IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

SHOPIFY INC. AND SHOPIFY
(USA), INC.,

        Plaintiffs and Counterclaim
        Defendants,

    v.

EXPRESS MOBILE, INC.,

        Defendant and Counterclaim
        Plaintiff.

Civil Action No. 19-439-RGA

MEMORANDUM OPINION

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September 21, 2021

ANDREWS, U.S. DISTRICT JUDGE:

Before me are Shopify's Motion for Summary Judgment and to Exclude Expert

Testimony (D.I. 211) and Express Mobile's Motion for Summary Judgment [and] to Exclude

[Expert] Testimony (D.I. 217). I held oral argument. (D.I. 296 [hereinafter, "Tr."]). I have

considered the parties' briefs and supplemental materials. (D.I. 212-216, 218, 223-235, 258-265,

277-280). For the reasons set forth below, Shopify's motion is GRANTED-in-part and

DENIED-in-part, and Express Mobile's motion is GRANTED-in-part and DENIED-in-part.

I. BACKGROUND

Shopify Inc. and its U.S. subsidiary (hereinafter referred to in the singular as "Shopify")

filed this declaratory judgment lawsuit of non-infringement of patents belonging to Express

Mobile on March 1, 2019. (D.I. 1). Express Mobile filed a counterclaim of infringement on

March 25, 2019. (D.I. 6). There have been amended pleadings. On June 23, 2020, I issued a

Markman order construing several disputed limitations. (D.I. 137, 142).

The case is about website design tools. Two families of patents are now at issue: (1) U.S.

Patent Nos. 6,546,397 ("the '397 patent") and 7,594,168 ("the '168 patent," and collectively "the

Web Design patents"); and (2) U.S. Patent Nos. 9,063,755 ("the '755 patent"), 9,471,287 ("the

'287 patent"), and 9,928,044 ("the '044 patent," and collectively "the Web Component patents").

(D.I. 212 at 3).

The Web Design patents generally describe methods for website design. (*See* '397 patent

at 1:5-8). The '168 patent is a continuation of the '397 patent, so the two have the same

specification. The specification explains that attributes of objects on the web page (*e.g.*, fonts,

id. at 31:44) can be stored in a database. *Id.* at 2:5-10. A run time engine is downloaded to the

end user's computer when he or she browses to a website, and the run time engine reads from an external database to obtain information used to generate the website. *Id.* at 2:10-14, 45:44-65.

The Web Component patents relate to two concepts: (1) an authoring tool that generates two sets of code, a device-independent Application and a device-specific Player (*see id.* at 5:8-14); and (2) an authoring tool that allows for integration of web services into that Application and Player (*e.g.*, Google Search, '755 patent at 9:27-34). The specifications for the three Web Component patents are the same.

Plaintiff currently asserts sixteen claims from the five patents. (D.I. 295).

On both the Web Design patents and the Web Component patents, Shopify moves for summary judgment of non-infringement and no willful infringement. (D.I. 211). On the '397 patent, the '755 patent, the '287 patent, and the '044 patent, Shopify moves for invalidity for lack of written description. (*Id.*). Shopify also moves to excludes certain opinions of Express Mobile's experts, Dr. Kevin Almeroth and Walter Bratic. (*Id.*).

Express Mobile moves for summary judgment of no invalidity for lack of patent eligibility under § 101, anticipation under § 102, and indefiniteness under § 112. (D.I. 217; D.I. 218 at 1-2). Express Mobile's no invalidity for lack of anticipation argument rests on its Web Design patents not being anticipated by SilverStream, a "Web Application Platform that allows corporations to easily build and deploy pure Java-based business applications." (D.I. 218 at 1-2; D.I. 226 at SHOP0016279). Express Mobile also moves to exclude certain opinions of Shopify's experts, Christopher Bakewell, Christopher Schmandt and Allen Wirfs-Brock. (D.I. 217; D.I. 218 at 26-27).

II. LEGAL STANDARD

A.   Summary Judgment

"The court shall grant summary judgment if the movant shows that there is no genuine

dispute as to any material fact and the movant is entitled to judgment as a matter of law." FED.

R. CIV. P. 56(a). The moving party has the initial burden of proving the absence of a genuinely

disputed material fact relative to the claims in question. *Celotex Corp. v. Catrett*, 477 U.S. 317,

330 (1986). Material facts are those "that could affect the outcome" of the proceeding, and "a

dispute about a material fact is 'genuine' if the evidence is sufficient to permit a reasonable jury

to return a verdict for the nonmoving party." *Lamont v. New Jersey*, 637 F.3d 177, 181 (3d Cir.

2011) (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). The burden on the

moving party may be discharged by pointing out to the district court that there is an absence of

evidence supporting the non-moving party's case. *Celotex*, 477 U.S. at 323.

The burden then shifts to the non-movant to demonstrate the existence of a genuine issue

for trial. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586-87 (1986);

Williams v. Borough of West Chester, Pa., 891 F.2d 458, 460–61 (3d Cir. 1989). A non-moving

party asserting that a fact is genuinely disputed must support such an assertion by: "(A) citing to

particular parts of materials in the record, including depositions, documents, electronically stored

information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or

other materials; or (B) showing that the materials cited [by the opposing party] do not establish

the absence . . . of a genuine dispute . . . ." FED. R. CIV. P. 56(c)(1). The non-moving party's

evidence "must amount to more than a scintilla, but may amount to less (in the evaluation of the

court) than a preponderance." *Williams*, 891 F.2d at 461.

When determining whether a genuine issue of material fact exists, the court must view

the evidence in the light most favorable to the non-moving party and draw all reasonable

inferences in that party's favor. *Scott v. Harris*, 550 U.S. 372, 380 (2007); *Wishkin v. Potter*,

476 F.3d 180, 184 (3d Cir. 2007). If the non-moving party fails to make a sufficient showing on

an essential element of its case with respect to which it has the burden of proof, the moving party

is entitled to judgment as a matter of law. *See Celotex Corp.*, 477 U.S. at 322.

B.   Infringement

Infringement of a patent occurs when a person "without authority makes, uses, offers to

sell, or sells any patented invention, within the United States . . . during the term of the patent[.]"

35 U.S.C. § 271(a). "Literal infringement of a claim exists when every limitation recited in the

claim is found in the accused device." *Kahn v. Gen. Motors Corp.*, 135 F.3d 1472, 1477 (Fed.

Cir. 1998). "If any claim limitation is absent from the accused device, there is no literal

infringement as a matter of law." *Bayer AG v. Elan Pharm. Rsch. Corp.*, 212 F.3d 1241, 1247

(Fed. Cir. 2000). If an accused product does not infringe an independent claim, it also does not

infringe any claim depending thereon. *See Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d

1546, 1553 (Fed. Cir. 1989). However, "[o]ne may infringe an independent claim and not

infringe a claim dependent on that claim." *Monsanto Co. v. Syngenta Seeds, Inc.*, 503 F.3d 1352,

1359 (Fed. Cir. 2007) (internal quotations omitted).

Infringement under the doctrine of equivalents requires that "the accused product or

process contain[s] elements identical or equivalent to each claimed element of the patented

invention." *Am. Calcar, Inc. v. Am. Honda Motor Co.*, 651 F.3d 1318, 1338 (Fed. Cir. 2011)

(quoting *Warner-Jenkins Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40 (1997)). This inquiry

is guided by the function-way-result test, "which asks whether an element of an accused product

'performs substantially the same function in substantially the same way to obtain the same

result.'" *Id.* On summary judgment, if "no reasonable jury could find equivalence," then summary judgment of noninfringement under this doctrine is appropriate. *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1356 (Fed. Cir. 2012).

When an accused infringer moves for summary judgment of non-infringement, such relief may be granted only if at least one limitation of the claim in question does not read on an element of the accused product, either literally or under the doctrine of equivalents. *See Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1376 (Fed. Cir. 2005); *see also TechSearch, L.L.C. v. Intel Corp.*, 286 F.3d 1360, 1369 (Fed. Cir. 2002) ("Summary judgment of noninfringement is . . . appropriate where the patent owner's proof is deficient in meeting an essential part of the legal standard for infringement, because such failure will render all other facts immaterial."). Thus, summary judgment of non-infringement can only be granted if, after viewing the facts in the light most favorable to the non-movant, there is no genuine issue as to whether the accused product is covered by the claims (as construed by the court). *See Pitney Bowes, Inc. v. Hewlett–Packard Co.*, 182 F.3d 1298, 1304 (Fed. Cir. 1999).

C.   Written Description

The written description requirement contained in 35 U.S.C. § 112, ¶ 1 (pre-AIA) requires that the specification "clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed." *Ariad Pharm. Inc., v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc) (alteration in original) (internal quotation marks omitted). "In other words, the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* The written description inquiry is a question of fact. *See id.* Although it is a question of fact, "[c]ompliance with the written description requirement . . . is amenable to

summary judgment in cases where no reasonable fact finder could return a verdict for the non-moving party." *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1307 (Fed. Cir. 2008). "A party must prove invalidity for lack of written description by clear and convincing evidence." *Vasudevan Software, Inc. v. MicroStrategy, Inc.*, 782 F.3d 671, 682 (Fed. Cir. 2015).

D.   *Daubert*

Federal Rule of Evidence 702 sets out the requirements for expert witness testimony and states:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

FED. R. EVID. 702. The Third Circuit has explained:

> Rule 702 embodies a trilogy of restrictions on expert testimony: qualification, reliability and fit. Qualification refers to the requirement that the witness possess specialized expertise. We have interpreted this requirement liberally, holding that "a broad range of knowledge, skills, and training qualify an expert." Secondly, the testimony must be reliable; it "must be based on the 'methods and procedures of science' rather than on 'subjective belief or unsupported speculation'; the expert must have 'good grounds' for his o[r] her belief. In sum, *Daubert* holds that an inquiry into the reliability of scientific evidence under Rule 702 requires a determination as to its scientific validity." Finally, Rule 702 requires that the expert testimony must fit the issues in the case. In other words, the expert's testimony must be relevant for the purposes of the case and must assist the trier of fact. The Supreme Court explained in *Daubert* that "Rule 702's 'helpfulness' standard requires a valid scientific connection to the pertinent inquiry as a precondition to admissibility."

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> By means of a so-called "*Daubert* hearing," the district
> court acts as a gatekeeper, preventing opinion testimony
> that does not meet the requirements of qualification,
> reliability and fit from reaching the jury. *See Daubert*
> ("Faced with a proffer of expert scientific testimony, then,
> the trial judge must determine at the outset, pursuant to
> Rule 104(a) [of the Federal Rules of Evidence] whether the
> expert is proposing to testify to (1) scientific knowledge
> that (2) will assist the trier of fact to understand or
> determine a fact in issue.").

Schneider ex rel. Estate of Schneider v. Fried, 320 F.3d 396, 404–05 (3d Cir. 2003) (footnote

and internal citations omitted).[1]

E.   Patent Ineligible Subject Matter

Section 101 of the Patent Act defines patent-eligible subject matter. It provides:

"Whoever invents or discovers any new and useful process, machine, manufacture, or

composition of matter, or any new and useful improvement thereof, may obtain a patent therefor,

subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court

has recognized an implicit exception for three categories of subject matter not eligible for

patentability-laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. v. CLS*

Bank Int'l, 573 U.S. 208, 216 (2014). The purpose of these carve outs is to protect the "basic

tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs.,*

Inc., 566 U.S. 66, 71 (2012). "[A] process is not unpatentable simply because it contains a law

of nature or a mathematical algorithm," as "an application of a law of nature or mathematical

formula to a known structure or process may well be deserving of patent protection." *Id.*

(internal quotation marks and emphasis omitted). In order "to transform an unpatentable law of

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[1] The Court of Appeals wrote under an earlier version of Rule 702, but the subsequent
amendments to it were not intended to make any substantive change.

nature into a patent-eligible application of such a law, one must do more than simply state the law of nature while adding the words 'apply it.'" *Id.* at 72 (emphasis omitted).

The Supreme Court reaffirmed the framework laid out in *Mayo* "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 573 U.S. at 217. First, the court must determine whether the claims are drawn to a patent-ineligible concept. *Id.* If the answer is yes, the court must look to "the elements of each claim both individually and as an 'ordered combination'" to see if there is an "'inventive concept'- *i.e.*, an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'" *Id.* at 217-18 (alteration in original). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* at 221. Further, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Id.* at 222 (quoting *Bilski v. Kappos*, 561 U.S. 593, 610-11 (2010)). Thus, "the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Id.* For this second step, the machine-or-transformation test can be a "useful clue," although it is not determinative. *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 716 (Fed. Cir. 2014).

"Whether a claim is drawn to patent-eligible subject matter under § 101 is an issue of law," and "is a matter of both claim construction and statutory construction." *In re Bilski*, 545 F.3d 943, 951 (Fed. Cir. 2008), *aff'd sub nom. Bilski v. Kappos*, 561 U.S. 593 (2010). "Claim construction is a question of law ... ." *In re Nuijten*, 500 F.3d 1346, 1352 (Fed. Cir. 2007).

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F.   Anticipation

"To show that a patent claim is invalid as anticipated, the accused infringer must show by clear and convincing evidence that a single prior art reference discloses each and every element of a claimed invention." *Silicon Graphics, Inc. v. ATI Tech., Inc.*, 607 F.3d 784, 796 (Fed. Cir. 2010). "[E]very element of the claimed invention [must be described], either expressly or inherently, such that a person of ordinary skill in the art could practice the invention without undue experimentation." *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331, 1346 (Fed. Cir. 2009). As with infringement, the court construes the claims and compares them against the prior art. *See Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010). "While anticipation is a question of fact, it may be decided on summary judgment if the record reveals no genuine dispute of material fact." *Encyclopaedia Britannica, Inc. v. Alpine Elecs. of Am., Inc.*, 609 F.3d 1345, 1349 (Fed. Cir. 2010).

G.   Indefiniteness

Section 112 requires that "a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014); *see also* 35 U.S.C. § 112 ("The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor . .. regards as the invention."). The requirement that patent claims be definite requires that patents be "precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them." *Nautilus*, 572 U.S. at 909 (cleaned up).

"Indefiniteness is a question of law" appropriate for summary judgment. *Eli Lilly & Co. v. Teva Parenteral Meds., Inc.*, 845 F.3d 1357, 1370 (Fed. Cir. 2017). A claim term "is

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indefinite if its language 'might mean several different things and no informed and confident choice is available among the contending definitions.'" *Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1371 (Fed. Cir. 2015) (quoting *Nautilus*, 572 U.S. at 911 n.8).

III.   DISCUSSION

Representative claims of the Web Design patents (with key terms emphasized) are set forth below.   Claim 1 of the '397 patent recites:

> 1. A method to allow users to produce Internet websites on and for computers having a browser and a ***virtual machine*** capable of generating displays, said method comprising:
> (a) presenting a viewable menu having a user selectable panel of settings describing elements on a website, said panel of settings being presented through a browser on a computer adapted to accept one or more of said selectable settings in said panel as inputs therefrom, and where at least one of said user selectable settings in said panel corresponds to commands to said ***virtual machine***;
> (b) generating a display in accordance with one or more user selected settings substantially contemporaneously with the selection thereof;
> (c) ***storing information representative of said one or more user selected settings in a database***;
> (d) generating a website at least in part by retrieving ***said information representative of said one or more user selected settings stored in said database***; and
> (e) ***building*** one or more web pages to generate said website from at least a portion of said database and ***at least one run time file***, where said ***at least one run time file utilizes information stored in said database*** to generate ***virtual machine commands*** for the display of at least a portion of said one or more web pages.

Claim 1 of the '168 patent recites:

> 1. A system for assembling a web site comprising:
> a server comprising a ***build engine*** configured to:
> accept user input to create a web site, the web site comprising a plurality of web pages, each web page comprising a plurality of objects,
> accept user input to associate a style with objects of the plurality of web pages, wherein each web page comprises at least one button object or at least one image object, and wherein the at least one button object or at least one image object is associated with a style that includes values defining transformations and time lines for the at least one button object or at least one image object; and wherein each web page is defined entirely by ***each*** of the plurality of objects comprising that web page and the style associated with the object,
> produce a database with a multidimensional array comprising the objects that comprise the web site including data defining, for ***each*** object, the object style, an ***object number***, and an indication of the web page that ***each*** object is part of, and

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provide the database to a server accessible to web browser;

wherein the database is produced such that a web browser with access to a ***runtime engine*** is configured to generate the web-site from the objects and style data extracted from the provided database.

A representative claim of the Web Component patents (with key terms emphasized) is set forth below. Claim 1 of the '755 patent recites:

1. A system for generating code to provide content on a display of a device, said system comprising:

computer memory storing a registry of:

    (a) symbolic names required for evoking one or more web components each related to a set of inputs and outputs of a web service obtainable over a network, where the symbolic names are character strings that do not contain either a persistent address or pointer to an output value accessible to the web service, and

    (b) the address of the web service;

an authoring tool configured to:

    define a user interface (UI) object for presentation on the display, where said UI object corresponds to the web component included in said registry selected from the group consisting of an input of the web service and an output of the web service,

    access said computer memory to select the symbolic name corresponding to the web component of the defined UI object,

    associate the selected symbolic name with the defined UI object,

    produce an ***Application*** including the selected symbolic name of the defined UI object, where said ***Application*** is a ***device-independent*** code, and

    produce a ***Player***, where said ***Player*** is a ***device-dependent*** code;

    such that, when the ***Application*** and ***Player*** are provided to the device and executed on the device, and when a user of the device provides one or more input values associated with an input symbolic name to an input of defined UI object,

    (1) the device provides the user provided one or more input values and corresponding input symbolic name to the web service,

    (2) the web service utilizes the input symbolic name and the user provided one or more input values for generating one or more output values having an associated output symbolic name,

    (3) said ***Player receives the output symbolic name*** and corresponding one or more output values and ***provides instructions for a display*** of the device to present an output value in the defined UI object.

A.   **Shopify's Motion for Summary Judgment**

1.   **Infringement of the "Run Time Engine" Limitation**

Claims 1, 2, 3, 11, and 37 of the '397 patent each require either "one or more run time files" or "at least one run time file," and claims 1, 2, and 3 of the '168 patent each require a "run time engine."

I have construed "run time engine" to mean "file that is executed at run time that reads information from the database and generates commands to display a web page or website," and "one or more run time files / at least one run time file" to mean "one or more files, including a run time engine, that are downloaded or created when a browser is pointed to a web page or website." (D.I. 142 at 1, 2). Thus, all asserted claims of the Web Design patents have a run time engine limitation. This limitation requires the run time engine to both: (1) be downloaded or created when a browser is pointed to a web page or website and (2) read information from the database.

The accused run time engine is a "Liquid template file." (D.I. 258 at 2-3).

Shopify's business involves providing other businesses, or merchants, who engage in e-commerce with an "online store." (D.I. 212 at 3). The layout of a Shopify merchant's online store is largely set by the "theme" selected by the merchant during the design process, which can be further customized using Shopify's Theme Editor. (D.I. 212 at 5). Shopify developed a template language called Liquid that is used to create the themes used in its platform. (*Id.*). Shopify contends a Liquid template is a file that contains HTML, JavaScript, or CSS—the components used to create a typical website—interspersed with pieces of Liquid. (*Id.*). Liquid templates are referred to as templates because they include placeholders that are filled in to produce JavaScript, HTML, and CSS code that is sent to a visitor's (*i.e.*, a merchant's potential

customer's) web browser when the visitor browses a merchant's website. (*Id.* at 5-6).

Shopify contends the accused Liquid templates, such as index.liquid, page.liquid, and product.liquid, cannot be the claimed "run time engine" because: (1) none of the accused files are downloaded (or created) when a browser is pointed to the website and (2) none of the accused files read from the database. (*Id.* at 7). Shopify asserts they remain on Shopify's servers at all times and are never "downloaded" to a visitor's computer, as is required by "one or more run time files / at least one run time file." (*Id.* at 7). Shopify asserts the Liquid template files are not "created" when a visitor browses a merchant's website. Rather, they are created when the merchant is designing its website, which is before the website is published to the web and therefore before any visitor points a browser to the web page or website. (*Id.*). Shopify contends it is the drop files, not the Liquid template files, that read information from the database. (*Id.* at 9).

Express Mobile contends Liquid templates meet the "downloaded (or created)" and "read from the database" limitations. (D.I. 258 at 3-10). According to Express Mobile, an instance of Liquid template files is created when a customer visits an online store and the instance is downloaded to the customer's computer for display. (*Id.* at 2). Express Mobile contends Liquid templates contain code for reading information from databases which triggers the related drop files and ActiveRecord files to perform the database read. (*Id.*).

a) Whether Liquid Templates Are Downloaded or Created When a Browser Is Pointed to a Web Page or Website

Both parties agree that the claimed run time engine must be downloaded or created at run time. The parties dispute whether the Liquid template file performs this necessary function. Shopify asserts that the Liquid template files are created and only exist on Shopify's servers, and are never downloaded to the machine of the visitor to a merchant's website. (Tr. 16:9-17).

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Shopify asserts that the Liquid template files are created when the merchant is designing its website, before the website is published to the web and before any visitor points a browser to the web page or website. (D.I. 212 at 7; D.I. 216 ¶ 13). Express Mobile's expert, Dr. Almeroth, agrees that the Liquid template as it exists on Shopify's servers is not downloaded onto a visitor's browser. (D.I. 213-4 Ex. 8 at 231:25-232:11). Rather, Express Mobile relies on its instantiation theory to argue that an instance of the required Liquid template is created at run time. (D.I. 258 at 3-4; Tr. 26:17-24).

Express Mobile's instantiation theory in based on Dr. Almeroth's expert report and an open-source document from https://rubydoc.info. (D.I. 258 at 3-4). Dr. Almeroth opines, "An instance of each Liquid template file is created when a browser is pointed at the user's web page." (D.I. 213-4 Ex. 7 ¶ 260). It is Dr. Almeroth's opinion that "these Liquid template files are downloaded to a visitor's web browser when the relevant template file is requested." (*Id.*) As Shopify points out, Express Mobile's instantiation theory lacks factual support. Dr. Almeroth's expert report introducing the instantiation theory does not cite to the factual record. (D.I. 213-4 Ex. 7 ¶ 260). Without factual support, Dr. Almeroth testified, "[B]oth the template as it exists and then the liquid file as it becomes the instantiated version of the liquid file, *to me*, those are both the same file." (D.I. 213-4 Ex. 8 234:25-235:17) (emphasis added)).

Using the image below, Shopify explains that the Liquid template file is not downloaded or created at run time, nor does it read from the database.

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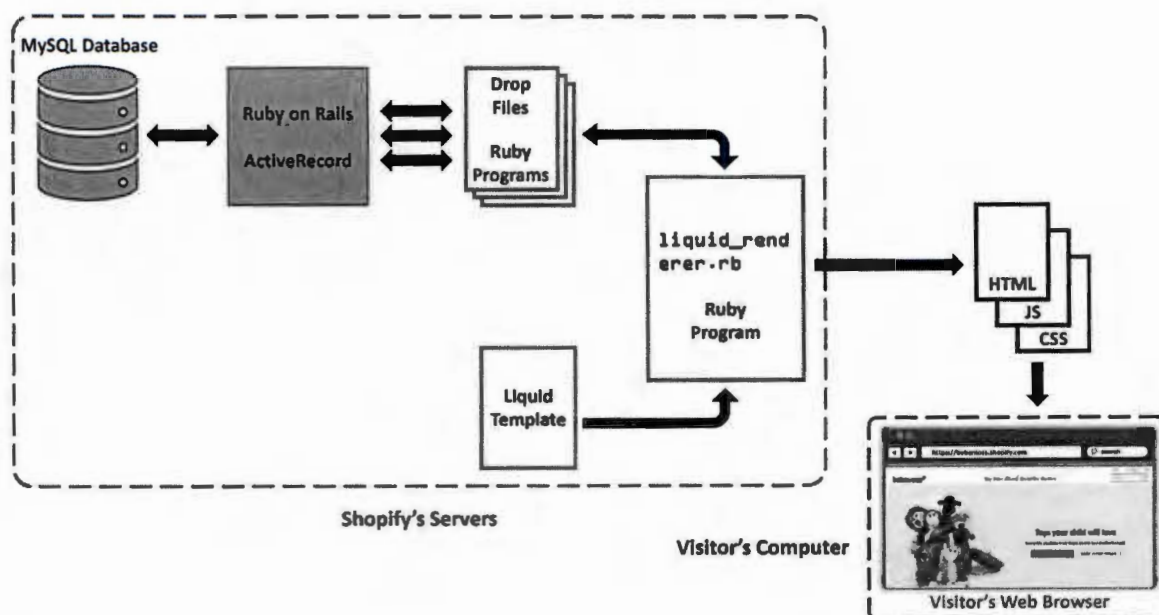
(D.I. 212 at 6, citing D.I. 216 ¶ 18; D.I. 213-4 Ex. 6 ¶ 96; D.I. 213-4 Ex. 7 ¶ 274).

According to Shopify's declaration from its corporate designee and technical fact witness, Larry Lumsden, Liquid template files are stored on Shopify's servers, are not downloaded by the visitor's web browser, and web browsers are not capable of rendering Liquid. (D.I. 216 ¶ 6). Mr. Lumsden explains that any placeholders in Liquid templates are filled in during a process known as rendering, the result of which is plain HTML, JavaScript, and CSS files that can be sent to a visitor's web browser. (*Id.* at ¶¶ 10-11). Mr. Lumsden continues that Liquid template files are not created when a visitor accesses the merchant's website (e.g., by entering the URL). (*Id.* at ¶ 13). Mr. Lumsden explains that Liquid template files are created as part of the web design process by the merchant and Liquid template files have filenames that end with ".liquid". (*Id.*). According to Mr. Lumsden: (1) the HTML, JavaScript, and CSS files are separate files from the Liquid templates; (2) unlike the Liquid template files, they do not have filenames that end in ".liquid" and there is no one-to-one correspondence between the Liquid template files and the HTML, JavaScript, and CSS files; and (3) the Liquid templates are simply

one of the inputs used by the liquid_renderer.rb program on Shopify's servers to generate HTML, JavaScript ("JS"), and CSS files. (*Id.* at ¶ 19). Nothing in Mr. Lumsden's declaration discusses "instantiation," or describes the HTML, JS, or CSS output of the liquid rendering process as a filled in "instance" of Liquid. (*See id.* ¶¶ 6-22).

Express Mobile contends that the instantiated Liquid template files is filled in with website code, and the resulting template is downloaded to the customer's browser for display. (D.I. 258 at 5). Again, Express Mobile cites to Dr. Almeroth's unsubstantiated opinion for its instantiation theory. (*Id.*; *see* D.I. 213-4 Ex. 7 ¶ 260; D.I. 235 Ex. G ¶ 27). However, a tension arises in Express Mobile's downloading argument. As demonstrated in the figure above, and as described by Mr. Lumsden, the output of the liquid rendering process is HTML, JavaScript, and CSS files, which are downloaded to the computer browser of a merchant's customer. (D.I. 212 at ¶ 6). Dr. Almeroth seems to agree that the output of the liquid rendering process are the HTML, JS, and CSS files, and testified that these HTML, JS, and CSS files are the instantiated Liquid template files. (D.I. 213-4 Ex. 8 230:10-18, 231:4-14; Ex. 7 ¶ 274). However, Dr. Almeroth's expert report explains that the claim element "run time engine" is met by the Liquid template files, and the separate claim element "virtual machine commands," generated by the run time engine, are the HTML, JS, and CSS files. (D.I. 213-4 Ex. 7 ¶¶ 259-60, 274). Claim 1 of the '397 patent recites "at least one run time file utilizes information stored in said database to generate virtual machine commands." Therefore, the claimed run time engine element of the HTML, JS, and CSS files as the instantiated Liquid template files cannot also be the separate claimed element of virtual machine commands, as Express Mobile suggests (Tr. 37:20-24), because the runtime file generate the virtual machine commands. Under Express Mobile's view, the HTML, JS, and CSS runtime files would be generating those same HTML, JS, and CSS

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virtual machine commands, which does not make sense as the files would then be generating themselves.

There is further support that the HTML, JS, and CSS files are not the same as the liquid files or an "instance" of the liquid files. Liquid template files have the extension of ".liquid" (D.I. 213-4 Ex. 7 ¶ 166; D.I. 216 ¶ 13), whereas the HTML, JavaScript, and CSS files do not (D.I. 213-4 Ex. 7 ¶ 276-77; D.I. 216 ¶ 19). The original Liquid templates continue to exist, unchanged, even after the HTML, JavaScript, and CSS files have been produced. (D.I. 216 ¶ 19; D.I. 213-4 Ex. 6 ¶ 97). There is no one-to-one correspondence between the two sets of files. For example, multiple Liquid template files can be used to produce one HTML file. (D.I. 216 ¶ 19).

Express Mobile additionally argues that the Liquid template files on Shopify's servers are the same file as the downloaded HTML, JS, and CSS files by comparing code between the two files. (D.I. 258 at 5). However, the content of the two files is not the same, because the Liquid template file on the server has lines of code that the "Liquid Template Downloaded in Browser" does not have. (*See id.*). Thus, Express Mobile has not met its burden to demonstrate that the accused Liquid template file is downloaded at run time.

Without any citation to the record, Dr. Almeroth's testimony is conclusory and unsupported by the facts in the record. *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 1001 (Fed. Cir. 2008) ("Conclusory expert assertions cannot raise triable issues of material fact on summary judgment.") Express Mobile claims that Dr. Almeroth cites to source code to substantiate his instantiation theory (D.I. 258 at 3-4), but the code Express Mobile cites is an open-source document from https://rubydoc.info (D.I. 260 Ex. 33). The open-source document is not a Shopify document and Dr. Almeroth does not refer to it. (Tr. 27:9-24 "this is not what we're relying on in our, you know, expert report."). According to Shopify, it "does not refer to file

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creation at all, but to the creation of an instance of a programming construct called a class, which is not unique to Liquid." (D.I. 279 at 3 n.4). No expert has opined on the meaning of the open-source document. (*See* D.I. 258 at 3-4; Tr. 27:9-24). With only attorney argument as to the relevance or meaning of the open-source document, Express Mobile has not met its burden of proof that the open-source document means anything at all. There is a lack of factual evidence in the record to support Express Mobile's instantiation theory. Indeed, the evidence is contrary. As shown by Shopify's declaration from its technical fact witness, Larry Lumsden, the Liquid template files are created before any visitor points a browser to the web page or website. (D.I. 216 ¶ 13). The HTML, JS, and CSS files that are the output of the liquid rendering process are generated from the liquid template file and other inputs. (*Id.* ¶ 19). Thus, Express Mobile has not met its burden to demonstrate that the accused Liquid template file is created at run time.

Since Express Mobile has not shown that the accused liquid template is either "downloaded" or "created," when a browser is pointed to a webpage or website, it cannot meet the relevant limitations of the asserted claims of the '397 and '168 patents.

> **b)   Whether Liquid Templates Read Information from a Database**

Both parties agree that the claimed run time engine must read information from the database. The parties dispute whether the accused Liquid template file performs this function.

Shopify contends Liquid templates do not refer to a database, do not contain any code for reading from databases, and do not contain any indication that the values needed to fill in the templates come from a database. (D.I. 212 at 10). According to Shopify, Liquid template files are an input to the liquid renderer program. (D.I. 216 ¶ 19; Tr. 6:20-23). When the liquid renderer program comes across a placeholder within the Liquid template file, the renderer calls on drop files, which read from the database with the assistance of the ActiveRecord library. (D.I.

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216 ¶ 6; Tr. 7:3-9). Shopify asserts that it is the drop files that are reading from the database, not the Liquid template files. (Tr. 7:15-16; D.I. 212 at 6; D.I. 216 ¶ 18).

Express Mobile again invokes its instantiation theory to argue that the instantiated version of the Liquid template file reads information from the database by triggering "the data reading operation that queries the database and reads from it the requested information." (D.I. 258 at 7). When questioned whether Express Mobile agrees that the drop file is actually doing the reading from the database, Express Mobile agreed, and contended that the Liquid template is reading from the database by triggering the drop file to perform its data fetching function. (Tr. 33:13-23). When questioned whether the drop file is considered to be part of the run time engine, Express Mobile agreed that the drop file is separate from the run time engine, but asserted that the run time engine uses it. (*Id.* at 34:16-35:3).

As Shopify points out, Express Mobile is advocating for a position similar to its claim construction position, which was that the run time engine should be construed to be a "file that is executed at run time that facilitates the retrieval of information from the database and generates commands to display a web page or website." (D.I. 137 at 5). As stated in my claim construction opinion, there is no intrinsic support for Express Mobile's argument that the run time engine "facilitates the retrieval of information" and that wording is "needlessly vague."[2] (*Id.*). Because Express Mobile agrees that the drop file is doing the actual reading and is separate from the claimed run time engine, Express Mobile has not met its burden for literal infringement. Express Mobile has not shown that the accused Liquid template file is reading from the database.

Express Mobile also argues the doctrine of equivalents for all asserted claims of the '397

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[2] In hindsight, maybe "purposefully" is more accurate than "needlessly."

and '168 patents. Express Mobile contends that Liquid template files read information from a database in substantially the same way as the claimed run time engine because, "The fact that different functions in software are implemented in different software components or even in different programming languages is a common practice." (D.I. 258 at 9). Express Mobile likens the Liquid template files to a Java Applet, which uses "a traditional database function call to a database-access library." (*Id.* at 10). Express Mobile argues Liquid template files utilize database-access code in libraries such as ActiveRecord to read from a database, and therefore reads from the database in substantially the same way as the run time engine. (*Id.*).

Shopify's technical witness Mr. Lumsden and its expert Mr. Schmandt state that Liquid template files are unlike a Java Applet. A Java Applet contains code to use a database-access library to help read information from a database, but Liquid template files do not contain code to read from a database or contain any references to the source of the data at all, whether through a database-access library or otherwise. (D.I. 212 at 12; D.I. 279 at 5-6; D.I. 216 at ¶¶ 17-18; D.I. 213-4 Ex. 6 ¶¶ 103-04).   Mr. Lumsden explains in his declaration that the Liquid template files function through "a multi-step process by which the Liquid template is filled in." (D.I. 216 at ¶ 18). Mr. Lumsden explains this multi-step process, which uses the liquid renderer to read the Liquid template files to be filled in. (*Id.*). When the renderer encounters a placeholder within the Liquid template file, it invokes drop files, which use libraries called ActiveRecord to read the database. (*Id.*). This ultimately produces the output HTML, JavaScript, and CSS files, which can be sent to a visitor's web browser. (*Id.*).

Express Mobile's expert, Dr. Almeroth, does not address the question of whether this operation of the accused Liquid template files is functioning in substantially the same way as the claimed run time engine. (D.I. 213-4 Ex. 7 ¶ 267). Dr. Almeroth's "substantially the same way"

opinion is another conclusory opinion, which is limited to, "[t]he Liquid templates perform in substantially the same way by executing code that can retrieve the information," followed by a comparison to the Java Applet. (*Id.*). However, unlike the Java Applet which does contain code to read from a database (D.I. 213-4 Ex. 6 ¶¶ 103-04), Liquid template files do not contain code to read from a database. (D.I. 212 at 12; D.I. 279 at 5-6; D.I. 216 at ¶¶ 17-18). Therefore, Express Mobile has not met its burden of proof that the accused Liquid template files operate in substantially the same way as the claimed runtime engine because the Liquid template files do not contain any reference to databases, nor contain any code for reading from databases like the Java Applet does. (D.I. 216 ¶ 6; D.I. 213-4 Ex. 6 ¶¶ 103-04).

There is no literal infringement of the "downloaded or created when a browser is pointed to a web page or website limitation and the "reads information from the database" limitation of claims 1, 2, 3, 11, and 37 of the '397 patent and claims 1, 2, and 3 of the '168 patent. There is no infringement by the doctrine of equivalents of the "reads information from the database" limitation of claims 1, 2, 3, 11, and 37 of the '397 patent and claims 1, 2, and 3 of the '168 patent. Therefore, Shopify's motion for summary judgment of no infringement of the asserted claims of the Web Design patents regarding the claimed "run time engine" is GRANTED.

2.   Infringement of the "Object Number" Limitation

Claims 1, 2, and 3 of the '168 patent each require "a database with a multidimensional array comprising the objects that comprise the web site including data defining, for each object, the object style, an object number, and an indication of the web page that each object is part of." Shopify states that, within its Theme Editor, objects are organized into blocks of content called "sections." (D.I. 212 at 13). An object within a section can have no number associated with it and sections do not necessarily have numbers associated with them, either. (*Id.*). Shopify

explains that when sections are "pre-defined" by the theme, they have a non-numeric

identification, and sections are given a numerical "ID" only when the ID is manually added by

the merchant. (*Id.*).

Shopify argues the claim language, which recites comprising an object number for each

object, requires that "each" means "all." (*Id.*). Because objects on Shopify's site do not

necessarily have an identifier and even the sections in which those objects appear may have a

non-numeric identifier, Shopify asserts that it does not infringe claims 1, 2, and 3. (*Id.*).

Express Mobile argues that because the first clause of claim 1 introduced objects by

stating "each web page comprising 'a plurality of objects'" the additional reciting of "the

objects" and "each object" relates to storing certain data for "a plurality of objects." (D.I. 258 at

10-11). Express Mobile contends "a plurality of objects" does not mean all objects. (*Id.*). The

parties additionally debate whether an object number must be a number, or if non-numeric

identifiers can be the claimed "object number." (D.I. 212 at 13-14; D.I. 258 at 12).

The parties both rely on *ResQNet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1379 (Fed. Cir.

2003).[3] There, for the '961 patent, the at-issue claim recited "means for processing said

information to generate a screen identification ("ID") from said first image, said ID being

generated as a function of the number, location, and length of *each field* in said first image said

ID uniquely identifying said first image." (*Id.* at 1377). A continuation-in-part of the '961

patent, the '608 patent, recited "means for identifying, based upon a position, length and type of

each of a plurality of fields, a particular screen to be displayed to said user" in the at-issue claim.

(*Id.*). The Federal Circuit determined that for the '961 patent, the language immediately

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[3] They do not cite or rely upon *Apple Inc. v. Samsung Elec. Co.*, 695 F.3d 1370, 1378 (Fed. Cir. 2012).

following the functional language, "said ID being generated as a function of the number, location, and length of *each* field in said first image" showed "that the claimed algorithm evaluates attributes of each (and every) field in the information to be displayed." (*Id.* at 1379). Accordingly, the language of the claim required the claimed algorithm to use all fields of the information, and each was determined to mean all. (*Id.*). The Federal Circuit found support for this construction in the patent specification and prosecution history. (*Id.* at 1379-82).

However, for the '608 patent, the Federal Circuit determined the language of the claim differed from the language of the claim of the '961 patent in that within the functional language of the '608 claim was the clause "based upon a position[,] length and type *of each of a plurality of fields*." (*Id.* at 1382). The Federal Circuit explained that "each of a plurality of fields," does not carry the same meaning as "every field." (*Id.*). The recitation of "plurality" suggested the use of "at least two." (*Id.* "While 'at least two' may mean 'every' under some circumstances, the two terms are not synonymous. In sum, 'each of a plurality of fields' means 'each of at least two fields.'") Again, the Federal Circuit found support in the '608 patent specification and prosecution history. (*Id.* at 1382-83).

I agree with Shopify that the use of "for each object" in claim 1 of the '168 patent does not refer back to a "plurality of objects." "[A] plurality of objects" is introduced in the first clause of the claim. When again referring to the plurality of objects in the second clause, the claim relies on the antecedent basis from the first clause and recites "each of *the* plurality of objects," which is shortly thereafter followed by "*the* object," which refers to each and every object of the preceding "plurality of objects." While "*the* plurality of objects" means two or more objects, the objects recited in the third clause, "*the* objects that comprise the web site including data defining, *for each object*, the object style, an object number . . ." refer to each and

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every object within "*the* plurality of objects." The claim specifies that "each web page is defined

entirely by each of *the plurality of objects* comprising that web page and the style associated with

the object." Thus, the only objects are those that "entirely define" the web page; each such

object must have defining data such as "the object style, an object number, and an indication of

the web page that each object is part of." The claim language shows that each and every object

has the defining data including an "object number."

The claim language requires an "object number," not an "object identifier." The

specification too supports finding that the claim to a "number" must be a number rather than an

identifier. The specification states that a web page can be displayed "either as a number in one

implementation or as a user defined name in an alternative implementation." ('168 patent at

20:25-30). The specification distinguishes between a number and a non-numerical "user defined

name." If "number" encompassed non-numeric identifiers, there would be no need to distinguish

between these two implementations.

Since there is no dispute that the objects do not all have object numbers, Express Mobile

cannot meet all the "object number" limitation of the '168 patent. Shopify's motion for

summary judgment for non-infringement of the asserted claims of the '168 patent is GRANTED.

3.   Infringement of the "Virtual Machine" Limitation

Claims 1, 2, 3, 11, and 37 of the '397 patent each require a "virtual machine," which I

have construed to mean "software that emulates a physical machine." (D.I. 137 at 4). Physical

machines, *e.g.*, processors or computers, have electronic circuitry to both fetch and execute the

machine language commands. (D.I. 212 at 15). A virtual machine emulates a physical machine

through software that performs the equivalent actions of fetching and executing the machine

language commands of the emulated machine. (*Id.*).

Express Mobile accuses a browser's JavaScript and rendering engines as being the claimed "virtual machine." (D.I. 258 at 13). Shopify contends it does not infringe the asserted claims of the '397 patent because a browser's JavaScript and rendering engines do not emulate a physical machine. (D.I. 212 at 17). Shopify argues that a "browser's JavaScript and rendering engines do not emulate all the functionality of a physical machine—memory, data types, registers, a stack, etc.—in software." (*Id.*). Shopify argues the crux of the dispute between the parties is "over the interpretation of the Court's construction of 'virtual machine': Is 'software that emulates a physical machine' software that emulates all the features of a computer processor, which (as Express Mobile does not dispute) include a machine language, memory locations, data types, etc.? … Or, as Express Mobile contends, is any software that 'emulate[s] the display rendering function of a physical machine' a virtual machine." (D.I. 279 at 8).

Shopify contends "emulate" does not mean "share a single feature of." If it did, Shopify argues, then Express Mobile's position, which allows for "virtual machines" that only emulate display rendering functions, would include online Solitaire and Microsoft Word. (*Id.*). Express Mobile contends JavaScript and other browser rendering engines are virtual machines as construed by the Court because they emulate the functionality of a physical machine.[4] (D.I. 258 at 13, citing D.I. 223 Ex. 1 ¶¶ 189-199; D.I. 235 Ex. G ¶¶ 11- 22; *id.* Ex. F ¶¶ 28, 31, 36-40). Express Mobile's experts opine that JavaScript engines and browser rendering engines all emulate the display rendering function of a physical machine. (D.I. 223 Ex. 1 ¶193 ("At least the JavaScript engine and the layout and rendering engine in popular Internet browsers emulate the underlying physical computer through the operating system translating commands in a web page

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[4] Both parties requested "emulated" as part of the construction of virtual machine. (D.I. 137 at 4). So now they are disputing the construction of a word on which they agreed.

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(i.e., HTML, CSS and JavaScript) to generate a display into the underlying machine commands of the physical computer."); D.I. 235 Ex. F ¶ 19).

While the patent specification only mentions "virtual machines" once in the context of a "JAVA Virtual Machine" ('397 patent at 35:34-38), as explained in my claim construction opinion, this is "clearly just one possible embodiment, not the invention itself. It is improper to 'import a feature from a preferred embodiment into the claims.' *Acumed LLC v. Stryker Corp.*, 483 F.3d 800, 805 (Fed. Cir. 2007)." (D.I. 137 at 4). Shopify argues that the '397 patent specification disparages the use of languages such as HTML and JavaScript to write web applications, and argues that the specification's recitation of "a browser and virtual machine" would be redundant if JavaScript engines were considered "virtual machines." (D.I. 212 at 18). The '397 specification "was drafted to explain the invention in the context of the JVM [Java Virtual Machine], the then-dominant virtual machine in the particular technological context." (D.I. 137 at 4, quoting *X.Commerce, Inc. v. Express Mobile, Inc.*, 2018 WL 10704439, at *3 (N.D. Cal. Sept. 12, 2018)). As such, I gave virtual machines a broad definition since it seemed to be a broad term. (D.I. 128 at 39-40).

The specification contemplated that "full-featured programming languages supported by browsers [would] evolve." ('397 patent at 62:33-34). I agree with Express Mobile that any disparagement of languages such as HTML and JavaScript reflected the inventor's understanding that before the priority date, these languages were not yet a full-featured programming languages. (D.I. 258 at 14). The specification explains that Java virtual machines are just one possible embodiment, and the patent specifically contemplates the "evolution of . . . technology is independent of the preferred implementation." ('397 patent at 65:37-39).

Express Mobile's experts explain that there are "many types of software that can emulate

functionality of a physical machine." (D.I. 258 at 17, citing D.I. 235 Ex. F ¶ 31; D.I. 235 Ex. G ¶¶ 13-16; D.I. 233 Ex. 13 ¶¶ 11, 20). There is therefore a genuine issue of material fact as to whether JavaScript engines are virtual machines. Taking the record in the light most favorable to Express Mobile, there is evidence that JavaScript engines and browser rendering engines are virtual machines because they emulate the display rendering function of a physical machine. (D.I. 223 Ex. 1 ¶¶ 189-199; D.I. 235 Ex. G ¶¶ 11- 22; *id.* Ex. F ¶¶ 28, 31, 36-40). I gave "virtual machine" a broad construction.

Shopify's motion for summary judgment that it does not infringe the asserted claims of the '397 patent because the browser's JavaScript and rendering engines are not the claimed "virtual machine" is DENIED.

4.   Lack of Written Description for "Virtual Machine"

Shopify argues that under a broad construction of "virtual machine," there is a lack of written description because the only "virtual machine" explicitly referenced in the '397 specification is a Java virtual machine. (D.I. 212 at 19-20). Shopify contends that the inventor was not aware of any JavaScript (as opposed to Java)[5] virtual machines at the time of the invention. (*Id.* at 20). Shopify argues that a POSA reading the specification would have no reason to believe the inventor considered JavaScript or rendering engines to be "virtual machines" suitable for his invention. (*Id.*).

In support of its argument, Shopify points to the inventor's testimony that a JavaScript virtual machine was not "available" at the time of the invention and the patent does not provide

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[5] Java is a web-based programming language that is not a part of a browser's native architecture. (D.I. 213-4 Ex. 14 ¶¶ 17, 55, 57). JavaScript, HTML, and CSS are programming languages that are part of standards-based technologies built "natively" into browsers to display web pages. (*Id.* ¶ 16). JavaScript is a completely different programming language from the Java, despite the similar names. (*Id.* ¶ 17 n.2).

guidance on how to go about creating a JavaScript virtual machine. (D.I. 279 at 9-10, citing D.I. 213-4 Ex. 17 at 127:21-128:3). However, Express Mobile's expert opines that any disparaging language by the inventor in the patent specification regarding the state of JavaScript and HTML "was premised on the state of JavaScript before it evolved into a full-featured language." (D.I. 235 Ex. F ¶ 43). Shopify argues the specification directly contradicts Express Mobile's assertion that JavaScript virtual machines were "well-known" to a POSA at the time of the invention and therefore no reasonable jury could conclude that the patentee possessed the invention. (D.I. 279 at 10-11, citing *Bos. Sci. Corp. v. Johnson & Johnson*, 647 F.3d 1353, 1366 (Fed. Cir. 2011)).

This is not the case here, as "Java Virtual Machine" mentioned in the specification is just one possible embodiment, not the invention itself. (D.I. 137 at 4).

The '397 patent disclosed the Java Virtual Machine as an example of a virtual machine. ('397 pat. at 62:33-34, 65:37-39; D.I. 259-1 Ex. 21 at 263:9-265:11; D.I. 259-1 Ex. 22 at 138:21-139:12, 142:5-14, 152:8-13). The '397 patent did not have to disclose all known examples of virtual machines. And it did not claim "JavaScript virtual machines." It claimed a "virtual machine." *See Martek Biosciences Corp. v. Nutrinova, Inc.,* 579 F.3d 1363, 1371 (Fed. Cir. 2009) (A "patent claim is not necessarily invalid for lack of written description just because it is broader than the specific examples disclosed.") It specifically contemplated others, including that other virtual machines would be developed and could be used in the invention. ('397 patent at 62:33-34, 65:37-39). The specification therefore discloses that other programming languages can be used to practice the invention, particularly as browsers develop over time. (*Id.* at 32:21-25, 62:33-36). Express Mobile's experts opine that a POSA would understand a "full-featured programming language" and "popular browsers" with "more robust versions of programing languages" disclosed in the specification to mean the use of other virtual machines. (D.I. 235

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Ex. F ¶¶ 42-43; D.I. 233 Ex. 11 ¶ 27.)

To that end, both Express Mobile and Shopify's experts agree JavaScript was a full featured programming language and included the accused functionality at the time of the invention. (D.I. 235 Ex. F ¶¶ 42-43; D.I. 235 Ex. E ¶ 102). Taking the record in the light most favorable to Express Mobile, a POSA would have appreciated that JavaScript was rapidly evolving, and followed the specification's disclosure that other virtual machines would be developed and could be used in the invention. *Ajinomoto Co., Inc. v. ITC*, 932 F.3d 1342, 1359 (Fed. Cir. 2019) ("[A] patentee may rely on information that is well-known in the art for purposes of meeting the written description requirement, because the specification is viewed from the perspective of [a POSA]."). The description of "virtual machine" is sufficient to show possession of specific virtual machines of which the inventor was personally unaware or that had not yet been developed.

Shopify's motion for summary judgment that "virtual machine" renders the asserted claims of the '397 patent invalid for lack of written description is DENIED.

5. Infringement of the "Player" Limitation of the Web Component Patents

Shopify argues that its system does not meet the "Player" limitation of the three Web Component patents. (D.I. 212 at 21-29).

Express Mobile identifies several JavaScript files that may be included in the "theme" code for a merchant's online store as the claimed "Player." (*Id.* at 21). These are files that may be sent to and executed by a visitor's web browser when the visitor goes to a Shopify merchant's website. (*Id.*). I have previously construed "Player" to be "device-specific code which contains

instructions for a device and which is separate from the Application,"[6] and "device-dependent code" to be "code that is specific to the operating system, programming language, or platform of a device." (D.I. 137 at 9-16). "Device-specific code" and "device-dependent code" mean the same thing. (*Id.* at 14).

Each of the asserted claims requires the Player to perform specific functions. The claimed "Player" must "receive[] the output symbolic name [generated by the web service] and corresponding one or more output values and provide[] instructions for a display of the device to present an output value in the defined UI [user interface] object." ('755 patent at claims 1, 12; '287 patent at claims 1, 13; '044 patent at claims 1, 15 (from which claims 17 and 19 depend)). Thus, in order to be the claimed Player, code must: (1) satisfy the claim construction of Player as device dependent code separate from the Application , (2) receive output values from the web service, and (3) provide instructions for the display of these values on the user's device. (D.I. 212 at 22). These requirements of a Player seem not to be disputed by Express Mobile.

The parties' disputes are rooted in two issues. Shopify argues all seven JavaScript files Express Mobile has identified as "Player code" fit into the two categories below, which cause the files to not meet at least one of the necessary three requirements of a Player:

> (1) Code for which Express Mobile has not offered any evidence that it includes device-dependent code under any interpretation

> (2) Code that includes conditional logic that Express Mobile contends is device-dependent code, but that Express Mobile has not shown receives output values from a web service and provides instructions for the display of the output values

(*Id.* at 25).

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[6] I have construed "Application" as "device-independent code which contains instructions for a device and which is separate from the Player" And "device-independent code" as "code that is not specific to the operating system, programming language, or platform of a device" (D.I. 137 at 6, 15).

a)   Whether the Identified Files Can Be the "Player" Because They Do Not Include Device-Dependent Code

Express Mobile contends that Shopify's JavaScript Player is "device-dependent code" because, according to Express Mobile's expert, the code for the JavaScript Player uses specific branches of code that are executed depending on the device configuration that is detected. (D.I. 223 Ex. 1 ¶¶ 485-87). According to Express Mobile, this type of code, known as conditional logic, is "device-dependent player code," because it executes differently depending on device-specific characteristics. (D.I. 258 at 22, citing D.I. 223 Ex. 1 at ¶ 491). Express Mobile contends this type of "device-dependent code" is consistent with the specification's teaching that the Player can "adapt[] the Application to the resources and limitations of any particular device." (*Id.*, citing '755 patent at 34:51-64).[7] Express Mobile contends conditional JavaScript code may execute differently depending on a particular browser, and such code is "device-specific code" because a browser is understood in the art as a "platform" (and therefore meets my construction for "device-dependent code"). (*Id.* at 23, citing D.I. 225 Ex. 5 at 174:16-23; D.I. 223 Ex. 1 at ¶ 490).

Shopify argues the conditional logic for determining device configuration details, like browser version and type, is at most "code that is aware of device type," the claim construction of "device-dependent code" that Express Mobile argued for and lost. (D.I. 212 at 26). Shopify contends this conditional code is not device-dependent because it is executable on all supported browsers and it is sent to every device that visits a particular storefront. (*Id.*). In Shopify's view of device dependent code, code that was specific to Android, for example, would not work on an iPhone. (Tr. 69:9-23). Shopify contends that the "if then" conditional logic is executable on a

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[7] I am not sure what Express Mobile's point is here. One decides infringement based on a comparison with the claims, as construed, not with the specification.

particular device, it would just not actually be executed. (*Id.* at 70:10-14). Therefore, Shopify asserts, this "conditional code" is not code "developed and provided to [] specific devices," a characteristic I had recognized being "consistent" with my claim construction opinion. (*Id.*, citing D.I. 137 at 15).

During claim construction, Shopify advocated for including "executable" both as part of the construction of "Player" and "device-dependent code." I rejected adding this term because it was not supported by the intrinsic evidence, and Express Mobile's claim construction expert explained that the Player could consist of multiple files that, while not executable on their own, contain instructions that would eventually be executable. (D.I. 137 at 13-15). Express Mobile's expert, Dr. Almeroth, explained, "In conditional programming, when a condition is not met, then that branch of code is bypassed and never executed on a device, thereby avoiding incompatibility and errors." (D.I. 235 Ex. G ¶ 125; D.I. 226 Ex. 6 at 215:17-216:3). According to Dr. Almeroth, "conditional branching is often the preferred way to implement device-dependent code to achieve cross-platform compatibility." (D.I. 235 Ex. G ¶ 125).

Shopify's argument that device-dependent code must be developed and provided to specific devices (D.I. 212 at 26-27, citing D.I. 137 at 15) fails. Shopify relies on a sentence from the prosecution history and quoted in my claim construction opinion: "If a new device comes on the market, or if it is found that the device-dependent code for a specific device needs an update, a new Player is developed and provided to those specific devices." (D.I. 137, citing D.I. 69-2 Ex. 19 at 8). The sentence is not a claim limitation, nor is it a finding of prosecution disclaimer as Shopify has characterized it. (Tr. 78:1-3). It explains an advantage of having the Application separate from the Player with an example. It does not mean that conditional logic cannot be a form of device-dependent code. What is required is that the Application be separate from the

Player, as per my construction. A reasonable jury could credit Dr. Almeroth and find that conditional logic is "device-dependent code."

Shopify and Express Mobile do not dispute that the Player can span across multiple files. (Tr. 64:19-23. 100:20-22). Shopify argues, however, that Express Mobile's argument broadens the definition of Player such that files lacking any device-dependent code can be considered part of the claimed Player, provided that the code "work[s] in conjunction" with other files to "provide the claimed functionality." (D.I. 279 at 12, citing D.I. 258 at 24, 27). Essentially, Shopify argues that even though Express Mobile has identified files as collectively corresponding to the Player that contain some conditional JavaScript (and therefore conditional logic), Express Mobile cannot satisfy the Player limitation with respect to device-specific code because the collection of files includes a mix of device-independent code and device-dependent code. (Tr. 73:9-18). Part of the construction of Player is "separate from the Application" and likewise part of the construction of Application is "separate from the Player." (D.I. 137 at 6, 9). Shopify contends that mixing device-independent code with device-dependent code would be completely contrary to the required separation in the claims of Application, which is device-independent and the Player, which is device dependent. (*Id.*).

Express Mobile contends that the JavaScript Player spans multiple JavaScript files that provide the claimed device-dependent functionality and, when considered as a whole, execute different code depending on device-specific characteristics. (D.I. 258 at 24). Express Mobile argues the JavaScript Player files are readily distinguishable from the HTML and CSS Application code and execute differently depending on the device. (*Id.* at 25). Express Mobile contends that "by virtue of the fact that [the universe of code Express Mobile identified] contains [] conditionally branched code, the player as a whole is a device-dependent code." (Tr. 97:11-

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13). As I understand their argument, according to Dr. Almeroth, from the perspective of a POSA, any code that is commingled between device-independent code and device-dependent code is overall considered to be conditional logic because it contains some amount of device-dependent code. (Tr. 97:13-18).

Shopify responds that differentiating HTML and CSS as the Application and JavaScript as the Player does not resolve the issue because Express Mobile's expert opined that JavaScript, HTML, and CSS code can be either the Application or Player. (D.I. 279 at 12-13, citing D.I. 233 Ex. 1 at ¶¶ 476-78, 485).

Express Mobile's expert, Dr. Almeroth, opines that "device-independent Application code is generally in HTML and CSS whereas the device-dependent Player code is in JavaScript . . . . Even in the cases the HTML and CSS code is delivered in the same file as JavaScript code, the two code[s] are readily distinct from one another, thus meets the requirement of being 'separate.'" (D.I. 223 Ex. 1 at ¶ 477). Other portions of Dr. Almeroth's opinions, however, characterize "HTML, CSS, JavaScript, and other code" as at times "device-independent code" and "device-dependent code." (*Id.* at ¶¶ 476, 485).

There are material disputes of fact. One is whether the Application is indeed separate from the Player, i.e., whether code that contains both device-independent code and device-dependent code is overall considered to be device-dependent conditional logical, or whether this would defy the separation of the Application and the Player, as is required by the claims. Another is whether the accused Application is solely based in HTML and CSS code and the accused Player code is solely based in JavaScript.

Shopify moves for no infringement under the doctrine of equivalents, arguing that "both the Application and Player could consist of the same type of code (device-independent code),

eliminating the fundamental difference between the claimed Application and Player and collapsing these separately claimed elements into one." (D.I. 212 at 27). Express Mobile replies that "device-dependency of the JavaScript Player ensures that the Application runs correctly on different device platforms, which would be substantially the same as using device-specific characteristics to obtain and use compatible code from a server." (D.I. 258 at 25).

Whether the JavaScript Player performs substantially the same function as the claimed Player, in the same way, to obtain the same result is a question of fact properly left to the trier of fact.

b) Whether the Identified Files Can Be the "Player" Based on Whether These Files Receive Output Values and Provide Instructions for Their Display

Shopify has moved for summary judgment for the independent reason that Express Mobile has not presented evidence that any of the identified JavaScript files receive output values and provide instructions for their display on the device. (D.I. 212 at 27). Shopify contends Dr. Almeroth offers no explanation for how *vendor.js.* and *theme.js* work in conjunction to provide instruction for the display of an updated cart quantity or any basis to conclude that *theme.js* includes device-dependent code. (*Id.* at 28).

Express Mobile contends Dr. Almeroth showed "that these code files are used to 'receive the symbolic name "quantity" and the value …; that this information is used to generate an output value … and that the Player code "updates the cart popup and displays responses … from the web service.""" (D.I. 258 at 26). Express Mobile cites multiple portions of Dr. Almeroth's expert report on this topic, which have images of what Dr. Almeroth explains to be Player code, as well as a portion of Dr. Almeroth's deposition testimony. (*Id.*, citing D.I. 223 Ex. 1 ¶¶ 499-509, 503, 506, 507-09; D.I. 235 Ex. G ¶¶ 136-47; D.I. 226 Ex. 6 at 293:24-294:14).

Shopify responds that the citations provided by Express Mobile do not link the device-independent portions of *theme.js* to any device-dependent code in *vendor.js.*, and therefore does not meet the requirement of an Application separate from the Player. (D.I. 279 at 14). Shopify contends that Express Mobile's position that *theme.js* does include "device-dependent code" is merely attorney argument, (*Id.*). I cannot determine whether the small images of supposed Player code within Dr. Almeroth's report do or do not link the device-independent portions of *theme.js* to any device-dependent code in *vendor.js*. These are questions of fact that are properly left to the trier of fact.

Similarly, for *lazysizes.js*, *spb.en.js*, *features.js*, and *shop_events_listener.js*, Shopify contends that Express Mobile either offers no evidence that these files receive output values from Shopify's servers regarding quantity of items in a shopping cart or provide instructions to display these output values on the user's device, and offers no explanation of how this is done. (D.I. 212 at 27-28). Express Mobile contends that Dr. Almeroth provided testimony that each of these files are part of the code trace that performs the Player functionality within the Shopify platform that receives output values and displays them when someone adds items to a shopping cart. (D.I. 258, citing D.I. 223 Ex. 1 ¶¶ 500, 507-08, 514-15, 524, 534; D.I. 235 Ex. G ¶ 136-37). Shopify responds that none of the cited paragraphs "link these files in any way to (1) receiving output values and (2) providing instructions for their display." (D.I. 279 at 13). A reasonable jury could credit Dr. Almeroth's analysis. Shopify's declaration from the VP of Engineering regarding the functioning of these files shows that there is a material dispute of fact in how the files function.

For the *www-embed-player.js*[8] Player, Shopify contends this file does not perform the function of receiving output values and providing instruction for the display of those values. (D.I. 212 at 28). Shopify further argues that any allegation of direct infringement relating to a system or method involving *www-embed-player.js* fails as a matter of law because Shopify does not "produce" the Player or undertake the step of "producing a Player," YouTube does. (*Id.* at 29). Shopify points to Dr. Almeroth's deposition in which he testified that "there are other files that are used in combination to actually present the video as shown on the screen." (D.I. 279 at 15, citing D.I. 226 Ex. 6 at 224:12–21). Dr. Almeroth can make that argument, because the Player "could consist of multiple files called by the operating system." (D.I. 137 at 14). Express Mobile points to Dr. Almeroth's expert report, in which he explains "video playback that Schmandt acknowledges to occur on Shopify's web pages is handled by the player code in the file www-embedded-player.js." (D.I. 258 at 29, citing D.I. 235 Ex. G ¶ 138). Therefore, there are material issues of disputed fact as to: (1) whether video playback is handled by www-embed-player.js, and (2) whether Shopify supports the embedded YouTube video functionality through Shopify's platform instructing a browser to download and execute www-embed-player.js.

Shopify's motion for summary judgment that Shopify's system does not infringe the asserted claims of the Web Component patents because there is no "Player" is DENIED.

6.   Invalidity Due to Lack of Written Description

Shopify argues that if the term "Player" covers any file that contains conditional logic to detect device configuration (e.g., browser type and version), there is a lack of written description. (D.I. 212 at 30-31). Nothing in the common specification of the Web Component patents

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[8] The file www-embed-player.js seems to be referred to as both www-embed-player.js and www-embedded-player.js. (D.I. 258 at 29).

suggests the inventors considered conditional JavaScript sent to a web browser to detect browser version or type to be an example of the claimed "Player." (*Id.*). Specifically, there is no description suggesting that the inventors considered conditional JavaScript code sent to and executed by the web browser (as opposed to code running on the operating system) to be the "Player," simply because it detects certain aspects of device configuration. (*Id.* at 31). Thus, the argument goes, the narrow disclosure of the specification does not support the broad claims. With the support of its expert, Dr. Schmandt, Shopify points to portions of the '755 patent specification discussing conditional JavaScript for detecting browser type and version, arguing there is no description that would suggest to a POSA that the inventors considered these types of files to be the "Player." (*Id.*, citing '755 patent at 31:26-35, 31:47-32:18; D.I. 213-4 Ex. 19 ¶ 1417). Shopify contends that the portions of the specification relied upon by Express Mobile's expert, Dr. Almeroth, are just general functional descriptions of what the Player does, not what the Player is, and therefore is an insufficient disclosure. (*Id.* at 31-32).

Express Mobile contends, "The specification offers numerous examples on various ways to implement a player with device dependent code." (D.I. 258 at 30). Express Mobile points to disclosures in the '755 patent specification related to "adapting the Application to the resources and limitations of any particular device," that "the Player will automatically throttle down an animation to the frame rate that the device can handle." (*Id.*, citing '755 patent at 34:51-62). With the support of its expert, Dr. Almeroth, Express Mobile argues, "The specification discloses JavaScript code for determining device characteristics." (*Id.*, citing D.I. 225 Ex. 4 ¶¶ 1417, 1419). According to Express Mobile, a POSA would have understood that a Player that executes different code based on differing platforms of a device (such as a browser) was described. (*Id.*).

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Whether a POSA would have understood the common specification to disclose the full scope of the claimed Player is a question of fact. Reasonable jurors could disagree on the answer. While Shopify argues that nothing in the specification suggests that the browser version and type is even a "device platform" within the scope of the term "Player" (D.I. 212 at 31), its own expert has acknowledged that certain browsers could be the platform. (D.I. 225 Ex. 5 at 174:16-23). Shopify may be correct that the specification's disclosure is lacking as to a representative number of Players or identification of structural features common to all Players. However, considering the conflicting expert testimony (*compare* D.I. 213-4 Ex. 19 ¶¶ 1414, 1417 *with* D.I. 225 Ex. 3 ¶¶ 1128-30), I cannot conclude that a reasonable fact finder would be unable to return a verdict for Express Mobile. Accordingly, summary judgment on Shopify's motion that if conditional JavaScript for determining device configuration can be the claimed "Player," the asserted claims of the Web Component patents lack sufficient written description is not warranted,[9] and thus summary judgment is DENIED.

7.   Willful Infringement

A determination of willfulness requires some finding of conduct that is "willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant" or otherwise "characteristic of a pirate." *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S.Ct. 1923, 1932 (2016); *see SRI Int'l, Inc. v. Cisco Systems, Inc.*, 930 F.3d 1295, 1309 (Fed. Cir. 2019) ("wanton, malicious, and bad-faith"), *cert. den.*, 140 S.Ct. 1108 (2020). A finding of "subjective willfulness," proof that the defendant acted in the face of a risk of infringement that was "either known or so obvious that it should have been known to the accused infringer," can satisfy this standard. *WesternGeco L.L.C. v. ION*

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[9] I am pretty certain that I cannot find a patent invalid based on a "conditional" argument, which is the way Shopify has framed it.

Geophysical Corp., 837 F.3d 1358, 1362 (Fed. Cir. 2016) (quoting *Halo*, 136 S.Ct. at 1930) (internal quotations omitted), *rev'd on other grounds*, 138 S.Ct. 2129 (2018).

Express Mobile notified Shopify of the Web Design patents in February 2013 when it offered to sell Shopify these patents as part of an auction process.[10] (D.I. 212 at 32 (citing D.I. 213-4, Ex. 20)); D.I. 258 at 32). The letter did not reference infringement by Shopify and did not include any claim charts, although it did include a slide deck. *Id.* Express Mobile sent Shopify a letter dated December 20, 2018, accusing Shopify of infringing "one or more" of the '397, '168, '755, and '287 patents five years later, again without any claim charts. (D.I. 212 at 32 (citing D.I. 213-4, Ex. 21)). Shopify's response was to file the present lawsuit, which it did on March 1, 2019. (D.I. 1 ¶¶ 22-26). Shopify contends Express Mobile has failed to present any evidence that Shopify acted with an "unjustifiably high risk of infringement." *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1371 (Fed. Cir. 2017). (D.I. 279 at 18). Express Mobile contends that despite Shopify's knowledge of Express Mobile's patents, Shopify continued to add accused functionality to its accused Theme Editor website builder and therefore infringed for at least six years with no good faith basis for its infringement. (D.I. 258 at 32).

Express Mobile's 2013 letter soliciting bids to purchase the '397 and '168 patents without any mention of infringement by Shopify could hardly show Shopify as acting in the face of a risk of infringement.[11] Express Mobile's 2018 letter alleging, "Shopify has infringed and is infringing one or more of the Express Mobile patents through its business of building web sites and web pages for customers" without claim charts is insufficient to constitute an "unjustifiably high risk of infringement." *Arctic Cat*, 876 F.3d at 1371. While the letter offered claim charts

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[10] The other three asserted patents did not issue until 2015 or later.
[11] Of course, if the Web Design patents are not infringed, then the letter in 2013 is even more irrelevant.

under terms of confidentiality, the accusation of infringement occurred two months prior to the

filing of this declaratory judgment action. Such action may have placed Shopify on notice, but

there is nothing to indicate that the allegations of infringement in this case are anything more

than garden-variety allegations, which are insufficient to support a finding of willfulness.

Therefore, Shopify's partial motion for summary judgment on Express Mobile's claims of

willful infringement is GRANTED.

B.   Shopify's *Daubert* Motion

1.   Dr. Almeroth's Report on "Technical Importance"

Shopify seeks to exclude the opinions of Express Mobile's technical expert, Dr.

Almeroth, on "technical importance," as well as the opinions Express Mobile's damages expert,

Bratic, that are based on Dr. Almeroth's analysis.[12] Shopify contends Dr. Almeroth's "technical

importance" opinions, which form the basis of Express Mobile's damages claim, are classic *ipse*

dixit. (D.I. 212 at 33). Shopify asserts there are no calculations or other information that shed

light on how these percentages were determined, and thus no way to test Dr. Almeroth's

conclusions. (*Id.*).

I will not strike Dr. Almeroth's "technical importance" opinions and apportionment

opinions. The expert analysis here differs from *NetFuel, Inc. v. Cisco Sys. Inc.*, in which the

Court excluded an expert's apportionment opinion based on his "experience in computer network

and security, [his] knowledge of the nature and function of routers and switches, and [his]

knowledge and understanding of the Accused Products and Cisco's network operating systems."

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[12] Specifically, Shopify asserts Dr. Almeroth should be precluded from offering the opinions
presented in ¶¶ 607-28 of his Opening Expert Report (D.I. 213-4 Ex. 7) and ¶¶ 220-63 of his
Reply Expert Report (D.I. 213-4 Ex. 10). Shopify asserts Bratic should be entirely excluded
from affirmatively presenting a reasonable royalty calculation of damages.

2020 WL 1274985, at *7 (N.D. Cal. Mar. 17, 2020) (finding use of industry-wide data as a starting point is improper and that the expert never explained how those statements weighed in his apportionment evaluation). Here, Dr. Almeroth first identified the technical differences between Shopify subscription plans. (D.I. 223 Ex. 1 ¶¶ 610-18). Dr. Almeroth considered the patents-in-suit, Shopify documents (including advertising and user surveys) and testimony, source code, and actual use of the Shopify platform. (*Id.* Ex. 1 §§ V.C.3, V.D.3, XI). He provided a specific analysis explaining why he assigned each particular percentage value. He explained why the percentages for the technical importance of the incremental difference between the Lite and Basic plans is attributable to the Theme Editor Functionalities and Web Component Functionalities, respectively. (*Id.* Ex. 1 ¶¶ 619-25).

His analysis is tied to the facts of the case such that it is more than impermissible *ipse dixit*. There is sufficient methodology to support the admission of Dr. Almeroth's opinions, and cross-examination would not be futile. *Cf. NetFuel*, 2020 WL 1274985 at *7. Other courts have admitted similar evaluations of technical importance. *See, e.g., Osseo Imaging, LLC v. Planmeca USA Inc.*, 2020 WL 6318724, at *9 (D. Del. Oct. 28, 2020); *Centripetal Networks, Inc. v. Cisco Sys., Inc.*, 492 F. Supp. 3d 495, 594 (E.D. Va. 2020) ("[I]t is well-understood that this process [of assigning value to a feature that may not have ever been individually sold] may involve some degree of approximation and uncertainty.") To the extent that Shopify disagrees with Dr. Almeroth's technical analysis, any such issue goes to weight, which can be fully explored on cross-examination.[13]

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[13] The specific "typographical" errors in Dr. Almeroth's report (listing the wrong technology apportionments in his table and in the text of his report) go to credibility, not to admissibility.

2.   Bratic's Report

Shopify contends that Bratic's opinions should be excluded. Shopify raises two grounds: (1) there is no link between Dr. Almeroth's "technical importance" analysis and Bratic's apportionment of profit relating to the accused products attributable to the patented technology; and (2) Bratic fails to account for the incremental benefit of the patented invention over the prior art. (D.I. 212 at 33-34).

In apportioning profits related to patented features, Bratic considered Dr. Almeroth's apportionment factor for the Web Design Patents and Web Component Patents, merchant surveys conducted by Shopify, Accused Product Pricing, and Shopify's gross profit margin. (D.I. 260-1 Ex. I ¶ 167). Bratic provided an analysis of that evidence, which is not limited to the "technical importance" analysis, and concluded, "Dr. Almeroth's apportionment factor is a reasonable measure of the portion of the profits attributable to the inventions" for each of the Web Design Patents and Web Component Patents. (*Id.* Ex. I ¶¶ 167-78).

I am persuaded that Bratic performed an economic analysis. He considered: Shopify's subscription plans and features, demand for those plans and features, Dr. Almeroth's technical analysis, Shopify's Merchant Surveys and other evidence. Shopify contends that Bratic's assertion that he considered evidence such as survey responses does not support admissibility, because Bratic confirmed that this evidence, while considered, was not used to support his apportionment opinions. (D.I. 279 at 20). That he considered relevant evidence and found it unhelpful does not matter.

To the extent Shopify argues Bratic's reasonable royalty figure fails to isolate the incremental value of the patented features over the prior art, Dr. Almeroth determined throughout his reports and during deposition that the value of the patented features over the prior

art was significant, that the value of the prior art features he acknowledged are *de minimis* in

comparison, had minimal impact, and were considered in deriving those values. (*See e.g.*, D.I.

235 Ex. G ¶¶ 229-31, 249-58; D.I 226 Ex. 6 at 120-29). As such, I disagree with Shopify that

neither expert actually accounted for the prior art and limited damages to the incremental benefit

the patented technology provides over that prior art. Dr. Almeroth, and therefore Bratic's report

since he relied upon Dr. Almeroth's report, did consider the value of the prior art, he just

considered it to be negligible. The persuasiveness of this opinion can be explored on cross-

examination.

Shopify's *Daubert* motion on Dr. Almeroth, on "technical importance" and Bratic is

DENIED.

C.   Express Mobile's Motion for Summary Judgment

1.   Patent Eligibility Under § 101

Express Mobile moved for summary judgment of no invalidity under 35 U.S.C. § 101

of all patents,[14] arguing the asserted claims of the '397 and '168 patents are directed to

"improvements to computer functionality itself," including browser-based what you see is what

you get ("WYSIWYG") web-page-editing, storing user-selectable settings describing web page

elements in a database, and using run time files to dynamically generate web pages from those

settings. (D.I. 218 at 5). Shopify argues that when stripped of excess verbiage, the claims are

directed to the abstract idea of generating and displaying web page elements based on selections

by a user. (D.I. 264 at 21). I disagree.

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[14] Shopify agreed not to challenge subject matter eligibility of the asserted claims of the Web
Component patents "at this time." (D.I. 264 n. 9). Since Shopify chose not to respond to
Express Mobile's argument, summary judgment of no § 101 invalidity is unopposed and is
GRANTED as to those patents.

The asserted claims are not directed to an abstract idea. Shopify analogizes the Web Design patents to laying out newspaper pages, in which the designer would be "presenting" the available elements (headlines, articles, advertisements, fonts, columns, images, borders, etc.) that could appear on the page. (*Id.* at 22). Therefore, according to Shopify the concept of generating and displaying elements on a page based on user selections is a long-utilized abstract idea and not an inherently technological one. (*Id.*).

The Federal Circuit, however, has warned against "describing the claims at such a high level of abstraction and untethered from the language of the claims all but ensures that the exceptions to § 101 swallow the rule.," *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016). The Federal Circuit in *Enfish* found it "relevant to ask whether the claims are directed to an improvement to computer functionality versus being directed to an abstract idea, even at the first step of the Alice analysis." *Id.* at 1335.

As noted by other courts, the claims "appear to address a problem particular to the internet: dynamically generating websites and displaying web pages based on stored user-selected settings," and, therefore, "appear necessarily rooted in computer technology and directed to specific problems of and improvements to then-existing web publishing applications." *Express Mobile, Inc. v. KTree Computer Solutions Inc.*, No. 17-128-JRG-RSP, D.I. 29 at 1 (E.D. Tex. May 4, 2017); *see also Express Mobile, Inc. v. Code & Theory LLC*, 2019 WL 477639 (N.D. Cal. Jan. 29, 2019).[15]

The claims do not broadly cover essentially all applications of an abstract idea "for which

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[15] Shopify notes that these decisions were at the pleading stage and argues that a fuller record would help patent eligibility determinations. (D.I. 264 at 24). Even on the fuller record before me, the conclusions drawn by these courts are accurate as to lack of abstraction of the same patent claims.

computers are invoked merely as a tool." *Enfish*, 822 F.3d at 1336. "[T]he plain focus of the claims is on an improvement to computer functionality itself," that is, creating webpages for the internet that allows for WYSIWYG editing. *See id.* Moreover, these claims are distinguishable from the claims in *Intellectual Ventures I LLC v. Capital One Bank*, 792 F.3d 1363, 1370-71 (Fed. Cir. 2015). The claims there "do not address problems unique to the Internet," nor do they provide a solution that includes anything more than "simply describ[ing] a generic web server." *Id.* Here, the claims are directed to a specific improvements of browser-based WYSIWYG web-page-editing ('397 patent), storing user-selectable settings describing web page elements in a database (both patents), and using run time files to dynamically generate web pages from those settings (both patents). Therefore, I determine that the asserted claims are not patent ineligible under § 101. Thus, Express Mobile's motion for summary judgment of no invalidity under § 101 is GRANTED as to all five patents-in-suit.

2.   Anticipation

Each of independent claims 1, 2, and 37 of the '397 patent requires the presentation and display of user-selectable website settings through a browser to edit elements of a webpage or website, and independent claim 1 of the '168 patent requires a server with a build engine that includes similar functionality. SilverStream[16] is a web-centric system for authoring, publishing, and managing web pages. (D.I. 264 at 2). It has two primary means for producing web pages: (1) A browser-based tool called the HTML Edit Control, which SilverStream described as "the first Java-based HTML editor that runs in Web browsers," and (2) a standalone application called SilverStream Designer. *Id.* Express Mobile alleges SilverStream does not disclose all the

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[16] SilverStream Software, founded by David Skok, went public in 1999 and was acquired by Novell a few years later. (D.I. 265-1 Ex. 1 at 5:25-6:5, 7:18-25).

limitations of the asserted claims of the '397 and '168 patents and instead operates in a

fundamentally different way. (D.I. 218 at 9). For the '397 patent, the parties dispute whether

SilverStream anticipates the limitations "information representative of said one or more user

selected settings" and "building" or "build tool." For the '168 patent, the parties dispute whether

SilverStream anticipates the limitations "objects and style data" and "server comprising a build

engine." These limitations will be taken in turn.

a)   "Information Representative of Said One or More User Selected Settings"[17] Limitation ('397 Patent)

Express Mobile contends SilverStream stores information as complete HTML code in the

same manner as the prior art, not as "information representative of . . . user selected settings" as

claimed in the '397 patent. (D.I. 218 at 15). According to Express Mobile, the '397 patent is

inventive over the prior art because the '397 patent claims storing user selected settings as

variables in a database whereas the prior art used website editors that simply generated complete

HTML website code. (*Id.* at 10). As Shopify points out, Express Mobile uses claim construction

arguments rooted in the specification and prosecution history to delineate whether complete

HTML code is "information representative of said one or more user selected settings." (*Id.* at

10-11). Express Mobile points to Figures 1 and 2 of the '397 patent to demonstrate that in the

prior art complete HTML files were executed directly by a browser, without requiring further

generation or modification of HTML code based on any user-selected settings at run time,

because the completed HTML has already been generated during the editing phase. (*Id.*, citing

'397 patent, Fig. 1 and 2, 5:46-47). Following its claim construction arguments, Express Mobile

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[17] I construed "storing information representative of said one or more user selected settings in a database" to mean "[s]toring data in a database, which data pertains to one or more attributes of an object available for selection by a user." (D.I. 142 at 2).

explains that the specification teaches that user selections stored as variables in a database and a run time engine are used to generate the website, as opposed to HTML that has already been generated. (*Id.*). Therefore, Express Mobile argues, complete HTML webpage code and a database that includes complete HTML pages are not "information representative of said one or more user selected settings," as recited in various claim elements of the '397 patent. (*Id.* at 11-12).

The dispute arises because in SilverStream when a user selects a setting using either the HTML Edit Control or SilverStream Designer, information is stored in the form of HTML tags. (D.I. 264 at 2). For example, when a user would like to make a word italicized, the system keeps track of that by inserting the text "<I>" and "</I>" (known as HTML "tags") before and after the italicized word when it is stored in the database. (*Id.* at 3). These types of settings such as italics, boldface, font, and font color are undisputedly user-selected settings. (*See* '397 patent at 30:52-32:14; D.I. 265-2 Ex. 5 ¶ 81 (stating that "settings" include colors and fonts); D.I. 265-2 Ex. 6 ¶ 167 (explaining that settings available for selection "include settings to bold, italicize, or change the colors of text within the HTML Edit Control").

Express Mobile contends that user selections within HTML code, as is done in SilverStream, is an already complete HTML file. (D.I. 218 at 10-15). Thus, the user selections can be executed directly by a browser (as in the prior art), rendering the role of the run time engine in the context of the Web Design patents meaningless. (D.I. 218 at 15). Express Mobile also argues that code containing HTML tags does not disclose the required limitation, because in regard to the tag, "you can't tell if that is a user setting or not. You can't tell if that . . . is representative of the user setting or what was actually determined. It could have been something that was hard-coded in the page" (as in the prior art). (D.I. 218 at 17).

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Shopify points out that Express Mobile's "no anticipation argument is premised on a new claim construction that it never advanced at the claim construction stage of this litigation." (D.I. 264 at 8). Meeting Express Mobile's claim construction arguments, Shopify contends there is no claim language that supports this assertion, but rather Express Mobile is importing limitations from the specification into the claims. (D.I. 264 at 9). Shopify asserts that Express Mobile attempts to limit the invention to specific embodiments in which user-selected settings are stored as variables in a database and Express Mobile erroneously relies on its expert's characterization of the "purpose of the invention" to exclude complete HTML code and HTML tags from the claim limitation. (*Id.* at 9-11).

A reasonable jury may disagree over whether complete HTML code and HTML tags meet the claim limitation "information representative of said one or more user selected settings." Viewing the record in the light most favorable to Shopify, I think there is genuine issue of material fact as to whether the claims prohibit complete HTML code or HTML tags from being the claimed "settings." As such, I believe summary judgment for this limitation is unwarranted.

b)   **"Building" or "Build Tool" Limitation ('397 Patent)**

Express Mobile contends SilverStream's HTML Edit Control functionality does not disclose the run time file functionality recited within the language of the "building" or "build tool" limitation recited in claim elements 1(e), 2(d), and 37(c) of the '397 patent. (D.I. 218 at 17). The asserted claims of the '397 patent require a step of "building one or more web pages to generate said website," or a "build tool" to "generat[e]" or "construct" "one or more web pages." (*Id.* at 17 n.8). As part of this process, "at least one run time file" must "utilize[e] information stored in said database." (D.I. 264 at 13). The parties dispute whether the claims require "utilize[ed] information" to be the same "information representative of said one or more user

selected settings" recited earlier in the claims. (*Id.* at 13-14; D.I. 277 at 9). Again, relying on the specification's teaching and prosecution history in a claim construction style argument, Express Mobile's position is that the run time file must use "information pertaining to . . . user-selectable settings of the webpage," not "*content-based* information" to build a web page. (D.I. 218 at 19-20). Based on this claim interpretation, Express Mobile argues that SilverStream does not anticipate, because (1) SilverStream allegedly does not use information pertaining to user-selected settings to build a web page (*id.*), and (2) SilverStream allegedly does not "create, modify, or replace web page code, such as HTML." (D.I. 218 at 17). Shopify contends the claims do not require "utilize[ed] information" to be the same "information representative of said one or more user selected settings" recited earlier in the claims. (D.I. 264 at 13-14).

Express Mobile claims that "information stored in *said* database" must refer to user-selected settings, because "[t]he *said database* refers to the database recited in claim 1(c), which "stor[es] information representative of said one or more user selected settings." (D.I. 218 at 19; D.I. 277 at 9). Shopify asserts that if the patentee intended to limit the claims as Express Mobile suggests, he would have included "said representative information," as in dependent claim 4, rather than referring generally to "information" in claim element 1(e). (D.I. 264 at 15). This is persuasive because, as Shopify points out, "said database" and "said information representative of said one or more user selected settings" are used in element (d) to refer back to the database and the user selected representative information, respectively, first introduced in element (c) of claim 1 of the '397 patent. While element (d) used "said information representative of said one or more user selected settings in said database," element (e) only used "information stored in said database."

A reasonable jury may be persuaded that the patentee knew how to refer to the same

database or information in element (c), when that was what he intended. *See Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1343 (Fed. Cir. 2008) (noting that claims using the term "said" are "anaphoric phrases, referring to the initial antecedent phrase"). Any specification support Express Mobile asserts supports its construction says nothing about whether the "information" utilized by the run time file can only be the separately claimed information representative of user-selected settings. (D.I. 218 at 19, citing '397 patent at 8:44-49). Regardless, this case is past claim construction. Therefore, a reasonable jury could disagree over whether any "information stored in said database" is met by user selected settings in a database or a database can contain both settings-based information and non-settings-based information. That's a factual dispute. Because there is a material dispute of fact as to whether SilverStream teaches the "building" limitation, summary judgment is not warranted.

Express Mobile also argues that SilverStream does not "build" web pages, because "to be within the scope of limitation 1(e) of the '397 patent, the system would have to create, modify, or replace web page code, such as HTML." (D.I. 218 at 17). Shopify's expert, Mr. Schmandt, opined that the SilverStream server does dynamically modify web page code before sending it to the customer's Java applet for generation of the display. He opined that when the customer searches for "key words," the HTML stored in the database is modified to highlight any appearances of those key words in the description as part of the process of building the web page. (D.I. 265-1 Ex. 3 ¶¶ 148-49). Mr. Schmandt opined that SilverStream provides dynamic page generation functionality to create, modify, or replace web page code on the fly, including using content from multiple columns of the database to construct web pages. (*Id.* ¶¶ 145-46, 150-51). Express Mobile contends highlighting any appearances has nothing to do with utilizing any stored user-selected settings derived from the HTML Edit Control. (D.I. 277 at 11). However,

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as explained, there is a material dispute of fact as to whether the "utilizes information stored in said database" limitation is met by user-selected settings stored in a database or can be non-settings-based information. Therefore, I have no basis to determine at this time that a reasonable jury could not credit Mr. Schmandt's analysis. Summary judgment of this limitation is unwarranted.

c)   "Objects and Style Data" Limitation ('168 Patent)

Claim 1 of the '168 patent, like the independent claims of the '397 patent, requires a database to be produced "such that a web browser with access to a run time engine is configured to generate the web-site from the objects and style data extracted from the provided database." ('168 Patent at claim 1). Shopify points out that, unlike in the '397 patent, the asserted claims of the '168 patent do not require a browser-based interface and do not require the database to store information representative of user-selected settings. (D.I. 264 at 8). The claim requires only that "objects and style data [be] extracted from the provided database." ('168 patent at claim 1).

The dispute here is similar to the one for the "information representative of said one or more user selected settings" limitation of the '397 patent. Essentially, the parties dispute whether complete HTML code constituting the object data of the alleged webpage is "data defining, for each object, the object style, an object number, and an indication of the web page that each object is a part of" as required by claim 1 of the '168 patent. (D.I. 218 at 21; D.I. 264 at 18).

As with the '397 patent, whether the complete HTML code or HTML tags meet the the claimed "objects and style data" limitation is a question of fact that precludes summary judgment.

d)   "Server Comprising a Build Engine" ('168 Patent)

Independent claim 1 of the '168 patent requires "a server comprising a build engine."

Express Mobile contends that the SilverStream Designer cannot be the "build engine" as set forth

by Mr. Schmandt because the SilverStream Designer is a desktop application and SilverStream's

documentation confirms the designer is stored on a local "client." (D.I. 218 at 22). Thus,

Express Mobile asserts SilverStream does not disclose a server comprising a build engine. (*Id.*).

Shopify responds that SilverStream documentation discloses applications of SilverStream

wherein all components of the SilverStream system are on a single server machine. (D.I. 264 at

20). According to Shopify's expert Mr. Schmandt, because the '168 patent specification teaches

that "server" denotes a specific machine, when SilverStream Designer is installed on the same

computer as the other SilverStream server software, the server "compris[es] a build engine."

(*Id.*). Because a reasonable jury could credit Mr. Schmandt's analysis, summary judgment is

unwarranted.

Thus, summary judgment as to no invalidity under 35 U.S.C. § 102 is DENIED.

3.   **Indefiniteness**

a)   **Asserted Claims 1 and 13 of the '287 Patent and Asserted
Claims 1, 17, and 19 of the '044 Patent Based on the Claimed "Data
Format Class Type"**

Shopify contends that the term "data format class type" is indefinite. It notes that "data

type" and "data format" are terms that are used in the specification, "data format class type" is

not found in the specification, the file history, or otherwise mentioned at all. (D.I. 264 at 27-28).

I note that although the parties filed a Markman brief with twenty-six disputed terms, "data

format class type" was not one of them. (D.I. 177 at i-ii).

I agree with Express Mobile that a POSA would have understood that the claim language

refers to "data types" that correspond to particular symbolic names. (D.I. 225 Ex. 3 ¶¶ 1143, 1145-47). Table 1 of the specification lists items including "Data Types." ('287 patent cols. 15-16). As Dr. Almeroth explained, this disclosure and table would place the POSA on "clear notice that the 'Data Types' supported by the invention include[] exemplary data types such a[s] Boolean, integers ('int'), string, list, RSSlist, and many more." (D.I. 225 Ex. 3 ¶ 1143). As opined by Dr. Almeroth, a POSA would understand with reasonable certainty that these data types share the property that they can be tied to a UI object and associated with a symbolic name, and each data type can represent a "format" of data.[18] (Id.).

Summary judgment as to this term is GRANTED.

> **b)   Asserted Claims 1 and 13 of the '287 Patent and Asserted Claims 1, 17, and 19 of the '044 Patent Based on the Claimed "Data Format Class Type Corresponding to a Subclass of User Interface (UI) Objects"**

Shopify contends the term "subclass of User Interface (UI) objects" is also indefinite, because the patent offers no guidance on how to determine a "class of UI objects," let alone what is sufficient to constitute a "subclass" of these objects. (D.I. 264 at 28). As Dr. Almeroth opined, Table 1 of the '287 and '044 patents would have informed the POSA with reasonable certainty that the "data format class type" that corresponds to a "subclass of User Interface (UI) objects" is simply a data type corresponding to a subset of UI objects. (D.I. 225 Ex. 3 ¶¶ 1148-50). A class would be reasonably understood by the POSA to correspond to the universe of data types that can correspond to UI objects described in the patent. (Id. ¶ 1147). A POSA would have understood the "Subclass of User Interface (UI) objects" "reflects those UI objects that are compatible with the 'Data Format'"—or data type—"for a particular symbolic name." (Id. ¶

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[18] Plaintiff is ORDERED to submit within one week a proposed claim construction (comprehensible to a jury) for the term "data format class type."

1149).

Summary judgment as to this term is GRANTED.

c) Asserted Claims 1, 17, and 19 of the '044 Patent Based on the Claimed "Player" that "Utilizes Information Stored in Said Database to Generate for the Display of at Least a Portion of Said One or More Web Pages"

All asserted claims of the '044 patent require an application to be built utilizing a

"player" that "utilizes information stored in said database to generate for the display of at least a

portion of said one or more web pages." ('044 patent at 38:20-25, 39:52-56). Shopify contends

this claim language renders the asserted claims of the '044 patent indefinite, because it is unclear

what is being claimed by the "to generate for the display" language. (D.I. 264 at 29). Shopify

premises this argument on the language of the '397 patent.[19] A comparison of the relevant claim

language is shown below, with additional language in claim 1 of the '397 patent emphasized:

'044 patent claim 1	'397 patent claim 1
utilizes information stored in said database to generate for the display of at least a portion of said one or more web pages	utilizes information stored in said database to generate *virtual machine commands* for the display of at least a portion of said one or more web pages

(*Id.*).

Shopify contends there are at least three possible "fixes," and the patent does not offer

any guidance on which of the "fixes" should be applied. (*Id.*).

This too is a matter of claim construction not previously presented.

In Dr. Almeroth's interpretation he deletes the word "for" from the claim, so that it reads

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[19] I think the '397 patent is irrelevant to the indefiniteness issue. It is a separate patent family, so it is extrinsic evidence to the '044 patent. It probably explains as a factual matter where the error came from, but such history, even if proved, does not impact the indefiniteness analysis.

"utilizes information stored in said database to generate the display of at least a portion of said one or more web pages." (D.I. 218 at 26; D.I. 225 Ex. 3 ¶ 1151). Dr. Almeroth supports this with extensive written description support in the '044 patent itself. (*Id.* citing '044 at 6:17-21, 8:26-9:28, 11:61-12:4, 33:54-61). I agree with this interpretation. A POSA would understand the meaning of this term to be the same as if the "for" were deleted. The preposition does not hold any particular significance in light of the disclosures in the specification. I adopt that construction.

Summary judgment as to this term is GRANTED.

D.   **Express Mobile's *Daubert* Motions**

1.   **Bakewell's Opinions Related to Settlement Agreements**

The second *Georgia–Pacific* factor, which is implicated by this *Daubert* motion, looks at "[t]he rates paid by the licensee for the use of other patents comparable to the patent in suit." *Georgia–Pacific Corp. v. U.S. Plywood Corp.*, 318 F.Supp. 1116, 1120 (S.D.N.Y. 1970). "This factor examines whether the licenses relied upon ... in proving damages are sufficiently comparable to the hypothetical license at issue in suit." *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1325 (Fed. Cir. 2009). "[T]here must be a basis in fact to associate the royalty rates used in prior licenses to the particular hypothetical negotiation at issue." *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1317 (Fed. Cir. 2011). It is improper to "rely on license agreements that were radically different from the hypothetical agreement under consideration to determine a reasonable royalty." *Id.* at 1316 (internal quotation marks omitted). "[C]omparisons of past patent licenses to the infringement must account for the technological and economic differences between them." *Wordtech Sys., Inc. v. Integrated Networks Solutions, Inc.*, 609 F.3d 1308, 1320 (Fed. Cir. 2010) (internal quotation marks omitted). "When relying on licenses to

prove a reasonable royalty, alleging a loose or vague comparability between different technologies or licenses does not suffice." *LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F.3d 51, 79 (Fed. Cir. 2012). "The testimony of a damages expert in a patent suit who relies on non-comparable licenses in reaching his royalty rate should be excluded." *DataQuill Ltd. v. High Tech Computer Corp.*, 887 F.Supp.2d 999, 1022 (S.D. Cal. 2011).

Express Mobile moves to exclude the opinions of Bakewell that rely on litigation settlement agreements. (D.I. 218 at 27). Bakewell cites to and relies on these agreements to form the basis of his "Market Approach" based opinion. (*Id.*). Bakewell's Market Approach opinion concludes that a reasonable royalty in this case would be in the form of a lump-sum fully paid-up license of "no more than $400,000" for the Web Design Patents and "no more than $100,000" for the Web Component Patents. (*Id.*). This is based on a transaction in which Express Mobile purchased the Web Design Patents from Akira for $400,001 on January 12, 2012. (D.I. 234 Ex. A ¶¶14-15). Bakewell, however, also cites to and relies on the settlement agreements throughout his report. (*Id.* Ex. A, ¶¶ 162-74, 279-82 n. 431, 341-56). Bakewell relies on the settlement agreements for three different purposes: (1) to support his opinion that the reasonable royalty should be in the form of a lump sum; (2) to rebut Bratic's opinions with the BigCommerce settlement agreement; and (3) to rebut Bratic's opinions with Express Mobile's licensing history and licensing program. (D.I. 264 at 32-37).

First, Express Mobile contends that the settlement agreements are not comparable and cannot be used to support the opinion that a lump-sum reasonable royalty is proper. *See, e.g., LaserDynamics, Inc. v. Quanta Computer, Inc.*, 694 F. 3d 51, 77 (Fed. Cir. 2012). Shopify contends an expert must establish that an existing agreement is both technologically and economically comparable to rely on the amount of that agreement, but Courts do not require the

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same showing when an expert considers existing agreements as evidence of the form the

reasonable royalty would take. (D.I. 264 at 32, citing *GREE, Inc. v. Supercell Oy*, 2020 WL

4288345, at *4 (E.D. Tex. July 27, 2020) (denying motion to exclude reliance on license

agreements for the form of the royalty); *Apple, Inc. v. Samsung Elecs. Co.*, 2014 WL 794328, at

*11 (N.D. Cal. Feb. 25, 2014)). Because I think there is a broader range of what settlement

agreements can be used for when the actual amounts of the agreements are not used, I will allow

the settlement agreements to be used to support the form the reasonable royalty would take.

Second, when relying on the BigCommerce settlement agreement to rebut Bratic's

opinions, Express Mobile acknowledges Bakewell concluded that the BigCommerce agreement

is "technically comparable to the hypothetical license(s)." (D.I. 234 Ex. A ¶ 351).[20] However,

Express Mobile argues Bakewell makes no conclusion of economic comparability. (D.I. 277 at

17). As Shopify explains, Bakewell analyzes: (1) the background leading up to that agreement,

including the status of the underlying litigation (D.I. 234 Ex. A ¶ 350); (2) the fact that Shopify

and BigCommerce are competitors in the e-commerce space (*id.* ¶ 352); (3) BigCommerce's

revenues, as compared to Shopify's revenues, including at around the time of the hypothetical

negotiation (*id.* ¶¶ 352-53); (4) the negotiations leading up to the agreement (based on the

limited information he had) (*id.* ¶ 347); (5) the scope of the license to the patents-in-suit granted

in that agreement (*id.* ¶¶ 343-44, 351, 354); (6) the value of the cross-license Express Mobile

received in the agreement (*id.* ¶¶ 345-47); (7) the language included in the settlement agreement

(*id.* ¶ 349); and (8) the technological comparability of the licensed patents, which is not in doubt

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[20] Technical comparability is therefore not an issue. In the license agreement, BigCommerce received rights to all the patents-in-suit plus others. (D.I. 234 Ex. A ¶ 351). Therefore, Bakewell determined the BigCommerce license agreement was technically comparable to the hypothetical license(s), but it was broader in that it included additional patents rights. (*Id.*) .

given that it included a license to the patents-in-suit (*id.* ¶ 351; *supra* n. 20). Bakewell concludes

that this analysis is inconsistent with Bratic's conclusion that a reasonable royalty here would be

orders of magnitude higher than the license fee in the BigCommerce settlement agreement. (*Id.* ¶

356).

I think the degree of economic comparability is more than sufficient to allow Bakewell's

opinions regarding the BigCommerce settlement agreement. Any "critical information" Express

Mobile claims Bakewell failed to consider goes to weight, and Express Mobile will have a full

and fair opportunity at trial to cross-examine Bakewell.

Third, in connection with Express Mobile's licensing history and its licensing program,

Express Mobile asserts Bakewell makes no attempt to discuss the other fifty-seven agreements at

all, much less show economic comparability. (D.I. 277 at 18). Shopify asserts Bakewell's

reliance on Express Mobile's self-described "licensing program" are proper rebuttal to Bratic and

not subject to exclusion. (D.I. 264 at 35). I agree with Shopify that evidence of the "licensing

program" does not suffer from any of the potential pitfalls of improperly using a settlement value

identified by the *LaserDynamics* court. This is not "evidence of a single, potentially

idiosyncratic settlement amount that could have been influenced by a host of factors unique to a

particular case." (*Id.* at 36). Rather, Express Mobile chose to undertake a licensing program

while simultaneously engaged in litigation.

Express Mobile's *Daubert* motion as to Bakewell related to settlement agreements is

DENIED.

          2.   **Schmandt's and Wirfs-Brock's Opinions Relating to Virtual Machines**

Express Mobile seeks to exclude the expert opinions of Schmandt's and Wirfs-Brock's

relating to virtual machines because Express Mobile contends these opinions contradict the

Court's claim construction. During oral argument for claim construction, I stated, "I'm going to give virtual machine as broad a definition as I can since it seems to be a broad term, and I don't expect to take the derivative of a definition to indicate what it means."[21] (D.I. 128 at 39:24-40:3). I construed "virtual machine" to be "software that emulates a physical machine" and substituted the term "physical machine" for "abstract machine" to make it easier for a jury to understand. (D.I. 137 at 4-5). I rejected Shopify's proffered construction of "abstract machine that is emulated in software and that executes intermediate code in the instruction set of that machine." (Id.).

Express Mobile contends Shopify's experts improperly add the following limitations to the Court's construction of virtual machine: a virtual machine must execute machine code, translated from source code, in the "instruction set" of the physical machine; and a virtual machine must emulate a specific physical machine (e.g., a specific type of processor). (D.I. 218 at 37). Express Mobile claims "instruction set" is merely a repackaged version of Shopify's previously rejected "executes intermediate code in the instruction set of that machine." (Id.). Express Mobile claims Schmandt and Wirfs-Brock now assert a virtual machine must emulate a specific actual piece of hardware. (Id. at 38).

Shopify contends Schmandt and Wirfs-Brock both applied the Court's construction of "virtual machine" to mean "software that emulates a virtual machine." (D.I. 264 at 37). Shopify claims its expert opinions are premised on the factual observation that physical machines have an "instruction set"—that is, "the set of commands . . . that can be executed by the processor." (Id. at 38). Shopify claims these factual explanations are not inconsistent with the Court's construction of "virtual machine." Indeed, they are compelled by it because one must know the

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[21] By a "derivative" definition, I meant a construction of a construction.

features of the physical machine to be emulated. (*Id.*). In regard to "physical machine," Shopify claims Wirfs-Brock was explaining that the "physical machine" referenced in the Court's construction is a computer, not some other type of machine. (*Id.* at 39).

Shopify asserts that both experts applied the Court's claim construction of virtual machine. (D.I. 223 Ex. 2 ¶ 115; D.I. 259 Ex. 26 ¶ 73). When Schmandt was asked whether he applied his view that virtual machines require intermediate code to render his opinions in this case, he answered, "No." (D.I. 259 Ex. 27 at 42:15-25). The experts have opined and testified that they were faithful to the claim construction of virtual machine. It is a factual question how "software that emulates a physical machine" (that is, "virtual machine" as construed) functions. Therefore, I will allow the expert opinions relating to virtual machines.[22]

Express Mobile's *Daubert* motion as to Schmandt and Wirfs-Brock related to virtual machine is DENIED.

IV. CONCLUSION

An appropriate order will issue.

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[22] A lot depends upon how the expert testifies. An expert cannot say, by "physical machine," the Court meant a computer processor. That would be claim construction. But the expert can say, a computer processor is a physical machine because a computer processor is xyz; a competing expert can say a computer processor is not a physical machine because a computer processor is not abc.