

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

METARAIL, INC.,
Patent Owner.

IPR2024-01269
Patent 10,789,626 B2

Before STACEY G. WHITE, FRANCES L. IPPOLITO, and
BRIAN P. MURPHY, *Administrative Patent Judges*.

MURPHY, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Google LLC (“Petitioner”) filed a Petition pursuant to 35 U.S.C. § 311 requesting institution of *inter partes* review of claims 1–10 of U.S. Patent No. 10,789,626 B2 (Ex. 1001, “the ’626 patent”). Paper 2 (“Pet.”). Metarail, Inc. (“Patent Owner”) timely filed a Patent Owner Preliminary Response. Paper 6 (“Prelim. Resp.”). Pursuant to authorization from the Board, Petitioner filed a pre-institution Reply to Patent Owner’s Preliminary Response addressing certain arguments by Patent Owner (Paper 7, cited as “Reply”), and Patent Owner filed a Sur-Reply (Paper 8, cited as “Sur-Reply”).

We have jurisdiction under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Under § 314, the Board may not institute review on fewer than all claims challenged in the petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018). If the Board institutes a review, it will institute “on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.108(a). Upon consideration of the Petition, the Preliminary Response, Reply, Sur-Reply, and the evidence of record, for the reasons set forth below, we conclude Petitioner does not demonstrate a reasonable likelihood that it would prevail in showing the unpatentability of at least one challenged claim of the ’626 patent. Accordingly, we do not institute an *inter partes* review of claims 1–10 of the ’626 patent.

A. Real Parties in Interest and Related Matters

Petitioner, Google LLC, identifies itself as the real party in interest. Pet. viii. Petitioner also notes that “Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc.,” and “XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.” *Id.* at viii n.1. Patent Owner, Metarail, Inc., identifies itself as the real party in interest. Paper 5, 2.

The parties identify *Metarail, Inc. v. Google LLC*, Case No. 1:23-cv-01116 (D. Del.) as a related matter. Pet. viii; Paper 5, 2. The parties also identify *Google LLC v. Metarail, Inc.*, IPR2024-01270 (challenging U.S. Patent No. 9,633,378), *Google LLC v. Metarail, Inc.*, IPR2024-01271 (challenging U.S. Patent No. 10,262,342), and *Google LLC v. Metarail, Inc.*, IPR2024-01272 (challenging U.S. Patent No. 10,152,734) as related matters. Pet. viii; Paper 5, 2. In addition, Petitioner identifies U.S. Patent Application No. 16/933,053 as a related matter. Pet. viii.

B. The '626 Patent

The '626 patent is titled “Deep-Linking System, Method and Computer Program Product for Online Advertisement and E-commerce.” Ex. 1001, code (54). The invention “relates generally to the field of online advertising and E-commerce” and, “[m]ore particularly, . . . to deep-linked advertising and E-commerce.” *Id.* at 1: 1:30–35. The '626 patent discloses that for search and E-commerce sites, “[a] recent advancement in Digital Advertising has been ‘deep-linked’ or ‘parameter-based’ advertising.” *Id.* at 2:53–54. The patent further states that this form of advertising applies “where the user is searching for a product or service, like a travel site, and types in search parameters, such as where s/he is traveling from, where to,

travel dates, how many people in the party, class of travel, etc.” *Id.* at 2:54–59. In deep-linking, these search parameters are passed to the advertiser and the advertiser uses these parameters to:

- (a) hyper-target the placement of ads and customize the copy of ads presented on targeted web pages, and (b) automatically activate searches from their home page, thereby landing the web user “deep” into their booking process rather than on their home page as is customary with other forms of ad clicks.

Id. at 2:61–67. Such deep-linked ad connections conventionally are achieved by manually creating “programmatic integrations” between variables, fields, etc., of different websites, e.g., a publisher site and advertiser site. *Id.* at 3:16–25.

The ’626 patent describes systems and methods to automate the generation of deep-linked ads. *Id.* at 3:48–55, 4:18–20. Figure 2 of the ’626 patent, reproduced below, depicts exemplary system architecture 200 for automatically generating a deep-linked ad.

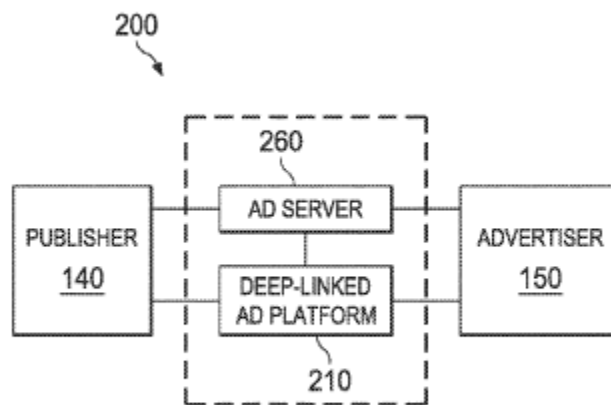


FIG. 2

In Figure 2, system architecture 200 includes deep-linked ad platform 210 and ad server 260. *Id.* at 7:61–64.¹ Ads for advertiser 150 are prepared by ad server 260 and served to publisher 140. *Id.* at 7:64–65. The ad server and deep-linked ad platform automatically generate deep-linked ads for the publisher 140. *Id.* at 7:64–8:7. In operation, this deep-linking method may include “creating and maintaining a universal map of variables and identifiers from sites . . . [and] automatically generating deep-linked ads from the variables and identifiers and other data in the universal variable map” to present deep-linked ads to consumers in real time. *See id.* at 8:27–35, Fig. 3. The ’626 patent discloses “one or more asynchronous spiders/scrapers or data gathering interfaces” may interact with websites and applications to obtain information about the variables or identifiers on the websites. *Id.* at 9:5–9.

With reference to Figures 4 and 5, the ’626 patent further discloses that

spidering module or data gathering module 510 may look up the Form section of each relevant web page, parse out the names of all the variables or input field identifiers (step 405), and archive them in a database which can be considered a universal variable map to *all relevant forms and fields across the websites crawled by the spidering module* or data gathering module thus far (step 407).

Id. at 9:30–37 (emphasis added); *see also id.* at 3:11–16 (“Fields or variables on the publisher site . . . need to be mapped and integrated with corresponding fields or variables on the advertiser site”). The universal variable map associates the forms and fields from one site with one or more

¹ Quotations from patent documents may omit or de-emphasize bold numerals.

relevant forms and fields on different sites. *Id.* at 5:26–30. The use of such mapping and integration (“*linking*”) can “take a website visitor from an initial stop (e.g., a home page of a first website) directly and in real-time through a specific deep-link ad to a landing spot on another site (e.g., a checkout page of a second website).” *Id.* at 5:30–35.

The ’626 patent further provides an example of a travel website where the spidering module has crawled the page, parsed the Form section of the page, and associated form fields with normalized variables in a universal variable map. *Id.* at 9:64–10:18. Table 1 (reproduced below) shows the data fields from three websites that are associated with normalized variables. *Id.* at 10:9–18.

Web Sites	xxx.com	yyy.net	zzz.org	...	Normalized Variables
Variable 1	Orig	Depart_City	From	...	from
Variable 2	Dest	Arrival_City	To	...	to
Variable 3	...	...	...	...	...
...	...	...	...	...	...

In Table I, each website uses different nomenclature for Variable 1 (“Orig,” “Depart_City,” and “From”) and Variable 2 (“Dest,” “Arrival_City,” and “To”). *Id.* The universal variable map associates “orig,” “Depart_City,” and “From” with normalized variable “from,” and associates “Dest,” “Arrival_City,” and “To” with normalized variable “to.” *Id.* The ’626 patent adds that “[b]y creating this universal schema, if web site A wants to advertise a deep-linked ad for web site B, the Ad system would already know what the respective variable names were called, and could

programmatically create an ad with accurate mappings without any human intervention.” *Id.* at 13:65–14:2.

The claimed method employs “a series of mapping heuristics” or processing rules that create the “mini-integrations or handshakes between each gathered variable and the corresponding normalized variable” in the universal variable map. *Id.* at 4:38–42; 13:42–58. When a website user inputs dynamic data via a user interface, the universal variable map allows the dynamic data variables to be normalized, integrated, and “linked to explicit variables on the advertising site, thereby passing all requisite dynamic data . . . into the right multiple fields in the right locations on the advertiser site,” i.e., automatically providing a deep-linked ad on an advertiser’s website. *Id.* at 5:6–13. Thus, the universal variable map and processing rules provide an automated, parameter-based form of hyper-targeted digital advertising that avoids the need to manually code the linkages, while passing a site visitor’s input parameters along with each ad click to the appropriate advertiser site.

Figure 11A of the ’626 patent depicts an example where Search Site 2 provides site visitors searching for cars with a deep-linked ad for Search Site 1. Figure 11A is reproduced below.

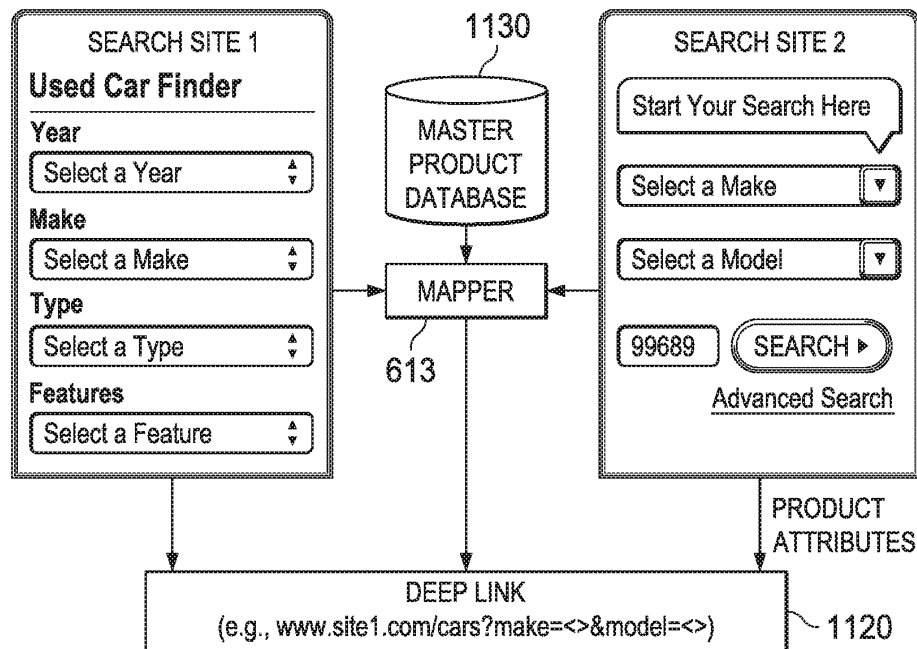


FIG. 11A

Id. at 6:65–7:2, Fig. 11A. In Figure 11A, the Mapper (613) accesses a universal variable map stored in the Master Product Database (1130) and “cross reference[s] programming variables used by Search Site 2 with those used by Search Site 1” to automatically create a deep-linked ad (1120) that is placed on Search Site 2. *Id.* at 14:7–15. When a user on Search Site 2 selects the deep link ad, the user’s browser is automatically directed to the deep link network address—`www.site1.com/cars?make=<>&model=<>`—“where ‘make’ and ‘model’ represent mapped field identifiers.” *Id.* at 14:15–20. The dynamic data entered by the user on Search Site 2 automatically pre-populates a form on Search Site 1 “with field identifier values (in this example, product attributes such as ‘Toyota’ and ‘Prius’), along with any user input provided at Search Site 2.” *Id.* at 14:20–25.

C. Illustrative Claim

Claim 1 is the sole independent claim. Claim 1, reproduced below, illustrates the claimed subject matter:

1. [1PRE]² A method, comprising:

[1A] generating, by a server computer, a deep-linked ad utilizing a universal variable map stored in a data store and accessible by the server computer, the *universal variable map linking programming variables across multiple sites on the Internet* and applications;

[1B] serving, by the server computer, the deep-linked ad through a first site or mobile application, the deep-linked ad linking a first set of programming variables of the first site on the Internet or the first mobile applications with a second set of programming variables of a second site on the Internet or a second mobile application, the first set of programming variables being associated with the second set of programming variables in the universal variable map stored in the data store; and

[1C] in response to a user interacting with the deep-linked ad displayed on a user device through an instance of the first site on the Internet or the first mobile application:

[1D] extracting, through the first site on the Internet or the first mobile application, values corresponding to the first set of programming variables;

[1E] automatically directing the user device to the second site on the Internet or the second mobile application; and

[1F] passing the values corresponding to the first set of programming variables to the second set of programming variables such that one or more fields corresponding to the second set of programming variables of the second site on the Internet or the second mobile application are explicitly or implicitly pre-populated with the values extracted through the first site on the Internet or the first mobile application.

Ex. 1001, 22:21–53 (emphasis added).

² We adopt Petitioner’s claim limitation numbering system for convenience.

D. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–10 are unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §³	References/Basis
1, 4–10	103(a)	Belanger, ⁴ Halevy ⁵
1, 4–10	103(a)	Belanger, AAPA, ⁶ Halevy
2, 3	103(a)	Belanger, Halevy, Reichart ⁷
2, 3	103(a)	Belanger, AAPA, Halevy, Reichart

II. CLAIM CONSTRUCTION

A. Level of Ordinary Skill in the Art

Petitioner submits that a person of ordinary skill in the art (“POSITA”) “would have had a bachelor’s degree in computer science or a related field, and at least two years of experience with web-programming and search engine systems.” Pet. 17 (citing Ex. 1003 ¶ 32). Petitioner further contends that “[m]ore education could substitute for experience, and vice versa” and “[t]his person would have been capable of understanding

³ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the challenged claims of the ’626 patent have an apparent effective filing date before March 16, 2013, the pre-AIA version of § 103 applies.

⁴ US Patent Pub. No. 2005/0144048 A1, June 30, 2005 (Ex. 1008, “Belanger”).

⁵ US Patent Pub. No. 2006/0230033 A1, Oct. 12, 2006 (Ex. 1006, “Halevy”).

⁶ Applicant Admitted Prior Art (“AAPA”).

⁷ US Patent Pub. No. 2002/0124255 A1, Sept. 5, 2002 (Ex. 1009, “Reichardt”).

and applying the teachings of the '626 patent and the prior-art references discussed herein.” *Id.* Patent Owner states that, “[f]or purposes of this preliminary response, Patent Owner and its expert apply this definition, as the Petition fails under any definition of a POSITA.” Prelim. Resp. 8 (citing Ex. 2001 ¶¶ 35–36).

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citing *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). “These factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art.” *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007). There is uncontested evidence in the record before us that reflects the knowledge and experience of a POSITA.

For purposes of this Decision, we adopt the level of ordinary skill in the art described in the Petition and applied in the Preliminary Response, which is consistent with the description in the '626 patent and the prior art of record.

B. Claim Construction

The parties do not assert any claim constructions at this stage. Pet. 17; *see generally* Prelim. Resp. In an *inter partes* review we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). In applying this standard, we generally give claim terms their ordinary and customary meaning as would

be understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *See id.*; *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). For purposes of this Decision, we need not expressly construe any claim terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

III. OBVIOUSNESS ANALYSIS

A. *Asserted Obviousness of Claims 1 and 4–10 over Belanger and Halevy (Ground 1)*

Petitioner contends that independent claim 1 and dependent claims 4–10 of the ’626 patent would have been obvious over Belanger in view of Halevy under 35 U.S.C. § 103 (Ground 1). Pet. 18–66 (citing Ex. 1003 ¶¶ 46–133). The Petition asserts Belanger teaches serving deep-linked promotional ads on a reservation website, although the Petition acknowledges Belanger teaches manual coding of the linkages between the promotional conditions (parameter values) of the advertising site and the programming variables (e.g., field parameters) of the reservation site, rather than teaching a “*universal variable map*” as recited in claim 1. *Id.* at 24–25 (citing Ex. 1003 ¶¶ 58–59; Ex. 1008 ¶¶ 81, 209, 212, Fig. 73). The Petition, therefore, asserts that combining Belanger and Halevy teaches, suggests, or otherwise renders obvious “*the universal variable map linking programming variables across multiple sites on the Internet and applications*” (hereafter,

the “UVM Limitation”).⁸ *Id.* at 27–33, 43–48 (citing Ex. 1003 ¶¶ 64–73, 104–111). The Petition further argues a POSITA would have been motivated to combine Belanger and Halevy in the manner claimed in the ’626 patent with a reasonable expectation of success. *Id.* at 33–41 (citing Ex. 1003 ¶¶ 78–90).

Patent Owner contends Petitioner has failed to meet its burden to show a reasonable likelihood that at least one of the challenged claims in Ground 1 is unpatentable over Belanger and Halevy. Prelim. Resp. 15–26. In particular, Patent Owner argues that neither Belanger nor Halevy disclose, teach, suggest, or otherwise render obvious the UVM Limitation. *Id.* at 16–24 (citing Ex. 2001 ¶¶ 61–70). Patent Owner further contends a POSITA would not have been motivated to combine Belanger and Halevy. *Id.* at 24–26 (citing Ex. 2001 ¶¶ 73–77). Patent Owner, therefore, maintains that Petitioner has not met its burden of establishing a reasonable likelihood that Belanger and Halevy would have rendered the challenged claims obvious to a POSITA.

“In an *inter partes* review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.” *In re Magnum Oil Tools Int’l Ltd.*, 829 F.3d 1364, 1375 (Fed. Cir. 2016) (quoting *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015)); *see also Aqua Products, Inc. v. Matal*, 872 F.3d 1290, 1306 (Fed. Cir. 2017 (en banc) (quoting *Magnum Oil*)).

⁸ The UVM Limitation is identified as [1.A] in the Petition and Preliminary Response.

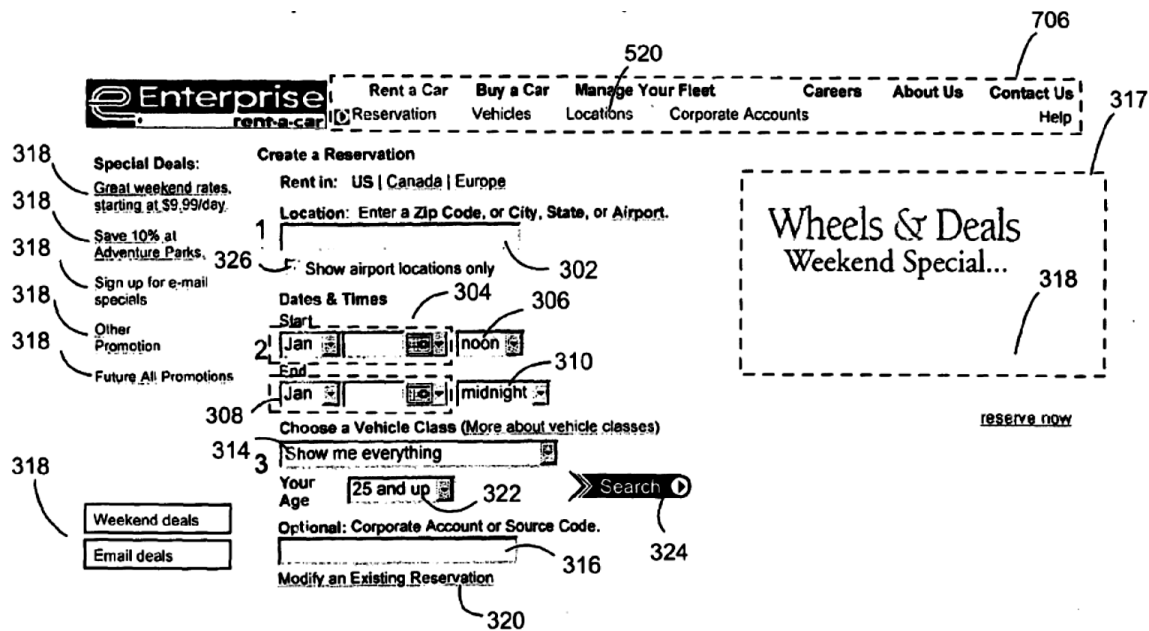
A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). Obviousness is resolved based on underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). A party who petitions the Board for a determination of obviousness must show that “a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (quoting *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)).

We assess Petitioner’s evidence and argument according to the above-referenced obviousness standard. For the reasons given below, we determine Petitioner has not established that Belanger and Halevy disclose, teach, suggest or otherwise render obvious independent claim 1 of the ’626 patent. We begin with a discussion of Belanger and Halevy.

1. Belanger (Ex. 1008)

Belanger “relates to the automated processing and booking of reservation transactions conducted over a computer network between a customer and a reservation booking entity,” such as an Internet-based rental

car reservation system. Ex. 1008 ¶ 2. Belanger discloses that a car reservation transaction guides the customer to provide required information (e.g., car, day/time period, and location sought) at a website. *Id.* ¶¶ 4–5. Figure 37, reproduced below, “is a screenshot of a preferred home page (H).” *Id.* ¶ 56.



Home page H, shown in Figure 37, contains a plurality of fields in which the customer can enter reservation information. *Id.* at Fig. 37. For example, the home page provides a branch location search tool via the “locations” link 520. *Id.* ¶ 165. Upon entering data in any of the fields, the user can submit the data by selecting the “Search” link 324. *Id.* ¶ 127.

Belanger also discloses that deep-linked advertisements may be “provided for customers seeking to book a reservation from a promotional link or from a corporate account.” *Id.* ¶ 19. Belanger Figure 53, reproduced below from the Petition (annotated with red box), depicts exemplary promotional link 318 on a rental car reservation confirmation web page.

Rent a car here - The Enterprise Rent-A-Car Online Reservation System

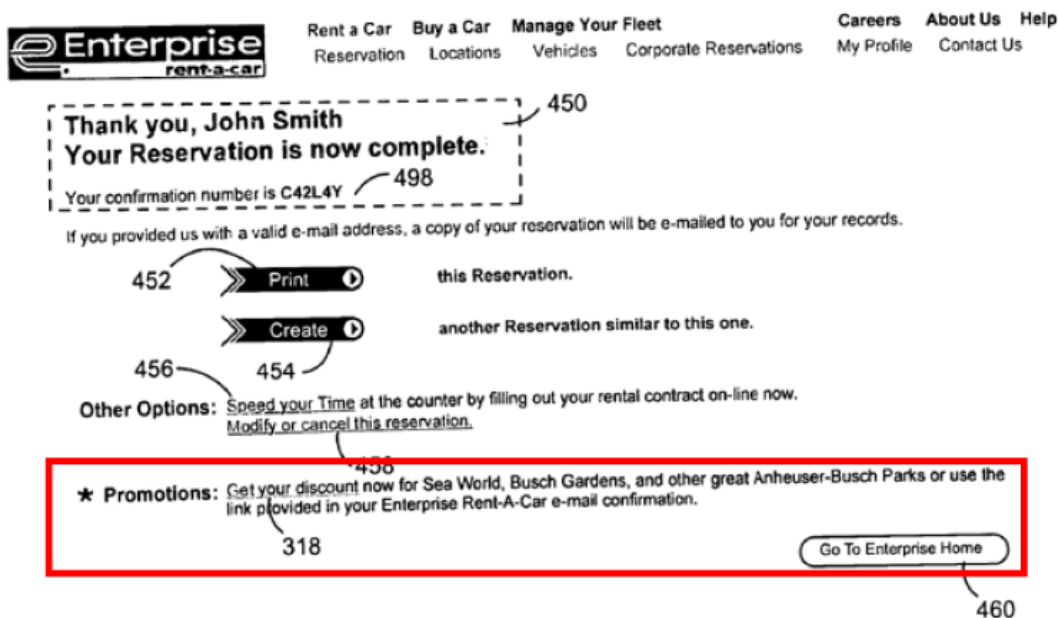


Fig. 53

Pet. 19–20 (Ex. 1008, Fig. 53 (annotated)). A user may click on the promotional link, which offers a discount at an amusement park attraction. Ex. 1008 ¶ 128, Fig. 53.

Belanger teaches the use of manual coding to associate the promotional conditions used in promotional deep links on the car reservation website with the field parameter names included in the deep-links. *Id.* ¶¶ 209, 212, Fig. 73. Belanger explains that such manual coding may be facilitated by a user interface, where “an account or promotion administrator can control a plurality of settings for the pages and rules of a promotion or corporate account.” *Id.* ¶ 209. “These settings are then stored with the appropriate account in the database for subsequent retrieval and processing.” *Id.* “Through the interface 700, it is preferred that the administrator be able to control nearly all aspects of the pages that a customer sees upon initiating

a reservation transaction via a corporate or customer account or promotion.”
Id. ¶ 210, Fig. 73.

2. *Halevy (Ex. 1006)*

Halevy “relates to . . . searches through content on websites” that may be hidden behind web-based forms and, “[m]ore specifically, . . . searching through content . . . accessible th[r]ough queries entered into web-based forms.” Ex. 1006 ¶¶ 3, 8. Halevy states that data available on the web but “hidden behind web-based forms” are not “searchable by traditional search engines.” *Id.* ¶ 5. Halevy uses a “form engine” that engages in a web-crawling process to collect information about websites with web-based forms and stores the collected information in a “form database.” *Id.* ¶¶ 34–35. When a system user inputs a keyword search query, Halevy’s form engine accesses the data stored in the form database to identify relevant forms and return a list of forms to the user along with “query-links” to the corresponding forms. *Id.* ¶¶ 36, 136–138.

Halevy Figure 1, reproduced below, depicts a “form engine” that facilitates such web-based form searching.

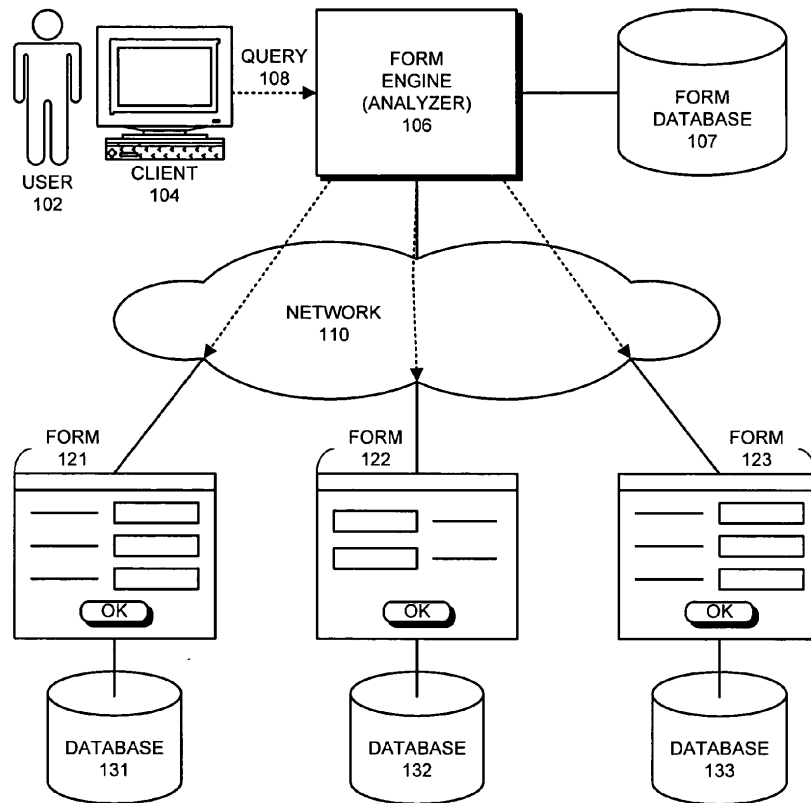


FIG. 1

Figure 1 depicts form engine 106 that facilitates searching through web-based forms. *Id.* ¶¶ 26, 34. Halevy discloses that

form engine 106 includes a set of tools that *facilitate constructing a search engine for the "deep web."* The deep web refers to the part of the web that *hides behind forms* and is therefore *not accessible to traditional search engines*. With these tools, both a general-purpose search engine, and domain-specific engines that focus on certain topics, may be constructed.

Id. ¶ 37 (emphases added). In operation, user 102 sends keyword query 108 to Form Engine 106. *Id.* ¶ 36. In response, Form Engine 106 “accesses a number of forms 121–123 which are hosted on servers located throughout network 110.” *Id.* ¶ 35. Halevy’s crawling process “creates database entries for the identified forms” of interest by “storing metadata describing the identified forms” in the form database, which facilitates subsequent

searching of the database. *Id.* ¶¶ 9, 35. The stored metadata includes data describing the “input fields” on the form, such as a field’s “parameter name,” “text,” “field types,” and “exemplary values.” *Id.* ¶¶ 16, 37, 44, Fig. 2.

Halevy’s system classifies each form in the database to indicate “the types of objects that can be obtained by querying the form,” such as “books, hotels, restaurants . . . houses, jobs, and cars for sale.” *Id.* ¶¶ 45, 57. Halevy refers to the form classifications as “SO-classes” (search ontology classes). *Id.* ¶ 38, Fig. 6. The SO-classes are organized in a hierarchy, wherein each SO-class is associated with “SO-properties” (search ontology properties) that represent the type of information to be obtained from searching a particular class of form fields (e.g., parameter names and values). *Id.* ¶¶ 38, 48, 66. For example, if a form’s “SO-class” is identified as “car,” then the form fields are mapped to the SO-properties for the car class, such as the make and model of a car. *Id.* ¶¶ 49, 95, 98–101. These SO-classes and associated SO-properties are used to identify forms in the database that are relevant to a user’s keyword search query. *Id.* ¶¶ 136–138.

Halevy’s system maps the form fields to the SO-properties of a given class, as depicted in highlighted Figure 3 reproduced below from the Petition.

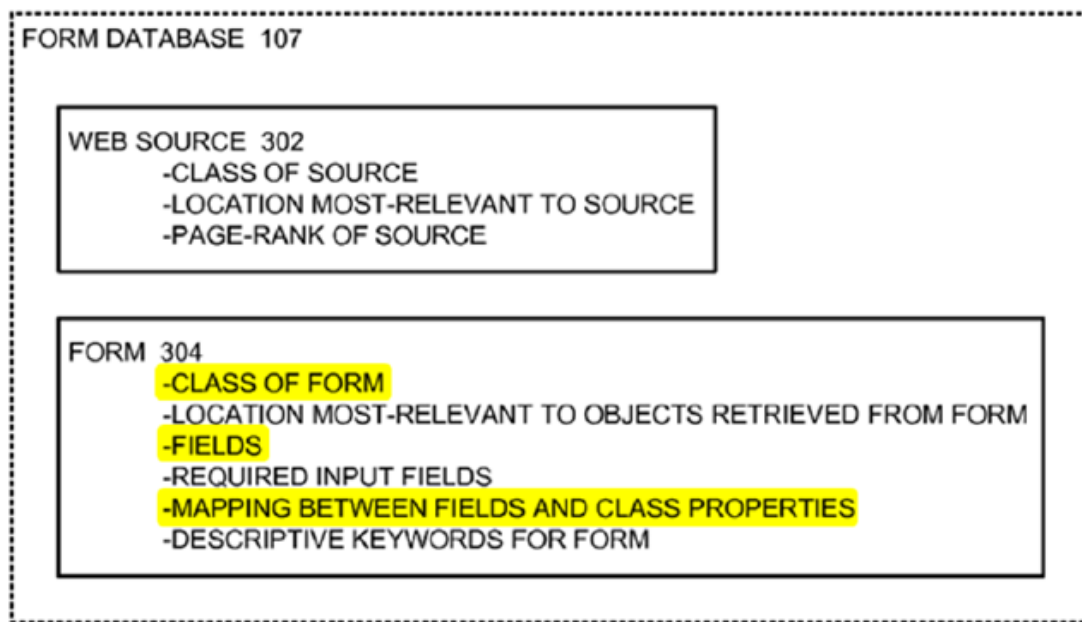


FIG. 3

Pet. 29. As shown above in Figure 3, separately for each form in the database, Halevy's system stores the identified class of the form, data for each form field (including the parameter name), and the mapping of fields on the form to the corresponding SO-properties of that form's class.

Ex. 1006 ¶¶ 43–49, 67, 125. The class and properties identified for each form are then used to “facilitate searches through content which is accessible through” the forms. *Id.* ¶ 9; *see also id.* ¶¶ 136–138, Fig. 2.

Halevy further discloses a search operation where a user inputs a query containing keywords. *Id.* ¶¶ 18, 136. A “query analyzer can be adapted to consider keyword queries from a user and to predict the SO-class in the ontology that is most relevant to the query.” *Id.* ¶ 89. For example, “the query ‘used Acura Integra’ is most likely referring to Cars” as the relevant SO-class. *Id.* ¶ 95. “[O]nce an SO-class has been predicted for a user query, a structured query is constructed by mapping the individual

words in the query to properties of the chosen search class.” *Id.* ¶ 112.
“Using this information, the query description module tries to match each word in the user query to the most likely search class property.” *Id.*
Halevy’s system then “performs a lookup based on the structured query in the form database to identify forms of interest.” *Id.* ¶¶ 18, 136–137. The system also ranks the forms returned by the lookup and “then presents the user with query-through links to the ranked forms of interest” that allows the user to click on a specific link “to submit a query to the associated form of interest.” *Id.* ¶¶ 137–138.

3. *Analysis of Claim 1 in View of Belanger and Halevy*

The Petition contends that Belanger teaches the use of time-intensive manual coding to associate the promotional conditions of a deep link with the field parameter names included in the deep-link. Pet. 24–25 (“promotional deep-links on Belanger’s reservation website are associated with the field parameter names in the deep-link manually;” “manually creating the promotion settings for deep-links is time and resource intensive”). The Petition, therefore, asserts that Halevy teaches a “system for automatically generating deep-links, by querying a ‘form database’” that acts as a type of “*universal variable map*.” *Id.* at 26 (citing Ex. 1003 ¶ 61; Ex. 1006 ¶ 37, Fig. 2). The Petition argues that Halevy’s system “automatically maps fields on forms from different websites to a shared set of identifiers (i.e., ‘properties’) determined from the form data, *thereby mapping corresponding fields across various website forms to each other*.” *Id.* (emphasis added). Based on our review of the record evidence, we determine the Petition has not adequately established that Halevy, or the combination of Belanger and Halevy, discloses, teaches, suggests, or

otherwise renders obvious the recited “*universal variable map*” for “*linking programming variables across multiple sites on the Internet*” (the UVM Limitation).

a. Halevy’s schema-mapping search engine

The key to Petitioner’s argument is the assertion that Halevy’s system uses “schema-mapping” such that “fields from different forms on different sites can map to the same SO-properties.” Pet. 46. The Petition illustrates the point with an example where the check-in date fields on two different hotel reservation forms on two different websites “would map to the same SO-property, even if the HTML code on the two different websites used different parameter names (i.e., *programming variable*) for the check-in date fields.” *Id.* at 46–47 (citing Ex. 1003 ¶ 109). The Petition then argues that a POSITA would have recognized Halevy’s form database as teaching the recited UVM Limitation, “because parameter names of corresponding form fields from multiple different websites *are linked to each other* in the form database by being mapped to the same SO-properties.” *Id.* at 47 (citing Ex. 1003 ¶ 111) (emphasis added).

Although Halevy’s schema-mapping technique maps each form field to a common set of SO-properties in each SO-class, there is no disclosure, teaching, or suggestion in Halevy to use schema-mapping to “*link*” or integrate form fields (parameter names) of different forms on different websites *to each other* to generate deep-links. We find the Petition’s reasoning and the cited testimony of Dr. Fox on this crucial point to be conclusory. We also find the Preliminary Response to be persuasive, Dr. Malek’s testimony (Ex. 2001) to be credible, and the reasoning of both consistent with the disclosures in Halevy.

In Halevy Figure 3, on which the Petition relies, each form (304) is a separate entry in the database, as depicted below.

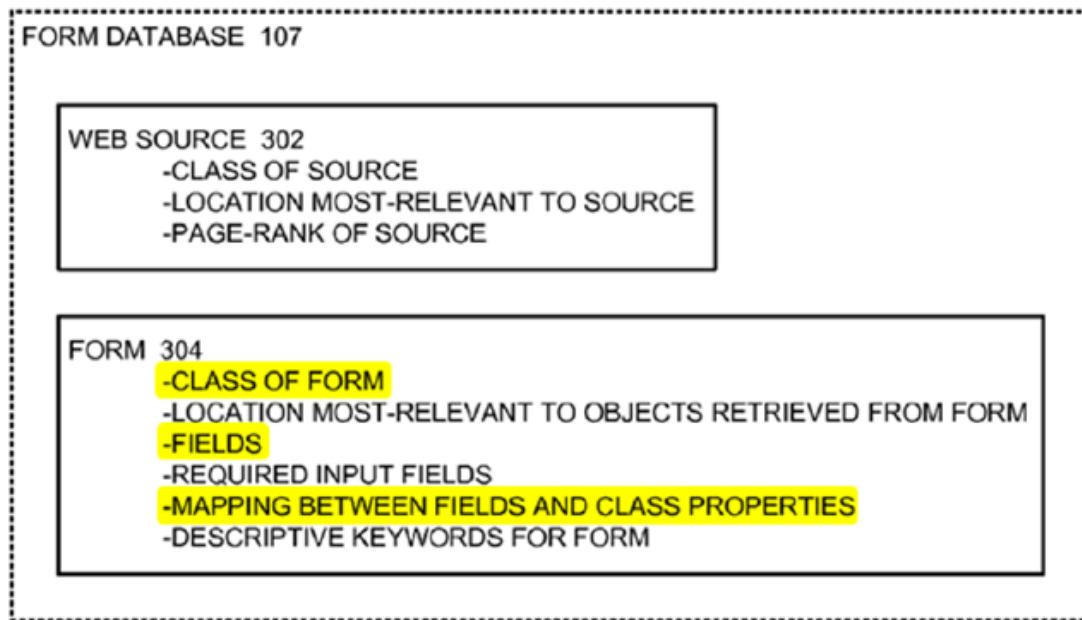


FIG. 3

As shown in Figure 3, each separate form entry has information associated with it such as its class, fields, and keywords. *See* Prelim. Resp. 17–18 (citing Ex. 1006 ¶ 28; Ex. 2001 ¶ 61). The Preliminary Response correctly points out that Halevy, including Figure 3, does not disclose, teach, or suggest “creating any relationships between different forms in the form database.” *Id.* at 18 (citing Ex. 2001 ¶ 62).

By way of contrast to the claimed invention, in Halevy’s system a user enters a keyword search query and the search engine identifies forms of interest responsive to the user’s query. “[T]he system performs a lookup based on the structured query in the form database to identify forms of interest (step 608) and ranks these forms (step 610).” Ex. 1006 ¶ 137. As Dr. Malek points out, Halevy’s form database “is just a database containing

separate, unrelated entries regarding forms that are available on different websites,” and “there is no ‘linking programming variables across multiple sites on the Internet and applications’ as required in claim 1 for the ‘universal variable map’.” Ex. 2001 ¶ 63. Patent Owner also persuasively argues:

Instead, each form entry associated with a website in Halevy’s form database exists independently of other form entries, with no linkages of programming variables (or any other information) between them. Indeed, no such linkages are contemplated in Halevy because Halevy’s system is not designed to assess the extent to which forms on different websites might be related to each other; instead, the data collected about forms and stored in Halevy’s form database is simply used to generate a ranked list of forms of interest in response to a user’s search query.

Prelim. Resp. 18 (citing Ex. 1006 ¶ 137; Ex. 2001 ¶ 64).

The difference between the recited UVM Limitation and Halevy’s form search engine is further illustrated with reference to the embodiment depicted in Halevy Figure 6. Figure 6 is “a flow chart illustrating the process of searching through content which is accessible through web-based forms.” Ex. 1006 ¶ 31. Halevy Figure 6 (highlighted) is reproduced below from the Preliminary Response:

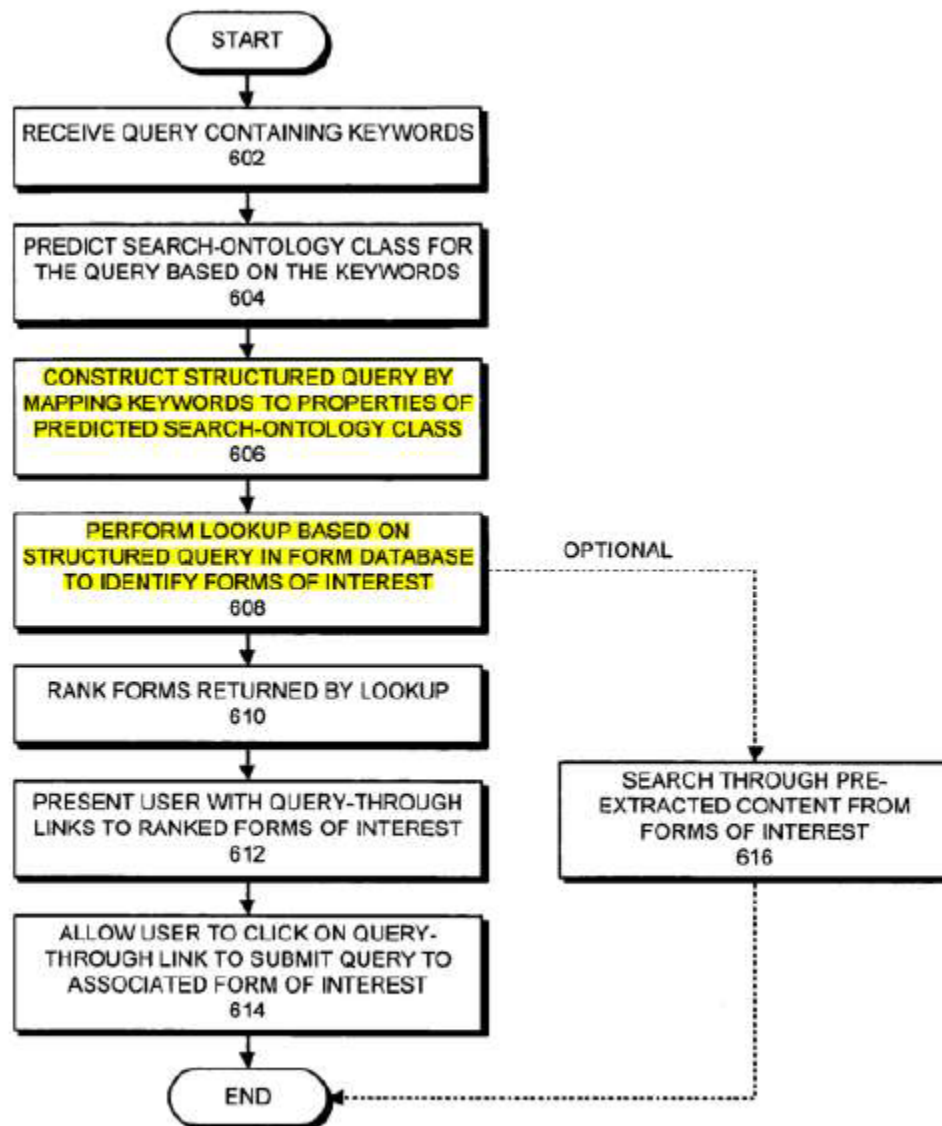


FIG. 6

Prelim. Resp. 21–22 (citing Ex. 1006 ¶¶ 136–137, Fig. 6 (annotated)).

As depicted in Figure 6, Halevy’s search engine begins with a keyword search used to predict a SO-class for the query (602, 604). The search engine constructs a structured query by “mapping keywords to properties of [the] predicted search-ontology class (606).” Halevy’s system then uses SO-properties of the predicted class to identify forms relevant to a user’s keyword search (“performs a lookup based on the structured query”),

ranks the forms, and “allows the user to click on a specific query-through link to submit a query to the associated form of interest.” Ex. 1006 ¶¶ 137–138. We do not discern any teaching, suggestion, or motivation in Halevy’s search engine process to use the form-field-to-SO-property mapping function for each form, to *link* form fields (parameter names) on different forms to each other (“*the universal variable map linking programming variables across multiple sites and applications*”). See Ex. 2001 ¶ 67 (“Halevy does not teach that the SO-properties establish any relationship between different websites or applications.”). The mere fact that fields in forms on different websites might have the same SO-properties does not teach or suggest a “*universal variable map linking programming variables across multiple sites and applications*” in Halevy’s form database. *Id.* The SO-properties in Halevy are used by the search engine to identify forms relevant to the user’s keyword search, as shown in Figure 6 and described above, nothing more.

We are further persuaded that Halevy’s use of a set of prediction algorithms in a “query analyzer,” which predicts SO-classes and SO-properties relevant to a user’s query *prior* to searching the form database, “further shows that the form database does not provide the predetermined linking between sites or applications in a universal variable map as contemplated in the ’626 patent.” Prelim. Resp. 22–23 (citing Ex. 2001 ¶ 69). As Dr. Malek explains:

This prediction process is necessary to transform the user query into a structured query that can be used to run a search through Halevy’s form database. The fact that Halevy’s system requires a set of algorithms to predict relevant SO-classes and SO-properties, *before any lookup has occurred in the form database*, further shows that Halevy’s form database *does not provide the*

predetermined linking between sites or applications in a universal variable map as contemplated in the '626 patent. *See* EX1001, 5:26-38 (“Leveraging this unique and comprehensive universal variable map, embodiments can take a website visitor from an initial stop (e.g., a home page of a first website) directly and *in real-time through a specific deep-link ad to a landing spot on another site* (e.g., a checkout page of a second website), or to a home page on another site with as much data pre-populated as available based on the user’s input in the context of the particular E-commerce transaction.”).

Ex. 2001 ¶ 69 (emphases added). We agree. Halevy’s teaching, to use prediction algorithms to select an SO-class and related SO-properties before executing a search for relevant forms, is inconsistent with the claimed “*universal variable map*” that automatically provides a website visitor with real-time deep-links to another website.

Dr. Malek also correctly points out that the portion of the '626 patent cited in the Petition and relied on by Dr. Fox does not support the assertion that Halevy discloses a “*universal variable map*,” but “merely discusses different types of variables and fields that might appear in different types of forms.” *Id.* ¶ 70 (distinguishing Ex. 1001, 17:52–56 and Dr. Fox’s testimony Ex. 1003 ¶ 110). In column 17, lines 52–56, the '626 patent explains that fields or variables may be part of forms, and variations of the data fields or variables “may include a source form, a destination form, a single source to many destination form, many sources to one destination form, cascading forms (e.g., a first form links to a second form which links to a third form, etc.) and so on.” Ex. 1001, 17:42–46. Although this section of the '626 patent indicates that forms may include variations on fields or variables, it does not describe any linking or mapping of variables to one another. Ex. 2001 ¶ 70.

For the reasons given above, we determine the Petition has not adequately supported the assertion that Halevy’s schema-mapping of different form fields to the same SO-properties, for use in Halevy’s structured-query form search engine, would have been recognized by a POSITA as a “*universal variable map linking programming variables across multiple sites on the Internet*” as recited in claim 1 of the ’626 patent. Pet. 47 (citing Ex. 1001, 17:52–55; Ex. 1003 ¶ 110).

b. Motivation to modify Belanger in view of Halevy

The Petition argues at length that a POSITA would have been motivated to modify Belanger in view of Halevy to achieve the claimed invention with a reasonable expectation of success. Pet. 33–41 (citing Ex. 1003 ¶¶ 78–90). The fundamental premise on which the Petition bases the asserted motivation—that “Halevy teaches one such system for automatically generating deep-links to other websites with the keywords from a query repurposed as parameter values in the deep-link”—is misplaced, as explained in section III.A.3.a., above. *Id.* at 34. Thus, the Petition does not adequately support the assertion that Halevy teaches automatically generating deep-links to other websites.

The Petition also argues in conclusory fashion that

POSAs would have recognized that such a web service data exchange [in Halevy] is taught by Belanger for similar purposes (Belanger, [0110]), and leveraging this existing communication feature would have automated the sending of queries and retrieval of deep-links from Halevy’s system for presentation as related travel promotions as already provided by Belanger, *e.g.*, at the close of booking via Figure 53) by submitting queries to Halevy’s “form engine” via SOAP-based communications.

Id. at 35 (citing Ex. 1003 ¶ 81). The Petition further relies on conclusory testimony and hindsight-based reasoning to fill gaps in reading the UVM

Limitation on the proposed Belanger-Halevy system. In particular, the Petition asserts that “POSAs would have understood” or “POSAs would have found it obvious” in a Belanger-Halevy system:

- that the queries would have been constructed to yield a desired deep-link;
- for the application server to construct a query for Halevy’s system specifying the keyword “hotel” or the name of the branding partner, along with the user-entered values for date and location, to generate a list of deep-links;
- for the application server to construct queries using just the user-entered date and location values of Belanger’s car rental reservation for a list of deep-links;
- to leverage Halevy’s already existing form database via Belanger’s existing data exchange mechanism (i.e., SOAP) for using customer-entered parameters to automatically generate deep-links;
- to modify Belanger’s application server, which already runs the “servlet” responsible for selecting promotions for display, . . . to query Halevy’s system (using SOAP) with the user-entered data and any other keywords during the booking process to repurpose data entered by the user on Belanger’s reservation website in the deep-links.

Id. at 36–38 (citing Ex. 1003 ¶¶ 83–85). We are cautioned not to “rel[y] on hindsight reasoning to piece together elements to arrive at the claimed invention.” *In re NTP, Inc.*, 654 F.3d 1279, 1299 (Fed. Cir. 2011) (“Care must be taken to avoid hindsight reconstruction by using the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit.” (internal quotations and citations omitted); *see also KSR*, 550 U.S. at 418 (obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). We do not find the Petition’s

asserted motivation for the proposed modification of Belanger in view of Halevy to be adequately supported by the evidence in the absence of hindsight gleaned from the '626 patent.

In contrast to Belanger, Halevy relates to a search engine system that “facilitates searching through content which is not directly available on web pages, but is instead accessible through queries entered into web-based forms.” Ex. 1006 ¶ 3. The design of a web-based form search engine that uses query-prediction algorithms to create a structured query for the form search is fundamentally different from Belanger’s on-line rental car reservation system. Ex. 1008 ¶¶ 19, 168–169, 179; *see also* Ex. 2001 ¶¶ 73–75 (contrasting the design goals of Halevy and Belanger: “[T]he alleged invention in [Belanger] is ‘an on-line reservation transaction system wherein the customer can complete the stages of the reservation transaction via a customer-determined path, and not according to a strictly defined, straight-line architecture.’”) (citing Ex. 1008 ¶ 13). Thus, the contrasting design goals do not support the asserted motivation to combine Belanger and Halevy.

Belanger and Halevy also disclose systems characterized by different architectures. As emphasized by Patent Owner, a user of Belanger’s system must fill in different fields on a web page as part of the rental car reservation process. Prelim. Resp. 25–26 (citing Ex. 1006 ¶ 112; Ex. 1008, Fig. 37; Ex. 2001 ¶ 76). A user of Halevy’s system, by contrast, enters a single search query (search string) that is processed by a search engine to “perform a lookup” and generate a list of ranked forms and query-through links to those forms. *See* Ex. 1006 ¶¶ 112 (exemplary user search query: “Telephone David Ko 98102”), 136 (“the system receives a query containing

keywords”), 137–138. As explained by Dr. Malek, “inputs and outputs of these systems are so different that it would not be clear to a POSITA how they could be combined into a single functioning system, or why there would ever be a reason to do so.” Ex. 2001 ¶ 76. We agree.

In short, we determine that the Petition has not adequately supported a motivation to combine Belanger and Halevy in the manner recited in independent claim 1 of the ’626 patent.

c. Conclusion

For the reasons given above, the Petition does not adequately support the assertion that Belanger in view of Halevy discloses, teaches, suggests, or otherwise renders obvious independent claim 1 of the ’626 patent.

Therefore, the Petition does not demonstrate a reasonable likelihood Petitioner would prevail in showing claims 1 and 4–10 are obvious over Belanger in view of Halevy. *See, e.g., Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (“[D]ependent claims are nonobvious if the independent claims from which they depend are nonobvious.”).

B. Asserted Obviousness of Claims 1 and 4–10 Over Belanger, AAPA, and Halevy (Ground 2)

Petitioner argues that independent claim 1 and dependent claims 4–10 of the ’626 patent would have been obvious over Belanger, Applicant Admitted Prior Art (“AAPA”), and Halevy. Pet. 14, 66–68. The Petition relies on AAPA as evidence of knowledge in the art “[t]o the extent that explicit disclosure is required regarding travel websites utilizing deep-link advertising” *Id.* at 66 (citing Ex. 1001, 2:53–59, 3:7–25). The Petition argues in particular that

POSAs would have recognized the partner and reservation websites described in Belanger to be examples of publisher websites and applications described in the [AAPA], having fields that require manual coding to map their search parameters to the deep-links provided by Belanger so that their search parameter values would have been passed along in the promotional deep-links on Belanger's reservation website.

Id. at 67 (citing Ex. 1003 ¶ 153). The Petition does not rely on AAPA to address the deficiencies of Belanger and Halevy discussed above regarding independent claim 1. As a result, the Petition has not demonstrated a reasonable likelihood Petitioner would prevail in showing that claims 1 and 4–10 of the '626 patent are obvious over Belanger, AAPA, Halevy (Ground 2).

C. Asserted Obviousness of Claims 2 and 3 Over Belanger, Halevy, and Reichardt (Ground 3), and Belanger, AAPA, Halevy, and Reichardt (Ground 4)

Petitioner argues that dependent claims 2 and 3 of the '626 patent would have been obvious over either Belanger, Halevy, and Reichardt (Ground 3) or Belanger, AAPA, Halevy, and Reichardt (Ground 4). Pet. 14, 68–76. Claims 2 and 3 depend from claim 1, and are directed to serving a deep-linked ad by “*inserting the deep-linked ad into a video on the first site on the Internet or in the first mobile application*” (claim 2), and selecting the deep-linked ad “*based on content being displayed or played to the user through the first site on the Internet or the first mobile application*” (claim 3). The Petition relies on Reichardt solely to address the additional limitations in claims 2 and 3, and it does not rely on Reichardt to address the deficiencies of Belanger and Halevy discussed above regarding independent claim 1. *Id.* at 73–76. As a result, the Petition has not demonstrated a reasonable likelihood Petitioner would prevail in showing that claims 2 and

3 are obvious over Belanger, Halevy, and Reichardt (Ground 3) or Belanger, AAPA, Halevy, and Reichardt (Ground 4).

IV. CONCLUSION

For the foregoing reasons, we determine Petitioner has not established a reasonable likelihood of prevailing in its challenge to the patentability of claims 1–10 in the '626 patent. Therefore, we deny institution of *inter partes* review of the challenged claims.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, the Petition is denied and *inter partes* review is not instituted.

IPR2024-01269
Patent 10,789,626 B2

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