

UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

RPX CORPORATION,
Petitioner, v.

v.

APPLICATIONS IN INTERNET TIME, LLC,
Patent Owner.

Case IPR2015-01750
Patent 8,484,111 B2

Before LYNNE E. PETTIGREW, MITCHELL G.
WEATHERLY, and JENNIFER MEYER CHAGNON,
Administrative Patent Judges.

CHAGNON, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Inter Partes Review
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 13–18 of U.S. Patent No. 8,484,111 B2 (Ex. 1001, “the ‘111 patent”) are unpatentable.

A. Procedural History

RPX Corporation (“Petitioner”) filed a Petition for *inter partes* review of claims 13–18 of the ’111 patent. Paper 1 (“Pet.”). Petitioner provided a Declaration of Mark E. Crovella, Ph.D. (Ex. 1002) to support its positions. Applications In Internet Time LLC (“Patent Owner”) filed a Preliminary Response. Paper 21, Paper 26 (redacted version) (“Prelim. Resp.”). We also authorized additional briefing on issues relating to real parties-in-interest. *See* Paper 28, Paper 29 (redacted version) (“RPI Reply”); Paper 38, Paper 37 (redacted version) (“RPI Sur-Reply”).

Pursuant to 35 U.S.C. § 314(a), on February 25, 2016, we instituted *inter partes* review to determine whether claims 13–18 are unpatentable under 35 U.S.C. § 102 as anticipated by Popp;¹ whether claims 13–18 are unpatentable under 35 U.S.C. § 102 as anticipated by Kovacevic;² and whether claims 13–18 are unpatentable under 35 U.S.C. § 103 as obvious in view of Balderrama³ and Java Complete.⁴ Paper 51⁵ (“Inst. Dec.”).

¹ U.S. Patent No. 6,249,291 B1, issued June 19, 2001 (Ex. 1004).

² Srdjan Kovacevic, *Flexible, Dynamic User Interfaces for Web-Delivered Training*, in AVI ‘96 PROCEEDINGS OF THE WORKSHOP ON ADVANCED VISUAL INTERFACES 108–18 (1996) (Ex. 1005).

³ U.S. Patent No. 5,806,071, issued Sept. 8, 1998 (Ex. 1006).

⁴ *Java Complete!*, 42 DATAMATION MAGAZINE 5, 28–49 (Mar. 1, 1996) (Ex. 1007).

⁵ A public version of the Institution Decision is available as Paper 60.

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 63 (“PO Resp.”)⁶), along with Declarations of H. V. Jagadish, Ph.D. (Ex. 2032) and James Flynn (Ex. 2033) to support its positions. Petitioner filed a Reply (Paper 70 (“Pet. Reply”)) to the Patent Owner Response, along with a Reply Declaration of Dr. Crovella (Ex. 1062). Pursuant to our authorization, Patent Owner filed a limited Sur- Reply (Paper 73 (“PO Sur-Reply”)⁷). A combined oral hearing for Cases IPR2015-01750, IPR2015-01751, and IPR2015-01752 was held on November 8, 2016. A transcript of the hearing is included in the record. Paper 77 (“Tr.”).

B. Related Proceedings

The '111 patent is the subject of the following district court proceeding: *Applications in Internet Time LLC v. Salesforce.com, Inc.*, No. 3:13-cv-00628 (D. Nev.). Pet. 3; Paper 6, 2.

Claims 1, 3–8, and 10–40 of related U.S. Patent No. 7,356,482 B2 (“the '482 patent”) are the subject of *inter partes* review in IPR2015-01751 and IPR2015-01752. Pet. 3; Paper 6, 2; IPR2015-01751, Paper 51; IPR2015-01752, Paper 51.

C. The '111 Patent

The '111 patent, titled “Integrated Change Management Unit,” relates to an “integrated system for managing changes in regulatory and non-regulatory requirements for business activities at an industrial or commercial facility.” Ex. 1001, Abstract.

⁶ Patent Owner filed a single Patent Owner Response in this proceeding and Cases IPR2015-01751 and IPR2015-01752.

⁷ Patent Owner filed a single Sur-Reply in this proceeding and Cases IPR2015-01751 and IPR2015-01752.

The integrated system described in the '111 patent manages data that is constantly changing by (1) "provid[ing] one or more databases that contain information on operations and requirements concerning an activity or area of business," (2) "monitor[ing] and evaluat[ing] the relevance of information on regulatory and non-regulatory changes that affect operations of the business and/or information management requirements," (3) "convert[ing] the relevant changes into changes in work/task lists, data entry forms, reports, data processing, analysis and presentation . . . of data processing and analysis results to selected recipients, without requiring the services of one or more programmers to re-program and/or re-code the software items affected by the change," and (4) "implement[ing] receipt of change information and dissemination of data processing and analysis results using the facilities of a network, such as the Internet." *Id.* at 8:37–52, 9:4–5.

Figure 1 of the '111 patent is reproduced below:

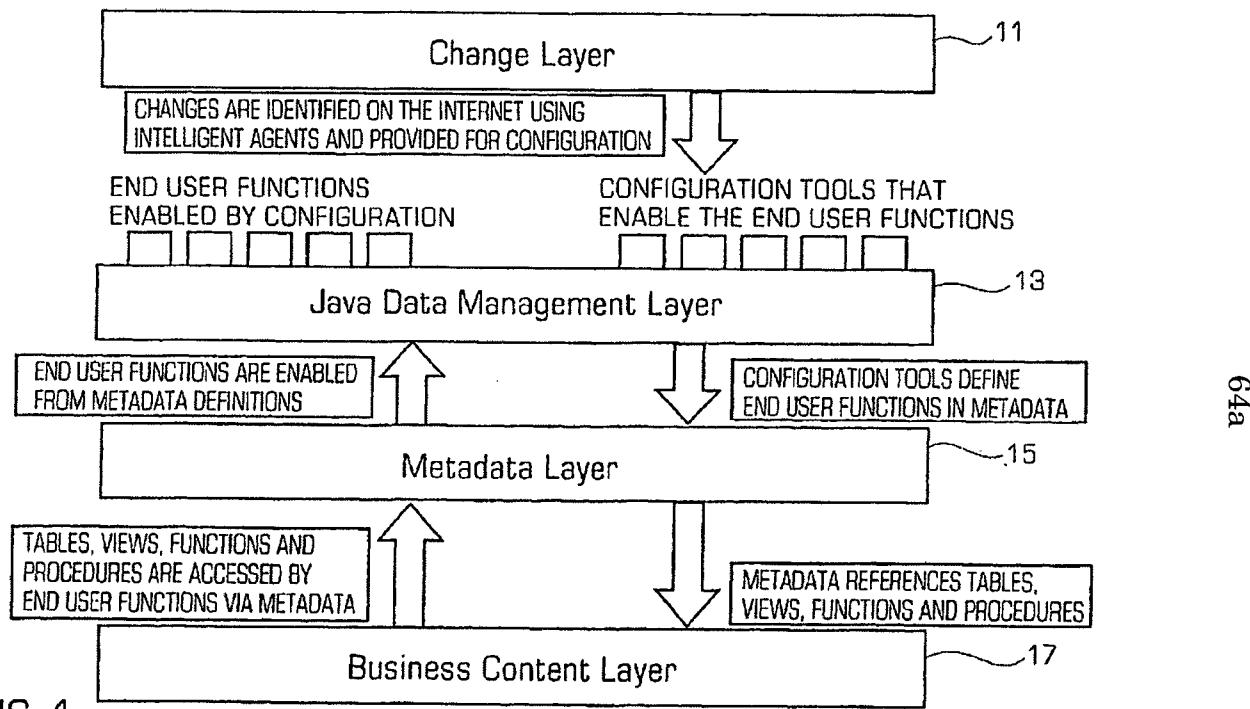


FIG. 1

As shown in Figure 1, the integrated system operates at four layers: (1) change management layer 11 that identifies regulatory and non-regulatory changes that may affect a user's business, (2) Java data management layer 13 that generates a user interface ("UI"), (3) metadata layer 15 that provides data about the user interface including "tools, worklists, data entry forms, reports, documents, processes, formulas, images, tables, views, columns, and other structures and functions," and (4) business content layer 17 that is specific to the particular business operations of interest to the user. *Id.* at 9:38–52. According to the '111 patent, because the system of the invention is "entirely data driven," the need to write and compile new code in order to update the system is eliminated. *Id.* at 10:24, 12:44–56.

D. Illustrative Claim

Of the claims subject to this *inter partes* review, claim 13 is independent. Claims 14–18 depend from claim 13. Claim 13 of the '111 patent, reproduced below, is illustrative:

13. A system, comprising:

a server accessible by a browser executed on a client device, the server including a first portion, a second portion, a third portion, and a fourth portion,

the first portion of the server having information about unique aspects of a particular application,

the second portion of the server having information about user interface elements and one or more functions common to various applications, the various applications including the particular application,

the third portion of the server being configured to dynamically generate a functionality and a user interface for the particular application, the functionality and the user interface of the particular application being based on the information in the first portion of the server and the information in the second portion of the server, the third portion of the server being configured to send the functionality and the user interface for the particular application to the browser upon establishment of a connection between the server and the client device,

the fourth portion of the server being configured to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server.

Ex. 1001, 33:19–34:8.

II. ANALYSIS

A. Real Parties-in-Interest

In its Petition, Petitioner identifies itself, RPX Corporation, as the “sole real party-in-interest in this proceeding.” Pet. 2. Prior to institution, Patent Owner raised the issue of whether Petitioner has identified all real parties-in-interest. In particular, Patent Owner asserted that Salesforce.com, Inc. (“Salesforce”) is an unnamed real party-in-interest. *See* Prelim. Resp. 2–20.

In our Institution Decision, we determined that Salesforce had not been shown to be a real party-in-interest in these proceedings. *See* Inst. Dec. 7–15. In its Patent Owner Response, Patent Owner argues:

In its decision instituting [this trial], the Board stated that there was insufficient

evidence to find that the real party in interest is Salesforce.com, Inc. Patent Owner disagrees with the Board's view of the law and the facts, and in particular believes that the Board misconstrued the law. As explained previously, the AIA was intended to prevent defendants from getting "a second bite at the apple." Yet, the Board is doing just that by allowing Petitioner to act indirectly for Salesforce. In its decision, the Board set an improperly high burden of proof for the patent owner, and also improperly shifted the burden of proof to the patent owner. As explained in Patent Owner's Preliminary Response, Salesforce is the real party in interest and Petitioner is acting as its proxy. Because Salesforce is time limited, so is Petitioner and patentability should be confirmed on this basis.

PO Resp. 8. To the extent Patent Owner is attempting to incorporate arguments made in the Preliminary Response into the Patent Owner Response, such incorporation is improper under our rules. *See* 37 C.F.R. § 42.6(a)(3) ("Arguments must not be incorporated by reference from one document into another document."). In any event, Patent Owner has neither presented any new evidence into the record, beyond the evidence we considered previously in rendering our Institution Decisions, nor cited any legal authority to support its positions set forth above. Based on the complete record now before us, we see no reason to change our previous determination, and we are not persuaded that Salesforce should have been identified as a real party-in-interest in this proceeding.

B. Level of Ordinary Skill in the Art

Petitioner asserts that a “person of ordinary skill in the art in the timeframe of the December 1998 priority date of the ’111 patent . . . would have had at least a B.S. in Computer Science or the equivalent, along with at least two years of computer programming experience in developing applications for client-server systems.” Pet. 5–6 (citing Ex. 1002 ¶ 10). Patent Owner indicates that it “does not dispute Petitioner’s definition of the person of ordinary skill in the art.” PO Resp. 10; Ex. 2032 ¶ 18; Ex. 2033 ¶ 17. For purposes of this Final Written Decision, we agree with and adopt Petitioner’s proposed definition for the level of ordinary skill in the art, which each declarant in this proceeding meets or exceeds.⁸ See Ex. 1002 ¶¶ 2–6, 11; Ex. 2032 ¶¶ 4–9, 19; Ex. 2033 ¶¶ 2–5, 18. We further note that the applied prior art reflects the appropriate level of skill at the time of the claimed invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest

⁸ Patent Owner argues that, in the relevant time frame, Dr. Crovella “was already considerably more than ordinary,” and, for this reason, we should give less weight to Dr. Crovella’s testimony. PO Resp. 11; *see also* Tr. 53:4–9, 55:24–56:4. We disagree. *See Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008) (noting that under Fed. R. Evid. 702, the expert must possess sufficient “expertise to be of assistance” to the trier of fact).

reasonable interpretation standard). Pursuant to that standard, the claim language should be read in light of the specification, as it would be interpreted by one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Thus, we generally give claim terms their ordinary and customary meaning. See *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning ‘is the meaning that the term would have to a person of ordinary skill in the art in question.’” (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc))).

The claims, however, “should always be read in light of the specification and teachings in the underlying patent,” and “[e]ven under the broadest reasonable interpretation, the Board’s construction ‘cannot be divorced from the specification and the record evidence.’” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (citations omitted). In other words, “[u]nder a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016) (citing *Straight Path IP Grp., Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1362 (Fed. Cir. 2015)). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. See *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). However, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

The parties’ dispute requires construction of the phrase “fourth portion of the server being configured

to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server,” recited in claim 13. No issue in this Decision requires express construction of any other claim terms. *See, e.g., Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘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)).

Claim 13 recites, in part, a “fourth portion of the server . . . configured to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server.” Ex. 1001, 34:5–8. In the Petition, Petitioner argues that a “portion of the server” is “any one or more components or functionality of or on the server.” Pet. 11 (citing Ex. 1002 ¶ 22).

In its Patent Owner Response, Patent Owner asserts

This [fourth portion] limitation, especially the phrase, “changes that affect,” is clearly the same as the “changes” discussed above regarding the change management layer. Thus, the “fourth portion,” as understood by a person of ordinary skill in the art and like the “change management layer” automatically detects changes that “arise from changes external to the application.”

PO Resp. 21. With respect to the “change management layer,”⁹ Patent Owner argues that “the

⁹ The term “change management layer” is not recited in the claims at issue in this proceeding, but is recited in claim 1 of

term ‘change management layer’ when interpreted in view of the specification would readily be understood to a person of ordinary skill in the art to mean ‘a layer that automatically detects changes *external to the application program* which impact *how* the application program *should operate.*’” *Id.* at 14 (citing Ex. 2032 ¶ 27; Ex. 2033 ¶ 27) (emphases added); *see id.* at 18. Patent Owner argues, in comparison, that “detecting changes *internal* to an application program is precisely what the claimed ‘third layer’ does.”¹⁰ *Id.* at 14 (citing Ex. 2032 ¶¶ 34–36).

As can be seen by a comparison of Patent Owner’s proposed construction with the language of claim 1 of the ‘482 patent, Patent Owner’s construction adds an additional requirement to the express language of the claim that any detected changes are “external to the application program.” Pointing to discussion in the ‘482 patent regarding so-called “intelligent agents” that search on the internet for relevant regulatory and/or non- regulatory changes in a selected business area, Patent Owner argues that “[a]ll of these ‘changes’ shown in the ‘482 patent are all ‘external to the application program.’” *Id.* at 16 (citing Ex. 1001,

the ‘482 patent, at issue in the related proceedings IPR2015-01751 and IPR2015-01752. However, because Patent Owner relies on its discussion of this term for its proposed construction of the recited “fourth portion” of the ‘111 patent, we discuss Patent Owner’s arguments in this regard.

¹⁰ Patent Owner’s argument in this regard is in reference to claim 1 of the ‘482 patent. We note that the third layer of this claim does not recite detecting any changes *per se*, but instead the claim recites that the third layer “retrieves the data in the first and second layers in order to generate the functionality and user interface elements of the application.” *See* IPR2015-01751, Ex. 1001 (the ‘482 patent), 32:23–26.

16:17–34, 19:66–20:6; Ex. 2032 ¶¶ 32–34; Ex. 2033 ¶¶ 33–34). Patent Owner makes a further distinction that “changes that affect an application,” as claimed, are not changes affecting the application in any way, but must be “changes which impact how the application program should operate.” *See* Tr. 66:21–69:3; Ex. 2032 ¶ 27; Ex. 2033 ¶ 27.

Patent Owner further argues that “it would be nonsensical for application-internal ‘changes’ to be the ‘changes that affect the application.’” PO Resp. 17. According to Patent Owner,

The specification includes an example that highlights that the definition proposed by the Patent Owner for the “change management layer” and the associated “change” are the broadest reasonable interpretation when read in light of the specification. The ’482 patent explains that regulations and technical requirements are constantly changing, and that these changes are posted in various media, including paper, microfiche and electronic media.

Id. The example from the Specification cited by Patent Owner is as follows:

Assume that a federal regulation, governing disposal of hazardous waste in landfills, is amended so that the regulation now requires analysis, reporting and record keeping of landfill samples. Part of the change language addresses what landfill sample information must be collected, including landfill type, landfill cell, parameter(s) sampled, identification of chain-of-custody, and laboratory results. **The change is posted in**

the Federal Register and becomes promptly available as a hard copy (paper) and electronically, on the Internet.

The invention begins tracking change using one or more intelligent agents (“IA’s”). An “intelligent agent” is a specialized program that resides on a network, or at a server as an applet, and can make decisions and perform tasks based on pre-defined rules. Preferably, two or more IA’s used by a business will have sufficiently different assignments that at most modest overlap occurs between the IA’s. An IA function is part of the Logic Menu, which is discussed subsequently.

A change made to landfill waste regulations is identified by an IA on the Internet, and **the relevant change information is routed to a selected metadata table in the invention.** The change information includes one or more of five recommendations: (1) create a new WorkList; (2) change one or more data entry forms; (3) create one or more new reports; (4) create a new process; and (5) add one or more new document images. Configuration Users can choose to automatically configure the preceding recommendation based on a set of default conditions, or can manually implement the configuration using a configuration toolkit.

Ex. 1001, 10:36–63 (emphases added by Patent Owner); PO Resp. 17–18.

In its Reply, Petitioner argues that Patent Owner’s proposed construction “should be rejected because it does not construe the claim language at

issue in this proceeding,” but instead Patent Owner’s analysis is entirely focused on language present in the claims of the ’482 patent. Pet. Reply 7. Petitioner asserts that the “claim language is plain on its face, includes no terms of art and requires no construction.” *Id.* at 5 (citing Ex. 1058, 44:19–45:4, 83:13, 95:16–20).

Petitioner also addresses Patent Owner’s proposed construction. In this regard, Petitioner argues that “[r]ather than interpret ‘changes,’ [Patent Owner] twice repeats the word in its construction and tacks on additional limitations that result in [Patent Owner’s] construction failing to give ‘changes’ its broadest reasonable interpretation.” Pet. Reply 8. According to Petitioner, the “only limitation the ’111 [patent] claims impose on ‘changes’ is that they ‘affect the information in the first . . . or . . . second portion of the server.’” *Id.* Petitioner asserts that the “plain language of the claims does not limit ‘changes’ to the narrow category of changes [Patent Owner] alleges (i.e., those that arise from changes external to the application).” *Id.*

We agree with Petitioner that the Specification of the ’111 patent “nowhere refers to changes ‘that arise from changes external to the application,’ and does not limit ‘changes’ in any way” and “[t]here is no disclaimer in the ’111 patent that limits the meaning of ‘changes’ in the manner [Patent Owner] alleges.” Pet. Reply 9; *see* Ex. 1062 ¶¶ 4–5.

While Patent Owner points to several portions of the Specification of the ’482 patent¹¹ in support of its argument that the claimed changes should be limited to those external to the application, we are not

¹¹ The ’111 patent and the ’482 patent “have substantially identical specifications and drawings.” PO Resp. 1 n.2.

persuaded that the discussion in the Specification rises to the level of “reasonable clarity, deliberateness, and precision” necessary to provide a special definition for the claim term. *See In re Paulsen*, 30 F.3d at 1480. In fact, as noted by Petitioner, the “specification also describes an embodiment in which intelligent agents pursue ‘internal’ as well as ‘external Web activities.’” Pet. Reply 12 (citing Ex. 1001, 19:66–67).

Based on the evidence in this record, we determine that the plain meaning of the phrase “fourth portion of the server being configured to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server” is consistent with the Specification. We are not persuaded that the recited function of “automatically detect[ing] changes” is limited to detecting changes external to the application, as proposed by Patent Owner. No further express construction of the claim phrase is necessary.

D. Principles of Law – Anticipation and Obviousness

To prevail in its challenges to the patentability of the claims, a petitioner must establish facts supporting its challenges by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts

to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326– 27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

To establish anticipation, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *See Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). Although the elements must be arranged or combined in the same way as in the claim, “the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); *accord In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented 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. *See 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) objective evidence of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). In an *inter partes* review, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int'l, Ltd.*, 829

F.3d 1364, 1380 (Fed. Cir. 2016). Thus, to prevail Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable.

At this final stage, we determine whether a preponderance of the evidence of the record shows that the challenged claims are anticipated by and/or would have been obvious in view of asserted prior art. We analyze the asserted grounds of unpatentability in accordance with those principles.

E. Anticipation by Popp

Petitioner asserts that independent claim 13, as well as claims 14–18 which depend therefrom, are anticipated by Popp. Pet. 13–23. Patent Owner argues that Popp does not disclose a “fourth portion,” as recited in independent claim 13. PO Resp. 22–25. We have reviewed the entire record before us, including the parties’ contentions and supporting evidence presented during this trial. For the reasons explained below, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 13–18 are unpatentable.

1. Overview of Popp

Popp relates to an “object-oriented approach [that] provides the ability to develop and manage Internet transactions.” Ex. 1004, Abstract. According to Popp, “[l]ocal applications can be accessed using any workstation connected to the Internet regardless of the workstation’s configuration.” *Id.* Popp describes that “[o]nce [a] connection is established, the present invention is used with an application on the server side of the connection to dynamically generate Web pages [that] contain application information and provide the ability for the user to specify input.” *Id.*

at 3:55–59. Web pages can be generated in response to the user input.

Id. at 3:61–63.

Figure 2 of Popp is reproduced below:

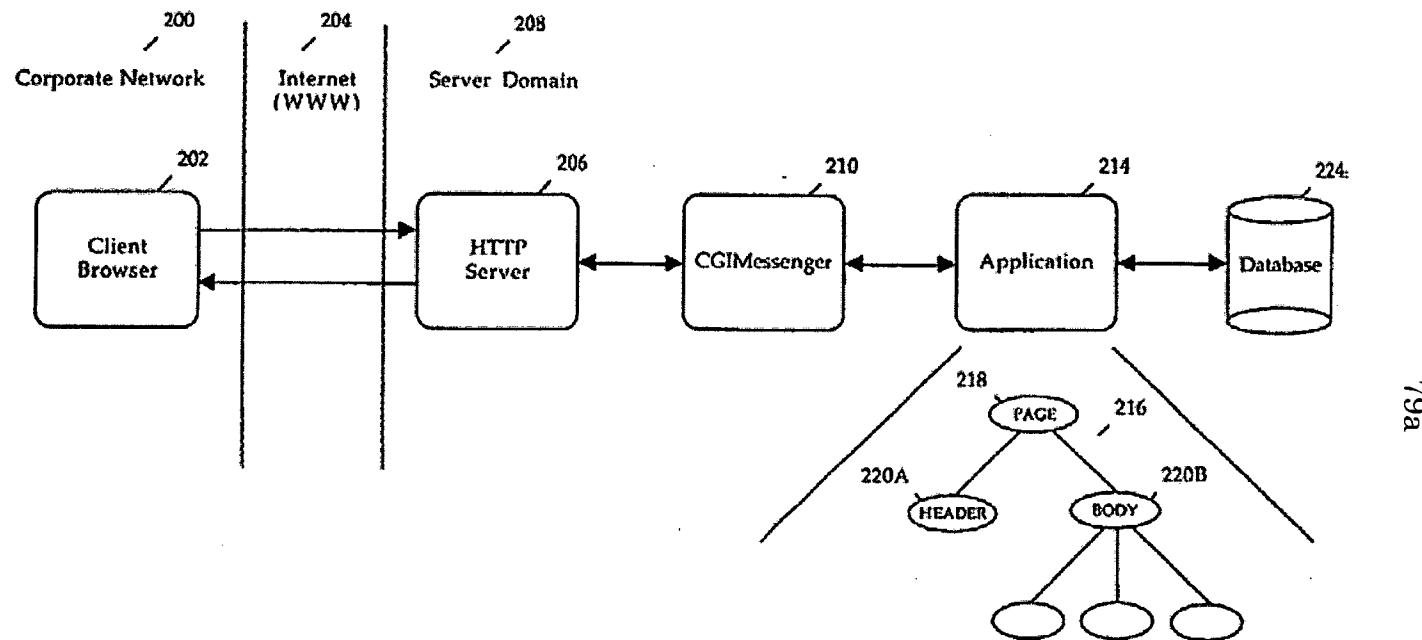


Figure 2

As seen in Figure 2 of Popp, Client Browser 202 is connected via Internet 204 to Server Domain 208, which includes among other things Application 214 and Database 224. *Ex. 1004, 6:40–7:23, 7:31–34.* Application 214 includes objects 216 that correspond to the HTML elements that define a Web page and are arranged in a tree structure that corresponds to the hierarchical structure of the HTML elements that they implement. *Id. at 12:21–26.* The self-contained modules, or components, may be shared by one or more Web pages in a single application and/or across multiple applications executing on a server. *Id. at 4:27–33, 4:41–43, 17:54–18:32.*

A scriptedControl object controls generation of a Web page. *Id. at 18:62–19:19, Fig. 6A.* Further, an inputControl object handles pushing and pulling data to/from the Web page and the external data source (e.g., database 224). *Id. at 21:61–22:67, Fig. 6B.* The inputControl object determines, for example, when a database entry should be updated based on information input to the Web page and sends an appropriate message to update the database. *Id. at 21:37–49.*

2. *Claim 13*

Claim 13 recites a “system, comprising: a server accessible by a browser executed on a client device, the server including a first portion, a second portion, a third portion, and a fourth portion.” Petitioner asserts that “Popp’s Server Domain 208 is accessible by Client Browser 202, executed on a client device.” Pet. 18 (citing *Ex. 1004, Fig. 2*). According to Petitioner, Server Domain 208 of Popp “includes database 224 (first portion), object tree 216 (second portion), internal application 214 (third portion), and inputControl object 664 (fourth portion, used by

internal application 214)," corresponding to the server portions recited in claim 13. *Id.* (citing Ex. 1004, 7:52–58, 12:21–32, Figs. 2, 6B); *see id.* at 14–17; Ex. 1002 ¶¶ 31, 34, 35, 40. Popp further discloses that "Database 224 can be resident on the same server as application 214," which also includes object tree 216 and inputControl object 664. Ex. 1004, 7:32–33, 7:52–58, 12:21–32; *see* Pet. 17, 18; Ex. 1002 ¶¶ 22, 31, 34, 35, 40. Thus, according to Petitioner, Popp discloses all four claimed "portions" on the same server.

Regarding the claimed "first portion of the server having information about unique aspects of a particular application," Petitioner describes the Web page of Popp as "meet[ing] the 'application' whose functionality and UI are dynamically generated" of the claim. Pet. 13–14 (citing Ex. 1002 ¶ 32). According to Petitioner, Popp discloses that database 224 (first portion) "contain[s] information about unique aspects of a particular Web page (application), e.g., for an Automobile Shopper's application that can be used by a prospective car buyer to select a car." *Id.* at 18 (citing Ex. 1004, 9:4–10, 9:56–61); *see* Ex. 1002 ¶ 31.

The claim further recites "the second portion of the server [has] information about user interface elements and one or more functions common to various applications, the various applications including the particular application." Petitioner relies on the following as disclosing this claimed feature:

Web page objects 216 [of Popp] correspond to HTML elements that define a web page and include component sub-trees representing user interface portions (e.g., text boxes, check boxes,

radio buttons) that can be shared across Web pages, and thus contain information about user interface elements (e.g., data entry elements) and functions (e.g., receiving and processing input data) common to various applications (Web pages), including any particular application (Web page) whose data is stored in the database.

Pet. 15 (citing Ex. 1002 ¶ 34); *see id.* at 18–19 (citing Ex. 1004, 2:33–41, 4:26–33, 4:41–43, 11:37–44, 12:21, 17:54–55, 18:32–43); Ex. 1002 ¶¶ 26, 31.

Regarding the claimed “third portion of the server being configured to dynamically generate a functionality and a user interface for the particular application,” Petitioner points to internal application 214 of Popp, which “includes scriptedControl Object 602 to generate and manage a Web page,” as disclosing this claimed feature. Pet. 15 (citing Ex. 1004, 8:49–55, 18:62–65, 19:1–2; Ex. 1002 ¶ 36); *see id.* at 19 (citing Ex. 1004, 3:55–59, 7:45–49, 8:49–55, 18:65–67, 19:29–38, 31:44–49). According to Petitioner, the “scriptedControl object 602 retrieves application-specific data from the database (first portion) and combines it with the object tree (second portion) in order to dynamically generate the functionality and user interface for the Web page (application),” thus disclosing the claim limitation that “the functionality and the user interface of the particular application [are] based on the information in the first portion of the server and the information in the second portion of the server.” *Id.* at 15 (citing Ex. 1004, 18:65–67, 19:29–38, 22:37–42, Figs. 6A, 6B; Ex. 1002 ¶¶ 36–37); *see id.* at 19 (citing Ex. 1004, 19:18–19, 19:35–38).

Petitioner further points to the fact that Popp's "Web page can include a Java applet that, when downloaded over an established connection between the client and the server and processed by a browser, presents the UI and functionality to the user," as disclosing that the claimed "third portion of the server [is] configured to send the functionality and the user interface for the particular application to the browser upon establishment of a connection between the server and the client device." Pet. 16 (citing Ex. 1004, 31:1–3; Ex. 1002 ¶¶ 38, 39); *see id.* at 20 (citing Ex. 1004, 3:55–65, Fig. 2).

Finally, regarding the claimed "fourth portion of the server [that is] configured to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server," Petitioner relies on Popp's *inputControl* object 664. Pet. 16–17. According to Petitioner, *inputControl* object 664 is responsible for detecting and responding to user input received from the web page user interface, such as a modification of field 632 in Web page 662. *Id.* (citing Ex. 1004, 22:28–62; Ex. 1002 ¶ 40); *see id.* at 20. Petitioner further asserts that "[w]hen *inputControl* object 664 detects a change . . . , the Web page objects (second portion) are automatically modified by storing the data retrieved from the Web page form in text object 654 and/or context object 628, and the database 630 (first portion) is automatically modified to store the changed data." *Id.* at 17 (citing Ex. 1004, 22:28–62, Fig. 6B; Ex. 1002 ¶ 40).

We agree with Petitioner's mapping of Popp to claim 13, and adopt it as our own.

Patent Owner argues that Popp does not disclose the "fourth portion" recited in claim 13. PO Resp. 22–

25. Regarding claim 13 specifically, Patent Owner refers to its arguments regarding claim 1 of the '482 patent, and asserts that “[f]or similar reasons, Popp’s disclosure of reaction to user input text is inadequate to anticipate the ‘fourth portion’ limitation required in every claim of the ‘111 patent.” *Id.* at 25 (citing Ex. 2032 ¶ 65; Ex. 2033 ¶¶ 49-50). We, thus, address Patent Owner’s arguments regarding claim 1 of the '482 patent herein.

In this regard, Patent Owner argues that “Popp does not disclose a ‘change management layer’ which ‘automatically detects changes which impact how the application program should operate’ where those ‘changes’ ‘arise from changes external to the application.’” *Id.* at 24 (citing Ex. 2032 ¶¶ 63-64; Ex. 2033 ¶¶ 46-50). Patent Owner argues that Popp instead discloses “automatically detect[ing] changes from [an application’s] *own operation* – in this case, user input of text data via a user interface.” *Id.* at 23 (citing Ex. 2031, 67:10-25). Patent Owner’s arguments rely upon its proposed construction of the claimed “change management layer” and “fourth portion,” which we do not adopt for the reasons discussed above (*see supra* Section II.C). We are persuaded by Petitioner’s assertion that automatically detecting a change that affects information (e.g., an employee name) stored in the database (i.e., the claimed “first portion”) discloses detecting a change that affects the application, as claimed. *See, e.g.*, Ex. 1001, 12:20-32 (describing the business content layer (i.e., “first portion”) as a database that may include data associated with a selected area of business, such as finance or human resources).

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Popp anticipates claim 13.

3. Claims 14–18

For each of claims 14–18, Petitioner provides arguments as to how each claim limitation is disclosed in Popp, and relies upon Dr. Crovella's testimony. *See* Pet. 20–23 (citing Ex. 1004, 2:25–32, 3:55–63, 16:48–17:52, 18:32–34, 19:50–20:37, 21:61–22:13, 22:37–48, 22:64–65, Fig. 2; Ex. 1002 ¶¶ 41–45). We agree with Petitioner's mapping of Popp to these claims, and adopt it as our own.

Patent Owner does not substantively discuss dependent claims 14–18, apart from its discussion of independent claim 13, which we have addressed above. *See* PO Resp. 22–25.

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Popp anticipates claims 14–18.

F. Anticipation by Kovacevic

Petitioner asserts that independent claim 13, as well as claims 14–18 which depend therefrom, are anticipated by Kovacevic. Pet. 24–33. Patent Owner argues that Kovacevic does not disclose a “fourth portion,” as recited in independent claim 13. PO Resp. 25–28. We have reviewed the entire record before us, including the parties' contentions and supporting evidence presented during this trial. For the reasons explained below, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 13–18 are unpatentable.

1. Overview of Kovacevic

Kovacevic relates to a system called MUSE that uses a model-based technology to implement an

intelligent tutoring system having a flexible user interface. Ex. 1005, Abstract. The system described in Kovacevic includes an application-specific library, which “contains procedural code implementing the functional core of applications whose UIs are to be generated,” and an interaction-specific library, which “contains a library of communications primitives—interaction techniques and presentation objects—to be used when assembling UI structures.” *Id.* at 117. The MUSE program uses these libraries to build and generate a user interface. *Id.* As further discussed in Kovacevic, the libraries, and if desired the entire MUSE program, could be transported over a browser using Java. *Id.* Kovacevic also discusses a sequencing control primitive that monitors and updates the system when something affecting information-flow-control primitives occurs. *Id.* at 114.

2. *Claim 13*

Claim 13 recites a “system, comprising: a server accessible by a browser executed on a client device, the server including a first portion, a second portion, a third portion, and a fourth portion.” Petitioner asserts that “Kovacevic’s SLOOP Server is accessible over the Web by an HTML browser executed on a UI client device.” Pet. 28 (citing Ex. 1005, Fig. 1). According to Petitioner, the “SLOOP Server includes the application- specific library (first portion), the interaction-specific library (second portion), the main MUSE program (third portion), and the sequencing control primitives (fourth portion),” corresponding to the server portions recited in claim 13. Pet. 28 (citing Ex. 1005, 117 (col. 2 ¶ 7)); *see id.* at 24–28; Ex. 1002 ¶¶ 50, 51, 53, 58. Thus, according to Petitioner,

Kovacevic discloses all four claimed “portions” on the same server.

Regarding the claimed “first portion of the server having information about unique aspects of a particular application,” Petitioner describes that a “tutoring course generated with a particular UI is a particular ‘application’ as recited in the claims.” Pet. 24 (citing Ex. 1002 ¶ 50). According to Petitioner, Kovacevic discloses that a “particular tutoring course is represented by an application-specific model specification with software primitives provided in an application-specific library.” *Id.* (citing Ex. 1005, 117 (col. 1 ¶ 4, col. 2 ¶ 7); Ex. 1002 ¶ 50); *see id.* at 28–29.

The claim further recites “the second portion of the server [has] information about user interface elements and one or more functions common to various applications, the various applications including the particular application.” Petitioner relies on an interaction-specific library in Kovacevic as disclosing this claimed feature. Pet. 24–25, 29. According to Petitioner, the interaction-specific library has “information about user interface elements (e.g., communication UI primitives in the interaction-specific library) and one or more functions (e.g., mapping between external inputs and internal forms) common to various applications (including the particular application represented by a downloaded application-specific library).” *Id.* at 24–25 (citing Ex. 1005, 114 (col. 1 ¶ 2), 115 (col. 1 ¶ 2), 116 (col. 1 ¶ 6), 117 (col. 1 ¶ 5); Ex. 1002 ¶ 51); *see id.* at 29 (citing Ex. 1005, 113 (col. 2 ¶ 2), 114 (col. 1 ¶ 2), 117 (col. 1 ¶ 5, col. 2 ¶ 7)).

Regarding the claimed “third portion of the server being configured to dynamically generate a functionality and a user interface for the particular

application,” Petitioner points to the “main program” of Kovacevic as disclosing this claimed feature. Pet. 25, 29. According to Petitioner, Kovacevic’s main program “generates the tutoring application (including the functionality and the UI of the tutoring course) using the primitives in the application-specific library (first portion) and the application-independent interaction-specific library (second portion).” *Id.* at 25 (citing Ex. 1005, 117 (col. 1 ¶ 4, col. 2 ¶ 7); Ex. 1002 ¶¶ 52–53); *see id.* at 29 (citing Ex. 1005, 109 (col. 1 ¶ 3, ¶ 5, col. 2 ¶ 4), 117 (col. 1 ¶ 4, col. 2 ¶ 7)). According to Petitioner, this generation of the tutoring application “is done by mapping application model primitives provided in the application- specific library (first portion) onto UI primitives including the communication primitives in the interaction-specific library (second portion) to construct a fully specified UI,” thus disclosing the claim limitation that “the functionality and the user interface of the particular application [are] based on the information in the first portion of the server and the information in the second portion of the server.” *Id.* at 25 (citing Ex. 1002 ¶ 54); *see id.* at 29–30 (citing Ex. 1005, 115 (col. 1 ¶ 2), 116 (col. 1 ¶ 6), Figs 5, 6, 8).

Petitioner further points to the fact that “[h]aving downloaded the application-specific library for a particular tutoring application, [Kovacevic’s] main MUSE program generates and sends the application’s functionality and UI to be rendered in the client’s browser,” as disclosing the limitation that “the third portion of the server [is] configured to send the functionality and the user interface for the particular application to the browser upon establishment of a connection between the server and the client device.” Pet. 27–28 (citing Ex. 1005, 110 (col. 1 ¶ 4), 117 (col. 1

¶ 4, col. 2 ¶ 7); Ex. 1002 ¶¶ 52–56); *see id.* at 30 (citing Ex. 1005, 108 (col. 1 ¶ 2, ¶ 4), 117 (col. 2 ¶ 7)).

Finally, regarding the claimed “fourth portion of the server [that is] configured to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server,” Petitioner relies on Kovacevic’s sequencing control primitives. *Id.* at 25–26. Kovacevic describes that the “sequencing control primitives maintain and monitor the relevant UI context. They update the context whenever something potentially affecting [information-flow-control] primitives happens, and they constantly evaluate the context to enable/disable those primitives.” Ex. 1005, 114 (col. 2 ¶ 6); *see* Pet. 30. According to Petitioner, “[c]hanges such as user input via the UI or selection of UI elements affect the information in the second portion of the server, e.g., by causing certain UI elements to be enabled or disabled,” and the sequencing control primitives of Kovacevic monitor for such user input to enable appropriate enable/disable response of the UI element when a user selection is made. Pet. 25–26 (citing Ex. 1005, 114 (col. 2 ¶ 6), 115 (col. 2); Ex. 1002 ¶ 57).

We agree with Petitioner’s mapping of Kovacevic to claim 13, and adopt it as our own.

Patent Owner argues that Kovacevic does not disclose the “fourth portion” recited in claim 13. PO Resp. 25–28. Regarding claim 13 specifically, Patent Owner refers to its arguments regarding claim 1 of the ’482 patent, and asserts that “[l]ikewise, claims 13–18 of the ’111 patent cannot be anticipated by Kovacevic because Kovacevic does not disclose the required ‘fourth portion.’” *Id.* at 28 (citing Ex. 2032 ¶ 73; Ex. 2033 ¶ 55). We, thus, address Patent

Owner's arguments regarding claim 1 of the '482 patent herein.

In this regard, Patent Owner argues that “[w]hile Kovacevic describes making the website responsive to user interaction, Kovacevic has no disclosure relevant to changes ‘external to the application.’” PO Resp. 25 (citing Ex. 2032 ¶ 69; Ex. 2033 ¶ 54). Patent Owner argues that “change[s] from a user interacting with the user interface, or . . . change[s] from a user selecting different user interface elements” are not “external to an application.” *Id.* at 27; *see id.* at 27–28 (citing Ex. 2032 ¶¶ 71–72; Ex. 2033 ¶¶ 54–55). Again, Patent Owner's arguments rely upon its proposed construction of the claimed “change management layer” and “fourth portion,” which we do not adopt for the reasons discussed above (*see supra* Section II.C).

As noted above, Petitioner relies on the UI primitives in the interaction-specific library of Kovacevic as disclosing the claimed second portion. We are persuaded by Petitioner's assertion that detecting user input (a change) that affects whether certain UI elements are enabled or disabled (i.e., information regarding the UI primitives in the second portion) discloses the fourth portion's claimed function of detecting changes that affect the information in the second portion.

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Kovacevic anticipates claim 13.

3. Claims 14–18

For each of claims 14–18 Petitioner provides arguments as to how each claim limitation is disclosed in Kovacevic, and relies upon Dr. Crovella's

testimony. *See* Pet. 31–33 (citing Ex. 1005, 110 (col. 1 ¶¶ 4–5, col. 2 ¶ 2), 112 (Fig. 4), 113 (col. 2 ¶ 2), 114 (col. 1 ¶ 2), 117 (col. 1 ¶ 4); Ex. 1002 ¶¶ 59–63). We agree with Petitioner’s mapping of Kovacevic to these claims, and adopt it as our own.

Patent Owner does not substantively discuss dependent claims 14–18, apart from its discussion of independent claim 13, which we have addressed above. *See* PO Resp. 28.

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Kovacevic anticipates claims 14–18.

G. Obviousness in View of Balderrama and Java Complete

Petitioner asserts that independent claim 13, as well as claims 14–18 which depend therefrom, would have been obvious in view of the combination of Balderrama and Java Complete. Pet. 34–45. Patent Owner argues that Balderrama does not disclose a “fourth portion,” as recited in independent claim 13. PO Resp. 28–32. We have reviewed the entire record before us, including the parties’ contentions and supporting evidence presented during this trial. For the reasons explained below, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 13–18 are unpatentable.

1. Overview of Balderrama

Balderrama relates to a system that can offer various goods for sale, in a self-service fashion with an “electronic device capable of accepting and transmitting a customer’s input,” such as a touch-screen display. Ex. 1006, 1:8–12, Fig. 1. The system of Balderrama includes template presentations and a database containing items intended for sale at a

particular sales outlet. *Id.* at 2:11–16, Fig. 3; *see also id.* at 6:48–58 (discussing template files), 8:64–9:2 (discussing “transmitted copy” of a template); 9:15–20 (discussing database records). A “configuring routine” uses information from the template presentation and the database for a particular sales outlet to create a presentation to display on the electronic device at the sales outlet. *Id.* at 11:37–48, Fig. 3 (element 84). The system is also configured to handle modifications to the database and/or updates to the presentation template. *Id.* at 2:17–21, 11:64–67, Fig. 6. Update/modification detector 82 receives information about updates to the template presentation and/or modifications to the database, and acts accordingly to update the presentation at the customer terminal. *Id.* at 8:21–64, 9:7–27, 10:11–24, Fig. 3 (arrows 81b, 87b, 83b).

2. Overview of Java Complete

Java Complete is a compilation of several articles in DATAMATION Magazine, discussing a “new simplified object-based, open-system [programming] language that allows software developers to engineer applications that can be distributed over the Internet.” *See Ex. 1007, 1–3, 28.* Java Complete provides information about the Java programming language. For example, as discussed in the magazine, “Java reinvents the way applications are distributed to clients and executed,” and provides “an easy way to deliver business information broadly.” *Id.* at 40. As further described, “network-centric Java applets . . . don’t have to be preinstalled—they install themselves just in time, on the fly, and deinstall themselves when they’re no longer needed.” *Id.* at 42. One example provided in Java Complete of a type of business

application that could be built with Java applets is an order-entry system. *Id.*

3. *Claim 13*

Claim 13 recites a “system, comprising: a server... including a first portion, a second portion, a third portion, and a fourth portion.” Petitioner asserts that “Balderrama’s manager station 10 is a server accessible by customer terminal 20a (client device) over POS LAN 14.” Pet. 39 (citing Ex. 1006, Fig. 1). According to Petitioner, Balderrama’s “[m]anager station 10 (server) includes in-store database 86 with records/files 87a (first portion), transmitted copy template presentation 80 (second portion), configuring routine 84 (third portion), and update/modification detector 82 (fourth portion),” corresponding to the server portions recited in claim 13. *Id.* at 40 (citing Ex. 1006, Fig. 3); *see id.* at 34–37; Ex. 1002 ¶¶ 71–73, 77. Petitioner asserts that each of these portions is “disclosed as being stored or executed on manager station 10.” Pet. 37 (citing Ex. 1006, 8:67–9:2, 9:16– 27, 11:38–46). Thus, according to Petitioner, Balderrama teaches all four claimed “portions” on the same server.

Regarding the claimed “first portion of the server having information about unique aspects of a particular application,” Petitioner describes Balderrama’s “order-entry presentation for a particular sales outlet (configured presentation 90),” which “is a UI for a user to view items for sale at the outlet and enter and order in an automated fashion, e.g., via a touch screen,” as the “particular application” of the claim. *Id.* at 34 (citing Ex. 1006, 1:8–23, 2:11–16, Fig. 1; Ex. 1002 ¶¶ 64, 71). Balderrama discloses that in-store database 86 with records/files 87a (i.e., the first portion) “contain data

records/information about items intended for sale at a particular sales outlet" (i.e., the "particular application"). Ex. 1006, 9:17– 21, Fig. 3; *see* Pet. 34– 35, 40; Ex. 1002 ¶¶ 64, 71.

The claim further recites "the second portion of the server [has] information about user interface elements and one or more functions common to various applications, the various applications including the particular application." Petitioner describes Balderrama's disclosure of "shared-across-outlets template presentation 80 from headquarters is transmitted to manager station 10 (the outlet's server) for combination with the outlet-specific data," as disclosing this claimed feature. Pet. 35–36 (citing Ex. 1006, 6:48–58, 8:67–9:2, 11:43–46; Ex. 1002 ¶ 72); *see id.* at 40–41 (citing Ex. 1006, 6:48–58, 7:19–23, 8:64–9:2, 11:43–46, Figs. 3, 11).

Regarding the claimed "third portion of the server being configured to dynamically generate a functionality and a user interface for the particular application," Petitioner describes that "Balderrama employs a configuring routine 84 . . . to retrieve data from the outlet-specific database 86 (first portion) and combine it with the generic template presentation 80 (second portion) in order to generate the functionality and user interface elements of the configured presentation 90 (application) for presentation to the customer," thus disclosing this claimed feature. Pet. 36 (citing Ex. 1006, 11:38–46, Fig. 3; Ex. 1002 ¶¶ 73–74); *see id.* at 41 (citing Ex. 1006, 11:38–46, 14:64–65, 16:20–21, 16:55–17:5, Fig. 3). According to Petitioner, "[c]onfiguring routine 84 matches items in the template presentation (second portion) with items in the database (first portion), activating the sales items that are sold in the particular sales outlet, and

incorporating those items' prices from the database into the corresponding cells in the template presentation," thus disclosing the claim limitation that "the functionality and the user interface of the particular application [are] based on the information in the first portion of the server and the information in the second portion of the server." *Id.* at 36 (citing Ex. 1006, 14:64–65, 16:20–21, 16:55–17:5; Ex. 1002 ¶ 73); *see id.* at 41 (citing Ex. 1006, 8:67–9:2, 10:10–13, Fig. 3).

Regarding the claimed "fourth portion of the server [that is] configured to automatically detect changes that affect the information in the first portion of the server or the information in the second portion of the server," Petitioner relies on Balderrama's update/modification detector 82. Pet. 36–37. According to Petitioner, update/modification detector 82 "automatically detects changes to the outlet-specific database (affecting the information in the first portion of the server) or the generic template presentation (affecting the information in the second portion of the server)." *Id.* at 36 (citing Ex. 1006, 10:14–21, 11:64–67; Ex. 1002 ¶ 77); *see id.* at 42 (citing Ex. 1006, 2:16–21, 10:14–21, 11:64–67, 12:34–38, Fig. 3). Petitioner further asserts that "[i]n response to update/modification detector 82 detecting changes . . . , a currently-running presentation is interrupted and re-configured." *Id.* at 37 (citing Ex. 1006, 9:7–15; Ex. 1002 ¶ 77).

Petitioner relies on Java Complete in combination with Balderrama for teaching that the server is "accessible by a browser executed on a client device," as claimed, and that the claimed "third portion of the server [is] configured to send the functionality and the user interface for the particular application to the

browser upon establishment of a connection between the server and the client device" *Id.* at 38–40. According to Petitioner, Balderrama teaches distributing the application from a server to a client over a LAN network but does not explicitly state that the server is accessible by a browser executed on the client device. *Id.* at 37 (citing Ex. 1002 ¶ 67). Java Complete "describes using browsers for UI delivery over the Internet and within a company's internal network." *Id.* at 38 (citing Ex. 1007, 30, 31, 40; Ex. 1002 ¶ 68). Petitioner asserts that "[i]t would have been obvious to a [person of ordinary skill in the art] to implement a browser on Balderrama's customer terminal for receiving and executing the order-entry application, as browsers were commonly used to receive UI applications in client-server systems." *Id.* at 37–38 (citing Ex. 1002 ¶¶ 68–69).

Petitioner further points to Java Complete's teaching that "the client browser executes a Java applet received from the server to dynamically generate the UI functionality of the application," asserting that a person of ordinary skill "would have been motivated to implement Balderrama's order-entry application as a Java applet delivered to a browser executed by the customer terminal (client device) because of the ease-of-implementation benefits of using Java and readily-available web browsers." *Id.* at 38 (citing Ex. 1007, 32, 40, 42; Ex. 1002 ¶¶ 68–69). According to Petitioner, Java applets are delivered in client-server systems by being downloaded upon establishment of a connection between the server and the client device. *Id.* at 39 (citing Ex. 1007, 32). Thus, Petitioner asserts:

[i]n the obvious combination of Balderrama and Java Complete, customer terminal 20a/94

(client device) executes a browser to access the server (manager station 10), and configuring routine 84 (third portion of the server) is configured to send the functionality and UI for the particular application (configured presentation 85) to the browser upon establishment of a connection between the server and the client device.

Id.

We agree with Petitioner's mapping of Balderrama and Java Complete to claim 13, and adopt it as our own.

Patent Owner argues that Balderrama does not disclose the "fourth portion" recited in claim 13. PO Resp. 28–32. Regarding claim 13 specifically, Patent Owner refers to its arguments regarding claim 1 of the '482 patent, and asserts that "[s]imilarly, the Balderrama in view of Java Complete [combination] cannot render any claim of the 'fourth portion' of claim 13 of the '111 patent obvious." *Id.* at 32 (citing Ex. 2032 ¶ 82; Ex. 2033 ¶ 62). We, thus, address Patent Owner's arguments regarding claim 1 of the '482 patent herein.

In this regard, Patent Owner asserts that the update/modification detector 82 of Balderrama (upon which Petitioner relies as teaching the claimed change management layer) merely "detects [manual] user input" and argues that "[o]ne of ordinary skill in the art would not recognize the 'update/modification detector 82' as [a] 'change management layer' that detects 'changes' under the broadest reasonable interpretation" thereof. PO Resp. 29 (citing Ex. 2032 ¶¶ 74–75, 77; Ex. 2033 ¶ 56; Ex. 1006, 2:10–21, 10:6–9, Table A (col. 7)). Patent Owner further argues that

update/modification detector 82 merely notifies the system of a detected change. *Id.* at 30 (citing Ex. 1006, 9:2–14). Again, Patent Owner’s arguments rely upon its proposed construction of the claimed “change management layer” and “fourth portion,” which we do not adopt for the reasons discussed above (*see supra* Section II.C).

We are persuaded by Petitioner’s assertion that notifying Balderrama’s update/modification detector 82 of a change in data records or template presentations, *see* Ex. 1006, Fig. 3, constitutes the claimed function of the “fourth portion.”

Based on the evidence of record, we are persuaded that Petitioner has shown that the combination of Balderrama and Java Complete teaches or suggests all of the limitations of claim 13, and has articulated sufficient reasoning why it would have been obvious to combine these references in the proposed manner. We, thus, determine Petitioner has shown, by a preponderance of the evidence, that the combination of Balderrama and Java Complete renders claim 13 obvious.

4. *Claims 14–18*

For each of claims 14–18, Petitioner provides arguments as to how each claim limitation is disclosed in the combination of Balderrama and Java Complete, and relies upon Dr. Crovella’s testimony. *See* Pet. 42–45 (citing Ex. 1006, 1:8–14, 6:48–63, 9:13–21, 16:55–17:5, Fig. 3; Ex. 1007, 42; Ex. 1002 ¶¶ 78–82). We agree with Petitioner’s mapping of Balderrama and Java Complete to these claims, and adopt it as our own.

Patent Owner does not substantively discuss dependent claims 14–18, apart from its discussion of

independent claim 13, which we have addressed above. *See* PO Resp. 32.

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that the combination of Balderrama and Java Complete renders claims 14–18 obvious.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 13–18 are unpatentable under 35 U.S.C. § 102 as anticipated by Popp; claims 13–18 are unpatentable under 35 U.S.C. § 102 as anticipated by Kovacevic; and claims 13–18 are unpatentable under 35 U.S.C. § 103 as obvious in view of Balderrama and Java Complete.

IV. ORDER

Accordingly, it is

ORDERED that claims 13–18 of U.S. Patent No. 8,484,111 B2 are held *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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UNITED STATES PATENT AND
TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL
BOARD

RPX CORPORATION,
Petitioner,

v.

APPLICATIONS IN INTERNET TIME, LLC,
Patent Owner.

Case IPR2015-01751

Case IPR2015-01752

Patent 7,356,482 B2

Before LYNNE E. PETTIGREW, MITCHELL G.
WEATHERLY, and JENNIFER MEYER CHAGNON,
Administrative Patent Judges.

CHAGNON, Administrative Patent Judge.

FINAL WRITTEN DECISION

Inter Partes Review

35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1, 3–8, and

10–40 of U.S. Patent No. 7,356,482 B2 (Ex. 1001,¹ “the ‘482 patent”) are unpatentable.

A. Procedural History

RPX Corporation (“Petitioner”) filed a Petition for *inter partes* review of claims 1, 7–21, 27–41, and 47–59 of the ‘482 patent. IPR2015-01751, Paper 1 (“1751 Pet.”). Petitioner also filed a Petition for *inter partes* review of claims 2–6, 22–26, and 42–46 of the ‘482 patent. IPR2015-01752, Paper 1 (“1752 Pet.”). Petitioner provided a Declaration of Mark E. Crovella, Ph.D. (Ex. 1002) to support its positions. Applications In Internet Time LLC (“Patent Owner”) filed a Preliminary Response in each proceeding. IPR2015-01751, Paper 20, Paper 26 (redacted version) (“1751 Prelim. Resp.”); IPR2015-01752, Paper 20, Paper 26 (redacted version) (“1752 Prelim. Resp.”). We also authorized additional briefing on issues relating to real parties-in-interest. *See* IPR2015-01751, Paper 28, Paper 29 (redacted version) (“RPI Reply”); IPR2015-01751, Paper 38, Paper 37 (redacted version) (“RPI Sur-Reply”) (the same documents also were filed in IPR2015-01752, Papers 28, 29, 37, 38).

Pursuant to 35 U.S.C. § 314(a), on February 25, 2016, we instituted *inter partes* review on the following asserted grounds:

¹ Citations to exhibits herein are to the Exhibit numbers in IPR2015-01751. The same Exhibits may be found in IPR2015-01752. For example, Exhibit 1001 in IPR2015-01751 corresponds to Exhibit 1101 in IPR2015-01752.

IPR2015-01751		
References	Basis	Claims Challenged
Popp ²	§ 102	1, 7, 8, 10–13, 18–21, 27–33, 38–40
Popp and Anand ³	§ 103	13–17, 33–37
Kovacevic ⁴	§ 102	1, 8, 10, 19–21, 28, 30, 39, 40
Balderrama ⁵ and Java Complete ⁶	§ 103	1, 7, 8, 10–12, 19–21, 27–32, 39, 40

IPR2015-01751, Paper 51⁷ (“1751 Inst. Dec.”).

² U.S. Patent No. 6,249,291 B1, issued June 19, 2001 (Ex. 1004).

³ U.S. Patent No. 5,710,900, issued Jan. 20, 1998 (Ex. 1009).

⁴ Srdjan Kovacevic, *Flexible, Dynamic User Interfaces for Web-Delivered Training*, in AVI ‘96 PROCEEDINGS OF THE WORKSHOP ON ADVANCED VISUAL INTERFACES 108–18 (1996) (Ex. 1005).

⁵ U.S. Patent No. 5,806,071, issued Sept. 8, 1998 (Ex. 1006).

⁶ *Java Complete!*, 42 DATAMATION MAGAZINE 5, 28–49 (Mar. 1, 1996) (Ex. 1007).

⁷ A public version of the Institution Decision is available as Paper 62.

IPR2015-01752		
References	Basis	Claims Challenged
Popp	§ 102	22
Popp and Codd ⁸	§ 103	3–6, 23–26

IPR2015-01752		
References	Basis	Claims Challenged
Balderrama and Java Complete	§ 102	22
Balderrama, Java Complete, and Codd	§ 103	3–6, 23–26
Kovacevic and Codd	§ 103	3–6, 23–26

IPR2015-01752, Paper 51⁹ (“1752 Inst. Dec.”).

Subsequent to institution, Patent Owner filed a Patent Owner Response (IPR2015-01751, Paper 65 (“PO Resp.”)¹⁰), along with Declarations of H.V. Jagadish, Ph.D. (Ex. 2032) and James Flynn (Ex. 2033) to support its positions. Petitioner filed a Reply to the Patent Owner Response in each proceeding (IPR2015-01751, Paper 72 (“1751 Pet. Reply”); IPR2015-01752, Paper 70 (“1752 Pet. Reply”)), along

⁸ E. F. Codd, *Does Your DBMS Run By the Rules?*, XIX COMPUTERWORLD 42, 49–60 (Oct. 21, 1985) (Ex. 1008).

⁹ A public version of the Institution Decision is available as Paper 60.

¹⁰ Patent Owner filed an identical Patent Owner Response in IPR2015-01752 (Paper 63). For convenience, we refer to both documents as “PO Resp.” herein.

with a Reply Declaration of Dr. Crovella (Ex. 1062). Pursuant to our authorization, Patent Owner filed a limited Sur-Reply (IPR2015-01751, Paper 75 (“PO Sur-Reply”)¹¹). A combined oral hearing for Cases IPR2015-01750, IPR2015-01751, and IPR2015-01752 was held on November 8, 2016. A transcript of the hearing is included in the record. IPR2015-01751, Paper 79 (“Tr.”); IPR2015-01752, Paper 77.

B. Related Proceedings

The '482 patent is the subject of the following district court proceeding: *Applications in Internet Time LLC v. Salesforce.com, Inc.*, No. 3:13-cv-00628 (D. Nev.). 1751 Pet. 3; 1751 Paper 5, 2; 1752 Pet. 3; 1752 Paper 5, 2.

Claims 13–18 of related U.S. Patent No. 8,484,111 B2 are the subject of *inter partes* review in IPR2015-01750. 1751 Pet. 3; 1751 Paper 5, 2; 1752 Pet. 3; 1752 Paper 5, 2.

C. The '482 Patent

The '482 patent, titled “Integrated Change Management Unit,” relates to an “integrated system for managing changes in regulatory and non-regulatory requirements for business activities at an industrial or commercial facility.” Ex. 1001, Abstract. The integrated system described in the '482 patent manages data that is constantly changing by (1) “provid[ing] one or more databases that contain information on operations and requirements concerning an activity or area of business,” (2) “monitor[ing] and evaluat[ing] the relevance of information on regulatory and non-regulatory

¹¹ Patent Owner filed an identical Sur-Reply in IPR2015-01752 (Paper 73).

changes that affect operations of the business and/or information management requirements,” (3) “convert[ing] the relevant changes into changes in work/task lists, data entry forms, reports, data processing, analysis and presentation . . . of data processing and analysis results to selected recipients, without requiring the services of one or more programmers to re-program and/or re-code the software items affected by the change,” and (4) “implement[ing] receipt of change information and dissemination of data processing and analysis results using the facilities of a network, such as the Internet.” *Id.* at 8:30–46, 66–67.

Figure 1 of the '482 patent is reproduced below:

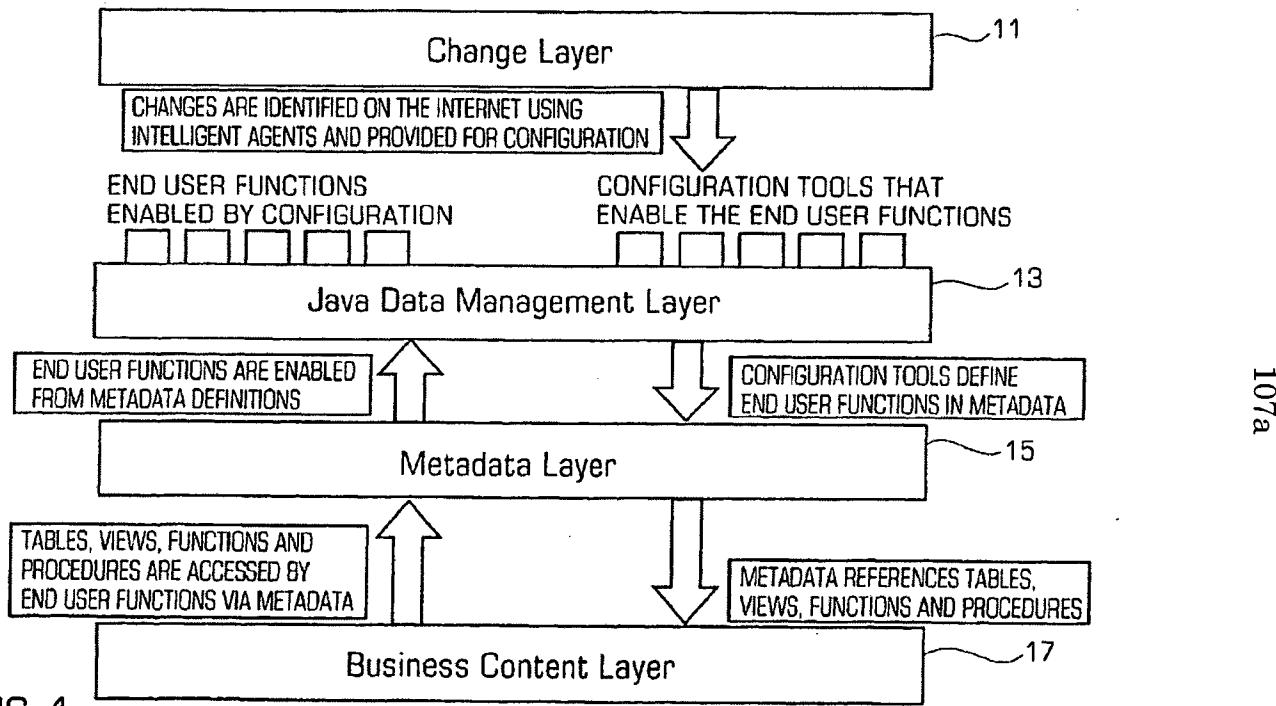


FIG. 1

As shown in Figure 1, the integrated system operates at four layers: (1) change management layer 11 that identifies regulatory and non-regulatory changes that may affect a user's business, (2) Java data management layer 13 that generates a user interface ("UI"), (3) metadata layer 15 that provides data about the user interface including "tools, worklists, data entry forms, reports, documents, processes, formulas, images, tables, views, columns, and other structures and functions," and (4) business content layer 17 that is specific to the particular business operations of interest to the user. *Id.* at 9:33–48. According to the '482 patent, because the system of the invention is "entirely data driven," the need to write and compile new code in order to update the system is eliminated. *Id.* at 10:20, 12:42–52.

D. Illustrative Claim

Of the claims subject to these *inter partes* reviews, claims 1 and 21 are independent. Claims 3–8 and 10–20 depend, directly or indirectly, from claim 1. Claims 22–40 depend, directly or indirectly, from claim 21. Claim 1 of the '482 patent, reproduced below, is illustrative:

1. A system for providing a dynamically generated application having one or more functions and one or more user interface elements, comprising:
 - a server computer;
 - one or more client computers connected to the server computer over a computer network;
 - a first layer associated with the server computer containing information about the unique aspects of a particular application;

a second layer associated with the server computer containing information about the user interface and functions common to a variety of applications, a particular application being generated based on the data in both the first and second layers;

a third layer associated with the server computer that retrieves the data in the first and second layers in order to generate the functionality and user interface elements of the application; and

a change management layer for automatically detecting changes that affect an application,

each client computer further comprising a browser application being executed by each client computer, wherein a user interface and functionality for the particular application is distributed to the browser application and dynamically generated when the client computer connects to the server computer.

Ex. 1001, 32:9–34.

II. ANALYSIS

A. Real Parties-in-Interest

In its Petitions, Petitioner identifies itself, RPX Corporation, as the “sole real party-in-interest in this proceeding.” 1751 Pet. 2; 1752 Pet. 2. Prior to institution, Patent Owner raised the issue of whether Petitioner has identified all real parties-in-interest. In particular, Patent Owner asserted that Salesforce.com, Inc. (“Salesforce”) is an unnamed real party-in-interest. *See* 1751 Prelim. Resp. 3–21; 1752 Prelim. Resp. 3–21.

In our Institution Decisions, we determined that Salesforce had not been shown to be a real party-in-interest in these proceedings. *See* 1751 Inst. Dec. 8–16; 1752 Inst. Dec. 8–16. In its Patent Owner Response, Patent Owner argues:

In its decision instituting these . . . trials, the Board stated that there was insufficient evidence to find that the real party in interest is Salesforce.com, Inc. Patent Owner disagrees with the Board’s view of the law and the facts, and in particular believes that the Board misconstrued the law. As explained previously, the AIA was intended to prevent defendants from getting “a second bite at the apple.” Yet, the Board is doing just that by allowing Petitioner to act indirectly for Salesforce. In its decision, the Board set an improperly high burden of proof for the patent owner, and also improperly shifted the burden of proof to the patent owner. As explained in Patent Owner’s Preliminary Response, Salesforce is the real party in interest and Petitioner is acting as its proxy. Because Salesforce is time limited, so is Petitioner and patentability should be confirmed on this basis.

PO Resp. 8. To the extent Patent Owner is attempting to incorporate arguments made in the Preliminary Response into the Patent Owner Response, such incorporation is improper under our rules. *See* 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”). In any event, Patent Owner has neither presented any new evidence into the record, beyond the evidence we considered

previously in rendering our Institution Decisions, nor cited any legal authority to support its positions set forth above. Based on the complete record now before us, we see no reason to change our previous determination, and we are not persuaded that Salesforce should have been identified as a real party-in-interest in these proceedings.

B. Level of Ordinary Skill in the Art

Petitioner asserts that a “person of ordinary skill in the art in the timeframe of the December 1998 priority date of the ’482 patent . . . would have had at least a B.S. in Computer Science or the equivalent, along with at least two years of computer programming experience in developing applications for client-server systems.” 1751 Pet. 6 (citing Ex. 1002 ¶ 10); 1752 Pet. 6 (citing the same evidence). Patent Owner indicates that it “does not dispute Petitioner’s definition of the person of ordinary skill in the art.” PO Resp. 10; Ex. 2032 ¶ 18; Ex. 2033 ¶ 17. For purposes of this Final Written Decision, we agree with and adopt Petitioner’s proposed definition for the level of ordinary skill in the art, which each declarant in this proceeding meets or exceeds.¹² See Ex. 1002 ¶¶ 2–6, 11; Ex. 2032 ¶¶ 4–9, 19; Ex. 2033 ¶¶ 2–5, 18. We further note that the applied prior art reflects the appropriate level of skill at the time of the claimed

¹² Patent Owner argues that, in the relevant time frame, Dr. Crovella “was already considerably more than ordinary,” and, for this reason, we should give less weight to Dr. Crovella’s testimony. PO Resp. 11; *see also* Tr. 53:4–9, 55:24–56:4. We disagree. *See Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1363–64 (Fed. Cir. 2008) (noting that under Fed. R. Evid. 702, the expert must possess sufficient “expertise to be of assistance” to the trier of fact).

invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. *See* 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016) (upholding the use of the broadest reasonable interpretation standard). Pursuant to that standard, the claim language should be read in light of the specification, as it would be interpreted by one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Thus, we generally give claim terms their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning ‘is the meaning that the term would have to a person of ordinary skill in the art in question.’” (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc))).

The claims, however, “should always be read in light of the specification and teachings in the underlying patent,” and “[e]ven under the broadest reasonable interpretation, the Board’s construction ‘cannot be divorced from the specification and the record evidence.’” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (citations omitted). In other words, “[u]nder a broadest reasonable interpretation, words of the claim must be given their plain meaning, unless such meaning is inconsistent with the specification and prosecution history.” *Trivascular, Inc. v. Samuels*, 812 F.3d 1056, 1062 (Fed. Cir. 2016) (citing *Straight Path IP Grp., Inc. v. Sipnet EU S.R.O.*, 806 F.3d 1356, 1362 (Fed.

Cir. 2015)). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). However, limitations are not to be read from the specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

The parties' dispute requires construction of the phrases "change management layer for automatically detecting changes that affect an application," recited in claim 1, and "automatically detecting changes that affect a particular application," recited in claim 21. No issue in this Decision requires express construction of any other claim terms. *See, e.g., Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) ("[C]laim terms need only be construed '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. change management layer . . .

Claim 1 recites, in part, "a change management layer for automatically detecting changes that affect an application." Ex. 1001, 32:27–28. In the Petitions, Petitioner argues that "[c]hange management" would have been understood by a [person of ordinary skill in the art] to be a mere label for the layer that performs the function recited in the claim, and thus the [broadest reasonable interpretation] for 'change management layer for automatically detecting changes that affect an application' is 'a layer for automatically detecting changes that affect an application.'" 1751 Pet. 10 (citing Ex. 1002 ¶ 23); *see* 1752 Pet. 10 (citing the same evidence).

In its Patent Owner Response, Patent Owner argues that “the term ‘change management layer’ when interpreted in view of the specification would readily be understood to a person of ordinary skill in the art to mean ‘a layer that automatically detects changes *external to the application program* which impact *how the application program should operate.*’” PO Resp. 14 (citing Ex. 2032 ¶ 27; Ex. 2033 ¶ 27) (emphases added); *see id.* at 18. Patent Owner argues, in comparison, that “detecting changes *internal to an application program* is precisely what the claimed ‘third layer’ does.”¹³ *Id.* at 14 (citing Ex. 2032 ¶¶ 34–36).

As can be seen by a comparison of Patent Owner’s proposed construction with the language of claim 1, Patent Owner’s construction adds an additional requirement to the express language of the claim that any detected changes are “external to the application program.” Pointing to discussion in the ’482 patent regarding so-called “intelligent agents” that search on the internet for relevant regulatory and/or non-regulatory changes in a selected business area, Patent Owner argues that “[a]ll of these ‘changes’ shown in the ’482 patent are all ‘external to the application program.’” *Id.* at 16 (citing Ex. 1001, 16:17–34, 19:66–20:6; Ex. 2032 ¶¶ 32–34; Ex. 2033 ¶¶ 33–34). Patent Owner makes a further distinction that “changes that affect an application,” as claimed, are not changes affecting the application in any way,

¹³ We note that the claimed third layer does not recite detecting any changes *per se*, but instead the claim recites that the third layer “retrieves the data in the first and second layers in order to generate the functionality and user interface elements of the application.” *See* Ex. 1001, 32:23–26.

but must be “changes which impact how the application program should operate.” *See* Tr. 66:21–69:3; Ex. 2032 ¶ 27; Ex. 2033 ¶ 27.

Patent Owner further argues that “it would be nonsensical for application-internal ‘changes’ to be the ‘changes that affect the application.’” PO Resp. 17. According to Patent Owner,

The specification includes an example that highlights that the definition proposed by the Patent Owner for the “change management layer” and the associated “change” are the broadest reasonable interpretation when read in light of the specification. The ’482 patent explains that regulations and technical requirements are constantly changing, and that these changes are posted in various media, including paper, microfiche and electronic media.

Id. The example from the Specification cited by Patent Owner is as follows:

Assume that a federal regulation, governing disposal of hazardous waste in landfills, is amended so that the regulation now requires analysis, reporting and record keeping of landfill samples. Part of the change language addresses what landfill sample information must be collected, including landfill type, landfill cell, parameter(s) sampled, identification of chain-of-custody, and laboratory results. **The change is posted in the Federal Register and becomes promptly available as a hard copy (paper) and electronically, on the Internet.**

The invention begins tracking change using one or more intelligent agents (“IA’s”). An “intelligent agent” is a specialized program that resides on a network, or at a server as an applet, and can make decisions and perform tasks based on pre-defined rules. Preferably, two or more IA’s used by a business will have sufficiently different assignments that at most modest overlap occurs between the IA’s. An IA function is part of the Logic Menu, which is discussed subsequently.

A change made to landfill waste regulations is identified by an IA on the Internet, and **the relevant change information is routed to a selected metadata table in the invention.** The change information includes one or more of five recommendations: (1) create a new WorkList; (2) change one or more data entry forms; (3) create one or more new reports; (4) create a new process; and (5) add one or more new document images. Configuration Users can choose to automatically configure the preceding recommendation based on a set of default conditions, or can manually implement the configuration using a configuration toolkit.

Ex. 1001, 10:21–60 (emphases added by Patent Owner); PO Resp. 17–18.

In its Reply, Petitioner argues that “[r]ather than interpret ‘changes,’ [Patent Owner] twice repeats the word in its construction and tacks on additional limitations that result in [Patent Owner’s] construction failing to give ‘changes’ its broadest reasonable interpretation.” 1751 Pet. Reply 5; *see*

1752 Pet. Reply 4. According to Petitioner, the “only limitation the ’482 [patent] claims impose on ‘changes’ is that they ‘affect an application.’” 1751 Pet. Reply 5; *see* 1752 Pet. Reply 4. Petitioner asserts that the “plain language of the claims does not limit ‘changes’ to the narrow category of changes [Patent Owner] alleges (i.e., those that arise from changes external to the application).” 1751 Pet. Reply 5; *see* 1752 Pet. Reply 4. Petitioner argues also that Patent Owner seeks to import unwarranted limitations into the claims with its proposal that changes that “affect an application” should be limited to changes “which impact how the application program should operate.” 1751 Pet. Reply 8; *see* 1752 Pet. Reply 7.

Patent Owner admits that the term “change management layer” is not a term of art. PO Resp. 14; *see* Ex. 1058, 44:19–45:4, 83:13, 95:16–20. Petitioner agrees. 1751 Pet. 10; 1752 Pet. 10; 1751 Pet. Reply 9; 1752 Pet. Reply 8. We agree with Petitioner that the Specification of the ’482 patent “nowhere refers to changes ‘that arise from changes external to the application,’ and does not limit ‘changes’ in any way” and “[t]here is no disclaimer in the ’482 patent that limits the meaning of ‘changes’ in the manner [Patent Owner] alleges.” 1751 Pet. Reply 6; *see* 1752 Pet. Reply 5; Ex. 1062 ¶¶ 4–5.

While Patent Owner points to several portions of the Specification of the ’482 patent in support of its argument that the claimed changes should be limited to those external to the application and those that impact how the application program operates, we are not persuaded that the discussion in the Specification rises to the level of “reasonable clarity, deliberateness, and precision” necessary to provide a special definition for the claim term. *See In re*

Paulsen, 30 F.3d at 1480. In fact, as noted by Petitioner, the “specification also describes an embodiment in which intelligent agents pursue ‘internal’ as well as ‘external Web activities.’” 1751 Pet. Reply 12 (citing Ex. 1001, 19:66–67); *see* 1752 Pet. Reply 11 (citing the same evidence). Further, the Specification describes the detected changes, more generally, throughout as changes that may affect operation of a user’s business, rather than as changes that affect operation of the application program. *See, e.g.*, Ex. 1001, Abstract (“The system . . . receives information on regulatory and non-regulatory changes that affect operations of the business.”), 9:34–38 (“[C]hange management layer 11 . . . includes one or more change agents that ‘cruise the Web’ and identify and bring to the user’s attention relevant regulatory and non-regulatory changes found on the Web that may affect a user’s business.”), 22:33–39 (“The system . . . does not require that every employee [of a business] become a programmer in order to continue to respond to regulatory and/or technological and/or social changes affecting business operations and/or information management requirements.”); *see also* Ex. 1062 ¶ 5 (Dr. Crovella testifying that a person of ordinary skill “would have understood that changes can affect an application without impacting how the application ‘should’ operate, and those types of changes are also included in the plain and ordinary meaning of ‘changes that affect an application,’ [such as] a change to the processing resources available to an application could affect the application (e.g., by causing it to run faster or slower) without impacting how the application ‘should’ operate (e.g., without altering any of the steps that the application attempts to perform)”).

Based on the evidence in this record, we determine that the plain meaning of the phrase “change management layer for automatically detecting changes that affect an application” is consistent with the Specification. We are not persuaded that the recited “change management layer for automatically detecting changes that affect an application” is limited to detecting changes external to the application, or that any such changes must impact how the application program should operate, as proposed by Patent Owner. No further express construction of the claim phrase is necessary.

2. automatically detecting changes that affect a particular application

Claim 21 recites, in part, “automatically detecting changes that affect a particular application.” Ex. 1001, 33:52–53. Patent Owner argues that this step “corresponds to the ‘change management layer’ of claim 1. PO Resp. 20. Patent Owner further argues that “[t]he meaning of ‘automatically detecting’ should correspond to that of the ‘change management [layer]’ and the ‘changes’ therein should likewise ‘arise from changes external to the application.’” *Id.*

For the same reasons discussed above with respect to the phrase “change management layer for automatically detecting changes that affect an application,” we are not persuaded that claim 21 should be limited in the manner asserted by Patent Owner. No further express construction of “automatically detecting changes that affect a particular application” is necessary.

D. Principles of Law – Anticipation and Obviousness

To prevail in its challenges to the patentability of the claims, a petitioner must establish facts supporting its challenges by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden never shifts to Patent Owner. See *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

To establish anticipation, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. See *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). Although the elements must be arranged or combined in the same way as in the claim, “the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); accord *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented 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. *See 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) objective evidence of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). In an *inter partes* review, Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Thus, to prevail Petitioner must explain how the proposed combinations of prior art would have rendered the challenged claims unpatentable.

At this final stage, we determine whether a preponderance of the evidence of the record shows that the challenged claims are anticipated by and/or would have been obvious in view of asserted prior art. We analyze the asserted grounds of unpatentability in accordance with those principles.

E. Grounds Based, At Least in Part, on Popp

Petitioner asserts that independent claims 1 and 21, as well as claims 7, 8, 10–13, 18–20, 22, 27–33, and 38–40 which depend therefrom, are anticipated by Popp. 1751 Pet. 16–28; 1752 Pet. 15–23. Petitioner also asserts that dependent claims 13–17 and 33–37 would have been obvious in view of the combination of Popp and Anand (1751 Pet. 57–60), and that dependent claims 3–6 and 23–26 would have been obvious in view of the combination of Popp and Codd

(1752 Pet. 37–43). Patent Owner argues that Popp does not disclose a “change management layer,” as recited in each of independent claims 1 and 21. PO Resp. 22–25.

We have reviewed the entire record before us, including the parties’ contentions and supporting evidence presented during this trial. For the reasons explained below, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 3–8, and 10–40 are unpatentable.

1. *Anticipation by Popp*

a. Overview of Popp

Popp relates to an “object-oriented approach [that] provides the ability to develop and manage Internet transactions.” Ex. 1004, Abstract. According to Popp, “[l]ocal applications can be accessed using any workstation connected to the Internet regardless of the workstation’s configuration.” *Id.* Popp describes that “[o]nce [a] connection is established, the present invention is used with an application on the server side of the connection to dynamically generate Web pages [that] contain application information and provide the ability for the user to specify input.” *Id.* at 3:55–59. Web pages can be generated in response to the user input. *Id.* at 3:61–63.

Figure 2 of Popp is reproduced below:

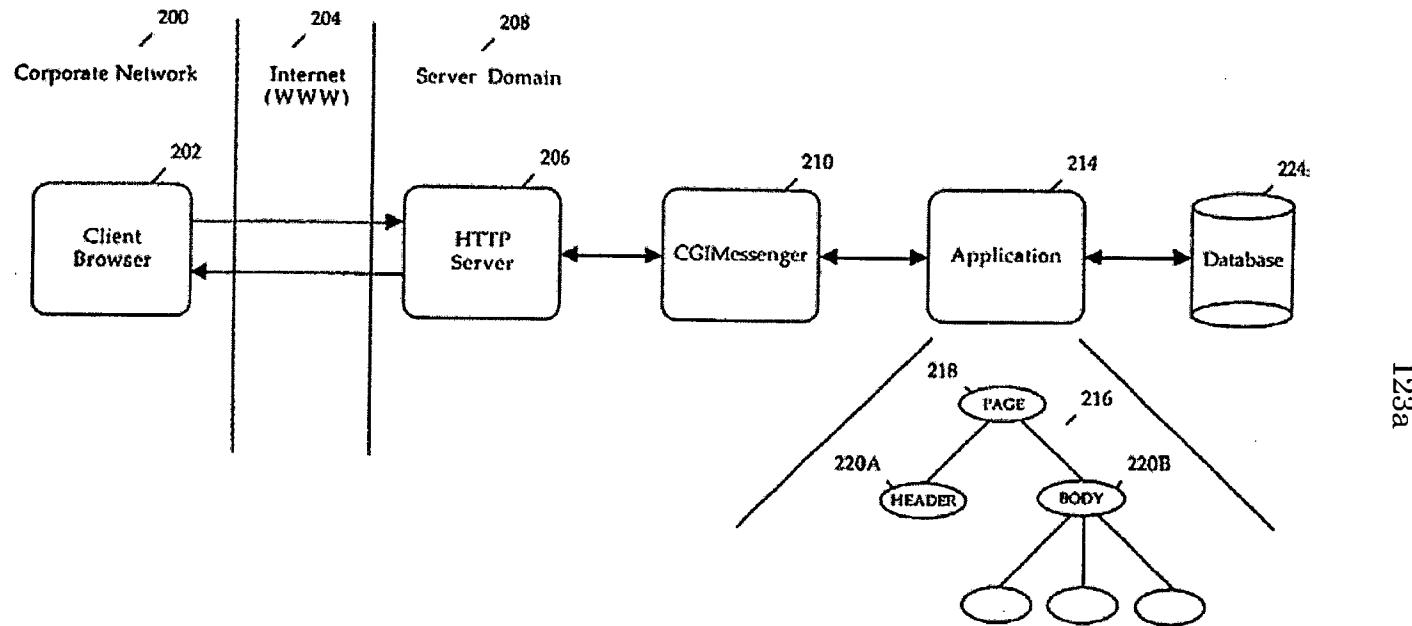


Figure 2

As seen in Figure 2 of Popp, Client Browser 202 is connected via Internet 204 to Server Domain 208, which includes among other things Application 214 and Database 224. *Ex. 1004, 6:40–7:23, 7:31–34.* Application 214 includes objects 216 that correspond to the HTML elements that define a Web page and are arranged in a tree structure that corresponds to the hierarchical structure of the HTML elements that they implement. *Id. at 12:21–26.* The self-contained modules, or components, may be shared by one or more Web pages in a single application and/or across multiple applications executing on a server. *Id. at 4:27–33, 4:41–43, 17:54–18:32.*

A scriptedControl object controls generation of a Web page. *Id. at 18:62–19:19, Fig. 6A.* Further, an inputControl object handles pushing and pulling data to/from the Web page and the external data source (e.g., database 224). *Id. at 21:61–22:67, Fig. 6B.* The inputControl object determines, for example, when a database entry should be updated based on information input to the Web page and sends an appropriate message to update the database. *Id. at 21:37–49.*

b. Claim 1

Claim 1 recites a “system for providing a dynamically generated application having one or more functions and one or more user interface elements” including a server computer; client computers connected to the server over a network; first, second, and third layers “associated with the server computer;” and a “change management layer.” Petitioner asserts that “Popp discloses a client-server system for generating Web pages that provide a dynamic UI for a database application that can

respond to user input.” 1751 Pet. 16 (citing Ex. 1004, 3:61–65, 8:24–26; Ex. 1002 ¶¶ 29–35); *see id.* at 19–20 (citing Ex. 1004, 3:55–59, 7:45–49, Fig. 2); 1752 Pet. 15, 18 (citing the same evidence). According to Petitioner, Server Domain 208 of Popp corresponds to the claimed server, database 224 corresponds to the claimed first layer, objects 216 correspond to the claimed second layer, scriptedControl object 602 (which is part of internal application 214) corresponds to the claimed third layer, and inputControl object 664 corresponds to the claimed change management layer. 1751 Pet. 20–21; *see id.* at 17–19 (citing Ex. 1004, 8:49–55, 18:62–65, 19:1–12, Fig. 2; Ex. 1002 ¶¶ 36–37, 39–40); 1752 Pet. 16–18 (citing the same evidence), 18–20. Popp further discloses that “[d]atabase 224 can be resident on the same server as application 214,” which also includes objects 216 and inputControl object 664. Ex. 1004, 7:28–33, 7:52–58, 12:21–32; *see* 1751 Pet. 18, 20–21; 1752 Pet. 19–20. Thus, according to Petitioner, Popp discloses all four claimed “layers,” with the first, second, and third being associated with the server.

Regarding the claimed “first layer . . . containing information about the unique aspects of a particular application,” Petitioner relies on Popp’s “Web pages that provide a dynamic UI for a database application that can respond to user input,” as disclosing the “particular application” of the claim. 1751 Pet. 16 (citing Ex. 1002 ¶ 31); *see* 1752 Pet. 15 (citing the same evidence). According to Petitioner, Popp discloses that database 224 (first layer) “contain[s] information about the unique aspects of a particular Web page (application), e.g., for an Automobile Shopper’s application that can be used by a prospective car buyer to select a car.” 1751 Pet. 20

(citing Ex. 1004, 9:4–10, 9:56–61); *see* 1752 Pet. 19 (citing the same evidence); Ex. 1002 ¶ 36.

The claim further recites a “second layer . . . containing information about the user interface and functions common to a variety of applications.” Petitioner relies on the following as disclosing this claimed feature:

Web page objects 216 [of Popp] correspond to HTML elements that define a web page and include component sub-trees representing UI portions (e.g., text boxes, check boxes, radio buttons) that can be shared across Web pages, and thus contain information about UI and functions common to a variety of applications.

1751 Pet. 17 (citing Ex. 1002 ¶ 37); *see id.* at 20–21 (citing Ex. 1004, 2:33–41, 4:26–33, 4:41–43, 11:37–44, 12:21, 17:54–55, 18:32–34, Fig. 2); 1752 Pet. 16–17, 19 (citing the same evidence).

Regarding the claimed “third layer . . . that retrieves the data in the first and second layers in order to generate the functionality and user interface elements of the application,” Petitioner points to *scriptedControl* Object 602, which Popp uses “to generate and manage a Web page,” as disclosing this claimed feature. 1751 Pet. 18 (citing Ex. 1004, 18:62–65, 19:1–2; Ex. 1002 ¶ 39); *see id.* at 21 (citing Ex. 1004, 8:49–55, 18:65–67, 19:29–38, Figs. 6A, 6B); 1752 Pet. 17, 20 (citing the same evidence). According to Petitioner, the “*scriptedControl* object 602 retrieves application-specific data from the database (first layer) and combines it with the object tree (second layer) in order to generate the functionality and UI elements of the Web page (application),” thus disclosing the claim limitation that “a particular

application [is] generated based on the data in both the first and second layers." 1751 Pet. 18 (citing Ex. 1004, Fig. 6B; Ex. 1002 ¶¶ 38–39); *see id.* at 21 (citing Ex. 1004, 19:18–19, 19:35–38); 1752 Pet. 17, 19–20 (citing the same evidence).

Petitioner further points to the fact that Popp's "Web page can include a Java applet that, when downloaded and processed by a Java-enabled browser..., dynamically generates and presents the UI and functionality to the user," as disclosing that the "user interface and functionality for the particular application is distributed to the browser application and dynamically generated when the client computer connects to the server computer," as claimed. 1751 Pet. 17 (citing Ex. 1002 ¶¶ 41–44); *see id.* at 22 (citing Ex. 1004, 3:55–63, 31:44–49); 1752 Pet. 16, 20–21 (citing the same evidence).

Finally, regarding the claimed "change management layer for automatically detecting changes that affect an application," Petitioner relies on Popp's inputControl object 664. 1751 Pet. 18 (citing Ex. 1002 ¶ 40); *see 1752 Pet. 17–18* (citing the same evidence). According to Petitioner, inputControl object 664 is responsible for responding to user input received from the web page UI, such as a modification of a field in a Web page form. 1751 Pet. 18 (citing Ex. 1004, 22:28–48; Ex. 1002 ¶ 40); *see id.* at 21; 1752 Pet. 17–18, 20 (citing the same evidence); Ex. 1004, Fig. 6B. Petitioner asserts that "[i]n response to a change detected by inputControl object 664, Popp's server application 214 modifies the Web page objects (second layer) by storing the user input in a context object, and updates the database (first layer) with the changed data." 1751 Pet. 19 (citing Ex. 1004, 22:28–62; Ex. 1002 ¶ 49); *see 1752 Pet. 18* (citing the same

evidence). Petitioner further asserts that “[i]nputControl object 664 automatically detects when a user inputs a change that affects a Web page, such as modifying field 632 within page 622 to specify a new name.” 1751 Pet. 19 (citing Ex. 1004, 22:37–42); *see* 1752 Pet. 17 (citing the same evidence); Ex. 1002 ¶ 40.

We agree with Petitioner’s mapping of Popp to claim 1, and adopt it as our own.

Patent Owner argues that Popp does not disclose the “change management layer” recited in claim 1. PO Resp. 22–25. In particular, Patent Owner argues that “Popp does not disclose a ‘change management layer’ which ‘automatically detects changes which impact how the application program should operate’ where those ‘changes’ ‘arise from changes external to the application.’” *Id.* at 24 (citing Ex. 2032 ¶¶ 63–64; Ex. 2033 ¶¶ 46–50). Patent Owner argues that Popp instead discloses “automatically detect[ing] changes from [an application’s] *own operation* – in this case, user input of text data via a user interface.” *Id.* at 23 (citing Ex. 2031, 67:10–25). Patent Owner’s arguments rely upon its proposed construction of the “change management layer,” which we do not adopt for the reasons discussed above (*see supra* Section II.C.1). We are persuaded by Petitioner’s assertion that automatically detecting a change that affects information stored in the database (e.g., an employee name stored in a database), from which the Web page (i.e., the claimed application) is generated, discloses detecting a change that affects the application, as claimed. *See, e.g.*, Ex. 1001, 12:17–28 (describing the business content layer (i.e., “first layer”) as a database that may include data associated with a selected area of business, such as finance or human resources).

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Popp anticipates claim 1.

c. Claim 21

Independent claim 21 recites a “method for dynamically generating an application” that includes limitations similar in scope to the system limitations discussed with respect to claim 1. *See* Ex. 1001, 33:34–58. In discussing this claim, the parties refer back to their arguments with respect to claim 1. *See* 1751 Pet. 26–27 (citing Ex. 1002 ¶¶ 44, 67; Ex. 1007, 42); 1752 Pet. 21–23 (citing the same evidence); PO Resp. 24. For the same reasons discussed with respect to claim 1, we determine Petitioner has shown, by a preponderance of the evidence, that Popp anticipates claim 21.

d. Claims 7, 8, 10–13, 18–20, 22, 27–33, and 38–40

For each of claims 7, 8, 10–13, 18–20, 22, 27–33, and 38–40, Petitioner provides arguments as to how each claim limitation is disclosed in Popp, and relies upon Dr. Crovella’s testimony. *See* 1751 Pet. 22–28 (citing Ex. 1004, 7:28–30, 7:32–35, 7:62–8:2, 8:32–42, 9:13–26, 9:64–65, 19:39–47, 19:50–53, 19:61–20:8, 21:7–15, 22:15–62, Fig. 2, 3B, 6B; Ex. 1007, 42; Ex. 1002 ¶¶ 46–57); 1752 Pet. 21–23 (citing Ex. 1004, 19:28–31, 19:39–47, 19:50–53, 31:24–26, Fig. 6; Ex. 1011, 274; Ex. 1002 ¶¶ 44). We agree with Petitioner’s mapping of Popp to these claims, and adopt it as our own.

Patent Owner does not substantively discuss dependent claims 7, 8, 10–13, 18–20, 22, 27–33, and 38–40, apart from its discussion of independent claims 1 and 21, which we have addressed above. *See*

PO Resp. 24 (“The remaining dependent claims are not anticipated by Popp by virtue of their dependencies on claims 1 and 21.”).

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Popp anticipates claims 7, 8, 10– 13, 18–20, 22, 27–33, and 38–40.

2. Obviousness in View of Popp and Anand

As discussed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Popp discloses all features of independent claims 1 and 21. As characterized by Petitioner, dependent claims 13–17 and 33–37 “recite a number of specific items that can be built in relation to an application and/or its UI.” 1751 Pet. 57. For example, claim 13 recites “a report builder for building a report for a particular application,” claim 15 recites “a document builder for mapping a document onto the first layer,” and claim 16 recites “a formula builder for generating formulas.” *See Ex. 1001*, 33:12–25, 34:34–45. Petitioner relies on Anand as disclosing each of the additional limitations recited in claims 13–17 and 33– 37. 1751 Pet. 57–60.

Anand relates to a graphical user interface (GUI) system for generating reports from a computer database. *Ex. 1009*, Abstract, 1:4–7. Petitioner provides arguments as to how each limitation introduced in claims 13–17 and 33–37 is disclosed in Anand, and relies upon Dr. Crovella’s testimony. 1751 Pet. 57–60 (citing *Ex. 1009*, 4:21–28, 4:53–56, 4:64–65, 5:48–62, 7:47–48, 9:33–38, 9:48–50, 11:13–18, 11:56–65, 17:58–65; *Ex. 1008*, 54; *Ex. 1002 ¶¶ 263–68*). Further, Petitioner asserts that “[i]t would have been obvious to a [person of ordinary skill

in the art] to utilize Popp's system to generate the UI for Anand's report system, for the benefit of leveraging the efficiency of Popp's sharable components for developing the functionality of Anand's UI application." *Id.* at 58 (citing Ex. 1004, 3:23–31; Ex. 1002 ¶ 261); *see* Ex. 1004, 3:61–65, 7:24–35; Ex. 1002 ¶ 262. We agree with Petitioner's mapping of Popp and Anand to these claims, and adopt it as our own.

Patent Owner has not presented separate arguments regarding whether Anand discloses the additional limitations introduced in dependent claims 13–17 and 33–37, or with respect to Petitioner's proposed combination of references. *See* PO Resp. 24.

Based on the evidence of record, we are persuaded that Petitioner has shown that the combination of Popp and Anand teaches or suggests all of the limitations of claims 13–17 and 33–37, and has articulated sufficient reasoning why it would have been obvious to combine these references in the proposed manner. We, thus, determine Petitioner has shown, by a preponderance of the evidence, that the combination of Popp and Anand renders claims 13–17 and 33–37 obvious.

3. Obviousness in View of Popp and Codd

As discussed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Popp discloses all features of independent claims 1 and 21. As characterized by Petitioner, dependent claims 3–6 and 23–26 "recite the term 'database,' which is explicitly defined in the '482 patent specification." 1752 Pet. 37; *see* Ex. 1001, 29:50–54. Petitioner asserts that Popp discloses each of the limitations introduced in these dependent

claims, “with the exception of explicitly specifying a database of the type meeting the specific definition given in the specification.” 1752 Pet. 37. Petitioner provides arguments as to how each limitation of claims 3–6 and 23–26 is disclosed in Popp, and relies upon Dr. Crovella’s testimony. *Id.* at 39–43 (citing Ex. 1004, 16:49–65, 18:32–34, 19:55–20:33, 21:61–22:13, 22:64–65; Ex. 1008, 54; Ex. 1002 ¶¶ 218–22).

Petitioner relies on Codd as disclosing a database as defined in the ’482 patent. *Id.* at 37. According to Petitioner, “Codd lists all of the major components of the ’482 patent’s defined ‘database’ (i.e., those that have their own sub-definitions—tables, views, columns, and rows) as canonical features of relational databases.” *Id.* (citing Ex. 1008, 54). Petitioner also asserts that “Codd teaches a number of benefits of relational databases . . . , such as advantages of performance, cost productivity, and distributability.” *Id.* at 38 (citing Ex. 1008, 60; Ex. 1002 ¶ 219). We are persuaded that one of ordinary skill would have used a relational database as disclosed in Codd to implement the system of Popp. *See id.* at 37–38 (citing Ex. 1002 ¶¶ 215, 219). We agree with Petitioner’s mapping of Popp and Codd to these claims, and adopt it as our own.

Patent Owner has not presented separate arguments regarding the additional limitations introduced in dependent claims 3–6 and 23–26, or with respect to Petitioner’s proposed combination of references. *See* PO Resp. 24.

Based on the evidence of record, we are persuaded that Petitioner has shown that the combination of Popp and Codd teaches or suggests all of the limitations of claims 3–6 and 23–26, and has articulated sufficient reasoning why it would have

been obvious to combine these references in the proposed manner. We, thus, determine Petitioner has shown, by a preponderance of the evidence, that the combination of Popp and Codd renders claims 3–6 and 23–26 obvious.

F. Grounds Based, At Least in Part, on Kovacevic

Petitioner asserts that independent claims 1 and 21, as well as claims 8, 10, 19, 20, 28, 30, 39, and 40 which depend therefrom, are anticipated by Kovacevic. 1751 Pet. 31–40. Petitioner also asserts that dependent claims 3–6 and 23–26 would have been obvious in view of the combination of Kovacevic and Codd. 1752 Pet. 48–55. Patent Owner argues that Kovacevic does not disclose a “change management layer,” as recited in each of independent claims 1 and 21. PO Resp. 25–28.

We have reviewed the entire record before us, including the parties’ contentions and supporting evidence presented during this trial. For the reasons explained below, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 3–6, 8, 10, 19–21, 23–26, 28, 30, 39, and 40 are unpatentable.

1. Anticipation by Kovacevic

a. Overview of Kovacevic

Kovacevic relates to a system called MUSE that uses a model-based technology to implement an intelligent tutoring system having a flexible user interface. Ex. 1005, Abstract. The system described in Kovacevic includes an application-specific library, which “contains procedural code implementing the functional core of applications whose UIs are to be generated,” and an interaction-specific library, which

“contains a library of communications primitives—interaction techniques and presentation objects—to be used when assembling UI structures.” *Id.* at 117. The MUSE program uses these libraries to build and generate a user interface. *Id.* As further discussed in Kovacevic, the libraries, and if desired the entire MUSE program, could be transported over a browser using Java. *Id.* Kovacevic also discusses a sequencing control primitive that monitors and updates the system when something affecting information-flow-control primitives occurs. *Id.* at 114.

b. Claim 1

Claim 1 recites a “system for providing a dynamically generated application having one or more functions and one or more user interface elements” including a server computer; client computers connected to the server over a network; first, second, and third layers “associated with the server computer;” and a “change management layer.” Petitioner asserts that “Kovacevic discloses a client-server system called MUSE for generating UIs for tutoring applications.” 1751 Pet. 31 (citing Ex. 1005, 108 (col. 2 ¶ 2); Ex. 1002 ¶¶ 101–103); *see* 1752 Pet. 48 (citing the same evidence). According to Petitioner, the SLOOP Server of Kovacevic corresponds to the claimed server, the application-specific library corresponds to the claimed first layer, the interaction-specific library corresponds to the claimed second layer, the main MUSE program corresponds to the claimed third layer, and the sequencing control primitives correspond to the claimed change management layer. 1751 Pet. 34–36 (citing Ex. 1005, 114 (col. 2 ¶ 6), 117 (col. 1 ¶¶ 4, 5), Fig. 1); *see id.* at 31–33 (citing Ex. 1005, 115 (col. 2),

117 (col. 1 ¶ 4, col. 2 ¶ 7); Ex. 1002 ¶¶ 104–108); 1752 Pet. 48–50, 52–53 (citing the same evidence, and Ex. 1005, 114 (col. 2 ¶ 6), Fig. 7). The first, second, and third layers are “associated with the server” because each is downloaded therefrom. *See* 1751 Pet. 32 (citing Ex. 1005, 117 (col. 2 ¶ 7); Ex. 1002 ¶¶ 104, 105, 107); 1752 Pet. 49–50 (citing the same evidence).

Regarding the claimed “first layer . . . containing information about the unique aspects of a particular application,” Petitioner describes that a “tutoring course generated with a particular UI is a particular ‘application’ as recited in the claims.” 1751 Pet. 31 (citing Ex. 1002 ¶¶ 101, 104); *see* 1752 Pet. 48 (citing the same evidence). According to Petitioner, Kovacevic discloses that a “particular tutoring course is represented by an application-specific model specification with software primitives provided in an application-specific library.” 1751 Pet. 31 (citing Ex. 1005, 117 (col. 1 ¶ 4, col. 2 ¶ 7); Ex. 1002 ¶ 104); *see* 1751 Pet. 34; 1752 Pet. 48–49 (citing the same evidence), 52.

The claim further recites a “second layer . . . containing information about the user interface and functions common to a variety of applications.” Petitioner relies on an interaction-specific library in Kovacevic as disclosing this claimed feature. 1751 Pet. 31–32, 35; 1752 Pet. 49, 52. According to Petitioner, the interaction-specific library includes UI primitives and the library is sharable among multiple applications. 1751 Pet. 31–32 (citing Ex. 1005, 111 (col. 2 ¶ 1); Ex. 1002 ¶¶ 99, 105–06); *see id.* at 35 (citing Ex. 1005, 113 (col. 2 ¶ 2), 114 (col. 1 ¶ 2), 117 (col. 1 ¶ 5, col. 2 ¶ 7)); 1752 Pet. 49, 52 (citing the same evidence, except Ex. 1005, 111 (col. 2 ¶ 1); Ex. 1002 ¶ 99).

Regarding the claimed “third layer . . . that retrieves the data in the first and second layers in order to generate the functionality and user interface elements of the application,” Petitioner points to the “main program” of Kovacevic as disclosing this claimed feature. 1751 Pet. 32, 35; 1752 Pet. 49, 53. According to Petitioner, Kovacevic’s main program “generates the tutoring application (including the functionality and the UI of the tutoring course) using the primitives in the application-specific library (first layer) and the application-independent interaction-specific library (second layer).” 1751 Pet. 32 (citing Ex. 1005, 117 (col. 1 ¶ 4, col. 2 ¶ 7); Ex. 1002 ¶ 107); *see id.* at 35 (citing Ex. 1005, 117 (col. 1 ¶ 4, col. 2 ¶ 7)); 1752 Pet. 49, 53 (citing the same evidence). According to Petitioner, this generation of the tutoring application “is done by mapping application model primitives provided in the application-specific library (first layer) onto UI primitives including the communication primitives in the interaction-specific library (second layer) to construct a fully specified UI,” thus disclosing the claim limitation that “a particular application [is] generated based on the data in both the first and second layers.” 1751 Pet. 32 (citing Ex. 1002 ¶ 106); *see id.* at 35 (citing Ex. 1005, 115 (col. 1 ¶ 2), 116 (col. 1 ¶ 6), Figs 5, 6, 8); 1752 Pet. 49, 52–53 (citing the same evidence).

Petitioner further argues that, in Kovacevic, the “UI and functionality of the tutoring application are distributed to the client computer’s browser and dynamically generated when the client connects to the server,” thus disclosing the limitation that the “user interface and functionality for the particular application is distributed to the browser application and dynamically generated when the client computer

connects to the server computer,” as claimed. 1751 Pet. 31 (citing Ex. 1002 ¶¶ 109–111); *see id.* at 33 (citing Ex. 1005, 110 (col. 1 ¶ 6), 112 (col. 2 ¶ 5); Ex. 1002 ¶ 126), 36 (citing Ex. 1005, 108 (col. 1 ¶ 4, col. 2 ¶ 2), 109 (col. 1 ¶ 3, ¶ 5, col. 2 ¶ 4), 117 (col. 2 ¶ 7)); 1752 Pet. 48, 50–51, 53–54 (citing the same evidence).

Finally, regarding the claimed “change management layer for automatically detecting changes that affect an application,” Petitioner relies on Kovacevic’s sequencing control primitives. 1751 Pet. 32–33; 1752 Pet. 50. Kovacevic describes that the “sequencing control primitives automatically detect changes that affect the information-flow-control primitives in an application.” 1751 Pet. 32 (citing Ex. 1005, 114 (col. 2 ¶ 6); Ex. 1002 ¶ 108); *see* 1752 Pet. 50 (citing the same evidence). According to Petitioner, “[c]hanges such as user input via the UI or selection of UI elements affect the application, e.g., by causing certain UI elements to be enabled or disabled,” and the sequencing control primitives of Kovacevic monitor for such user input to enable appropriate enable/disable response of the UI element when a user selection is made. 1751 Pet. 32–33 (citing Ex. 1005, 115 (col. 2); Ex. 1002 ¶ 108); *see id.* at 36 (citing Ex. 1005, 114 (col. 2 ¶ 6)); 1752 Pet. 50, 53 (citing the same evidence).

We agree with Petitioner’s mapping of Kovacevic to claim 1, and adopt it as our own.

Patent Owner argues that Kovacevic does not disclose the “change management layer” recited in claim 1. PO Resp. 25–28. In particular, Patent Owner argues that “[w]hile Kovacevic describes making the website responsive to user interaction, Kovacevic has no disclosure relevant to changes

‘external to the application.’’ *Id.* at 25 (citing Ex. 2032 ¶ 69; Ex. 2033 ¶ 54). Patent Owner argues that “change[s] from a user interacting with the user interface, or . . . change[s] from a user selecting different user interface elements” are not “external to an application.” *Id.* at 27; *see id.* at 27–28 (citing Ex. 2032 ¶¶ 71–72; Ex. 2033 ¶¶ 54–55). Again, Patent Owner’s arguments rely upon its proposed construction of the “change management layer,” which we do not adopt for the reasons discussed above (*see supra* Section II.C.1).

As noted above, Petitioner relies on the UI primitives in the interaction-specific library of Kovacevic as disclosing the claimed second layer. We are persuaded by Petitioner’s assertion that detecting user input (a change) that affects whether certain UI elements are enabled or disabled (i.e., information regarding the UI primitives in the second layer) is sufficient to disclose the change management layer’s claimed function of detecting changes that affect the application (i.e., the tutoring program generated using the UI primitives).

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Kovacevic anticipates claim 1.

c. Claim 21

In discussing independent claim 21—a method claim, which includes limitations similar in scope to the system limitations discussed with respect to claim 1—the parties refer back to their arguments with respect to claim 1. *See* 1751 Pet. 38–39 (citing Ex. 1005, 110 (col. 1 ¶ 6), 112 (col. 2 ¶ 5); Ex. 1002 126); 1752 Pet. 54–55 (citing the same evidence); PO Resp. 28. For the same reasons discussed with

respect to claim 1, we determine Petitioner has shown, by a preponderance of the evidence, that Kovacevic anticipates claim 21.

d. Claims 8, 10, 19, 20, 28, 30, 39, and 40

For each of claims 8, 10, 19, 20, 28, 30, 39, and 40 Petitioner provides arguments as to how each claim limitation is disclosed in Kovacevic, and relies upon Dr. Crovella's testimony. *See* 1751 Pet. 36–39 (citing Ex. 1005, 108 (col. 2 ¶ 2), 110 (col. 2 ¶ 3), 117 (col. 2 ¶ 7), Figs. 1, 2; Ex. 1002 ¶¶ 112–16). We agree with Petitioner's mapping of Kovacevic to these claims, and adopt it as our own.

Patent Owner does not substantively discuss dependent claims 8, 10, 19, 20, 28, 30, 39, and 40, apart from its discussion of independent claims 1 and 21, which we have addressed above. *See* PO Resp. 28 (“The remaining dependent claims are not anticipated by Kovacevic by virtue of their dependencies on claims 1 and 21.”).

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that Kovacevic anticipates claims 8, 10, 19, 20, 28, 30, 39, and 40.

2. *Obviousness in View of Kovacevic and Codd*

As discussed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that Kovacevic discloses all features of independent claims 1 and 21. As characterized by Petitioner, dependent claims 3–6 and 23–26 “recite the term ‘database,’ which is explicitly defined in the ’482 patent specification.” 1752 Pet. 37; *see* Ex. 1001, 29:50–54. Petitioner asserts that Kovacevic discloses

each of the limitations introduced in these dependent claims, “with the exception of explicitly specifying a database of the type meeting the specific definition given in the specification.” 1752 Pet. 57. Petitioner provides arguments as to how each limitation of claims 3–6 and 23–26 is disclosed in Kovacevic, and relies upon Dr. Crovella’s testimony. *Id.* at 57–60 (citing Ex. 1005, 112, 113 (col. 2 ¶ 2), 114 (col. 1 ¶ 2), 117 (col. 1 ¶ 4), Fig. 7; Ex. 1008, 54; Ex. 1002 ¶¶ 232–36).

Petitioner relies on Codd as disclosing a database as defined in the ’482 patent. *Id.* at 57. According to Petitioner, “Codd lists all of the major components of the ’482 patent’s defined ‘database’ (i.e., those that have their own sub-definitions—tables, views, columns, and rows) as canonical features of relational databases.” *Id.* at 37 (citing Ex. 1008, 54). Petitioner also asserts that “Codd teaches a number of benefits of relational databases, such as advantages of performance, cost productivity, and distributability.” *Id.* at 57 (citing Ex. 1008, 60; Ex. 1002 ¶¶ 219, 233). We are persuaded that one of ordinary skill would have used a relational database as disclosed in Codd to implement the system of Kovacevic. *Id.* (citing Ex. 1002 ¶¶ 215, 219). We agree with Petitioner’s mapping of Kovacevic and Codd to these claims, and adopt it as our own.

Patent Owner has not presented separate arguments regarding the additional limitations introduced in dependent claims 3–6 and 23–26, or with respect to Petitioner’s proposed combination of references. *See* PO Resp. 28.

Based on the evidence of record, we are persuaded that Petitioner has shown that the combination of Kovacevic and Codd teaches or suggests all of the

limitations of claims 3–6 and 23–26, and has articulated sufficient reasoning why it would have been obvious to combine these references in the proposed manner. We, thus, determine Petitioner has shown, by a preponderance of the evidence, that the combination of Kovacevic and Codd renders claims 3–6 and 23–26 obvious.

G. Grounds Based, At Least in Part, on Balderrama and Java Complete

Petitioner asserts that independent claims 1 and 21, as well as claims 7, 8, 10–12, 19, 20, 22, 27–32, 39, and 40 which depend therefrom, would have been obvious in view of the combination of Balderrama and Java Complete. 1751 Pet. 40–55; 1752 Pet. 25–35. Petitioner also asserts that dependent claims 3–6 and 23–26 would have been obvious in view of the combination of Balderrama, Java Complete, and Codd. 1752 Pet. 37–39, 44–47. Patent Owner argues that Balderrama does not disclose a “change management layer,” as recited in each of independent claims 1 and 21. PO Resp. 28–32. We have reviewed the entire record before us, including the parties’ contentions and supporting evidence presented during this trial. For the reasons explained below, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 3–8, 10–12, 19–22, 23–32, 39, and 40 are unpatentable.

1. Obviousness in View of Balderrama and Java Complete

a. Overview of Balderrama

Balderrama relates to a system that can offer various goods for sale, in a self-service fashion with an “electronic device capable of accepting and transmitting a customer’s input,” such as a

touch-screen display. Ex. 1006, 1:8–12, Fig. 1. The system of Balderrama includes template presentations and a database containing items intended for sale at a particular sales outlet. *Id.* at 2:11–16, Fig. 3; *see also id.* at 6:48–58 (discussing template files), 8:64–9:2 (discussing “transmitted copy” of a template); 9:15–20 (discussing database records). A “configuring routine” uses information from the template presentation and the database for a particular sales outlet to create a presentation to display on the electronic device at the sales outlet. *Id.* at 11:37–48, Fig. 3 (element 84). The system is also configured to handle modifications to the database and/or updates to the presentation template. *Id.* at 2:17–21, 11:64–67, Fig. 6. Update/modification detector 82 receives information about updates to the template presentation and/or modifications to the database, and acts accordingly to update the presentation at the customer terminal. *Id.* at 8:21–64, 9:7–27, 10:11–24, Fig. 3 (arrows 81b, 87b, 83b).

b. Overview of Java Complete

Java Complete is a compilation of several articles in DATAMATION Magazine, discussing a “new simplified object-based, open-system [programming] language that allows software developers to engineer applications that can be distributed over the Internet.” *See* Ex. 1007, 1–3, 28. Java Complete provides information about the Java programming language. For example, as discussed in the magazine, “Java reinvents the way applications are distributed to clients and executed,” and provides “an easy way to deliver business information broadly.” *Id.* at 40. As further described, “network-centric Java applets . . . don’t have to be preinstalled—they install themselves just in time, on the fly, and deinstall themselves when

they're no longer needed." *Id.* at 42. One example provided in Java Complete of a type of business application that could be built with Java applets is an order-entry system. *Id.*

c. Claim 1

Claim 1 recites a "system for providing a dynamically generated application having one or more functions and one or more user interface elements" including a server computer; client computers connected to the server over a network; first, second, and third layers "associated with the server computer;" and a "change management layer." Petitioner asserts that "Balderrama discloses a network system for a sales outlet, and employs a server computer (manager station 10) that distributes an order-entry presentation over a local area network (LAN) to client computers (customer terminals 20a, 20b, 20c) that are used by customers to enter orders." 1751 Pet. 42 (citing Ex. 1006, Fig. 1); *see* 1752 Pet. 25 (citing the same evidence); Ex. 1002 ¶¶ 145, 148–150. According to Petitioner, Balderrama's manager station 10 corresponds to the claimed server, in-store database 86 with records/files 87a correspond to the claimed first layer, transmitted copy template presentation 80 corresponds to the claimed second layer, configuring routine 84 corresponds to the claimed third layer, and update/modification detector 82 corresponds to the claimed change management layer. 1751 Pet. 47–49 (citing Ex. 1006, 2:16–21, 10:14–21, 11:64–67, 12:34–38, 14:64–65, 16:20–21, 16:55–17:5, Figs. 1, 3); *see* 1751 Pet. 42–44 (citing Ex. 1006, 8:67–9:2, 9:16–27, 10:14–21, 11:38–46, 11:64–67, 14:64–65, 16:20–21, 16:55–17:5; Ex. 1002 ¶¶ 151–55); 1752 Pet. 25–27, 30–32 (citing the same evidence).

Regarding the claimed “first layer . . . containing information about the unique aspects of a particular application,” Petitioner describes Balderrama’s “order-entry presentation for a particular sales outlet,” which “is a UI for a user to view items for sale at the outlet and enter and order in an automated fashion, e.g., via a touch screen,” as the “particular application” of the claim. 1751 Pet. 42 (citing Ex. 1006, 1:8–23, 2:11–16, Fig. 1; Ex. 1002 ¶¶ 145, 148–51); *see* 1752 Pet. 25 (citing the same evidence). Balderrama discloses that in-store database 86 with records/files 87a (i.e., the first portion) “contain data records/information about items intended for sale at a particular sales outlet” (i.e., the “particular application”). Ex. 1006, 9:17–21, Fig. 3; *see* 1751 Pet. 42–43, 47; 1752 Pet. 25–26, 30; Ex. 1002 ¶¶ 145, 151.

The claim further recites a “second layer . . . containing information about the user interface and functions common to a variety of applications.” Petitioner describes Balderrama’s disclosure of “shared-across-outlets template presentation 80 from headquarters is transmitted to manager station 10 (the outlet’s server) for combination with the outlet-specific data,” as disclosing this claimed feature. 1751 Pet. 43 (citing Ex. 1006, 6:48–58, 8:67–9:2, 11:43–46; Ex. 1002 ¶ 152); *see id.* at 47–48 (citing Ex. 1006, 6:48–58, 8:64–9:2, 11:43–46, Fig. 3); 1752 Pet. 26, 30–31 (citing the same evidence).

Regarding the claimed “third layer . . . that retrieves the data in the first and second layers in order to generate the functionality and user interface elements of the application,” Petitioner describes that “Balderrama employs a configuring routine 84 . . . to retrieve data from the outlet-specific database

files/records (first layer) and combine it with the generic template presentation (second layer) in order to generate the functionality and UI elements of the configured presentation (application) for presentation to the customer,” thus disclosing this claimed feature. 1751 Pet. 43 (citing Ex. 1006, 11:38–46, Fig. 3; Ex. 1002 ¶¶ 153–54); *see id.* at 48 (citing Ex. 1006, 11:38–46, 14:64–65, 16:20–21, 16:55–17:5, Fig. 3); 1752 Pet. 26–27, 31 (citing the same evidence). According to Petitioner, “[c]onfiguring routine 84 matches items in the template presentation (second layer) with items in the database (first layer), activating the sales items that are sold in the particular sales outlet, and incorporating those items’ prices from the database into the corresponding cells in the template presentation,” thus disclosing the claim limitation that “a particular application [is] generated based on the data in both the first and second layers.” 1751 Pet. 43–44 (citing Ex. 1006, 14:64–65, 16:20–21, 16:55–17:5; Ex. 1002 ¶ 154); *see id.* at 48 (citing Ex. 1006, 8:67–9:2, 10:10–13, Fig. 3); 1752 Pet. 27, 31 (citing the same evidence).

Regarding the claimed “change management layer for automatically detecting changes that affect an application,” Petitioner relies on Balderrama’s update/modification detector 82. 1751 Pet. 44; 1752 Pet. 27. According to Petitioner, update/modification detector 82 “automatically detects changes to the outlet-specific database or the generic template presentation that affect the application (the configured outlet-specific presentation).” 1751 Pet. 44 (citing Ex. 1006, 10:14–21, 11:64–67; Ex. 1002 ¶ 155); *see id.* at 48–49 (citing Ex. 1006, 2:16–21, 10:14–21, 11:64–67, 12:34–38); 1752 Pet. 27, 31–32 (citing the same evidence, and Ex. 1006, Fig. 3). Petitioner

further asserts that “[i]n response to update/modification detector 82 detecting changes . . . , a currently-running presentation is interrupted and re-configured.” 1751 Pet. 44 (citing Ex. 1006, 9:7–15; Ex. 1002 ¶ 167); *see* 1752 Pet. 27 (citing the same evidence).

Petitioner relies on Java Complete in combination with Balderrama for teaching that “each client computer further compris[es] a browser application being executed by each client computer,” and that the claimed “user interface and functionality for the particular application is distributed to the browser application and dynamically generated when the client computer connects to the server computer.” 1751 Pet. 45–46; 1752 Pet. 27–29. According to Petitioner, Balderrama teaches distributing the application from a server to a client over a LAN network but does not explicitly state that the server is accessible by a browser executed on the client device. 1751 Pet. 44–45 (citing Ex. 1002 ¶¶ 148–50); *see* 1752 Pet. 27–28 (citing the same evidence). Java Complete “describes using browsers for UI delivery over the Internet and within a company’s internal network.” 1751 Pet. 45 (citing Ex. 1007, 30, 31, 40; Ex. 1002 ¶ 156); *see* 1752 Pet. 28 (citing the same evidence). Petitioner asserts that “[i]t would have been obvious to a [person of ordinary skill in the art] to implement a browser application on Balderrama’s customer terminal for receiving and executing the order-entry application, as browsers (including Java-enabled browsers) were commonly used to receive UI applications in client-server systems.” 1751 Pet. 45 (citing Ex. 1002 ¶¶ 156–57); *see* 1752 Pet. 28 (citing the same evidence).

Petitioner further points to Java Complete's teaching that "the client browser executes a Java applet received from the server to dynamically generate the UI and functionality of the application," asserting that a person of ordinary skill "would have been motivated to implement Balderrama's order-entry application as a Java applet delivered to a browser executed by the customer terminal (client computer) because of the ease-of- implementation benefits of using Java and readily-available web browsers." 1751 Pet. 45–46 (citing Ex. 1007, 32, 40, 42; Ex. 1002 ¶ 156); *see* 1752 Pet. 28–29 (citing the same evidence).

We agree with Petitioner's mapping of Balderrama and Java Complete to claim 1, and adopt it as our own.

Patent Owner argues that Balderrama does not disclose the "change management layer" recited in claim 1. PO Resp. 28–32. In particular, Patent Owner asserts that the update/modification detector 82 of Balderrama (upon which Petitioner relies as teaching the claimed change management layer) merely "detects [manual] user input" and argues that "[o]ne of ordinary skill in the art would not recognize the 'update/modification detector 82' as [a] 'change management layer' that detects 'changes' under the broadest reasonable interpretation" thereof. *Id.* at 29 (citing Ex. 2032 ¶¶ 74–75, 77; Ex. 2033 ¶ 56; Ex. 1006, 2:10–21, 10:6–9, Table A (col. 7)). Patent Owner further argues that update/modification detector 82 merely notifies the system of a detected change. *Id.* at 30 (citing Ex. 1006, 9:2–14). Again, Patent Owner's arguments rely upon its proposed construction of the "change management layer," which we do not adopt

for the reasons discussed above (*see supra* Section II.C.1).

We are persuaded by Petitioner's assertion that notifying Balderrama's update/modification detector 82 of a change in data records or template presentations, *see Ex. 1006, Fig. 3*, from which the configured presentation (i.e., the application) is generated, meets the claimed function of the "change management layer."

Based on the evidence of record, we are persuaded that Petitioner has shown that the combination of Balderrama and Java Complete teaches or suggests all of the limitations of claim 1, and has articulated sufficient reasoning why it would have been obvious to combine these references in the proposed manner. We, thus, determine Petitioner has shown, by a preponderance of the evidence, that the combination of Balderrama and Java Complete renders claim 1 obvious.

d. Claim 21

In discussing independent claim 21—a method claim, which includes limitations similar in scope to the system limitations discussed with respect to claim 1—the parties refer back to their arguments with respect to claim 1. *See 1751 Pet. 53–54* (citing Ex. 1007, 42; Ex. 1002 ¶ 183); *1752 Pet. 33–35* (citing the same evidence); *PO Resp. 32*. For the same reasons discussed with respect to claim 1, we determine Petitioner has shown, by a preponderance of the evidence, that the combination of Balderrama and Java Complete renders claim 21 obvious.

e. Claims 7, 8, 10–12, 19, 20, 22, 27–32, 39, and 40

For each of claims 7, 8, 10–12, 19, 20, 22, 27–32, 39, and 40, Petitioner provides arguments as to how each claim limitation is disclosed in the combination of Balderrama and Java Complete, and relies upon Dr. Crovella's testimony. *See* 1751 Pet. 49–55 (citing Ex. 1006, 6:17–42, 8:67–9:2, 9:7–15, 9:33–10:3, 10:10–13, 12:65–14:43, Fig. 3; Ex. 1007, 42; Ex. 1002 ¶¶ 162–67, 169–73); 1752 Pet. 33, 35 (citing Ex. 1006, 8:67–9:2, 10:10–13, Fig. 3; Ex. 1007, 42; Ex. 1002 ¶¶ 153, 160–61). We agree with Petitioner's mapping of Balderrama and Java Complete to these claims, and adopt it as our own.

Patent Owner does not substantively discuss dependent claims 7, 8, 10–12, 19, 20, 22, 27–32, 39, and 40, apart from its discussion of independent claims 1 and 21, which we have addressed above. *See* PO Resp. 32 (“The remaining dependent claims are not [obvious based on] Balderrama in view of Java Complete by virtue of their dependencies on claims 1 and 21.”).

Based on the evidence of record, we determine Petitioner has shown, by a preponderance of the evidence, that the combination of Balderrama and Java Complete renders claims 7, 8, 10–12, 19, 20, 22, 27–32, 39, and 40 obvious.

2. Obviousness in View of Balderrama, Java Complete, and Codd

As discussed above, we are persuaded that Petitioner has shown by a preponderance of the evidence that the combination of Balderrama and Java Complete teaches all features of independent claims 1 and 21. As characterized by Petitioner,

dependent claims 3–6 and 23–26 “recite the term ‘database,’ which is explicitly defined in the ’482 patent specification.” 1752 Pet. 37; *see* Ex. 1001, 29:50–54. Petitioner asserts that Balderrama discloses each of the limitations introduced in these dependent claims, “with the exception of explicitly specifying a database of the type meeting the specific definition given in the specification.” 1752 Pet. 37. Petitioner provides arguments as to how each limitation of claims 3–6 and 23–26 is disclosed in Balderrama, and relies upon Dr. Crovella’s testimony. *Id.* at 44–47 (citing Ex. 1006, 6:48–63, 9:16–21, 16:55–7:5; Ex. 1008, 54; Ex. 1002 ¶¶ 246–51).

Petitioner relies on Codd as disclosing a database as defined in the ’482 patent. *Id.* at 37. According to Petitioner, “Codd lists all of the major components of the ’482 patent’s defined “database” (i.e., those that have their own sub-definitions—tables, views, columns, and rows) as canonical features of relational databases.” *Id.* (citing Ex. 1008, 54). Petitioner also asserts that “Codd teaches a number of benefits of relational databases . . . , such as advantages of performance, cost productivity, and distributability.” *Id.* at 38 (citing Ex. 1008, 60; Ex. 1002 ¶ 219). We are persuaded that one of ordinary skill would have used a relational database as disclosed in Codd to implement the system of Balderrama. *See id.* at 37–38 (citing Ex. 1002 ¶¶ 215, 219). We agree with Petitioner’s mapping of Balderrama, Java Complete, and Codd to these claims, and adopt it as our own.

Patent Owner has not presented separate arguments regarding the additional limitations introduced in dependent claims 3–6 and 23–26, or with respect to Petitioner’s proposed combination of references. *See* PO Resp. 32.

Based on the evidence of record, we are persuaded that Petitioner has shown that the combination of Balderrama, Java Complete, and Codd teaches or suggests all of the limitations of claims 3–6 and 23–26, and has articulated sufficient reasoning why it would have been obvious to combine these references in the proposed manner. We, thus, determine Petitioner has shown, by a preponderance of the evidence, that the combination of Balderrama, Java Complete, and Codd renders claims 3–6 and 23–26 obvious.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 7, 8, 10–13, 18–22, 27–33, and 38–40 are unpatentable under 35 U.S.C. § 102 as anticipated by Popp; claims 3–6 and 23–26 are unpatentable under 35 U.S.C. § 103 as obvious in view of Popp and Codd; claims 13–17 and 33–37 are unpatentable under 35 U.S.C. § 103 as obvious in view of Popp and Anand; claims 1, 8, 10, 19–21, 28, 30, 39, and 40 are unpatentable under 35 U.S.C. § 102 as anticipated by Kovacevic; claims 3–6 and 23–26 are unpatentable under 35 U.S.C. § 103 as obvious in view of Kovacevic and Codd; claims 1, 7, 8, 10–12, 19–22, 27–32, 39, and 40 are unpatentable under 35 U.S.C. § 103 as obvious in view of Balderrama and Java Complete; and claims 3–6 and 23–26 are unpatentable under 35 U.S.C. § 103 as obvious in view of Balderrama, Java Complete, and Codd.

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 3–8, and 10–40 of U.S. Patent No. 7,356,482 B2 are held *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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