine”—rather than a different term that includes the “runtime engine” and other things. Patent Owner cannot now credibly argue that the claim should be read to require a “run time file” when it chose not to recite that term in its claims.

We further note that the language that Patent Owner attempts to incorporate into the construction of “runtime engine” relates to the timing of when the “runtime engine” is “downloaded or created.” Specifically that it must be downloaded or created “when a browser is pointed to a web page or website.” PO Resp. 38. It is not clear how this timing fits into the overall system that is claimed. Claim 1 is directed to “[a] system for assembling a web site comprising: a server comprising a build engine configured to” perform certain operations, including to “produce a database” populated with certain data. The term “runtime engine” appears in a wherein clause stating that “the database is produced such that a web browser with access to a runtime engine is configured to generate the web-site from the objects and style data extracted from the provided database.” In this context it is not readily apparent how the temporal limitation Patent Owner seeks to impose

on “runtime engine” defines the claimed “build engine” that produces the database. If a “build engine” is configured to produce a database that has the required information and that database can be read by a file, putting a restriction on when that file is “downloaded or created” does not appear to limit the claimed “build engine.” We see nothing in the ’168 patent that explains how to produce a database such that it can only be read by a file that is “downloaded or created” at a particular time. Thus, Patent Owner’s additional temporal limitation on the “runtime engine” does not appear to limit the claimed system.

For “runtime engine,” we apply the construction given in three of the four district courts of a “file that is executed at runtime that reads information from the database and generates commands to display a web page or website.” Ex. 1016 at 7–8; Ex. 1020 at 1; Ex. 1021 at 17; *see also* PO Resp. 18–19. The other district court construction is the same except that it substitutes “facilitates retrieval of information” for “reads information.” Ex. 1017 (similar construction of “file that is executed at runtime that facilitates the retrieval of information from the database and generates commands to display a web page or website”). Because reading information from a database facilitates retrieval of information, there is no substantive difference between this construction and the other district court constructions for our purposes. Moreover, as explained below in § II.D.2.f, our conclusion of unpatentability would be the same if we included Patent Owner’s temporal limitation on when the runtime engine is “downloaded or created.”

2. *Style*

Claim 1 recites that the build engine is configured to

accept user input to associate a style with objects of the plurality of web pages, wherein each web page comprises at least one button object or at least one image object, and wherein the at least one button object or at least one image object is associated with a style that includes values defining transformations and time lines for the at least one button object or at least one image object.

In its Response, Patent Owner offers various definitions for the term “style.” Patent Owner asserts that a “style” is “a collection of attributes to be applied to objects on a page.” PO Resp. 4. Patent Owner also asserts that a “style” is “a collection of one or more settings that is defined separately from any single object but can be associated with one or more objects.” PO Resp. 12, 29. Still further, Patent Owner argues that “[t]he ’168 patent clearly describes styles as independent collections of one or more attributes which are either preset or modifiable and are applied to objects as a set by the authoring tool.” PO Resp. 30 (citing Ex. 1001, 31:57–32:18). In its Sur-reply, Patent Owner clarifies its contentions by selecting one of these proposed constructions, stating that it “defined ‘style’ as ‘a collection of one or more settings that is defined separately from any single object but can be associated with one or more objects.’” PO Sur-reply 3 (citing PO Resp. 29–30).

Petitioner takes issue with Patent Owner’s assertion that a style is “defined separately from any single object.” Pet. Reply 2–3. Petitioner, however, also asserts that this language does not distinguish the claims over its asserted combination of prior art. Pet. Reply 4–5. Because we agree with Petitioner that the asserted combination teaches “style” under Patent Owner’s proposed construction in any event, we need not resolve the claim construction dispute to render a decision on patentability.

*D. Obviousness over
Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski
(Claims 1–4, 6)*

Petitioner asserts that claims 1–4 and 6 are unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski. Pet. 10, 20–73. Patent Owner opposes. PO Resp. 12–43; PO Sur-reply 1–23.

1. Overview of the Prior Art

Reynolds discloses “techniques for creating and viewing material on the World Wide Web in the form of an interactive Web book.” Ex. 1003, 1:6–8. Reynolds explains that its interactive Web book (“ibook”) “is a self-extending, self-sustaining information-redistributing Web robot, which is resident on a data network such as the Internet or an intranet,” and that “[m]aterial in an ibook is preferably organized in the form of Web pages.” Ex. 1003, 1:27–30.

Lemay Web discloses information about Java animations. Ex. 1004, 88–91 (pp. 254–57).¹⁰ Petitioner presents evidence that Lemay Web was published before the December 2, 1999, filing date of the application to which the ’168 patent claims priority. See Ex. 1024 ¶¶ 55–62.

Lemay Java discloses information about Java threads and multithreading. Ex. 1005, 76 (p. 178). Petitioner presents evidence that Lemay Java was published before the December 2, 1999, filing date of the application to which the ’168 patent claims priority. See Ex. 1024 ¶¶ 48–54.

Perry discloses information about multidimensional arrays. Ex. 1006, 23 (p. 455). Petitioner presents evidence that Perry was published before the

¹⁰ We cite the exhibit page numbers followed parenthetically by a reference’s internal page numbers when they are different.

December 2, 1999, filing date of the application to which the '168 patent claims priority. *See* Ex. 1024 ¶¶ 63–69.

Witkowski is a U.S. Patent with a filing date of July 2, 1998. Ex. 1007, code (22). Witkowski relates to database systems. Ex. 1007, 1:15–17.

Petitioner asserts that “[e]ach reference cited in this Petition qualifies as prior art because each reference was either filed (in the case of patent references) or published long before the claimed December 1999 priority date of the '168 patent.” Pet. 20 (citing Ex. 1024 ¶¶ 40–69). Patent Owner does not challenge the prior art status of any of the applied references. Based on the filing dates of Reynolds and Witkowski and based on Petitioner’s evidence regarding the publication of Lemay Web, Lemay Java, and Perry, we determine that these references are prior art to the '168 patent.

2. Claim 1

a) Recitations 1a and 1b

Petitioner argues that Reynolds’s disclosure of assembling an ibook made up of web pages teaches “[a] system for assembling a web site,” as recited in the preamble of claim 1. Pet. 20–22 (citing Ex. 1003, code (57), 1:25–27, 1:30–31, 1:34–38, 7:57–67, 8:53–60, 11:24–40, Fig. 7; Ex. 1002 ¶ 65).¹¹

Petitioner argues that Reynolds’s ibook server 56 and ibook server application 64 correspond, respectively, to the “server” and the “build engine” in recitation 1a (“a server comprising a build engine”). Pet. 22–23 (citing Ex. 1003, 5:18–20, Fig. 3; Ex. 1002 ¶ 67).

¹¹ The parties emphasize reference names, claim recitations, and numerals designating elements in references. We omit such emphasis when quoting the parties’ arguments in this Decision.

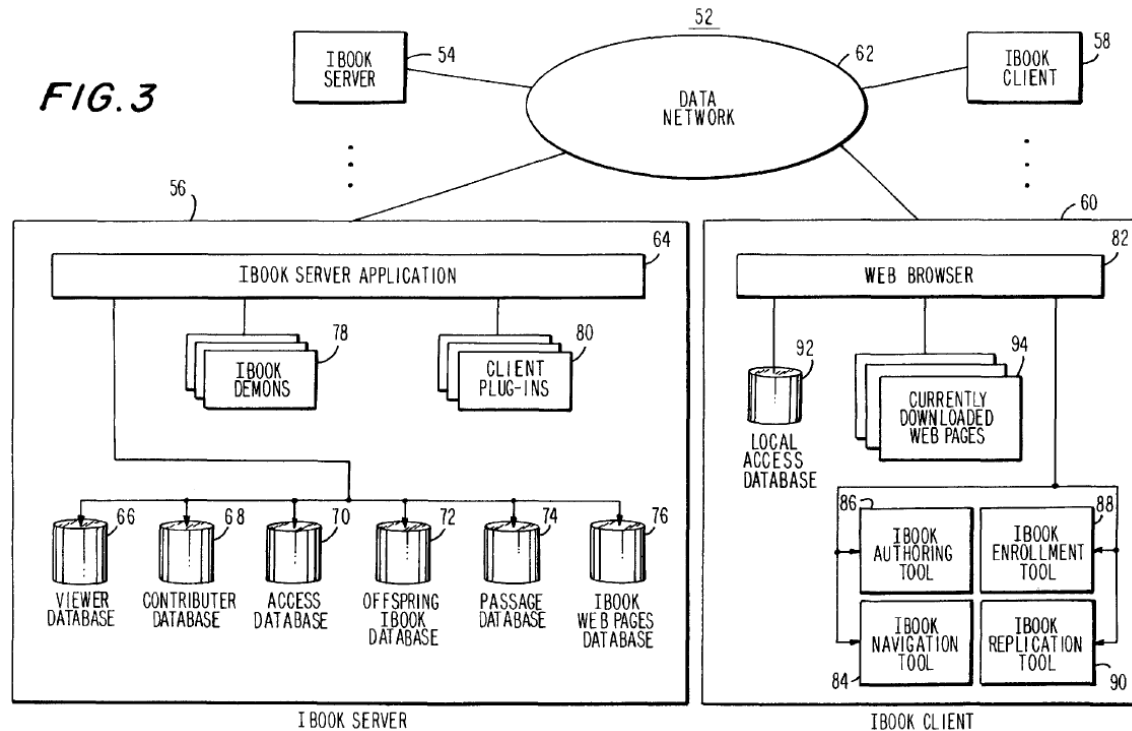
Claim 1 recites that the “build engine” is “configured to” perform several operations. The first operation is to “accept user input to create a web site, the web site comprising a plurality of web pages, each web page comprising a plurality of objects” (recitation 1b). Petitioner argues that Reynolds’s ibook, which is made up of web pages, is a “website” and that each web page of the ibook is made up of passages, i.e., “objects.”

Pet. 23–27 (citing Ex. 1003, 1:29–30, 1:34–38, 7:36–37, 7:57–67, 8:4–11, 9:52–54, 11:7–11, 11:24–40, 11:43–55, Fig. 7; Ex. 1002 ¶¶ 68–71).

Petitioner further argues that Reynolds’s authoring tool accepts user input to create the ibook. Pet. 27–30 (citing Ex. 1003, 5:21–23, 5:28–37, 7:2–5, 7:23–28, 7:37–39, 9:27–30, Figs. 3, 6; Ex. 1002 ¶¶ 73–75).

In addressing this ground of unpatentability, Patent Owner does not specifically dispute Petitioner’s contentions for the preamble of claim 1 and recitations 1a and 1b. *See* PO Resp. 20–43. In addressing Petitioner’s second ground, Patent Owner states that “Reynolds is not a ‘website’ building system” but, rather, “a system for creating and viewing ‘ibooks.’” PO Resp. 43. Our findings below address this argument.

Petitioner’s contentions and evidence, summarized above, are persuasive. Reynolds’s Figure 3 is reproduced below.



Reynolds’s Figure 3, reproduced above, is a “diagram of an interactive Web book 25 server and an interactive Web book client interconnected by a data network.” Ex. 1006, 2:24–26. Reynolds explains that “[i]book server application 64 directs the overall operation of ibook server 56.” Ex. 1006, 18–20, *cited in* Pet. 23. Figure 3 also shows ibook authoring tool 86, which a contributor uses “[t]o create or modify material in an ibook.” Ex. 1006, 7:2–3, *cited in* Pet. 28. Reynolds further discloses that, “during the creation of passages 152 authoring tool 86 and ibook server application 64 cause information to be stored in passage database 74 that identifies which Web page 138 contains each passage 152.” Ex. 1006, 9:27–30, *cited in* Pet. 28–29. Reynolds explains that “ibook server application 64 controls databases 66, 68, 70, 72, 74, and 76, in which various ibook information is stored.” Ex. 1006, 5:21–23, *cited in* Pet. 29. Thus, ibook server application 64 (the recited “build engine”) accepts user input to create ibooks via authoring tool 86.

Furthermore, Reynolds discloses that an ibook “is resident on a data network such as the Internet or an intranet” and that its material “is preferably organized in the form of Web pages.” Ex. 1006, 1:27–31, *cited in part in* Pet. 20.; *see also* Inst. Dec. 10 (citing Ex. 1003, 1:27–29). Reynolds also discloses that material within each web page is organized in “passages” (the recited “objects”). Ex. 1006, 1:34–38, *cited in* Pet. 24. Thus, an ibook is a “web site comprising a plurality of web pages,” each of which “compris[es] a plurality of objects,” as recited in claim 1. Therefore, notwithstanding Patent Owner’s assertion, directed to the second rather than the first ground, that “Reynolds is not a ‘website’ building system” (PO Resp. 43), we find that Reynolds teaches “[a] system for assembling a web site.”

Based on Petitioner’s persuasive argument and evidence, therefore, we find that Reynolds teaches the preamble of claim 1 and recitations 1a and 1b.

b) Recitation 1c

The second operation of the build engine is to accept user input to associate a style with objects of the plurality of web pages, wherein each web page comprises at least one button object or at least one image object, and wherein the at least one button object or at least one image object is associated with a style that includes values defining transformations and time lines for the at least one button object or at least one image object (recitation 1c). Petitioner relies on a combination of Reynolds and Lemay Web for this subject matter and additionally relies on the teachings of Lemay Java to address a particular interpretation of “time lines.” Pet. 30–40.

Petitioner notes that Reynolds discloses that passages of an ibook “can include not just text but also graphic images, animation sequences, and executable code modules.” Pet. 30 (citing Ex. 1003, 8:4–11, 9:52–54). Petitioner argues that Reynolds “contemplates that authoring tool 86 will have functionality for the user to place content on an ibook web page, but Reynolds does not further detail the specific user inputs provided through authoring tool 86.” Pet. 31 (citing Ex. 1002 ¶¶ 78–84). Petitioner relies on Lemay Web’s disclosure of placing an animated image on a web page to show specifying a style for a button object or an image object that is added to a web page. Pet. 31–35 (citing Ex. 1004, 88–90 (pp. 254–57), Fig. 9.10; Ex. 1002 ¶¶ 80, 83–84).

In particular, Petitioner argues that “Lemay Web discloses ‘objects of the plurality of web pages’ in the form of image animations that include both graphical images and executable code (i.e. the Java animation applet) to display the images in sequence.” Pet. 33 (citing Ex. 1002 ¶ 83). Petitioner argues that

Lemay Web further describes how to ‘accept user input to associate a style’ with such objects, including by entering HTML code with respect to the many different examples of attributes which define the objects’ visual appearance (e.g., width and height on the page, the sequence of the images, a “PAUSE” value indicating how long each image is displayed before advancing to the next image, and a “REPEAT” value indicating whether or not the image animation will occur once or cycle in a loop).

Pet. 33–34 (citing Ex. 1002 ¶ 83). According to Petitioner, therefore, “authoring tool 86 of Reynolds under the proposed combination would be adapted to accept user input to specify attributes that define the visual appearance of an object, such as the WIDTH, HEIGHT, STARTIMAGE,

ENDIMAGE, PAUSE, or REPEAT attributes associated with the animated image object in Lemay Web.” Pet. 34.

For the recited “values defining transformations and time lines for the at least one button object or at least one image object,” Petitioner contends that Lemay Web’s “<PARAM>” tags in HTML code define transformations and time lines of the object because they specify how the animated object changes from one state to the next as the animation progresses. Pet. 35–36 (citing Ex. 1002 ¶¶ 85–86); *see also* Pet. 36–37 (relying on Lemay Java to show time lines that are “independent” and “asynchronous”). Petitioner provides various reasons that it would have been obvious to combine the Java teachings of Lemay Web and Lemay Java with Reynolds, including that Reynolds discloses that its passages can be implemented as Java programs and that Lemay Web discloses pre-built Java animator applets that allow animation to be easily included in a web page. Pet. 38–40 (citing Ex. 1003, 8:7–11, 9:52–54, 9:56–58; Ex. 1004, 88 (p. 254); Ex. 1002 ¶¶ 90–91, 93).

Patent Owner argues that the proposed combination does not teach the claimed “style,” Patent Owner also disputes Petitioner’s rationale to combine. PO Resp. 28–33; PO Sur-reply 3–10. We address these issues below.

(1) Style

Patent Owner argues that Petitioner’s asserted combination of references does not teach the claimed “style” in recitation 1c. PO Resp. 29–30; PO Sur-reply 6–7. Patent Owner argues that the attributes identified by Petitioner as teaching the style—WIDTH, HEIGHT, STARTIMAGE, ENDMETHOD, PAUSE, and REPEAT—are not a “separable collection of one or more settings that can be applied to a particular object” but, instead, are

part of the object itself. PO Resp. 30 (citing Ex. 2005 ¶¶ 60–61). Patent Owner also argues that these attributes are, at best, “merely ‘values’ for an object” and that Petitioner does not distinguish between these values and the style even though these are distinct in the claim language. PO Resp. 30.

As to the alleged distinction between “values” and “style,” claim 1 recites “a style that includes values defining transformations and time lines for the at least one button object or at least one image object.” Thus, the “style” is defined, at least in part, by the recited “values.” *See* Inst. Dec. 13 (explaining that the claim requires a style that is defined partly by the values). Petitioner correctly notes that STARTIMAGE and ENDIMAGE specify the beginning and ending image in the animation, which, therefore, defines image transformations. Pet. 35. Lemay Web explains that “STARTIMAGE is the image number to start from” and that “ENDIMAGE, accordingly, is the number of the last image to use in the animation.” Ex. 1004, 90 (p. 256); *see* Pet. 33 (explaining STARTIMAGE and ENDIMAGE). Petitioner also correctly points out that “the ‘PAUSE’ tag specifies the amount of time between one image and the next” and, therefore, defines a time line for the animation. Pet. 35–36. Lemay Web explains that PAUSE “determines how many milliseconds the applet will wait between the images in the animation.” Ex. 1004, 90 (p. 256); *see* Pet. 33 (explaining PAUSE). Thus, we find that the values for these attributes in Lemay Web define, in part, the style, as required by claim 1.

As to Patent Owner’s argument that the attributes are part of the object itself and not separate (PO Resp. 30), we disagree. As discussed above, Petitioner argues that Lemay Web’s disclosure of “image animations that include both graphical images and executable code (*i.e.* the Java animation applet) to display the images in sequence” teaches the recited

“objects.” Pet. 33. Separately, Petitioner points to Lemay Web’s disclosure of “entering HTML code” for the attributes discussed above to “define the objects’ visual appearance” for teaching the object’s “style.” Pet. 33–34. Lemay Web shows the following exemplary HTML code for inserting an animation into a web page:

```
<APPLET CODE="Animator.class" WIDTH=100 HEIGHT=100>  
<PARAM NAME="STARTIMAGE" VALUE="1">  
<PARAM NAME="ENDIMAGE" VALUE="12">  
<PARAM NAME="PAUSE" VALUE="1000">  
<PARAM NAME="REPEAT" VALUE="TRUE">  
</APPLET>
```

Ex. 1004, 90 (p. 256); *see* Pet. 32 (discussing this HTML code). Petitioner asserts that the attributes are defined separately from the object because they are in an HTML file, which is stored separately from the file containing the object. Pet. Reply 5 (citing Ex. 1030 ¶ 28).

The evidence supports Petitioner’s explanation. For example, Lemay Web explains that, “[u]sing different <PARAM> tags, you can include different parameters to pass to the applet—and different applets will require different parameters.” Ex. 1004, 90 (p. 256). Thus, the settings selected by the programmer using the HTML code are passed to the applet. The HTML code, therefore, is not “an integral part of the object itself (i.e., the applet on the page),” as Dr. Malek testifies. *See* Ex. 2005 ¶ 62. Lemay Web also explains that “you can use pre-built Java applets on your pages to create animation effects without touching a line of Java code” by “download[ing] the Java applet to your system” and “includ[ing] a few lines of HTML on your page.” Ex. 1004, 88 (p. 254). This further shows that the Java applet “Animator.class” is a separate file from the HTML file that calls it to create the animation. Based on Lemay Web’s disclosure, we credit Dr. Madisetti’s

testimony that “Animator.class refers to the Java program (class file) that provides the animator functionality, and it is stored in a file that is separate from the HTML file that contains the <APPLET> tag.” Ex. 1030 ¶ 28. Furthermore, Lemay Web discloses that the image files that are displayed as the animation object are separate from the HTML. Ex. 1004, 88–89 (pp. 254–55) (explaining that, to “create animation,” you need a “set of image files,” “Sun’s Animator classes” including Animator.class, and an “HTML file that contains the Java applet”; also explaining that it is easiest to put “all the image files, all the class files, and your HTML file” in the same directory).

Patent Owner also argues that, “[w]ithout the APPLET tag block, there would be no applet.” PO Sur-reply 6. We disagree. Lemay Web discloses downloading an applet that will be loaded by a Java-enabled browser if the web page includes appropriate HTML code to invoke the applet. *See* Ex. 1004, 90 (p. 256) (“With all that in place, you can save and load up the HTML file into your favorite Java-enabled browser. The Animator applet will be loaded, and it in turn loads and plays all the images in sequence.”). Thus, the applet is independent of the applet tag block, even if the tag is required to invoke the applet in a web page.

Patent Owner further argues the Applet tag block is not defined separately from the object because “[t]he APPLET tag block only pertains to a single object—the specific applet being instantiated—and the PARAMs inside that tag block pertain only to that specific applet.” PO Sur-reply 6. We disagree with Patent Owner’s assertion because, according to its own proposed construction, a style—“a collection of one or more settings that is defined separately from any single object but can be associated with one or more objects”—can be associated with just one object. Therefore, a style

being associated with a single object does not preclude a finding that the style and object are defined separately. Furthermore, Lemay Web gives an example of how to insert a Java animation on a web page using images of a pocket watch, but Lemay Web's teachings are not limited to one object or particular settings for that object. Rather, Lemay Web provides a template with default values that can be changed, and it expressly discloses "experiment[ing] with the pause between frames until you get an animation you like." Ex. 1004, 90 (p. 256), *quoted in* Pet. 33. In this respect, Lemay Web's disclosure is similar to the following discussion in the '168 patent:

Flags are kept for every possible style setting for each object. If a given object is edited through the text button, image, or interaction menus or other interface objects of the panel 400, the flags are set for any setting[s] that are changed. If that style is subsequently changed, only those settings that have not had their flags set will be changed for any given object.

Ex. 1001, 32:12–18; *see* Inst. Dec. 12 (discussing this passage from the '168 patent). Just as this quoted passage shows that the values for the style of an object can be individually set in the '168 patent through user input, Lemay Web discloses that a user assigns values for various parameters of an animated Java object. Ex. 1004, 89–91 (pp. 255–57).

For the foregoing reasons and based on Petitioner's persuasive arguments and evidence, we find that the asserted combination teaches the claimed "style," and we next address Patent Owner's arguments about the rationale to combine.

(2) Rationale to Combine Reynolds, Lemay Web, and Lemay Java

As noted above, Petitioner provides various reasons that it would have been obvious to combine the Java teachings of Lemay Web and Lemay Java with Reynolds, including that Reynolds discloses that its passages can be

implemented as Java programs and that Lemay Web discloses pre-built Java animator applets that allow animation to be easily included in a web page.

Pet. 38–40 (citing Ex. 1003, 8:7–11, 9:52–54, 9:56–58; Ex. 1004, 88 (p. 254); Ex. 1002 ¶¶ 90–91, 93).

Patent Owner argues that Petitioner’s proposed combination of Reynolds and Lemay Web “is technologically infeasible.” PO Resp. 31. According to Patent Owner, Lemay Web requires certain things to be done to include an animation, and Petitioner has not explained how Lemay Web’s animation would be incorporated into Reynolds’s database system. PO Resp. 31–35. Patent Owner asserts that “the combination proposed by Petitioner, in which all data is stored in a relational database, makes such a system impossible, if not completely impracticable.” PO Resp. 32 (citing Ex. 2005 ¶¶ 63–64. And Patent Owner asserts that these “fundamental technical problems [would] dissuade anyone of skill in the art from pursuing such a combination.” PO Resp. 33.

We disagree with Patent Owner’s arguments. As Petitioner correctly points out, Reynolds expressly discloses including animation sequences as passages and discloses that passages can be Java programs. *See* Pet. 38–39 (citing Ex. 1003, 8:7–11, 9:52–54, 9:56–58). In particular, Reynolds discloses that, “[i]f an ibook contains multimedia material, passages 152 can be graphic images, animation sequences, portions of a sound track, still video images, or video clips. If an ibook contains executable material, passages 152 can be modules of code.” Ex. 1003, 8:7–11. Reynolds discloses that “[w]hen passages 152 are executable modules, navigation tool 84 presents the passages by downloading and executing the passages” and that “[e]ach style is controlled by an ibook passage (e.g., a Java program) which implements that style.” Ex. 1003, 9:52–54, 9:56–58. Thus,

Reynolds expressly discloses that ibook passages can be animation sequences and Java programs, and Lemay Web explains how Java animations work. The references themselves provide a motivation to combine their respective teachings. Furthermore, Reynolds's express disclosure of using Java directly refutes Patent Owner's assertion that "Reynolds teaches away from using a Java applet." *See* PO Resp. 19.

As to Patent Owner's arguments that it would have been impossible to combine the relevant teachings of Reynolds and Lemay Web, we disagree. As Petitioner correctly points out, "Reynolds explains that ibook passages in the database can include precisely the same components that make up the Animator class in Lemay Web – graphic images, animation sequences, and executable material including modules of code," and "Reynolds further confirms that passages can be implemented as Java programs." Pet. Reply 6–7 (citing Ex. 1003, 8:7–11, 9:52–54, 9:56–58). Thus, Reynolds expressly discloses storing Java programs and animations in its database, contradicting Patent Owner's argument that storing the necessary data to generate Java animations would be "impossible, if not completely impracticable." *See* PO Resp. 32.

We also disagree with Patent Owner's argument that the applet will not function if things are not put in precisely the right place because Lemay Web requires "*strict* naming and filepath conventions." PO Resp. 31 (citing Ex. 2005 ¶¶ 63–64). Lemay Web explains that "[t]he easiest way to create Java animations *without knowing much about Java* is to put all your files into the same directory." Ex. 1004, 89 (p. 255) (emphasis added). Patent Owner's arguments approach Lemay Web from the standpoint of a simple user, rather than from the standpoint of a person of ordinary skill in the art, who has a bachelors or graduate degree and two or three years of experience

in the field relating to web design and development. *See* § II.B above. Such a person would have been knowledgeable about Java and would have been capable of using Java in more than just the “easiest” way described by Lemay Web. *See* Ex. 1030 ¶ 33 (Dr. Madisetti testifying that a person of ordinary skill in the art would have been “someone actually knowledgeable about Java and web site systems”). Indeed, the ’168 patent itself shows that a person of ordinary skill in the art would have been familiar with Java: “Those of ordinary skill will recognize that, JAVA could have been used more extensively to implement the methods described at 48, 49 and 54.” Ex. 1001, 10:67–11:2.

In support of its technical impossibility argument, Patent Owner relies on the testimony of Dr. Malek. PO Resp. 32 (citing Ex. 2005 ¶¶ 63–64). Dr. Malek testifies that “a [person of ordinary skill in the art] would face severe and likely insurmountable technical difficulties in bridging the differences between Lemay Web’s Java applet, which presumes files are stored in the same directory, and Reynold’s approach that stores everything in a database.” Ex. 2005 ¶ 64. This testimony, therefore, relies on Lemay Web’s disclosure of how someone can implement a Java animation “without knowing much about Java” by putting files in the same directory (Ex. 1004, 89 (p. 255)), and, therefore, fails to account for the knowledge of a person of ordinary skill in the art. Lemay Web also discloses that “[t]he Animator applet includes several other parameters to choose from, including *parameters that let you change the location and name of the image files*, add a background to the animation or a soundtrack, and control the order that frames are displayed.” Ex. 1004, 91 (p. 257) (emphasis added); *see* Ex. 1030 ¶ 33 (discussing emphasized disclosure). Thus, Lemay Web itself is not limited in the manner Dr. Malek suggests, and, therefore, Patent

Owner's arguments and Dr. Malek's testimony, which rely on this alleged limitation of Lemay Web, are inconsistent with both the knowledge of a person of ordinary skill in the art and the teachings of Lemay Web.

Petitioner's contentions and evidence supporting its combination of Reynolds, Lemay Web, and Lemay Java are persuasive. We find that a person of ordinary skill in the art would have been motivated to combine Lemay Web's disclosures of implementing animations using a Java applet with Reynolds's ibook system because Reynolds expressly discloses that ibook passages can be animation sequences and Java programs, and Lemay Web explains how Java animations work. Ex. 1003, 8:7–11, 9:52–54, 9:56–58; Ex. 1004, 88–91 (pp. 254–57). We find that a person of ordinary skill in the art would have had a reasonable expectation of success in combining Lemay Web's teachings with Reynolds based on the references' disclosures discussed above and based on Dr. Madisetti's testimony that a person of ordinary skill in the art "would have found this combination straightforward." *See* Ex. 1002 ¶ 93. Dr. Madisetti's testimony regarding the capabilities of a person of ordinary skill in the art to successfully make the proposed combination relies on Reynolds's own disclosure of organizing passage information, including animations and Java programs, in a database, and we credit this testimony because it is consistent with the disclosure of the references and the knowledge and skill in the art reflected by the references. *See* Ex. 1002 ¶ 93; Ex. 1030 ¶¶ 31–33.

Petitioner relies on Lemay Java to address a potential interpretation of "time lines" as requiring an "independent asynchronous process." Pet. 36–37. Neither party advocates for these additional requirements to be imposed on "time lines," but, to the extent required, Petitioner has demonstrated that Lemay Java teaches such subject matter and that a person of ordinary skill in

the art would have had reason to combine these teachings from Lemay Java with the combination of Reynolds and Lemay Web. *See* Pet. 36–37 (citing Ex. 1002 ¶¶ 87–90; Ex. 1005, 76 (p. 178)). In particular, we agree with Petitioner that Lemay Java’s disclosure of the benefits of multithreading, including enabling several different execution threads to run at the same time without interfering with each other, would have motivated the proposed combination. *See* Pet. 37 (citing Ex. 1005, 76 (p. 178) (“Multithreading, as in Java, enables several different execution threads to run at the same time inside the same program, in parallel, without interfering with each other.”)).

(3) Determination for Recitation 1c

Based on Petitioner’s persuasive argument and evidence, summarized and addressed above, we determine that the subject matter of recitation 1c would have been obvious to a person of ordinary skill in the art based on the asserted combination of prior art.

c) Recitation 1d

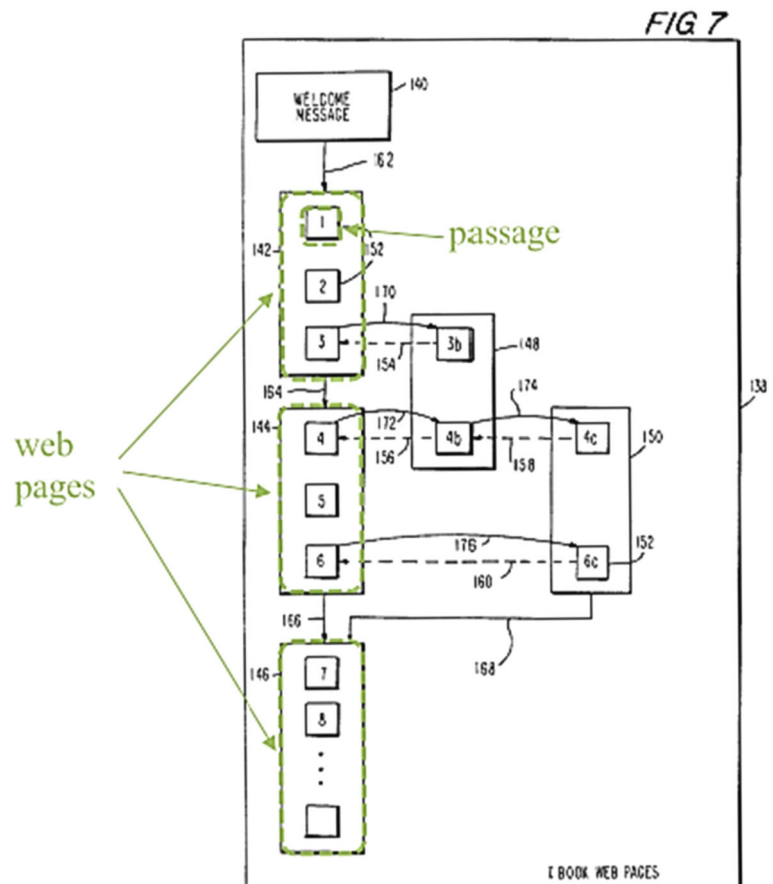
Claim 1 also recites “wherein each web page is defined entirely by each of the plurality of objects comprising that web page and the style associated with the object” (recitation 1d). Petitioner argues that Reynolds, as modified by Lemay Web and Lemay Java, teaches this subject matter “because each ibook web page is nothing more than a collection of passages” displayed according to their associated styles. Pet. 40–43 (citing Ex. 1003, 7:37–39, 7:66–67, 8:7–10, 9:27–30, 9:54–56, 9:62–10:16, 10:27–38, Figs. 7, 8; Ex. 1002 ¶¶ 95–96).

Patent Owner argues that Petitioner’s proposed combination does not teach recitation 1d because it does not disclose a “style,” referring to its arguments for recitation 1c. PO Resp. 33–34. We disagree with Patent

Owner's "style" arguments for the reasons explained in the preceding section.

Petitioner's contentions for recitation 1d are persuasive. At right, is an annotated version of Reynolds's Figure 7 relied upon by Petitioner. Pet. 41. Petitioner's annotations illustrate the ibook web pages being made up of passages. Ex. 1003, 7:35–37; Pet. 41. Reynolds discloses that "Web pages 142, 144, 146, 148, and 150 are preferably organized in the form of one or more passages 152." Ex. 1003,

7:66–67, *quoted in* Pet. 41. Based on Reynolds's Figure 7 and accompanying disclosure, we agree with Petitioner that "each web page in an ibook is defined entirely by passages 152 ('each of the plurality of objects') that make up that page, because each ibook web page is nothing more than a collection of passages." *See* Pet. 41 (citing Ex. 1002 ¶ 95). Furthermore, we agree with Petitioner that, in the proposed combination, "each web page is not only defined entirely by each of the plurality of objects comprising that web page, but also by 'the style associated with the object'" because the style specifies how the object is displayed. *See* Pet. 43 (citing Ex. 1002 ¶ 96).



Based on Petitioner's persuasive argument and evidence, summarized and addressed above, we determine that the subject matter of recitation 1d would have been obvious to a person of ordinary skill in the art based on the asserted combination of prior art.

d) Recitation 1e

The third operation recited for the “build engine” is to “produce a database with a multidimensional array comprising the objects that comprise the web site including data defining, for each object, the object style, an object number, and an indication of the web page that each object is part of” (recitation 1e). Petitioner argues that Reynolds teaches producing a database having the website objects and associated object information. Pet. 43–49 (citing Ex. 1003, 1:34–38, 5:19–23, 7:37–39, 7:66–8:2, 9:27–30, 11:28–40, Figs. 3, 7; Ex. 1002 ¶¶ 98–102). For the database, Petitioner cites Reynolds's passage database 74 and ibook web pages database 76. Pet. 44–45 (citing Ex. 1003, 1:34–38, 5:19–22, 7:37–39, 11:28–40, Fig. 3). For “an indication of the web page that each object is part of,” Petitioner cites Reynolds's disclosure of storing information that identifies which web page contains each passage. Pet. 46 (citing Ex. 1003, 9:27–30 (“[D]uring the creation of passages 152 authoring tool 86 and ibook server application 64 cause information to be stored in passage database 74 that identifies which Web page 138 contains each passage 152.”)). For object numbers, Petitioner cites passage numbers in Reynolds's Figure 7. Pet. 46–48 (citing Ex. 1003, 7:66–8:2, Fig. 7); *see* Ex. 1003, 7:67–8:2 (disclosing that “ibook Web page 142 contains passages 1, 2, and 3 and ibook Web page 150 contains passages 4c and 6c”). To store the “object style,” Petitioner argues that “it would have been obvious that the same databases in Reynolds that store

passages would likewise store their associated styles.” Pet. 45–46 (citing Ex. 1002 ¶ 99).

Petitioner argues that “the claimed database with a multidimensional array would have been obvious to an ordinarily skilled artisan in view of Perry and Witkowski.” Pet. 49 (citing Ex. 1002 ¶¶ 104–109). Petitioner relies on Perry for its disclosure of multidimensional arrays, such as a two dimensional table, and on Witkowski for its disclosure of using multidimensional arrays in databases. Pet. 49–53 (citing Ex. 1006, 24 (p. 456); Ex. 1007, 1:20–25, 15:54–59, Fig. 4A; Ex. 1002 ¶¶ 105–106, 108–109). Petitioner argues that it would have been obvious to implement Reynolds’s database using a two-dimensional array, with “the most straightforward” configuration having rows corresponding to passages and columns with data relating to the passages. Pet. 54 (citing Ex. 1002 ¶ 110). Petitioner provides various rationales for making the combination, including that Reynolds expressly discloses storing web page information in tables in a relational database. Pet. 54–57 (citing Ex. 1003, 15:30–37; Ex. 1006, 24 p. 456); Ex. 1002 ¶¶ 111–113).

Patent Owner raises two issues in disputing Petitioner’s contentions for recitation 1e. PO Resp. 34–36; PO Sur-reply 11–13.

First, Patent Owner argues that Petitioner relies on Lemay Web and Lemay Java to teach a “style” in recitation 1c but does not rely on them for recitation 1e, which also recites “style.” PO Resp. 34–35. Patent Owner suggests that Petitioner did this “in an attempt to avoid a five-reference combination for a single claim element.” PO Resp. 35.

We do not read the Petition so narrowly. Petitioner’s focus for recitation 1e is on the “multidimensional array,” and Petitioner explains that the combination would use such an array with “a number of columns

(‘including data defining, for each object’) containing the above-discussed data relating to passages.” Pet. 54 (citing Ex. 1002 ¶ 110). Thus, the proposed combination would include the “style” for each passage, as discussed above in § II.D.2.b for recitation 1c.

Second, Patent Owner disputes Petitioner’s rationale to combine Reynolds, Perry, and Witkowski, arguing that “Petitioner’s motivation to combine analysis . . . is generalized, conclusory, and speculative” and that Petitioner’s proposed combination “would never have been implemented by a” person of ordinary skill in the art because the resulting “database schema would be impractical” to search. PO Resp. 35–36 (citing Ex. 2005 ¶¶ 81–84).

We disagree with Patent Owner’s arguments. As an initial matter, Reynolds expressly discloses using a table in a relational database to store passage information:

Although various information concerning the ibook passages, such as derivation linking information, derivation type information, passage characteristics, and attribution information have been described as being stored in passage databases, a suitable alternative is to store this information in the Web pages that contain the passages or as a set of relations and *tables in a suitable relational database*, or as a set of objects in an object database.

Ex. 1003, 15:30–37 (emphasis added), *quoted in* Pet. 55–56. There is no dispute that a table is a multidimensional array. For example, Patent Owner’s declarant, Dr. Malek, describes a table as a “two-dimensional array.” See Ex. 2005 ¶ 82 (“Petitioner proposes a two-dimensional array (table) . . .”), ¶ 84 (“A [person of ordinary skill in the art], in contrast, would have understood the design proposed by the Petitioner is not scalable, because as more records are added to the two-dimensional array (i.e., a

single table) described by the Petitioner’). Thus, Reynolds’s express disclosure of using a table in a relational database supports Petitioner’s proposed combination to achieve the “multidimensional array” aspect of recitation 1e.

Perry and Witkowski provide additional useful background on tables in databases. Petitioner cites Perry to show that a table is an example of a multidimensional array having two dimensions represented by rows and columns. Pet. 49–51 (citing Ex. 1006, 23–24 (pp. 455–56); Ex. 1002 ¶¶ 105–106, 108). For example, Perry discloses that “[m]ultidimensional arrays, sometimes called *tables* or *matrices*, have at least two dimensions (rows and columns).” Ex. 1006, 23 (p. 455). As noted above, Dr. Malek agrees that a table is a multidimensional array. Ex. 2005 ¶¶ 82, 84.

Witkowski provides further details on implementing tables in relational databases. Ex. 1007, 1:20–25, 15:54–59, Fig. 4A; *see* Pet. 51–53. Witkowski explains that, “[i]n relational database systems, the data containers are referred to as tables, the records are referred to as rows, and the fields are referred to as columns.” Ex. 1007, 1:23–25, *quoted in* Pet. 51–52. This description of tables in relational databases is consistent with Reynolds’s disclosure of storing ibooks passage information “as a set of relations and tables in a suitable relational database.” Ex. 1003, 15:30–37. And, this disclosure in Reynolds provides an express teaching and a motivation to a person of ordinary skill in the art to consider tables (Perry) and tables in relational databases (Witkowski). Therefore, we disagree with Patent Owner’s arguments that “Perry, Witkowski, and Reynolds are completely disparate references” and that “Petitioner provided little to no explanation as to why all three references would have been evaluated by a

[person of ordinary skill in the art] simultaneously.” PO Sur-reply 12 (emphasis omitted).

Furthermore, Patent Owner’s arguments that searching tables for records would be too onerous and that such a system would not scale for a million records (PO Resp. 36; Ex. 2005 ¶ 84) ignore Reynolds’s disclosure to use “tables in a *suitable* relational database” (Ex. 1007, 15:30–37 (emphasis added)). Thus, Reynolds’s express teaching counsels against the impractical system Patent Owner envisions. Furthermore, we discern no requirement in the claims that the system be scalable to handle “1 million records in the table,” which Dr. Malek says “would have actually taught *away* from any such combination.” Ex. 2005 ¶ 84. We find Reynolds’s express disclosure of storing passage data in “tables in a suitable relational database,” i.e., the recited “a database with a multidimensional array,” to expressly suggest combining Reynolds, Perry, and Witkowski as proposed by Petitioner.

Based on Petitioner’s persuasive argument and evidence, summarized and addressed above, we determine that the subject matter of recitation 1e would have been obvious to a person of ordinary skill in the art based on the asserted combination of prior art.

e) Recitation 1f

The fourth operation recited for the “build engine” is to “provide the database to a server accessible to web browser” (recitation 1f). Petitioner argues that “Reynolds discloses that web pages database 76 is provided to a server accessible to web browser 82.” Pet. 57–59 (citing Ex. 1003, 5:19–22, 5:27–31, 5:35–37, 11:24–39, Fig. 3; Ex. 1002 ¶¶ 114–115). Petitioner contends that “an ibook client 60 viewing an ibook uses Web browser 82 (with navigation tool 84 installed through a plugin downloaded from Web

server 56) to retrieve passages from web pages database 76 at the server 56, and display web pages composed of the retrieved passages.” Pet. 58–59 (citing Ex. 1003, 5:27–31, 5:35–37, 11:24–39).

Patent Owner does not address Petitioner’s contentions for recitation 1f. *See* PO Resp.

Petitioner’s contentions are persuasive. Referring to Figure 3, Reynolds discloses that ibook client 60 runs web browser 82 with added capabilities from downloaded client plug-ins 80, one of which is navigational tool 84. Ex. 1003, 5:28–37. Reynolds further explains how the user navigates an ibook using navigation tool 84, which requests material to display at client 60. Ex. 1003, 11:24–40.

Based on Petitioner’s persuasive argument and evidence, summarized and addressed above, we determine that the subject matter of recitation 1f would have been obvious to a person of ordinary skill in the art based on the asserted combination of prior art.

f) Recitation 1g

Claim 1 also recites “wherein the database is produced such that a web browser with access to a runtime engine is configured to generate the web-site from the objects and style data extracted from the provided database” (recitation 1g). Petitioner identifies Reynolds’s navigation tool 84 as the recited “runtime engine” and argues that web browser 82 executing navigation tool 84 generates the web site as recited in the claim. Pet. 59–62 (citing Ex. 1003, 5:28–31, 5:35–37; Ex. 1002 ¶¶ 116).

Patent Owner again argues that the asserted combination does not teach a “style” (PO Resp. 37–38), an argument with which we disagree as discussed above in § II.D.2.b. Patent Owner also suggests that Petitioner’s assertion of obviousness based on the combination of Reynolds, Lemay

Web, and Lemay Java conflicts with Petitioner's declarant, Dr. Madisetti, who, according to Patent Owner, relied only on Reynolds for recitation 1g. PO Resp. 37 (citing Ex. 2007, 152:3–5). Patent Owner's argument refers to the following exchange during Dr. Madisetti's deposition:

Q And what do you rely on for claim elements 1G?

A I rely upon Reynolds.

Ex. 2007, 152:3–5. We do not see this exchange as a retraction of Dr. Madisetti's testimony explaining how the combination teaches recitation 1g. *See* Ex. 1002 ¶ 119 (“Under the combination of Reynolds with Lemay Web and Lemay Java as explained for claim 1[b]–[c] above, ibook passages are associated with style data (e.g. data defining the appearance of a Java image or button object), which is stored in the database as explained for claim 1[d] above.”).

Patent Owner also argues that Petitioner's contentions fail because Reynolds's navigation tool is not downloaded or created when the browser is pointed to a web page, according to its proposed construction of “runtime engine.” PO Resp. 38–40. For the reasons explained above in § II.C.1, this construction is incorrect.

Petitioner's contentions for recitation 1g are persuasive. As discussed above in § II.C.1, a “runtime engine” has been construed in several district court litigations as a “file that is executed at runtime that utilizes information from the database and generates commands to display a web page or website.” *See* PO Resp. 18–19; Pet. Reply 12. We apply that construction here.

Reynolds discloses that web browser 82 uses client plug-ins, including navigation tool 84 to provide additional capabilities for the browser. In

particular, it discloses that “[c]lient plug-ins 80 are downloadable executable program modules that can be run on client 60 in conjunction with Web browser 82 to add additional capabilities to Web browser 82” and that “[w]hen client plug-ins 80 are downloaded onto client 60, they form tools 84, 86, 88, and 90.” Ex. 1003, 5:28–31, 5:35–37; *see* Pet. 59–60 (quoting this disclosure). Petitioner argues that navigational tool 84 is a “runtime engine” because “the tool is a file executed at runtime (e.g. in web browser 82) to facilitate retrieval of information from the database and generate commands to display the ibook web pages in the browser,” which is consistent with the construction of “runtime engine” from several district courts as noted above. Pet. 60. We agree with Petitioner.

In describing how a user navigates within an ibook, Reynolds’s discloses the following:

At step 198, the user at client 60 determines which passage is to be viewed, for example, by using the various buttons provided by navigation tool 84 (FIG. 8). Navigation tool 84 preferably generates a request to view a desired passage and transmits this request to server 56 at step 200. Server application 64 at server 56 receives the request and locates the requested passage in ibook Web pages database 76 at step 202. At step 204, server 56 records information about the access request, such as a time and date entry identifying when the requested access took place. Server 56 transmits the requested passage to client 60 at step 206. Client 60 displays the passage and may make a time and date entry in local access database 92 at step 208.

Ex. 1003, 11:28–40, *quoted in* Pet. 60. Thus, navigation tool 84 facilitates retrieval of information from the ibook Web pages database. Reynolds further discloses that, “[w]hen passages 152 are executable modules, navigation tool 84 presents the passages by downloading and executing the passages.” Ex. 1003, 9:52–54, *cited in* Pet. 61.

All of this disclosure confirms that Reynolds's navigation tool 84 is a "file that is executed at runtime that utilizes information from the database and generates commands to display a web page or website," i.e., a "runtime engine." Navigation tool 84 is executed at run time as part of the browser, to which it "add[s] additional capabilities." Ex. 1003, 5:28–31. In response to user input, it requests and receives passages from the ibook Web pages database and presents the passages by downloading them and executing them. Ex. 1003, 9:52–54, 11:28–40. Thus, we find that Reynolds teaches a "runtime engine." And Reynolds's navigation tool disclosures confirm Petitioner's contention that, "under the proposed combination, navigation tool 84 will generate the website for display in the browser from passages ('objects') and 'style data' extracted from the database." *See* Pet. 62.

Patent Owner argues that Petitioner's contention is at odds with a Board decision involving the '397 patent, of which the '168 patent is a continuation. PO Resp. 40–43 (citing IPR2018-00750, Paper 10). We disagree with Patent Owner's argument as it focuses on different claim language from a different patent. In particular, Patent Owner focuses upon the recitation in claim 1 of the '397 patent of "building one or more web pages to generate said website from at least a portion of said database." PO Resp. 40–42. But the claims of the '168 patent do not recite "building" web pages to generate a website. Rather, recitation 1g states that "a web browser with access to a runtime engine is configured to generate the web-site from the objects and style data extracted from the provided database." Thus, Patent Owner's arguments about whether web pages are pre-built or pre-stored are inapposite. *See* PO Resp. 40–42.

Patent Owner also argues that "it is unclear how the act of rendering a pre-packaged passage which consists, allegedly, of the object (the 'passage')

which itself contains the ‘style data’ in plain text fulfills claim 1[g].” PO Resp. 42–43. But, rather than being “unclear,” this characterization of the prior art shows “generat[ing] the web-site from the objects and style data extracted from the provided database” because, as Patent Owner acknowledges, objects with a style are rendered. *See* Ex. 1003, 9:52–54 (“When passages 152 are executable modules, navigation tool 84 presents the passages by downloading and executing the passages.”).

Furthermore, we find that Reynolds teaches or suggests Patent Owner’s additional requirement that “a ‘runtime engine’ must be ‘downloaded or created [...] when the browser is pointed to a web page.’” PO Resp. 38 (alterations by Patent Owner). Reynolds discloses that “[d]ownloading of client plug-ins 80 can be accomplished using standard techniques, such as the standard Internet file transfer protocol (FTP).” Ex. 1003, 5:33–35. As Petitioner points out, “[p]opular web browsers such as Microsoft Internet Explorer downloaded files using FTP hyperlinks on websites.” Pet. Reply 17 (citing Ex. 1037). Petitioner cites a 1997 reference titled *Official Microsoft Internet Explorer Book* that explains that FTP sites linked in a webpage can be accessed using the Internet Explorer web browser. Ex. 1037, 11 (p. 184) (“Accessing FTP Sites Directly. You can download files, as just discussed, by clicking a downloading link on a Web page. . . . Click an FTP hyperlink in a Web page.”). Patent Owner argues that “FTP cannot be used to transfer a run time file directly to a browser or upon access to a web page – such a transfer is a separate operation performed before visiting an ibook.” PO Resp. 39 (citing Ex. 2005 ¶¶ 73–74). According to Patent Owner, “*Reynolds* describes software downloaded beforehand by a user, such as from an ibook provider’s website, prior to connection to the ibook server using the downloaded tool.” PO Resp. 39–40

(citing Ex. 2005 ¶¶ 73–74). But Patent Owner’s additional requirement—that the runtime engine must be downloaded or created when the browser is pointed to a web page—does not preclude this. If the file is downloaded when the browser is pointed to a web page, even if it happens minutes, hours, or days before the runtime engine is used for any particular application, then that meets Patent Owner’s additional requirement.

Patent Owner’s argument that clicking on an FTP link in a web page is not sufficient because the file must be “automatically downloaded” similarly misses the mark as this is not a requirement in Patent Owner’s proposed construction. *See* PO Sur-reply 17–20.

For all the foregoing reasons and based on Petitioner’s persuasive argument and evidence, summarized and addressed above, we determine that the subject matter of recitation 1g would have been obvious to a person of ordinary skill in the art based on the asserted combination of prior art.

g) Conclusion for Claim 1

For the reasons discussed above and based on Petitioner’s contentions and evidence, we are persuaded that the subject matter of claim 1 would have been obvious to a person of ordinary skill in the art based on the combined teachings of Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski.

3. Claims 2–4, 6

Petitioner also asserts that claims 2–4 and 6 are unpatentable as obvious over the combined teachings of Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski. Pet. 62–73. Patent Owner does not specifically dispute Petitioner’s contentions for claims 2–4 and 6. *See* PO Resp. Petitioner’s contentions, set forth below, are persuasive.

Claim 2 recites, “The system of claim 1, wherein one of said plurality of objects is a child, and wherein the build engine is configured to accept user input to associate a style with child button and child image objects.” Petitioner relies on Reynolds’s disclosure of derivative passages to teach child objects. Pet. 62–66 (citing Ex. 1003, 1:47–61, 8:19–25, 8:28–35, 8:61–9:19, Fig. 7). Reynolds explains that “[w]orks that are created based on previously contributed material are called derivations,” and Figure 7 shows derivation links 170, 172, 174, and 176 that point to derivative passages. Ex. 1003, 9:1–7, Fig. 7. Reynolds discloses using a “cut and paste feature in derivation tool 132 to cut and paste text or multimedia material from passage 3 when creating passage 3b” (Ex. 1003, 8:30–33), and Petitioner argues that copying an animated image, as in the combination discussed for claim 1, “would naturally include copying the style defining the object’s visual appearance.” Pet. 65 (citing Ex. 1002 ¶ 122). Petitioner argues that

it would have been obvious for an ordinarily skilled artisan to adapt Reynolds’ ibook server application to accept user input to associate a style with animated image objects (which are also button objects) of derivative child passages, either through user input of new animation styles for the derivative child passages or through copying the user-specified styles from the parent passages.

Pet. 66–67.

Claim 3 recites, “The system of claim 2, wherein at least one of said styles includes values defining time lines for child button and child image objects.” Referring to its contentions for recitation 1c, Petitioner argues that it would have been obvious that “that the animation style for animated image objects of a derivation passage (child button and child image objects)

includes values defining time lines for the child button and child image objects.” Pet. 67 (citing Ex. 1002 ¶ 126).

Claim 4 recites, “The system of claim 1, wherein at least one of said styles includes settings for multiple object states.” Referring to its contentions for recitation 1c, Petitioner argues that Lemay Web’s disclosure of STARTIMAGE and ENDIMAGE parameters, which define which and how many images are presented, for animated objects teaches this subject matter “because each image represents a different object state, and the animation transitions between successive states each displaying a different image (as set by STARTIMAGE and ENDIMAGE).” Pet. 67–68 (citing Ex. 1004, 90 (p. 256); Ex. 1002 ¶ 127).

Claim 6 recites, “The system of claim 1, where said data is stored as one or more of a Boolean an integer, a string, a floating point variables, or a URL.” Petitioner explains how the asserted combination teaches the claimed subject matter for each type of “said data” from claim 1 (“data defining, for each object, the object style, an object number, and an indication of the web page that each object is part of”). Pet. 68–73. In particular, Petitioner argues that “object style” is stored as a string, “object number” is stored as an integer, and “an indication of the web page that each object is part of” is stored as a URL. Pet. 68–73.

Petitioner’s contentions, summarized above, are persuasive, and, therefore, based on Petitioner’s persuasive contentions and evidence, we conclude that the subject matter of claims 2–4 and 6 would have been obvious to a person of ordinary skill in the art based on the combined teachings of Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski.

*E. Obviousness over
Reynolds, Lemay Web, Lemay Java, Perry, Witkowski, and Coombs
(Claims 1–4, 6)*

Petitioner asserts that claims 1–4 and 6 are unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Reynolds, Lemay Web, Lemay Java, Perry, Witkowski, and Coombs. Pet. 73–79.

Coombs, titled *Setting up an Internet Site for Dummies*, describes steps for setting up a web site. Ex. 1008, 22, 38–48 (pp. 3, 29–39). Petitioner presents evidence that Coombs was published before the December 2, 1999, filing date of the application to which the '168 patent claims priority. See Ex. 1024 ¶¶ 40–47; Pet. 20. Patent Owner does not challenge the prior art status of Coombs. Based on Petitioner's evidence regarding the publication of Coombs, we determine that it is prior art to the '168 patent.

Petitioner notes that “Reynolds does not expressly use the word ‘website’ to describe the collection of ibook web pages” and argues that, “[i]n the event Patent Owner were to argue that ‘website’ requires that the ibook web pages be accessed through a separate and dedicated domain name (such as ‘www.domainname.com’),” this would have been obvious, relying on Coombs’s disclosures of setting up a website. Pet. 74 (emphasis omitted; citing Ex. 1008, 22, 38–48 (pp. 3, 29–39)). In particular, Petitioner argues that “it would have been obvious to a skilled artisan to implement the ibook system” based on the asserted combination “under a separate domain name,” which “would have predictably resulted in the ibook web pages being accessible under a dedicated domain name, for example, a URL in a form such as <http://www.reynoldsibook.com>.” Pet. 75 (citing Ex. 1002 ¶¶ 139–143). Petitioner argues that a person of ordinary skill in the art

would have had various reasons to apply Coombs’s teachings in this manner, including that “a domain name provides a simple and easy way for visitors to reach a website” and allows a user to register the website with search engines. Pet. 76–78 (citing Ex. 1002 ¶¶ 140–143; Ex. 1003, 3:17–21, 14:15–21; Ex. 1008, 95, 98, Fig. 12-2 (pp. 246, 249)).

Patent Owner argues that “Reynolds is not a ‘website’ building system” and that “Coombs does nothing to address the underlying failures of the various combinations of Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski assembled by Petitioner throughout Ground 1.” PO Resp. 43–44. For reasons discussed above in § II.D, Petitioner’s asserted combination of Reynolds, Lemay Web, Lemay Java, Perry, and Witkowski renders obvious claims 1–4 and 6, leaving no deficiency to address here. As discussed above in § II.D.2.a, we find that Reynolds’s ibook disclosures teach a website. Therefore, Coombs’s disclosure is not necessary to conclude the claims are unpatentable. Nevertheless, Petitioner’s contentions based on Coombs are persuasive, and we conclude that it would have been obvious to a person of ordinary skill in the art to make Reynolds’s ibook accessible under a separate and dedicated domain name in light of Coombs’s teachings for the reasons given by Petitioner. *See* Pet. 73–78.

Based on Petitioner’s persuasive contentions and evidence, we conclude that the subject matter of claims 1–4 and 6 would have been obvious to a person of ordinary skill in the art based on the combined teachings of Reynolds, Lemay Web, Lemay Java, Perry, Witkowski, and Coombs.

F. Other Arguments

Patent Owner argues that we should reject Petitioner’s challenges based on the number of prior art references asserted in the proposed

combinations. PO Resp. 44–49. According to Patent Owner, “[e]ven if Petitioner’s Grounds 1 and 2 were not deficient for the reasons discussed above, they should still be denied because both fail to show a likelihood that it was obvious to combine this large number of references in order to allegedly meet the claims.” PO Resp. 44.

We disagree. Patent Owner identifies no per se limit on the number of references in a combination that may demonstrate obviousness. *Cf. In re Gorman*, 933 F.2d 982 (Fed. Cir. 1991) (affirming a rejection based on 13 references and rejecting the argument that the number of references “itself weighs against a holding of obviousness”). According to the Supreme Court, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). We have addressed Petitioner’s rationales to combine the references in the manner asserted, and we find them persuasive for the reasons discussed in detail above.

Furthermore, Patent Owner’s argument overstates the nature of Petitioner’s reliance on five or six references for the first and second grounds, respectively. Petitioner relies on Lemay Java only to address a particular interpretation of “time lines” that no party advocates in this proceeding. Pet. 36–37; *see also* PO Resp. 29 (“Petitioner asserts Lemay Java only against a particular previous construction of ‘time line.’”). And as noted above in § II.E, Coombs’s disclosure is not necessary to conclude the claims are unpatentable because Petitioner has shown that Reynolds teaches a website. As for the other references, our analysis above shows that Petitioner provides ample reason to combine teachings from the references. For example, Perry and Witkowski provide some additional information on

databases with multidimensional arrays, but as discussed above in § II.D.2.d, Reynolds expressly teaches storing data in “tables in a suitable relational database.” Ex. 1007, 15:30–37. We can hardly criticize Petitioner for providing additional information from two references to explain what Reynolds already discloses.

Thus, we decline Patent Owner’s invitation to reject Petitioner’s patentability challenges based on the number of references listed.

Patent Owner also criticizes Petitioner and Dr. Madisetti for allegedly engaging in impermissible hindsight and not evaluating the references fully and criticizes Dr. Madisetti for allegedly “dodg[ing]” questions at his deposition about “a technical limitation of Lemay Web that is spelled out in the reference itself.” PO Resp. 21–28. As to Dr. Madisetti’s testimony, the “technical limitation” Patent Owner alleges is that “Lemay Web requires strict file structure and naming conventions in order to function.” PO Resp. 27 (citing Ex. 2005 ¶ 64). But as discussed above in § II.D.2.b.2, Lemay Web has no such technical limitation, and its disclosure shows that Java allows changing the location and name of image files in an animation. Ex. 1004, 90 (p. 257). Thus, Patent Owner’s attacks on Dr. Madisetti’s testimony in this regard are based on an incorrect premise. Furthermore, for the reasons explained in detail above, we find that Petitioner has provided adequate rationales to combine the asserted prior art references, and, therefore, we disagree that Petitioner relied on impermissible hindsight.

G. Due Process

Patent Owner includes a section in its Response titled “Substitution of Judges in This Proceeding is a Violation of Express Mobile’s Due Process Rights.” PO Resp. 49–50. After institution, a Panel Change Order issued, stating that, “[d]ue to unavailability, Administrative Patent Judge Mitchell

G. Weatherly replaces Administrative Patent Judge Kristi L. R. Sawert on the panel.” Paper 12 at 2. Patent Owner states that this change “implicates due process concerns,” and Patent Owner “reserves all rights with respect to the PTO’s decision to reconstitute the composition of the panel in this case, and with respect to any panel expansion that has already occurred or might occur in this proceeding.” PO Resp. 49–50. Patent Owner, however, has not alleged any specific due process violation stemming from the unavailability of one of the panelists, and 35 U.S.C. § 6(c) requires that each “inter partes review shall be heard by at least 3 members of the Patent Trial and Appeal Board,” necessitating a replacement panelist for the unavailable panelist. Therefore, we consider any argument by Patent Owner asserting a due process violation to have been forfeited. *See* Paper 9 at 9 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.”).

III. CONCLUSION¹²

For the reasons discussed above, we determine that Petitioner has proven, by a preponderance of the evidence, that claims 1–4 and 6 of the ’168 patent are unpatentable, as summarized in the following table:

¹² Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. *See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–4, 6	103(a)	Reynolds, Lemay Web, Lemay Java, Perry, Witkowski	1–4, 6	
1–4, 6	103(a)	Reynolds, Lemay Web, Lemay Java, Perry, Witkowski , Coombs	1–4, 6	
Overall Outcome			1–4, 6	

IV. ORDER

Accordingly, it is

ORDERED that claims 1–4 and 6 of the '168 patent have been shown to be unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, 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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