

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FOLEON INC.,

Petitioner

v.

TURTL SURF & IMMERSE LIMITED

Patent Owner

IPR2026-00428
Patent No. 11,755,816

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

TABLE OF CONTENTS

I.	Introduction.....	1
II.	Petition Requirements.....	2
	A. Grounds For Standing and Timeliness	2
	B. Payment of Fees	3
	C. Identification of Challenge and Relief Requested	3
III.	Technological Background.....	4
IV.	The '816 Patent.....	7
	A. Overview of the '816 Patent.....	7
	B. Prosecution History	13
V.	Level of Ordinary Skill in The Art	13
VI.	Claim Construction.....	14
VII.	Summary of the Prior Art	14
	A. Harrop.....	14
	B. Hailey	18
	C. Davis.....	19
	D. Lo.....	21
	E. Ohashi.....	22
VIII.	GROUND FOR UNPATENTABILITY	25
	A. Ground 1: Claims 1-4, 7, 11-14, and 17 are rendered obvious by Harrop and Hailey	25
	i. Reasons to combine	26
	a. Analogous Art.....	26
	b. Motivation to Combine.....	27
	c. Reasonable Expectation of Success.....	28
	ii. Claim 1	29
	a. Limitation 1[PRE]: A method for creating an interactive document.....	29
	b. Limitation 1[A]: providing a first document comprising a first set of modular items, wherein at	

	least a subset of the first set of modular items have embedded rules	30
c.	Limitation 1[B]: receiving a personalization parameter for generating a derivative document;.....	32
d.	Limitation 1[C]: selecting one or more modular items from the first subset of modular items to be assembled into the derivative document wherein the one or more modular items are selected when the personalization parameter meets the embedded rules in the respective one or more modular items; and.....	34
e.	Limitation 1[D]: creating a reference for linking the one or more modular items to the derivative document.....	37
iii.	Claim 2: The method of claim 1, wherein the reference is created based at least in part on the personalization parameter.....	42
iv.	Claim 3: The method of claim 1, wherein the reference is used to update the one or more modular items in the derivative document.....	43
v.	Claim 4: The method of claim 1, wherein the derivative document comprises a second set of modular items that do not have embedded rules.....	45
vi.	Claim 7: The method of claim 1, wherein the personalization parameter is received via a graphical user interface or via an application programming interface.....	48
vii.	Claim 11	49
a.	Limitation 11[PRE]	49
b.	Limitation 11[A].....	49
c.	Limitation 11[B]	50
d.	Limitation 11[C]	51
e.	Limitation 11[D].....	51
f.	Limitation 11[E]	51
viii.	Claim 12: The system of claim 11, wherein the reference is created based at least in part on the personalization parameter.....	51

ix.	Claim 13: The system of claim 11, wherein the reference is used to update the one or more modular items in the derivative document.....	52
x.	Claim 14: The system of claim 11, wherein the derivative document comprises a second set of modular items that do not have embedded rules.....	52
xi.	Claim 17: The system of claim 11, wherein the personalization parameter is received via a graphical user interface or via an application programming interface.....	52
B.	Ground 2: Claims 8-9 and 18-19 are rendered obvious by Harrop, Hailey, and Lo	52
i.	Reasons to Combine	53
a.	Analogous Art.....	53
b.	Motivation to combine.....	53
c.	Reasonable Expectation of Success.....	54
ii.	Claim 8: The method of claim 1, further comprising upon receiving the personalization parameter, rendering the derivative document in real-time.	55
iii.	Claim 9: The method of claim 8, wherein the derivative document is rendered within a web browser by executing a script using a content renderer.	56
iv.	Claim 18: The system of claim 11, wherein the one or more processors are further configured to render rendering [sic] the derivative document in real-time upon receiving the personalization parameter.	57
v.	Claim 19: The system of claim 18, wherein the derivative document is rendered within a web browser by executing a script using a content renderer.	58
C.	Ground 3: Claims 10 and 20 are rendered obvious by Hailey, Harrop and Davis.....	58
i.	Technical Background - User Tracking.....	58
ii.	Reasons to Combine	59
a.	Analogous Art.....	59
b.	Motivation to combine.....	60

c.	Reasonable Expectation of Success.....	62
iii.	Claim 10: The method of claim 1, further comprising embedding a tracking feature in the derivative document to collect data indicative of user interaction with the derivative document.....	63
iv.	Claim 20: The system of claim 11, wherein the derivative document is embedded with a tracking feature to collect data indicative of user interaction with the derivative document.....	64
D.	Ground 4: Claims 5- 6 and 15-16 are rendered obvious by Hailey, Harrop and Ohashi.....	64
i.	Reasons to Combine	64
a.	Analogous Art.....	64
b.	Motivation to Combine.....	65
c.	Reasonable Expectation of Success.....	66
ii.	Claim 5: The method of claim 4, further comprising converting the derivative document into a master document by embedding rules into at least one of the second set of modular items.....	66
iii.	Claim 6: The method of claim 5, further comprising removing the reference to break the link between at least one modular item and the derivative document.....	68
iv.	Claim 15: The system of claim 14, wherein the one or more processors are further configured to convert the derivative document into a master document by embedding rules into at least one of the second set of modular items.	69
v.	Claim 16: The system of claim 15, wherein the one or more processors are further configured to remove the reference to break the link between at least one modular item and the derivative document.....	70
IX.	Discretionary Denial Is Not Warranted.....	70
X.	CONCLUSION.....	72
	Petitioner Mandatory Notices	73

Petitioner's Exhibit List¹

Exhibit No.	Description
1001	U.S. Patent No. 11,755,816 B1
1002	Prosecution History of U.S. Patent No. 11,755,816 B1
1003	Declaration of Dr. Ben Bederson
1004	<i>Curriculum Vitae</i> of Dr. Ben Bederson
1005	U.S. Patent Publication No. 2005/0080814 A1 to Hailey et al.
1006	International Publication No. WO 03/075191 A1 to Harrop et al.
1007	U.S. Patent No. 5,796,952 to Davis et al.
1008	U.S. Patent No. 7,844,896 (“Ohashi”)
1009	U.S. Patent Publication No. 2005/0094205 A1 to Lo et al.
1010	U.S. Patent No. 4,712,174 to Minkler
1011	U.S. Patent 5,956,687 to Wamsley et al. (“Wamsley”)
1012	“How Users Read on the Web”
1013	<i>Information on RFC 3986</i> , RFC Editor
1014	“How to use the Mail Merge feature in Word to create and to print form letters that use the data from an Excel worksheet,” Microsoft
1015	“How People Read Online: The Eyetracking Evidence”

¹ Petitioner cites to exhibits' original page numbers. Unless otherwise noted, all emphasis in any quoted material has been added.

Exhibit No.	Description
1016	Rong Chen, Anne Rose, and Benjamin B. Bederson. 2009. How people read books online: mining and visualizing web logs for use information. In Proceedings of the 13th European conference on Research and advanced technology for digital libraries (ECDL'09). Springer-Verlag, Berlin, Heidelberg, 364–369
1017	NYTimes, Google Acquires Urchin Software, March 29, 2005
1018	Nataliia Bielova. 2017. Web Tracking Technologies and Protection Mechanisms. In Proceedings of the 2017 ACM SIGSAC Conference on Computer and Communications Security (CCS '17). Association for Computing Machinery, New York, NY, USA, 2607–2609.
1019	Tim Berners-Lee et al.. <i>The World-Wide Web</i> . 37 Communications of the ACM 76 (1994).
1020	Archived webpage regarding Web Parameter Tampering (April 27, 2020).
1021	Archived webpage regarding Information exposure through query strings in url description (April 22, 2020).
1022	U.S. Patent 8,661,342 to Lu et al. (“Lu”).
1023	<i>Foleon Inc. v. Turtl Surf & Immerse Limited</i> , IPR2025-01525, Paper 6 (PTAB Jan. 28, 2026).
1024	<i>Foleon Inc. v. Turtl Surf & Immerse Limited</i> , IPR2025-01525, EX2001 (PTAB Jan. 28, 2026).
1025	[RESERVED]
1026	Wayback Machine Archive of Alex Hopmann, “Story of XMLHTTP”, (June 17, 2006)
1027	Michael Singer, “Google Testing Free Webmail” (April 1, 2004)

Exhibit No.	Description
1028	Bret Taylor, “Mapping your way” (February 8, 2005)
1029	Jesse James Garrett, “Ajax: A New Approach to Web Applications”, February 18, 2005
1030	https://en.wikipedia.org/wiki/JavaScript#History
1031	Document Object Model (DOM) Level 1 Specification (1998)
1032	Peter-Paul Koch, Digital Web Magazine, <i>The Document Object Model: an Introduction</i> , January 24, 2014

Claim Appendix

Claim Limitation	Claim Language
1[PRE]	A method for creating an interactive document, the method comprising:
1[A]	providing a first document comprising a first set of modular items, wherein at least a subset of the first set of modular items have embedded rules;
1[B]	receiving a personalization parameter for generating a derivative document;
1[C]	selecting one or more modular items from the first subset of modular items to be assembled into the derivative document wherein the one or more modular items are selected when the personalization parameter meets the embedded rules in the respective one or more modular items; and
1[D]	creating a reference for linking the one or more modular items to the derivative document
2	The method of claim 1, wherein the reference is created based at least in part on the personalization parameter.
3	The method of claim 1, wherein the reference is used to update the one or more modular items in the derivative document.
4	The method of claim 1, wherein the derivative document comprises a second set of modular items that do not have embedded rules .

5	The method of claim 4, further comprising converting the derivative document into a master document by embedding rules into at least one of the second set of modular items.
6	The method of claim 5, further comprising removing the reference to break the link between at least one modular item and the derivative document.
7	The method of claim 1, wherein the personalization parameter is received via a graphical user interface or via an application programming interface.
8	The method of claim 1, further comprising upon receiving the personalization parameter, rendering the derivative document in real-time.
9	The method of claim 8, wherein the derivative document is rendered within a web browser by executing a script using a content renderer.
10	The method of claim 1, further comprising embedding a tracking feature in the derivative document to collect data indicative of user interaction with the derivative document.
11[PRE]	A system for creating an interactive document, the method comprising:

11[A]	A memory for storing a set of software instructions, and one or more processors configured to execute the set of software instructions to:
11[B]	(a) provide a first document comprising a first set of modular items, wherein at least a subset of the first set of modular items have embedded rules;
11[C]	(b) receive a personalization parameter for generating a derivative document;
11[D]	(c) select one or more modular items from the first subset of modular items to be assembled into the derivative document, wherein the one or more modular items are selected when the personalization parameter meets the embedded rules in the respective one or more modular items; and
11[E]	(d) create a reference for linking the one or more modular items to the derivative document.
12	The system of claim 11, wherein the reference is created based at least in part on the personalization parameter.
13	The system of claim 11, wherein the reference is used to update the one or more modular items in the derivative document.
14	The system of claim 11, wherein the derivative document comprises a second set of modular items that do not have embedded rules.
15	The system of claim 14, wherein the one or more processors are further configured to convert the derivative document into a master

	document by embedding rules into at least one of the second set of modular items.
16	The system of claim 15, wherein the one or more processors are further configured to remove the reference to break the link between at least one modular item and the derivative document.
17	The system of claim 11, wherein the personalization parameter is received via a graphical user interface or via an application programming interface.
18	The system of claim 11, wherein the one or more processors are further configured to render rendering [sic] the derivative document in real-time upon receiving the personalization parameter.
19	The system of claim 18, wherein the derivative document is rendered within a web browser by executing a script using a content renderer.
20	The system of claim 11, wherein the derivative document is embedded with a tracking feature to collect data indicative of user interaction with the derivative document.

I. INTRODUCTION

Foleon Inc., (“Foleon” or “Petitioner”) respectfully requests the Board institute *inter partes* review of U.S. Patent No. 11,755,816 (“the ’816 Patent”), which is assigned to Turtl Surf & Immerse Limited (“Turtl” or “Patent Owner”). Petitioner has been accused of infringing the ’816 Patent and is proactively seeking early cancellation of claims 1-20 (“the Challenged Claims”) of the ’816 Patent to protect its product, market, and customers.

The ’816 Patent purports to describe a novel system and method for generating a document based on modular items (e.g., content), personalization parameters (e.g., variables), and rules that govern the inclusion of one or more of the modular items. The independent claims also recite creating a reference for linking the modular items to the generated derivative document. However, none of the features claimed by the ’816 Patent are novel or nonobvious over the prior art.

For example, Hailey and Harrop both describe document generation systems that pre-date the ’816 Patent by fifteen and seventeen years, respectively, and, as explained in Ground 1 below, these references together teach the features of independent claims 1 and 11, as well as dependent claims 2-4, 7, 11-14, and 17. Ground 2 demonstrates that the real-time rendering recited in dependent claims 8-9 and 18-19 are obvious over the combination of Hailey, Harrop, and Lo. Ground 3 explains that the user tracking recited in dependent claims 10 and 20 is obvious in

view of the teachings of Hailey, Harrop, and Davis. Ground 4 explains that the conversion of the derivative document, as recited in claims 5-6 and 15-16, is obvious in view of the teachings of Hailey, Harrop, and Ohashi.

In addition, Patent Owner has dedicated a substantial portion of the inventions described in the '816 Patent to the public domain. In response to Petitioner's IPR petition which relied on the same prior art presented here and challenged U.S. Patent No. 12,118,290—which shares an identical specification with the '816 Patent—Patent Owner statutorily disclaimed all of the claims of the '290 patent. *See* EX1023, EX1024 (*Foleon Inc. v. Turtl Surf & Immerse Limited*, IPR2025-01525, Paper 6, EX2001 (PTAB Jan. 28, 2026)).

Accordingly, institution of this petition is requested and a Final Written Decision invalidating the Challenged Claims is appropriate.

II. PETITION REQUIREMENTS

A. Grounds For Standing and Timeliness

Petitioner certifies that the '816 Patent is eligible for IPR and that Petitioner is not barred or estopped from requesting IPR. 37 C.F.R. §42.104(a). The '816 Patent was filed on June 2, 2022, and issued on September 12, 2023. It became eligible for IPR on June 12, 2024, nine months after issuance. *See* 37 C.F.R. §42.102(a)(1). The '816 Patent has been in force for less than three years and has been eligible for IPR

for just over two years. Furthermore, Petitioner has only been aware of Patent Owner’s allegations of infringement since receiving Patent Owner’s November 1, 2024 letter alleging infringement, after which Petitioner promptly informed Patent Owner that the ’816 Patent was invalid. As such, Patent Owner cannot reasonably claim settled expectations in the validity of its patent claims.

B. Payment of Fees

Pursuant to 37 C.F.R. §§42.103(a) and 42.15(a), the required fees are submitted herewith. If additional fees are due during this proceeding, the Office is authorized to charge Deposit Account 50-1943.

C. Identification of Challenge and Relief Requested

Pursuant to 37 C.F.R. §§ 42.22(a) and 42.104(b), Petitioner requests a final written decision that the Challenged Claims are unpatentable in view of the analysis below. *See* §VIII, *infra*. The effective filing date of the ’816 Patent, for purposes of this Petition only, is assumed to be Jul. 6, 2020 (the “Effective Filing Date”). *See* §IV, *infra*. The following is the prior art that anticipates and/or renders obvious the Challenged Claims.

Exhibit	Description	Operative Date
1005	U.S. Patent Publication No. 2005/0080814 A1 (“Hailey”)	April 14, 2005

1006	International Publication No. WO 03/075191 A1 to Harrop et al. (“Harrop”)	September 12, 2003
1007	U.S. Patent No. 5,796,952 (“Davis”)	August 18, 1998
1008	U.S. Patent No. 7,844,896 (“Ohashi”)	November 30, 2010
1009	U.S. Patent Publication No. 2005/0094205A1 (“Lo”)	May 5, 2005

Each of Hailey, Harrop, Davis, Ohashi, and Lo are prior art under §102(a)(1) because each reference is a printed patent publication prior to the earliest effective filing date of the ’816 Patent and none of the exceptions of §102(b)(1) or §102(b)(2) apply.

Petitioner requests cancellation of the Challenged Claims on the following grounds:

Ground	Claims	Obviousness under §103
1	1-4, 7, 11-14 and 17	Obvious in view of Harrop and Hailey
2	8-9 and 18-19	Obvious in view of Harrop, Hailey, and Lo
3	10 and 20	Obvious in view of Harrop, Hailey, and Davis
4	5-6 and 15-16	Obvious in view of Harrop, Hailey, and Ohashi

III. TECHNOLOGICAL BACKGROUND

Creating documents from modular or variable content has been known for decades. For example, in 1987, U.S. Patent No. 4,712,174 to Minkler describes “[a]

computer-based system for generating text from a predetermined data base, in either prose or poetic form, in response to a plurality of input data provided by an operator in an interactive mode of operation with the computer.” EX1010, Abstract. Even four decades ago, Minkler describes that “it is well known in the prior art to generate textual material by combining prewritten sentences, paragraphs or sections of text retrieved from data base files.” EX1010, 1:12-13. In particular, Minkler’s system “provide[s] a pseudorandom computer printout of text in response to a plurality of input data items related to the intended recipient and/or sender of that text.” EX1010, 2:17-20. In the 90’s, systems for generating documents from variable data related to a specific field were also known. For example, U.S. Patent 5,956,687 to Wamsley et al. (“Wamsley”) describes a system that “automatically generate[s] a demand letter and calculate[s] settlement amounts from information gathered in the record during pursuit of [a] claim.” EX1011, Abstract. EX1003, ¶55.

As described in more detail below, both Hailey and Harrop, both published in the early 2000s, also describe systems for generating documents from variable or modular data or content. For example, Harrop teaches “A document assembly or document automation system includes an assembler for generating an instance document on the basis of a source document and one or more logic source documents referenced by the source document.” EX1006, Abstract. Similarly, Hailey teaches

that “[d]ocument production systems that insert customer-specific content into a pre-fabricated document are known.” Hailey’s system, among other things, “create[es] documents by assembling document components and applying precedence and rules to create a desired document.” EX1005, ¶2; EX1003, ¶56.

More generally, a range of products in the early 2000s generated documents from templates. For example, many word processing programs supported a “mail merge” feature which used a word processing document as a template with fields marked with a delimiter. EX1003, ¶57.

As recognized by Minkler, Wamsley, Hailey, Harrop, and others, assembly rules are used to instruct or influence which content or text to include in a generated document. Minkler teaches an algorithm with a series of assembly rules that direct which words, how many syllables, which pronouns, etc. should be included in the generated poem. *See* EX1010, 16:53-17:32. Wamsley teaches generating a demand letter with rules for which paragraphs and information to include in the letter. EX1011, 23:6-39. As discussed in Section VIII below, Harrop and Hailey also describe using assembly rules to determine what content to include in a generated document. EX1003, ¶58.

The dynamic display of interactive documents via the World Wide Web has also been known for decades. For example, one approach to dynamically fetching

information from web servers into documents that were displayed within web browsers was developed by Microsoft in late 1998. Microsoft called it XMLHTTP and used it to improve their Outlook Web Access website. *See* EX1026. Google went on to do something similar with their creation of Gmail in 2004 and Google Maps in 2005. *See* EX1027, EX1028. In 2005, this widely adopted approach was coined “AJAX” (Asynchronous JavaScript and XML). *See* EX1029. EX1003, ¶¶59-64.

IV. THE '816 PATENT

The '816 Patent issued on September 12, 2023, from Patent Application Serial No. 17/830,566, filed on June 2, 2022, by Patent Owner. *See* EX1001, 1. The '816 Patent claims priority to U.S. Patent No. 11,379,651 which was filed on June 15, 2021 which claims priority to U.S. Provisional Application No. 63/048,512 which was filed on July 6, 2020. EX1001, 1 (field 60, 63). Without conceding the issue, Petitioner treats all of the Challenged Claims of the '816 Patent as having an effective filing date of July 6, 2020.

A. Overview of the '816 Patent

The '816 Patent is directed to document assembly systems and methods for automatically assembling digital content or documents based on a set of modular content and parameters corresponding to the ultimate reader of the assembled document. EX1001, 1:35-41; 2:7-17. These assembled documents may take various

forms including “report[s], brochures, digital magazines, case studies, product guides, sales playbooks, sales proposals, whitepapers, newsletters, company handbooks, annual reports, presentations, *and various others* that may be utilized in various other fields.” *Id.*, 4:42-47. The patent interchangeably refers to these assembled documents as “derivative” or “assembled” documents. EX1001, 6:4-6; EX1003, ¶65.

The patent describes these documents as being “interactive” documents and broadly defines “interaction.” For example, the patent describes interaction when a user has “read, edited, shared, [and/or] saved” a document. EX1001, 23:13-28. In another example, interaction amounts to a user “brows[ing], filter[ing], or select[ing] a content item (*e.g.*, page, video) for viewing.” *Id.*, 25:12-14. EX1003, ¶66.

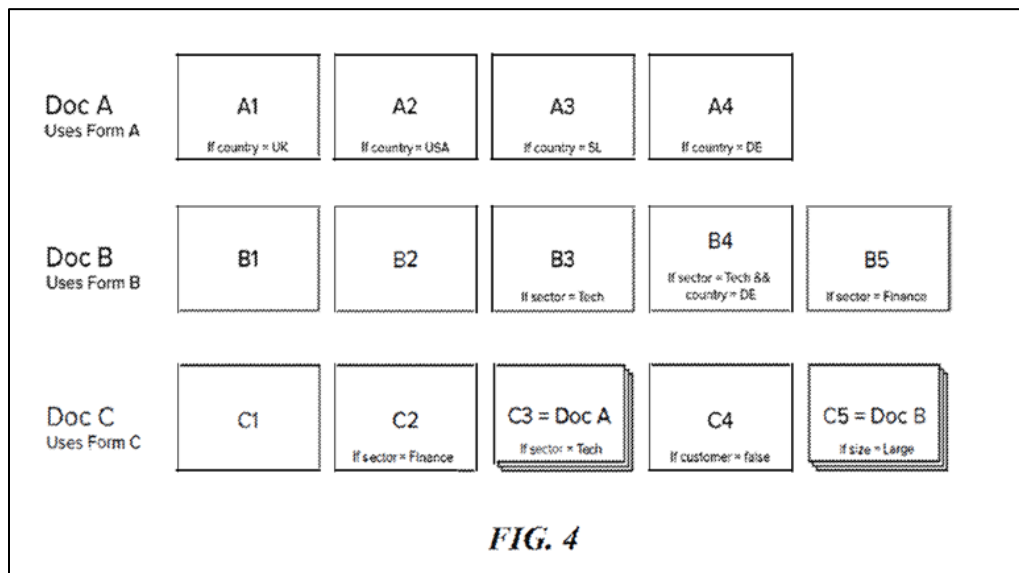
The patent’s discussion of “interaction” is related to its described collection of “data indicative of” a user’s interaction with a document. EX1001, 23:12-13. While the patent describes a wide spectrum of interaction, it offers no description of what the collected data looks like—whether it is a particular type of data, stored in a specific document, or otherwise has a particular form. EX1003, ¶67-68.

Regarding the creation of personalized interactive documents, the patent describes using a “content creation and management system 121” which “permits users (*e.g.*, creators, personalizers, analyzers, administers, etc.) to create content and

content items, generate a set of rules associated with a content item, customize a document[,], and manage various aspects of the platform.” EX1001, 8:18-23. Content items—also referred to as “modular content items”—may be “a page, a slide, a video, an image, a chart, [and/or] a text file....” EX1001, 15:49-53; EX1003, ¶69.

The modular content items “may be automatically selected from one or more documents to be assembled into a personalized document assembly based on pre-determined assembly rules” which “define the conditions to meet in order to include a content item into a derivative/output document.” EX1001, 5:53-58. The patent refers to these “conditions” defined in the assembly rules as “personalization parameters.” EX1001, 5:58-65, 20:3-8. For example, the personalization parameter may require a certain geographic location (*e.g.*, state) or revenue for the content associated with the rule to be displayed in the generated document. EX1001, 16:46-49. A user may select personalization options in a personalization field provided to the user via a graphical user interface where the selections allow a document to be customized to a specific customer or reader. EX1001, 8:30-40. Thus, the personalization parameters are variables which influence which content are included in the generated document. EX1003, ¶70.

The patent describes that the assembly rules may be “embedded” in a modular content item and offers Figure 4 (reproduced below) as an illustrative depiction of “at least one document page embedded with one or more assembly rules.” EX1001, 3:49-51. EX1003, ¶71.

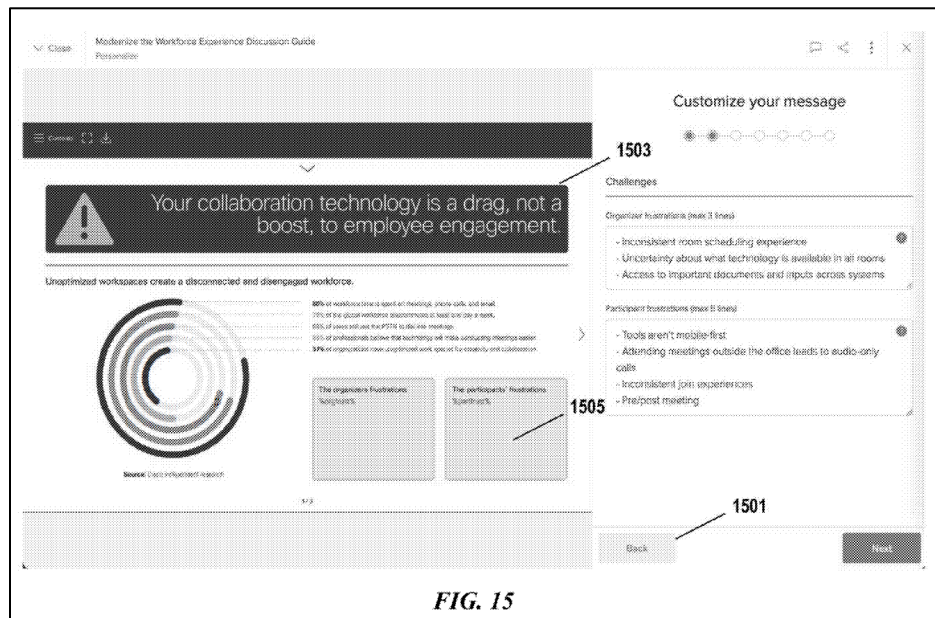


As seen above, page A1 includes the rule “if country = UK” such that page A1 would be included in the generated document if the user location is “UK.” EX1001, 19:3-6. Beyond the depiction of an “embedded” rule shown in figure 4 and other similar figures, the patent does not give an example (*e.g.*, example code, file type, pointer, etc.) of how an assembly rule would be “embedded” in a content item. Further, the ’816 Patent does not provide any explanation, example, or discussion showing how a *derivative* document either includes or excludes assembly rules. EX1003, ¶72.

The patent describes a “content renderer for rend[er]ing the assembled document.” EX1001, 22:52-54. The function of content renderer is described at a high level including that the content renderer may “execute a script (e.g., JavaScript);” may “render the content or document as a web-page in a web browser;” and/or may “render content according to a brand theme/style mapping.” EX1001, 22:52-64. However, the patent does not provide any example of what a “content renderer” may be, other than describing the intended function. EX1003, ¶73.

Another aspect of the ’816 Patent is the creation of a “link or connection between the source document and the derivative document.” EX1001, 6:9-11. When an output document is created, “the personalization parameters (e.g., fields in the personalization form) that were provided during the personalization process and a reference to the source document may be stored in the system as a link or connection to the source document(s).” EX1001, 19:35-40. When the same output document is accessed by a reader, “the source document may be loaded and the stored link may be used to dynamically apply changes from the source documents.” EX1001, 19:40-43. Aside from referring to the “stored link” and the “link or connection,” the patent offers no elaboration of what form the “link or connection” takes (e.g., whether it is a data structure, a table, a dynamic reference, etc.). EX1003, ¶75.

Figure 15 of the patent (reproduced below) purports to depict a “user interface” that “display[s] content live when a user completes a personalization form.”



EX1001, Fig. 15, 22:40-43. The patent states that “[u]pon receiving an input in a field of the personalization form, the document 1503 may automatically navigate to the relevant page and highlight the content (e.g., blocks 1505) that is related to the field.” EX1001, 22:45-48. The patent does not describe whether “navigation” requires any specific action (e.g., scrolling, zooming, panning, etc.) other than showing the user the portion of the document that is related to the field of the personalization form. EX1003, ¶74.

Lastly, the ’816 Patent describes that “the system may be capable of converting a personalized document into a master document” by “break[ing] the

connection between the personalized document and its original master document.” The patent describes that “breaking the connection” prevents updates to the original master document from affecting the converted derivative documents. EX1001, 20:14-29. The patent describes that an aspect of converting the derivative document into a master document may involve “hardcoding” stored fields as assembly rules. EX1001, 20:25-29; EX1003, ¶77.

B. Prosecution History

The prosecution history of the '816 Patent was brief. After filing the initial claims via a preliminary amendment on August 30, 2022, the Examiner initiated an interview on April 27, 2023 to propose an amendment to the pending claims. EX1002, 87, 116. Subsequently, the Notice of Allowance was issued with minimal explanation of why the claims were allowed. EX1002, 208-214. After payment of the issue fees, the '816 Patent issued on September 12, 2023. EX1002, 222.

V. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) in the field of the '816 Patent, as of its earliest possible filing date of July 6, 2020, would have been someone knowledgeable about and familiar with electronic document assembly systems and methods pertinent to the '816 Patent. A POSITA would have had a bachelor’s degree in Computer Science or equivalent training, and approximately two years of

programming experience developing client/server systems that create and render documents. Lack of work experience can be remedied by additional education, and vice versa. EX1003, ¶¶23-27.

VI. CLAIM CONSTRUCTION

Claim terms in an IPR are construed according to their “ordinary and customary meaning” to those of skill in the art. 37 C.F.R. § 42.100(b); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Petitioner submits that, for the purposes of this proceeding and the grounds presented herein, no claim term requires express construction. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

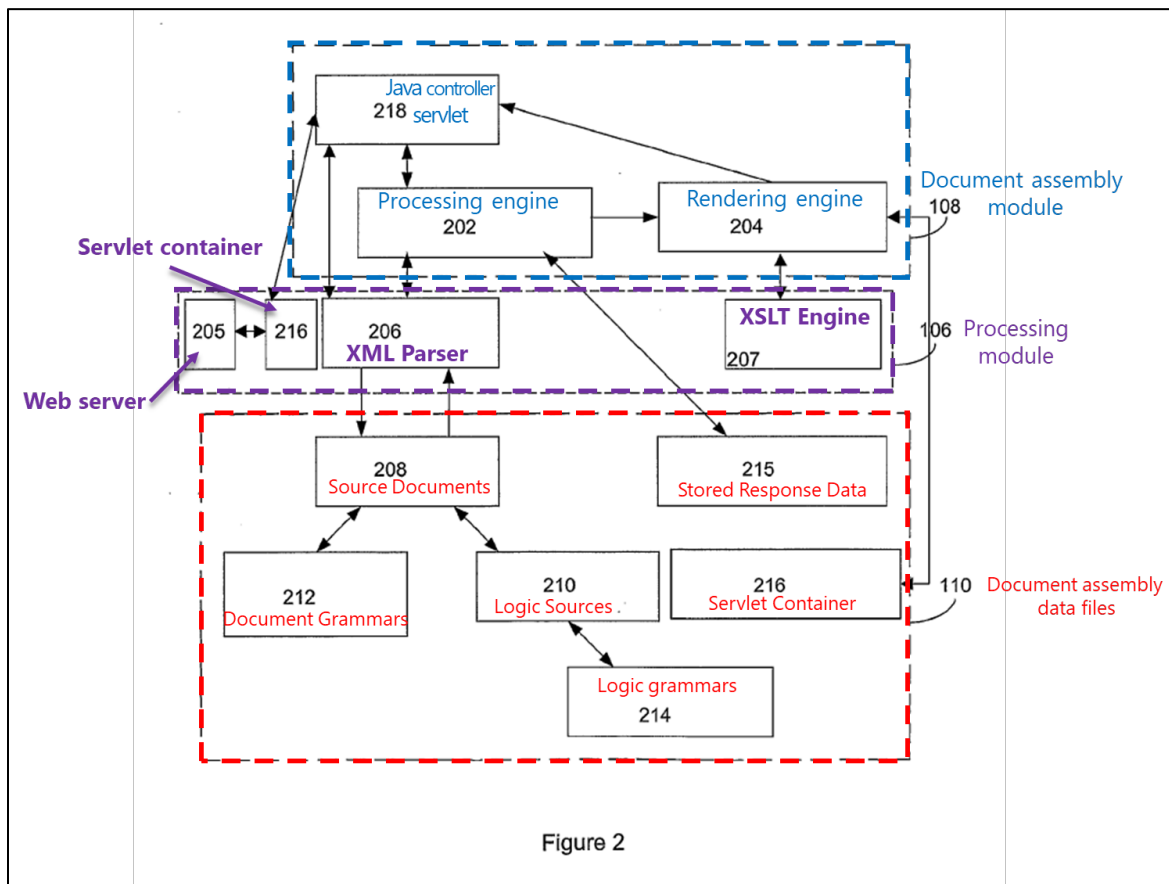
VII. SUMMARY OF THE PRIOR ART

A. Harrop

Just like the '816 Patent, Harrop teaches a computer-based document assembly system that generates different output documents (called “instance documents”) from XML source documents and personalized information provided by a user or database. EX1006, 8:1-20; EX1003, ¶77.

In one embodiment, a user may use their computer’s web browser to access the document assembly system. Over a network connection the assembly system accesses assembly modules 108, invokes a processing engine 202 to generate an

instance document, and uses rendering engine 204 to send the rendered document to the user's web browser. EX1006, 7:8-19. Figure 2 of Harrop (annotated below to include the names of each component) depicts many of the components of Harrop's system. EX1006, Fig. 2 (reproduced, annotated, below). EX1003, ¶78.

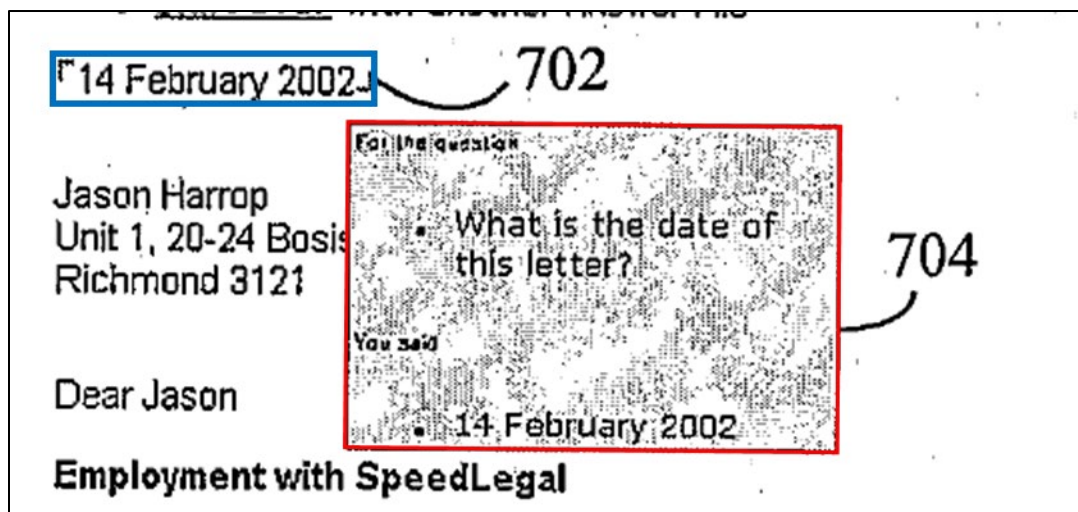


Harrop's system uses XML source documents 208 and information provided by a user or other data source to generate one or more instance documents. EX1006, 8:1-5. Other, non-user data sources may be "databases, file systems, web services, directory services, and so on." EX1006, 13:13-14. Where a user is the data source,

the processing engine 202 uses logic sources 210 to generate questions and solicit necessary responses from the user; together, Harrop refers to the question and answers as “interview data” stored as “response data 215.” EX1006, 8:5-7, 9:15-19, 11:23-26, 12:8-12. The logic sources function as rules which, when evaluated by the processing engine and combined with interview data, instruct which reusable text from the XML source document should be included in the generated instance document. EX1006, 9:11-15. Harrop describes that logic sources 210 may be separate from the source documents 208 or the logic sources may be incorporated in the source documents through embedded references to the logic sources. EX1006, 20:4-12. The logic sources and content associated with logic sources together are a modular item in the XML source document. EX1003, ¶79.

As part of the question-and-answer interview process, Harrop’s processing engine can reset questions as requested by the user and re-display the question to solicit a new answer. EX1006, 15:10-15; 68:7-9, 68:20-22. Once a new answer is provided (and all questions are answered), a new instance document may be generated. EX1006, 15:15-16. Specifically, Harrop describes “hypertext anchors” as part of a generated HTML instance document that, when a user moves their mouse over the hypertext anchor, a pop-up window showing the question and answer that led to the text being included. EX1006, 15:8-10. Further, when the hypertext anchor

is clicked “the processing engine 202 generates a new interview round including the relevant question, allowing the user to provide a different response to that question.” EX1006, 15:10-13. Figure 7 (reproduced-in-part below and annotated) depicts the **hypertext anchor** and the **pop-up window** showing the relevant question and answer. EX1006, Fig. 7 (annotated).



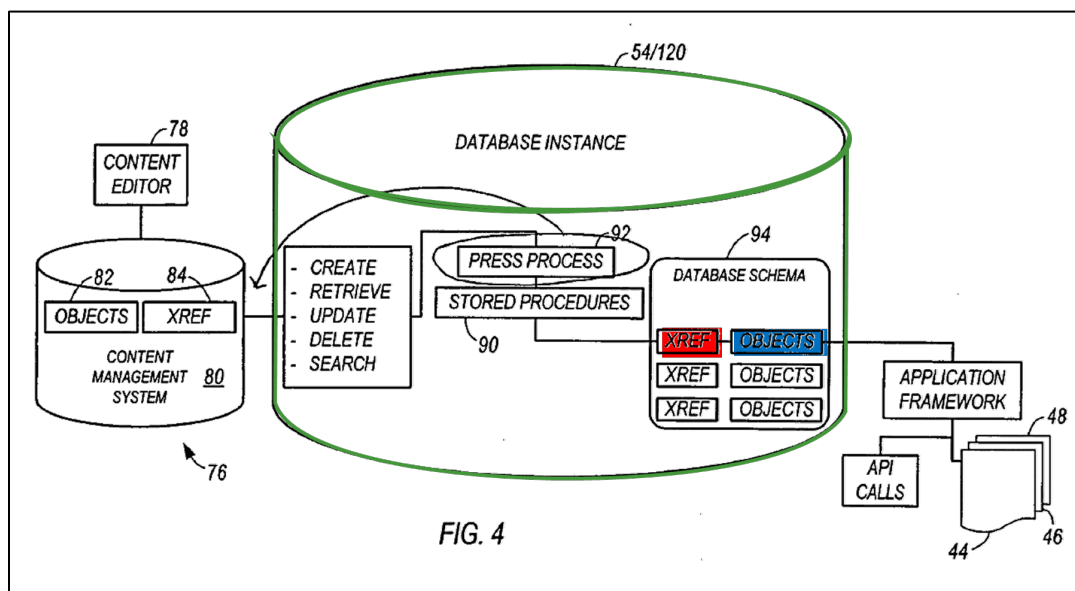
Specifically, Harrop describes that the pop-up 704 is generated on mouse-over based on “JavaScript and the anchor element’s HTML onMouseOver event.” EX1006, 68:15-19; EX1003, ¶80.

After the processing engine 202 has resolved all the processing-instructions logic, the rendering engine 204 renders the instance document into a desired format, such as HTML. EX1006, 9:30-10:7. Additionally, in one embodiment, Harrop’s system can generate a document “in HTML (without controls), XML, or in rich text format (RTF).” EX1006, 15:20-23; EX1003, ¶81.

B. Hailey

Just like the '816 Patent, Hailey teaches a document generation system that uses input information regarding the document needed (e.g., “type of transaction, number of parties, amount of loan, price, governing law, etc.”) and generates an appropriate output file based on the input information. EX1005, ¶7. Hailey’s output file (or document) may be in one of a variety of file formats including PDF and HTML. EX1005, ¶42; EX1003, ¶82.

Hailey’s output documents are built from content and rules (cross-references called “XREF”) held within a knowledge base. EX1005, ¶¶44-45. Figure 4 illustrates one example of how the **content (objects)**, **rules (XREFs)**, and **knowledge base 54/120** can be arranged in Hailey’s system. EX1005, ¶64, Fig. 4 (annotated).



As seen in figure 4 above, the knowledge base 54/120 is depicted as a “database instance.” *Id.*, Fig. 4, ¶95 (“embodiments of the invention may include a database or knowledge base”). In addition, Hailey describes that the xref-object pairs shown in database schema 94 are stored as associated pairs. EX1005, ¶64; EX1003, ¶¶83-84. In one example, Hailey describes one type of input information (location) where the appropriate consumer protection clause is included in the instance document depending on the location of the transaction (e.g. New York). EX1005, ¶5; EX1003, ¶¶83-84.

C. Davis

Davis teaches “a method for tracking the use and interaction of a user with a resource ... by use of a tracking program embedded in the resource.” EX1007, 4:3-5. Davis teaches that, even in 1997, including user tracking features in an HTML document was known. Specifically, Davis teaches at least one embodiment where “the tracking program is embedded in an HTML document (such as a Web site. a Web page. or part of a Web page-e.g. an ‘ad banner.’” EX1007, 5:13-16; EX1003, ¶86.

Davis teaches embedding a tracking program in an HTML document that is sent from a server to a client with the tracking program executing on the client machine. EX1007, 8:6-8. The tracking program “may monitor various indicia. such

as time, mouse events, keyboard events, and the like, to track a user's interaction with the Web page.” *Id.*, 8:6-13. Thus, Davis explains, that in one embodiment “the tracking program may simply monitor the amount of time the user spends interacting with the Web page. or may monitor details of choices (such as links) made by individual users within a particular Web page.” *Id.*, 8:13-20. In another embodiment, “[t]he tracking program may monitor operation of a peripheral input device connected to the client machine, such as a keyboard or mouse, keep a record of which choices, if any, are made by a user, and may monitor the length of time the user has displayed the Web page in addition to the time spent interacting with a particular part of it.” *Id.*, 8:30-38. Davis explains that tracking these user interactions “provide[s] meaningful data to the server concerning the user's interaction with the Web page.” EX1007, 8:64-9:2; EX1003, ¶87.

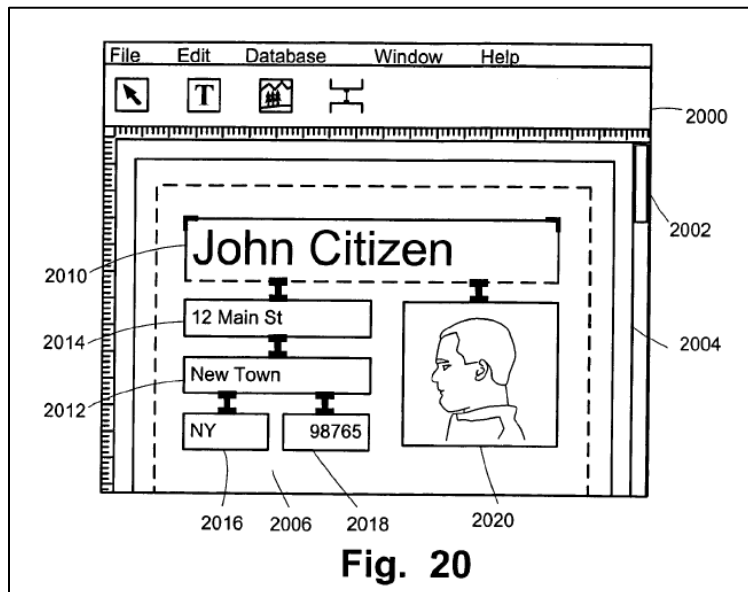
Davis teaches that “[t]he tracked information may be used to assemble resources geared toward the user's interests.” EX1007, 14:47-48. For example, “[b]ased upon the historic user profiles created in the server database, downloading of information to the same client on a subsequent visit to the same or different Web page may be done on a more intelligent basis.” EX1007, 14:48-52. The tracked information can be used to create user profiles that include “details of choices created by individual users within a particular resource.” EX1007, 4:24-32. Davis teaches

using this tracked information to generate resources (e.g., HTML documents) based on, for example, a historic user profile. *Id.*, 4:33-36. Thus, just like Harrop and Hailey, Davis also teaches a system that creates customized documents based on personalization parameters (e.g., a user's profile). EX1003, ¶88.

D. Lo

Lo teaches a document creation and printing system that allows multiple documents to be created from a single document template, “where each document is customized for its intended readers.” EX1009, ¶¶6, 84. Lo's customized documents are “are created by inserting variable data into a document template.” *Id.*, ¶7; EX1003, ¶89.

Further, Lo teaches using “live proofing” to “display[] variable data merged with the variable document template interactively and on-demand.” EX1009, ¶428. As shown in figure 20 (reproduced below), Lo's live proofing shows “what part of [a] record would look like if printed” including “extra borders 2004 and colors 2006 ... to make visible the constraints defined within the variable document template.” EX1009, ¶428, Fig. 20. EX1003, ¶90.

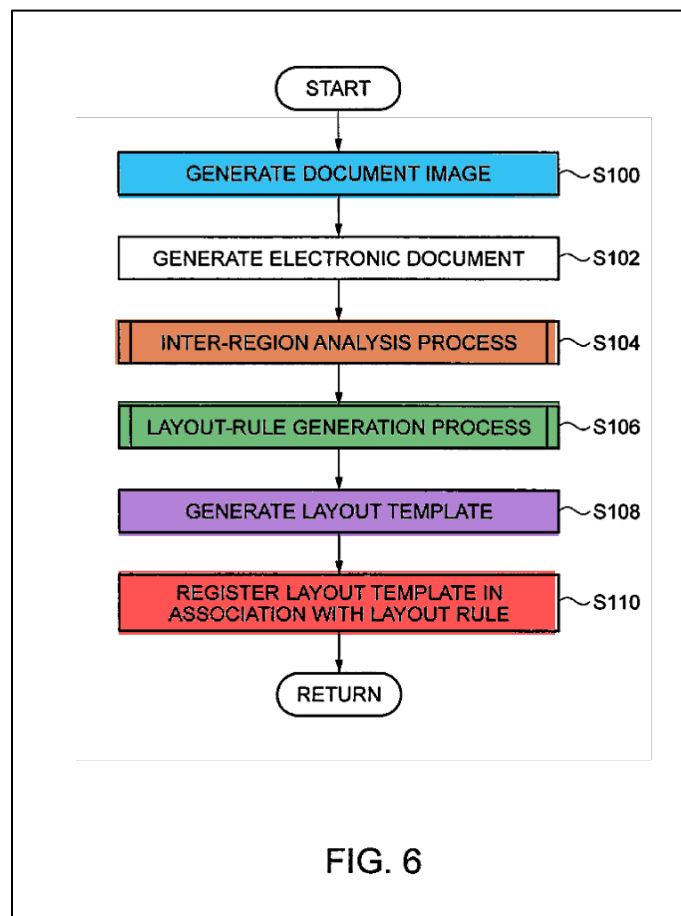


As seen in Figure 20 above, Lo's "live proofing" view shows only the portion of the document that is relevant to the edited variables in the document template.. Lo explains that "[l]ive proofing is advantageous over a separate merging process because errors in the design of the template are likely to be found earlier through interactive navigation." EX1009, ¶429; EX1003, ¶91.

E. Ohashi

Similar to the '816 Patent, Ohashi teaches a computer-based document assembly system that uses templates to generate output documents. EX1008, 1:49-59. Ohashi teaches a method and system configured to automatically create layout templates based on existing documents by analyzing the content, positional relationships, font, colors, and other attributes of the existing document. EX1008, 16:38-46, 19:3-41. Ohashi teaches that "it takes much time and labor to produce

layout templates manually one by one,” and provides a “convenient [way] to extract a layout from an existing laid-out document to form a layout template automatically.” EX1008, 1:60-64. As seen in Figure 6 (annotated below), Ohashi’s system **generates an image** of an existing document (e.g., via a scanner) at **step S100**, teaches a process, **analyzes the regions** of the document image at **step S104**, generates layout, **generates layout-rules** based on the analysis at **step S106**, **generates a layout template** at **step S108**, and finally **associates the layout rules and layout templates** with each other at **step S110**. EX1003, ¶92.

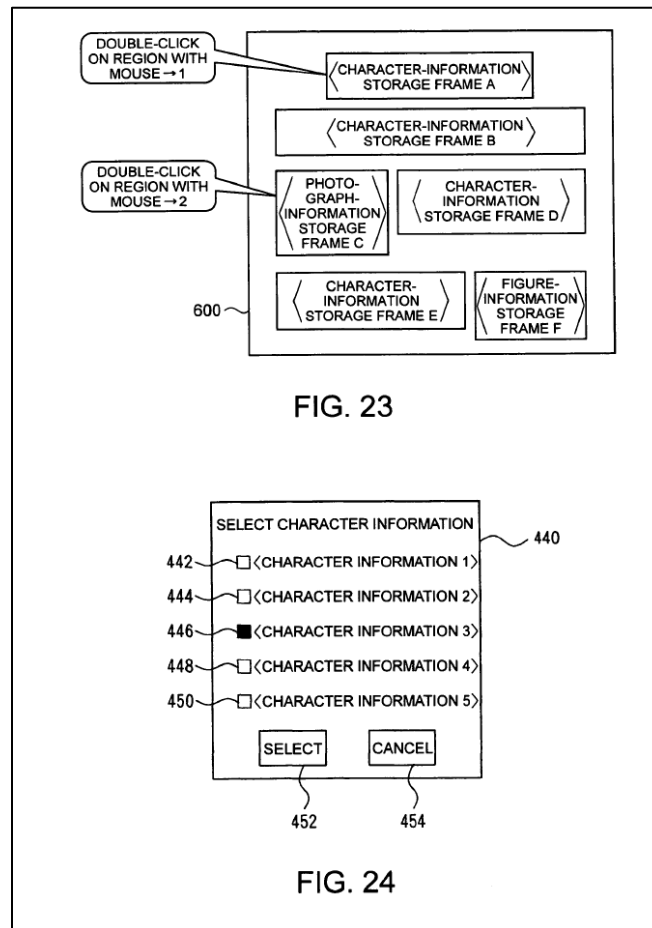


Thus, Ohashi takes an existing document and converts the document into a layout template that includes embedded rules (associated layout rules) through analysis of the content (images, headings, colors, etc.) and their positional relationships. *See* EX1008, 16:64-17:8, 17:43-50, 18:49-54. Like the '816 patent, Ohashi teaches that in the generated layout template various attributes of the generated template may be stored as structured data in an XML format:

the number, size, layout position, and types of information storage frames, the size, type, and color of the font of character information, character spacing and line pitch, and the quality, size, aspect ratio, and trimming of photograph information or figure information, can be set for each information storage frame, ***which are described by a markup language such as an extensible markup language (XML).***

EX1008, 17:43-50. EX1003, ¶93.

Also like the '816 Patent, Ohashi's system allows for users to edit the generated layout by editing which content is included in a template object. For example, figures 23 and 24 (reproduced below) illustrates a user double clicking on <Character-Information Storage Frame A> and selecting the character information that should be associated with the layout object.



EX1008, Figs. 24 and 25. Figure 26 shows options for the <Photograph-Information Storage Frame C> shown in Figure 23. Thus, Ohashi teaches that the generated layout templates may be further customized by a user. EX1003, ¶94.

VIII. GROUND FOR UNPATENTABILITY

A. Ground 1: Claims 1-4, 7, 11-14, and 17 are rendered obvious by Harrop and Hailey

As explained in this section, claims 1-4, 7, 11-14, and 17 are obvious based on the combined teachings of Hailey and Harrop. As discussed below, a POSITA would find it obvious to combine the teachings of Hailey and Harrop to arrive at the

claimed invention. The combined teachings of Hailey and Harrop are referred to below as the “Hailey-Harrop combination.” EX1003, ¶¶99-161.

i. Reasons to combine

A POSITA would have been motivated to combine Harrop and Hailey to arrive at the features of claims 1-4, 7, 11-14, and 17 for numerous reasons presented below. EX1003, ¶96.

a. Analogous Art

Harrop and Hailey are in the same field of endeavor as the '816 Patent, namely document assembly and creation. *See* EX1001, Abstract; 1:33-53; EX1003, ¶97. Hailey, for example, is directed to the creation of documents by assembling document components and applying rules to create a derivative document. EX1005, Abstract, ¶2. Harrop is directed to document assembly and systems and methods for document assembly, or the generation of a derivative document from one or more source documents. EX1006 at Abstract, 1:4-23. Further, the '816 Patent is classified in International Patent Class G06F, Electronic Digital Data Processing and generally describes document creation and assembly systems and methods for use on the Internet. *See* EX1001 at (51), 4:51-5:22. Harrop and Hailey are each classified in International Patent Class G06F and also relate to the application of document creation systems and methods for use on the Internet, including standard hyper-text

markup language (“HTML”) documents. *See* EX1005, 1 (field (51)), ¶42 (output file in HTML format); EX1006, 1 (field (51)), 6:28-7:6 (document assembly system can be accessed by a user over the Internet), 15:18-28 (output document in HTML format); EX1003, ¶97.

b. Motivation to Combine

A POSITA would recognize that the systems of Hailey and Harrop are closely related and would have found it obvious to combine various teachings within each reference to improve the system of the other reference. For example, a POSITA would have found it obvious to include Harrop’s teaching of linking portions of the interactive document, the master document, and the personalization parameters through hypertext anchors in a generated HTML document. In particular, a POSITA would have appreciated Harrop’s described benefit of the feature as a way for users to inspect portions of a final document quickly (i.e., via a pop-up) and edit those sections by adjusting the input variables. EX1006, 67:28-68:18. Hailey describes a similar user-input interface in its origination platform and teaches soliciting further answers from a user when more information is needed to generate a document. EX1005, ¶¶40-41. Accordingly, a POSITA would be motivated to combine Harrop’s teaching of hypertext anchors with Hailey’s user interface to generate a pop-up with associated questions and answers, and which reset associated answers when clicked

to allow a user to make relatively quick changes to the content included in a portion of a generated document. EX1003, ¶¶98-99.

c. Reasonable Expectation of Success

The references include similar arrangements of well-understood components and use predictable technology in routine and conventional ways. EX1003, ¶¶100-101. For example, a POSITA would have found it routine and predictable to combine Harrop's hypertext anchors with Hailey's system through known technologies like URL parameters and/or JavaScript functions. Indeed, Harrop itself teaches that the pop-ups associated with the hypertext anchors are generated through "JavaScript and the anchor element's HTML onMouseOver event..." EX1006, 68:15-19. Similarly, Hailey teaches reviewing a generated (assembled) document and, if information is missing (*e.g.*, a loan amount), querying the assembly engine to request the missing information from the user or database. EX1005, ¶40. In other words, Hailey also provides a way for the system to correct a generated document by querying a user for additional information. A POSITA would have recognized these well-known and commonly used web-based document languages and would have found it routine to implement the same or similar JavaScript and/or HTML coding in Hailey's generated HTML output file to accomplish the same or similar pop-up generation and reset of associated variables/questions. A POSITA would have considered the

combination of these teachings nothing more than the implementation of well-known concepts in well-known systems that had been known for decades prior to the '816 Patent. EX1003, ¶¶100-101.

ii. Claim 1

A POSITA would find claim 1 is obvious over the combination of Hailey and Harrop as explained in more detail below. *See* EX1003, ¶¶102-132.

a. Limitation 1[PRE]: A method for creating an interactive document

To the extent the preamble is limiting, and without conceding the issue, the Hailey-Harrop combination renders the elements of the preamble obvious by teaching methods for creating interactive documents. EX1003, ¶¶102-104.

For example, Hailey and Harrop each teach methods for creating interactive documents for display in a web browser. *See, e.g.*, EX1005, ¶42 (“The output file (or document) may be in one of a variety of file formats as is illustrated by three exemplary file format blocks (or documents) 44, 46, and 48 (.pdf, HTML, and other)"); EX1006, 15:2-6 (“the instance document is then displayed by the web browser, as shown in FIG. 7.”). A POSITA would understand that when a document is displayed in a web browser, a user may interact with the document in various ways including scrolling, activating links, interacting with animations and/or dynamic objects, etc. and that the same interactions may be present in a PDF document as

well. EX1003, ¶103. Accordingly, a POSITA would understand that Harrop and Hailey both teach methods of creating interactive documents. *Id.*

As discussed in §IV.A, *supra* (incorporated here), the '816 Patent describes “interaction” as including user actions such as reading, editing, saving, browsing, filtering, and/or selecting video or web page. EX1001, 6:23-39, 25:10-15; EX1003, ¶¶104. Accordingly, Harrop and Hailey teach this feature at least in as much detail as the '816 Patent. *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1570 (Fed. Cir. 1997) (patent owner cannot demand a greater level of detail from the prior art than the challenged patent teaches).

Thus, Hailey and Harrop each teach methods of creating interactive documents and the Hailey-Harrop combination renders limitation 1[PRE] obvious.

b. **Limitation 1[A]: providing a first document comprising a first set of modular items, wherein at least a subset of the first set of modular items have embedded rules**

The Hailey-Harrop combination renders this limitation obvious because each of Hailey and Harrop teach this limitation. EX1003, ¶105.

Hailey teaches providing content (modular items) stored in a knowledge base (first document) and creating output files (interactive documents) based on various input values (personalization parameters). EX1005, ¶39. Similarly, the '816 Patent describes that the first (or master) document may be “stored as structured data ... in

the document database.” *See, e.g.*, EX1001, 2:1-6; 13:36-14:24; 15:35-48, 24:33-35. A POSITA would understand that Hailey’s knowledge base which contains the content is the “first document” as claimed and that the various items of content are pulled from this database (i.e., the knowledge base). EX1003, ¶106. Hailey teaches that the items of content are stored in database 54/120 as groups of “objects” and associated embedded rules (“XREF”). EX1005, ¶64, Fig. 4. These grouped rules (XREF) and objects form one or more modular items that are used to generate interactive documents 44, 46, 48. EX1005, ¶64 (“The content is used ... to create documents such as the documents 44, 46, and 48.”); EX1003, ¶¶106-107.

Similarly, Harrop teaches generating an instance document (interactive document) based on logic sources (modular items) that include reusable text options which are pulled from one or more XML source documents (first documents) based on the values of variables relevant to the circumstances (e.g., based on information specific to the parties involved and the circumstances of their relationships). EX1006, 8:1-20, 8:22-9:23. The logic sources “are themselves structured XML documents that define questions, conditions, and reusable text objects.” EX1006, 8:28-29. A POSITA would understand that these logic sources are modular items defining rules and various text options for a derivative document. EX1003, ¶¶108-109.

Thus, both Hailey and Harrop teach providing a first document (database / XML source documents) comprising a first set of modular items (Xref-content groups / Logic Sources) where at least a subset of the modular items have embedded rules (XREF rules / Logic Sources). EX1003, ¶110. Accordingly, Hailey and Harrop each teach Limitation 1[A] and the Hailey-Harrop combination renders this limitation obvious. *Id.*

c. **Limitation 1[B]: receiving a personalization parameter for generating a derivative document;**

The Hailey-Harrop combination renders this limitation obvious because each of Hailey and Harrop teach this limitation. EX1003, ¶111. As explained in §IV.A, *supra* (incorporated here), the '816 Patent describes the personalization parameters as variables or options which a user can select to personalize a generated document. EX1001, 8:30-35. A POSITA would understand that this description aligns with the plain and ordinary meaning of “personalization parameters.” EX1003, ¶111.

Hailey teaches that the content (*i.e.* objects and XREF) are pulled from the database (first document) based on various data (*i.e.* personalization parameters) input into the system:

[T]he document generation module 22 performs four basic functions. The document generation module 22 ***validates incoming data*** (as is represented by a validation module 24), ***applies precedence*** (as is represented by precedence module 26), ***applies rules*** to the content (as

is represented by a rules application module 28), and ***performs document assembly*** (as is represented by an assembly module 30).

EX1005, ¶40. As an example, Hailey describes processing location data (e.g., Texas or California) input into origination platform 12 to select and generate an output file that includes appropriate content for the relevant location. EX1005, ¶40-41. Hailey further describes soliciting additional input data from origination platform 12 to resolve any remaining questions and complete document assembly. EX1005, ¶40 (“if the amount of a loan has not been specified..., a question module 32 queries the origination platform 12 to request needed information or data 34.”), Fig. 1. Accordingly, the origination platform receives data (i.e., personalization parameters) which influence, at least in part, which content is assembled into the final output file. EX1003, ¶¶112-114.

Similarly, Harrop teaches receiving values of variables (e.g., based on information specific to the parties involved and the circumstances of their relationships) to generate an instance document. EX1006, 8:1-20, 8:22-9:23; EX1003, ¶115. In one example, Harrop teaches receiving a user’s answers to interview questions to “determine values for variables” which “determine content for the resulting instance document.” EX1006, 14:7-11. “The user’s responses are used to assign values to variables, such as setting Boolean variables to a value of true or false for determining whether an associated portion of text is to be included

in a generated instance document.” EX1006, 9:19-22. The answers provided by a user are an example of receiving a “personalization parameter for generating a derivative document.” EX1003, ¶¶115-117.

Thus, as Dr. Bederson confirms, both Hailey and Harrop teach receiving personalization parameters which are used in generating a derivative document and, therefore, Hailey and Harrop each teach Limitation 1[B] and the Hailey-Harrop combination render this limitation obvious. *Id.*

- d. **Limitation 1[C]: selecting one or more modular items from the first subset of modular items to be assembled into the derivative document wherein the one or more modular items are selected when the personalization parameter meets the embedded rules in the respective one or more modular items; and**

The Hailey-Harrop combination renders this limitation obvious because each of Hailey and Harrop teach this limitation. EX1003, ¶119.

Hailey teaches selecting modular items (*i.e.* objects and XREF) from the database (first document) based on the evaluation of various data input (*i.e.* personalization parameters). EX1005, ¶40 (“The document generation module 22 validates incoming data..., applies precedence..., ***applies rules to the content....***, and ***performs document assembly....***”). As discussed above, Hailey describes an example of processing location data (e.g., Texas or California) input into origination platform 12 to select and generate an output file that includes appropriate content for

the relevant location. EX1005, ¶40-41. Hailey further describes soliciting additional input data from origination platform 12 to resolve any remaining questions and complete document assembly. EX1005, ¶40, Fig. 1. Accordingly, the data (location, loan amount, etc.) input into the origination platform are personalization parameters which influence whether certain content is assembled into the final output file. A POSITA would understand that Harrop uses the input data to evaluate whether an embedded rule is met and, depending on how the rule is met, selects which content from the modular item to include in the generated document. EX1003, ¶120.

Similarly, Harrop teaches selecting text options from logic sources in XML source documents based on received values of variables. EX1006, 8:1-20, 8:22-9:23; EX1003, ¶121. In one example, Harrop teaches using a user's answers to interview questions to "determine values for variables" which "determine content for the resulting instance document." EX1006, 14:7-11. "The user's responses are used to assign values to variables, such as setting Boolean variables to a value of true or false for determining whether an associated portion of text is to be included in a generated instance document." EX1006, 9:19-22. A POSITA would understand that "determin[ing] content for the resulting instance document" and "determining whether an associated portion of text is to be included" are descriptions of applying the values of variables (i.e., personalization parameters) to rules to determine the

appropriate content. Thus, whether a portion of text is to be included in the output document is based on how user's responses (i.e., personalization parameters) meet a rule associated with the variables. EX1003, ¶121.

Harrop provides an illustrative example regarding the creation of a letter of employment for a prospective employee ("Jason"). EX1006, 14:21-31, Fig. 6. Figure 6 illustrates one example of an interview question at reference number 604: "What are the core hours when Jason is expected to attend the office?"; where the user (e.g., HR admin) answers: "10am – 12 pm and 2pm – 4 pm." *Id.*, Fig. 6. Once all the questions about Jason and his employment are answered, Harrop's system "generates at step 510 an instance document in HTML format on the basis of responses provided by the user, and the instance document is then displayed by the web browser, as shown in Figure 7." EX1006, 15:1-6. EX1003, ¶122.

Thus, Harrop uses the variables corresponding to the questions asked and answers provided by a user as personalization parameters. The answers are applied to the appropriate logic sources (modular item) to resolve an associated logic rule and the appropriate portion of text is pulled from the XML source document (i.e., master document) and the text included in the instance document (i.e., interactive document) is based on how the values (i.e. answer) meet the logic rule. EX1003, ¶123.

Thus, as Dr. Bederson confirms, both Hailey and Harrop teach selecting one or more modular items based on how one or more personalization parameters (information related to the parties / variables holding answers as values) meets an associated rule. EX1003, ¶¶123-124. Thus, Hailey and Harrop each teach Limitation 1[C] and the Hailey–Harrop combination renders this limitation obvious. *Id.*

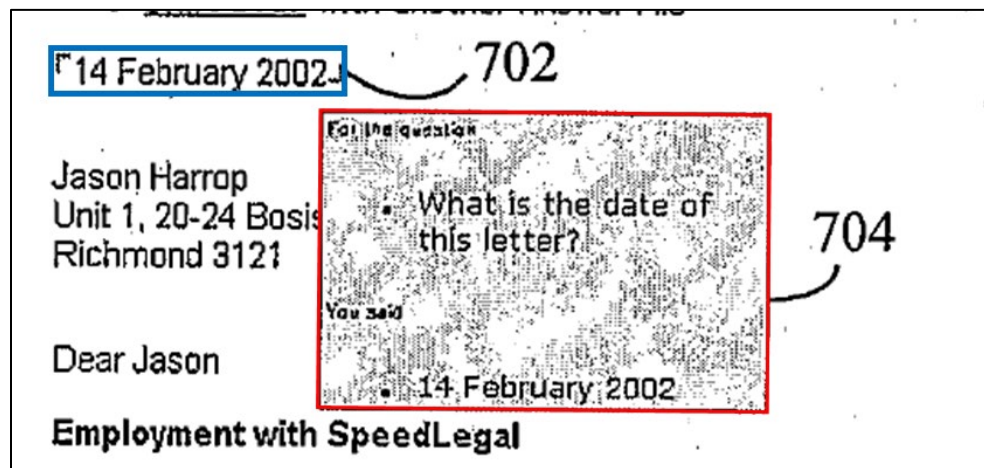
e. **Limitation 1[D]: creating a reference for linking the one or more modular items to the derivative document.**

The Hailey-Harrop combination teaches this limitation. EX1003, ¶125.

Limitation 1[D] recites creating a reference for linking the modular items and the derivative document. The '816 Patent describes that “the personalization parameters (e.g., fields in the personalization form) that were provided during the personalization process and a reference to the source document *may be stored in the system as a link or connection* to the source document(s)” so that changes made to source documents can be reflected when rendering derivative documents. EX1001, 19:36-40. The '816 Patent does not describe any form or data structure for the “link or connection.” EX1003, ¶126.

Harrop teaches creating a reference linking the modular items included in the instance document (interactive document) and the XML source document. For example, Harrop teaches rendering an HTML instance document where certain text

is rendered as “a hypertext anchor” to indicate the question and answer that resulted in that particular text being included in the rendered document. EX1006, 67:28-68:5. Specifically, Harrop teaches that hovering (or mousing over) the hypertext anchor “displays the question and response that resulted in the anchor text being included.” EX1006, 68:1-2. Figure 7 of Harrop depicts one example of a **pop-up window** showing the question and answer associated with the **included hyperlinked text**.



EX1006, Fig. 7 (reproduced-in-part, annotated). EX1003, ¶127.

Further, Harrop teaches that when a hypertext anchor is clicked on by a user, the processing engine 202 is invoked to “reset” the questions associated with the linked text. EX1006, 68:14-18. The processing engine 202 along with java controller servlet 218, and rendering engine 204 are components of document assembly modules 108, which, in turn, exist on server 102. *See* EX1006, 6:28-29, 7:1-3, 7:8-

9. Thus, invoking the processing engine means that the hypertext anchor provides a link from the user's device (e.g., web browser) to the server. EX1003, ¶128.

The processing engine 202 uses XML source documents 208 and logic sources 210 to resolve all logic in the source document including all questions and required answers. *See* EX1006, 8:22-9:9, 9:30-10:7, 14:13-19, 15:1-6. In addition, Harrop describes that “[i]f, at step 512, the user selects the hypertext anchor 702, the processing engine 202 generates a new interview round including the relevant question, allowing the user to provide a different response to that question.” EX1006, 15:10-13. Once a user enters new responses and any additionally required responses are also provided, “[a] new HTML rendering of the instance XML document is then generated at step 510 and displayed by the web browser” which will contain different content depending on the user's new answers or responses. EX1006, 15:8-16. Step 510 shown in Figure 5 refers to the newly rendered document as “generate HTML *version* of instance document.” EX1006, Fig. 5. Further, Harrop teaches that the referred web browser operates on the user's computing system 114 which is separate from the server 102. *See* EX1006, 7:11-13, Fig. 1 (showing the computing system 114 being separate from the server 102). Harrop also teaches that rendering engine 204, which exists on the server 102, is responsible for generating the HTML version of the instance document. EX1006, 10:4-5. As Dr. Bederson

explains, a POSITA would understand that when the rendering engine updates the HTML of the instance document based on a user's changed responses, the processing engine and the rendering engine necessarily include a link from the modular items that were changed to the instance document so that the rendering engine can update the HTML version of the instance document to reflect any changes. The '816 Patent describes updating a derivative document in response to "an update in the input data (e.g., a field update in the personalization form..." which are displayed on user devices to elicit responsive inputs from users. EX1001, 10:25-28, 20:3-13. Thus, the '816 Patent describes updating a derivative document via a similar process to what Harrop describes. EX1003, ¶¶128-130.

To the extent Patent Owner argues that the '816 teaches and the limitation requires that the same webpage that was initially displayed to a user be updated without rendering a fully new HTML page, a POSITA would have found it obvious to use user-device identifying information (e.g., a session id) to link the user's active web browsing session to the server and vice versa in order to ensure that updates to the rendered document reach the proper intended instance document and user device.. As Dr. Bederson explains, a POSITA would have found it obvious perform the updating of the HTML version of Harrop's instance document using well-known technology such as AJAX. EX1003, ¶¶130. Doing so necessarily includes a

“reference for linking” to the HTML rendering on the user’s web browser since the server must be able to send the updated HTML back to the user’s device that contains the instance document the hyperlink anchor that was initially clicked on resulting in invoking the processing engine. In other words, a POSITA would understand Harrop’s server 102 uses existing identifying information (e.g., a reference) that indicates which user device and document requested the processing server to be invoked to reset certain questions and answers, and that the server uses that identifying information to send the updated HTML back to the user’s device. Accordingly, a POSITA would have found it obvious to use information to link the user’s active web browsing session to the server and vice versa in order to ensure that updates to the rendered document reach the proper intended instance document. EX1003, ¶¶130-131.

As discussed in §VIII.A.i, *supra*. (incorporated here), a POSITA would have found it obvious to include Harrop’s link in the system of Hailey to connect generated interactive documents, the modular items included in the interactive document, and the master documents at least for the reasons discussed above. EX1003, ¶¶131-132. Accordingly, limitation 1[D] is obvious in view of the Hailey-Harrop combination.

iii. **Claim 2: The method of claim 1, wherein the reference is created based at least in part on the personalization parameter.**

In addition to all the limitations of claim 1, the Hailey-Harrop combination further renders claim 2 obvious. *See* §VIII.A.ii, *supra* (incorporated here); EX1003, ¶133. As discussed in §VIII.A.ii.e regarding limitation 1[D], Harrop teaches creating a reference as a hypertext anchor which includes the question and the user's associated answer. *See* EX1006, 6:28-7:31, 14:7-11; EX1003, ¶¶125-132. When the hypertext anchor is hovered over, the associated question and answer is displayed in a pop-up window. *See, e.g.*, EX1006, Fig. 7; EX1003, ¶133.

As Dr. Bederson explains, a POSITA would understand that Harrop's system creates the hypertext anchor such that the anchor and/or the HTML code associated with the anchor include information that allows Harrop's processing engine 202 to access the relevant portion (*i.e.*, the question) of the XML source document and the user's answer to the relevant question. EX1003, ¶134. Harrop's web browser uses this information to generate the pop-up window which shows the relevant question-and-answer. *Id.* The collection of information and the hypertext anchors that Harrop's system uses to perform the functions associated with the hypertext anchors creates a reference linking the modular item (e.g., the question and associated content) and the generated instance document. *Id.* Thus, Harrop's system creates a reference that is based on personalization parameters (e.g., the user's answer) since

the reference (hypertext anchor) includes information necessary to generate a pop-up window including the user's answer. *Id.* In combination with the disclosures of Hailey and Harrop discussed regarding claim 1, the Hailey-Harrop combination renders claim 2 obvious as well.

iv. **Claim 3: The method of claim 1, wherein the reference is used to update the one or more modular items in the derivative document.**

In addition to all the limitations of claim 1, the Hailey-Harrop combination further renders claim 3 obvious. *See* §VIII.A.ii, *supra* (incorporated here); EX1003, ¶135. Harrop further teaches that the link (i.e., the connection between the interactive document, master document, and variables/answers) is used to apply a change to one or more modular items based on a change to the master document. EX1006, 10:5-7, 15:2-6, 15:8-16. That is, a POSITA would understand that Harrop's system is designed to render the instance document based on the XML source document and that any changes to the XML source document would result in a change to the instance document the next time the instance document is generated and rendered. EX1006, 10:5-7, 15:2-6, 15:8-16 (resetting questions, querying new answers, rendering a new HTML instance document). For example, if a user clicks the hyperlink anchor in Harrop's HTML instance document, the question will be reset, and a user will have to provide a new answer. EX1006, 15:8-16; EX1003, ¶135. If

the source XML associated with the reset question has been modified since the HTML instance document was first rendered, then the re-rendered instance document—which now contains a new answer—will reflect the change made to the XML source document. EX1003, ¶135. Thus, Harrop teaches using the link (reference) to update one or more modular items (content) in the instance document (derivative document).

To the extent that Harrop does not expressly teach that its content renderer uses Harrop’s link to “update the one or more modular items in the derivative document,” a POSITA would have found it obvious to modify Harrop to apply a change to the modular items based on a change to the master document. EX1003, ¶136. Harrop teaches using reference links to incorporate an XML code module into a given XML source to automatically update the resulting instance document based on changes in the XML module. EX1006, 55:22-24 (“Alternatively, the user can import into the document a link to the module—this can point to a current version of the module, and any modifications subsequently made to the module are automatically reflected in the resulting document.”). A POSITA would have understood this disclosure from Harrop as teaching the advantage of using links to source documents so that changes to the source can be automatically updated in the resulting document. EX1006, 55:22-24; EX1003, ¶136. A POSITA considering

Harrop's disclosure of this benefit and its teaching of linking the master document, instance document, and personalization parameters, as discussed in §VIII.A.ii.d, *supra* (incorporated here) regarding limitation 1[C], would have found it obvious to use Harrop's links to automatically update an instance document and the modular items (i.e. text) contained therein, based on changes to the source document. EX1003, ¶136.

Therefore, it would have been obvious to a POSITA, to include in the systems of Harrop and Hailey a rendering engine that uses a link to apply a change to a modular item based on a change to the master document. This combination of teachings is applicable to both Harrop—since it contains the teachings and suggestions—as well as Hailey for the reasons discussed in §VIII.A.i, *supra* (incorporated here). EX1003, ¶137. The Hailey-Harrop combination renders claim 3 obvious.

v. **Claim 4: The method of claim 1, wherein the derivative document comprises a second set of modular items that do not have embedded rules.**

As discussed above, the Hailey-Harrop combination renders obvious all the limitations of claim 1, and further renders claim 4 obvious. §VIII.A.ii, *supra* (incorporated here); EX1003, ¶138.

Claim 4 further limits claim 1 such that the derivative document (the generated document) contains a second set of modular items that “do not have embedded rules.” EX1003, ¶139. Although the ’816 Patent describes the embedding of assembly rules in modular items in a source or master document, the ’816 Patent provides no description or example of a derivative document that includes modular items which *do not* include embedded rules. *See* EX1001, 3:49-51; EX1003, ¶139. Notwithstanding a lack of supporting disclosure for this limitation, a POSITA would have been able to understand the plain and ordinary meaning of this limitation based on the claim language itself and would have found the claim to be obvious over the Hailey-Harrop combination. EX1003, ¶139.

Hailey and Harrop both describe using source (master) documents and variables (personalization parameters) to select modular content and generate output (derivative) documents as HTML and PDF documents. *See* §VIII.A.ii.c, *supra* (incorporated here); EX1005, ¶¶39-41, 64, Figs. 1, 4.; EX1006, 8:1-9:23, 10:9-17, 14:7-11, 14:21-15:6, Fig. 7. The selected modular content (e.g., text items) that is included in the generated document forms the “second set of modular items” claimed. Further, a POSITA would understand that a generated HTML or PDF document would include the selected modular content based on personalization parameters but would not include the assembly rules used to select the content and

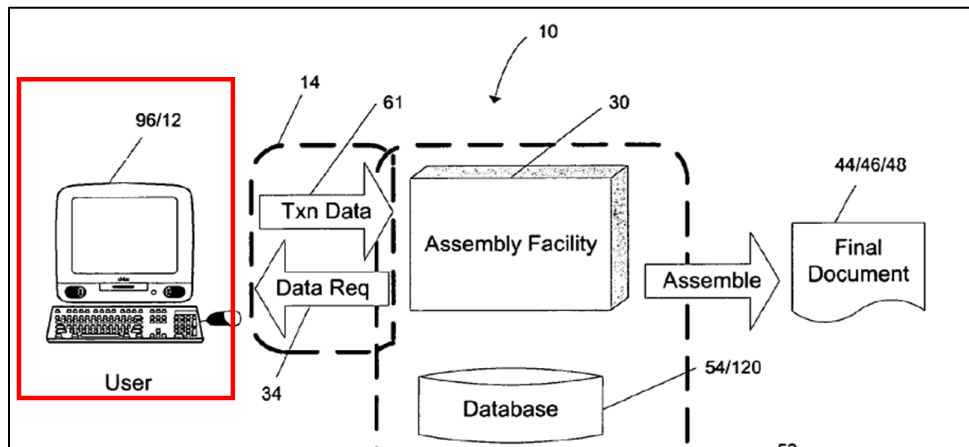
assemble the generated document. EX1003, ¶140. As Dr. Bederson explains, it would be obvious to exclude the assembly rules from the modular content items after they are evaluated and only populate the generated document with the object or text content from the modular items for several reasons. *Id.* For example, a POSITA would recognize that including assembly rules in a generated document would unnecessarily complicate the document, including limiting the file types that the generated document can use. *Id.* Additionally, a POSITA would understand that including the assembly rules in the generated document would introduce a security risk because an end-user could then potentially manipulate the value of parameters in the generated document relying on the rules to modify the document in ways unintended by the owner of the master document. *See, e.g.,* EX1020, EX1021; EX1003, ¶140. Moreover, a POSITA would understand that the typical approach would be to use the assembly rules to decide what content is included in the final generated document and leave the rule itself in the source/master document. EX1003, ¶140. In other words, a POSITA would have found it obvious to use assembly rules from modular items to select content and create an interactive document, and not import those assembly rules into the final, generated document. *Id.*

vi. **Claim 7: The method of claim 1, wherein the personalization parameter is received via a graphical user interface or via an application programming interface.**

As discussed above, the Hailey-Harrop combination renders obvious all the limitations of claim 1 and further renders claim 7 obvious. §VIII.A.ii, *supra* (incorporated here). EX1003, ¶141.

Harrop teaches that a web browser (i.e., a GUI) displays interview questions to solicit answers from a user and generate an instance document. EX1006, 14:21-31, Fig. 6. A web browser is or at least includes a graphical user interface (GUI). EX1003, ¶142.

In addition, Hailey teaches that an origination platform 12 is used to solicit data from a user, which data (personalization parameter) is used to select the appropriate content for the generated document. *See* §VIII.A.ii.c-d, *supra* (incorporated here); EX1005, ¶¶39-41, 64, Fig. 1; EX1003, ¶143. As shown in Figure 4A (annotated below), Hailey describes that a **computer** is used to input data into the origination platform 96/12. EX1005, Fig. 4A, ¶66 (“A user 96 interacting with the origination platform 12 enters transaction data 61”). A POSITA would understand that the computer of Hailey includes a graphical user interface to receive data or selections by the user. EX1003, ¶¶143-144. Accordingly, the Hailey-Harrop combination renders the limitations of claim 7 obvious.



vii. **Claim 11**

Claim 11 is directed to a system for creating an interactive document and recites limitations that are substantially identical to the recitations in claim 1. Indeed, Claim 11 even includes an apparent typo stating “the *method* comprising,” which may be a copy-paste error made by the patent applicant. Thus, claim 11, for at least the same reasons as claim 1, is unpatentable over Hailey and Harrop. §VIII.A.ii, *supra* (incorporated here); EX1003, ¶145.

a. **Limitation 11[PRE]**

As discussed in §VIII.A.ii.a, *supra* (incorporated here) regarding limitations 1[PRE], the Hailey-Harrop combination renders this limitation obvious. *See* EX1003, ¶146.

b. **Limitation 11[A]**

The Hailey-Harrop combination renders this limitation obvious because each of Hailey and Harrop teach this limitation. EX1003, ¶147.

Hailey teaches implementing its document creation system “in software which may be stored as instructions on a computer readable medium ... and executed by a microprocessor or a similar device.” EX1005, ¶99; EX1003, ¶148.

Harrop discloses the example of a computer server such as a Sun Fire® 15K server, and processing modules 106, 108, and 112 of the document assembly system “implemented as software modules stored on hard disk storage 104 of the server 102.” EX1006, 7:23-26; EX1003, ¶149.

A POSITA would recognize any of these example environments as teaching a memory for storing a set of software instructions, and one or more processors configured to execute the set of software instructions to perform one or more operations. EX1003, ¶150. Thus, Hailey and Harrop each teach Limitation 11[A] and, therefore, the Hailey-Harrop combination renders the limitation obvious. *Id.*

c. Limitation 11[B]

As discussed in §VIII.A.ii.b, *supra* (incorporated here) regarding limitation 1[A], the Hailey-Harrop combination renders this limitation obvious. *See* EX1003, ¶151.

d. Limitation 11[C]

As discussed in §VIII.A.ii.c, *supra* (incorporated here) regarding limitations 1[B], the Hailey-Harrop combination renders this limitation obvious. *See* EX1003, ¶152.

e. Limitation 11[D]

As discussed in §VIII.A.ii.d, *supra* (incorporated here) regarding limitations 1[C], the Hailey-Harrop combination renders this limitation obvious. *See* EX1003, ¶153.

f. Limitation 11[E]

As discussed in §VIII.A.ii.e, *supra* (incorporated here) regarding limitations 1[D], the Hailey-Harrop combination renders this limitation obvious. *See* EX1003, ¶154.

viii. Claim 12: The system of claim 11, wherein the reference is created based at least in part on the personalization parameter.

In addition to all the limitations of claim 11, the Hailey-Harrop combination renders this claim obvious for the same reasons discussed regarding claim 2. *See* §§VIII.A.ii, VIII.A.iii, VIII.A.vii, *supra* (incorporated here); EX1003, ¶155.

- ix. **Claim 13: The system of claim 11, wherein the reference is used to update the one or more modular items in the derivative document.**

In addition to all the limitations of claim 11, the Hailey-Harrop combination renders this claim obvious for the same reasons discussed regarding claim 3. *See* §§VIII.A.ii, VIII.A.iv, VIII.A.vii, *supra* (incorporated here); EX1003, ¶156.

- x. **Claim 14: The system of claim 11, wherein the derivative document comprises a second set of modular items that do not have embedded rules.**

In addition to all the limitations of claim 11, the Hailey-Harrop combination renders this claim obvious for the same reasons discussed regarding claim 4. *See* §§VIII.A.ii, VIII.A.v, VIII.A.vii, *supra* (incorporated here); EX1003, ¶157.

- xi. **Claim 17: The system of claim 11, wherein the personalization parameter is received via a graphical user interface or via an application programming interface.**

In addition to all the limitations of claim 11, the Hailey-Harrop combination renders this claim obvious for the same reasons discussed regarding claim 7. *See* §§VIII.A.ii, VIII.A.vi, VIII.A.vii, *supra* (incorporated here); EX1003, ¶158.

B. Ground 2: Claims 8-9 and 18-19 are rendered obvious by Harrop, Hailey, and Lo

The features of claims 8-9 and 18-19 are taught by Lo and rendered obvious when combined with the teachings of Hailey and Harrop. EX1003, ¶159

i. Reasons to Combine

a. Analogous Art

Lo is analogous art to the Hailey-Harrop combination, as well as the '816 Patent. Lo is in the same field of endeavor, namely document assembly and creation. EX1009, ¶2 (“methods and processes for creation, editing, and printing of documents composed of text and graphics and, in printing particular, to the creation, editing and printing of variable data documents.”). As with the '816 Patent, Lo is classified in International Patent Class G06F, Electronic Digital Data Processing. EX1009, 1 (field (52)). Accordingly, a POSITA would have considered Lo to be analogous art to Hailey and Harrop, and the '816 Patent. EX1003, ¶160.

b. Motivation to combine

A POSITA would have been motivated to combine the teachings of Lo with the teachings of Hailey and Harrop. Lo teaches that “[l]ive proofing is advantageous over a separate merging process because errors in the design of the template are likely to be found earlier through interactive navigation.” EX1009, ¶381; *see* §VII.D, *supra* (incorporated here); EX1003, ¶161. Similarly, a POSITA would have recognized that Hailey and Harrop each appreciate the importance of previewing and/or catching errors before a final output document is generated. EX1003, ¶161. For example, Harrop describes document previews (i.e., pop-up windows) to assist

a user in adjusting the final document. EX1006, 15:8-16, 67:28-68:18. Likewise, Hailey's system includes a mechanism to allow a user to "change or replace paragraphs or sections, add content, etc." in a generated document. EX1005, ¶69; EX1003, ¶161.

A POSITA would have been motivated to combine Lo's teaching of live-proofing previews with the teachings of Hailey and Harrop to enable a user to find errors in document design at an earlier stage, as taught by Lo. EX1003, ¶162.

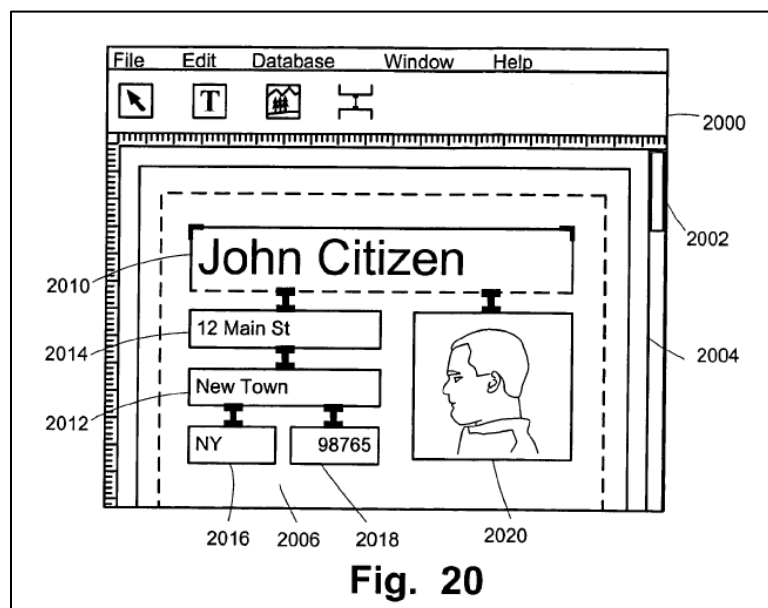
c. Reasonable Expectation of Success

A POSITA would have had a reasonable expectation of success in modifying the systems of Hailey and Harrop to include the live-proofing previews taught by Lo. EX1003, ¶163. The implementation of previews into a GUI would have required nothing more than incorporating known concepts (*i.e.*, previews in a GUI) into known systems (*i.e.*, the interfaces taught by Hailey and Harrop). In particular, Hailey and Harrop teach user interfaces through which a user inputs data or answers questions relative to the variables that influence which content is included in the generated documents. *See* §VIII.A.vi, *supra* (incorporated here). A POSITA would have found it routine to modify the already-existing user interfaces of Hailey and Harrop to include Lo's teachings regarding the live-proofing preview feature. EX1003, ¶163.

ii. **Claim 8: The method of claim 1, further comprising upon receiving the personalization parameter, rendering the derivative document in real-time.**

As discussed in §VIII.A.ii, *supra* (incorporated here), the Hailey-Harrop combination renders claim 1 obvious. Claim 8 is rendered obvious over Hailey and Harrop in further view of Lo. EX1003, ¶164.

Lo teaches “live proofing” a template document to “display[] variable data merged with the variable document template interactively and on-demand.” EX1009, ¶428. Figure 20 of Lo shows “what part of [a] record would look like if printed” including “extra borders 2004 and colors 2006...to make visible the constraints defined within the variable document template.” EX1009, ¶¶380, 428-429. Fig. 20.



Thus, Lo teaches rendering the interactive document in real-time through displaying a preview of an interactive document (as shown in figure 20) where the preview reflects a user input regarding a personalization parameter (*e.g.*, Lo’s “variable data”). EX1003, ¶¶165-166.

For the reasons discussed in VIII.B.i, *supra* (incorporated here), a POSITA would have found it obvious to include Lo’s live-proofing feature in the Hailey-Harrop combined system to provide the user with a real-time preview of how the generated interactive document would change depending on changes to input variables. *See* EX1003, ¶167. Accordingly, the Hailey-Harrop combination as modified by Lo renders claim 8 obvious.

iii. **Claim 9: The method of claim 8, wherein the derivative document is rendered within a web browser by executing a script using a content renderer.**

As discussed in §§VIII.A.ii, VIII.B.ii, *supra* (incorporated here), the Hailey-Harrop combination in view of Lo renders claim 8 obvious. The same combination renders claim 9 obvious. *See* EX1003, ¶168.

Lo teaches that his user interface and layout engine, which include the live-proofing feature, may be “incorporated as software executable on a web server that can serve up documents customized for the viewer.” EX1009, ¶85. Similarly, Harrop teaches rendering the derivative document as an HTML file to display in a

user interface. EX1006, 67:28-31 (“The instance [HTML] document can be rendered....”). Harrop further teaches that “[w]here the questions are put to a user via their web browser, the [java] controller servlet 218 can put all the questions to the user in a single HTML form...” EX1006, 14:16-18, 14:14-15 (“The processing engine 202 provides the questions to 15 which it requires responses to the Java controller servlet 218.”). A POSITA would understand that a Java controller would execute JavaScript to put questions to a user “in a single HTML form.” Thus, Harrop teaches executing a script using a content renderer. EX1003, ¶169.

As explained by Dr. Bederson, a POSITA would readily understand that displaying HTML documents on a display device includes rendering visual content from the HTML document. EX1003, ¶170. Accordingly, a POSITA would understand that the combined teachings of Hailey, Harrop, and Lo include using a web browser as a content renderer to display the derivative documents. EX1003, ¶170.

- iv. **Claim 18: The system of claim 11, wherein the one or more processors are further configured to render rendering [sic] the derivative document in real-time upon receiving the personalization parameter.**

In addition to all the limitations of claim 11, the Hailey/Harrop/Lo combination renders claim 18 obvious for the same reasons discussed regarding

claim 8 above. *See* §§VIII.A.ii, VIII.A.vii, VIII.B.ii, *supra* (incorporated here); EX1003, ¶171.

- v. **Claim 19: The system of claim 18, wherein the derivative document is rendered within a web browser by executing a script using a content renderer.**

In addition to all the limitations of claims 11 and 18, the Hailey/Harrop/Lo combination renders claim 19 obvious for the same reasons discussed regarding claims 11 and 9 above. *See* §§VIII.A.vii, VIII.B.iii, VIII.A.vii, VIII.B.iv *supra* (incorporated here); EX1003, ¶172.

C. **Ground 3: Claims 10 and 20 are rendered obvious by Hailey, Harrop and Davis**

i. **Technical Background - User Tracking**

Since (practically) the beginning of the web, user tracking has been known and implemented ubiquitously. A POSITA would have known of several commonly used ways to track how people use the web. EX1003, ¶173. At the simplest level, a POSITA would know of and how to use “web logs” which are logs of every URL request to a web server that are kept by essentially all web server systems. *Id.* These logs can be analyzed to determine which pages are being viewed, from where, for how long, by how many different people, etc. *Id.* There are numerous services that support such analysis of web logs. For example, Google Analytics has provided

analysis of web logs since at least 1995. EX1017, EX1018, Abstract; EX1003, ¶¶173-174.

As discussed in §VII.C, *supra* (incorporated here), Davis, a patent filed in 1997, describes the tracking of how people use documents including monitoring “time, keyboard events, mouse events, and the like, in order to track choices and selections made by a user”. EX1007, Abstract. Davis describes performing this tracking “by use of a tracking program embedded in the resource and executable by a client.” EX1007, 4:6-8. Davis explains that “the tracking program is embedded in an HTML document” (such as a Web site, a Web page, or part of a Web page—e.g. an ‘ad banner’). EX1007, 5:14-17. It also describes that “the tracking program of the present invention may be implemented in the JAVA programming language.” EX1007, 10:48-50. EX1003, ¶175.

ii. Reasons to Combine

a. Analogous Art

A POSITA would consider Harrop, Hailey, Davis and the ’816 Patent to be analogous art. As discussed in §VIII.A.i.a, *supra* (incorporated here), Harrop, Hailey, and the ’816 Patent are analogous art. Davis is also analogous art to Hailey, Harrop, and the ’816 Patent. For example, Davis teaches generating a document (HTML web page) based on personal information (e.g., a user profile). EX1007,

14:46-52. Further, Davis is classified in International Patent Class G06F and also relates to the application of document creation systems and methods for use on the Internet, including standard hyper-text markup language (“HTML”) documents, just like the ’816 Patent. *See* EX1005, 1 (field (51)), ¶42 (output file in HTML format; EX1007, 1 (field (51)), 4:1-10, 4:33-36, 5:14-18 (collecting user tracking information and using it to generate a customized HTML document). EX1003, ¶176.

b. Motivation to combine

Davis teaches embedding tracking features in a derivative document to collect data indicative of user interaction with the document. EX1007, 5:14-18; *see* §VII.C, *supra* (incorporated here). Davis teaches embedding a tracking program in an HTML document to gain information regarding user preferences, collect information regarding specific user interactions and create user profiles based on the tracked information. *See* EX1007, 4:3-8 (“a tracking program embedded in the resource and executable by a client.”), 4:19-23, (“creating a database of user profiles for use by advertisers and/or marketers to determine the effectiveness and value of network-based advertisements and/or marketing resources”), 4:33-36 (“assembling a resource, such as a Web page or a highly targeted ad banner, in accordance with a historic user profile.”). Specifically, Davis’s tracking feature monitors various user interactions including “time, mouse events, keyboard events,” (*id.*, 8:13-20) as well

as “details of choices created by individual users within a particular resource.” *Id.*, 4:24-32. Davis teaches using these tracked interactions to assemble a customized resource (*e.g.*, HTML webpage) based on a user’s profile which includes the tracked information. *Id.*, 4:33-36. EX1003, ¶177.

Accordingly, a POSITA would have been motivated to include in the systems of Hailey and/or Harrop a tracking feature that collects data indicative of user interactions with interactive documents, as taught by Davis, to use that collected data to improve the respective systems in various ways. EX1003, ¶178. For example, a POSITA would have been motivated to track user interaction with the interactive documents generated by Hailey and Harrop to glean information regarding user preferences to respective variations of user documents including preferences as to the formatting, size, color, file type, delivery method, etc. of the interactive documents. *Id.* For example, a POSITA would understand that tracking a user’s responses to questions posed by Hailey or Harrop’s system regarding a user’s name, entity, or job can be tracked using the tracking program described by Davis and that information can be reused in Hailey or Harrop’s systems when assembling new interactive documents. *Id.* Further, a POSITA would have known that user tracking information can be used to understand what works well and what does not for their

users, thereby improving system designs and ensuring the system works as intended.

Id.

c. Reasonable Expectation of Success

The references include similar arrangements of well-understood components and use predictable technology in routine and conventional ways. EX1003, ¶179.

A POSITA would have found it routine and predictable to include the user tracking feature of Davis in the systems of Harrop and Hailey. EX1003, ¶180. Each of Davis, Harrop, and Hailey describe generating or assembling documents in an HTML format. Further, Davis teaches that his tracking feature can be embedded as part of an HTML document. EX1007, 5:14-15 (“In one embodiment of the present invention, the tracking program is embedded in an HTML document”). A POSITA would have understood that implementing Davis’s user tracking program would have merely required implementing known code functions (*e.g.*, Davis’s tracking program) in a known way (*e.g.*, using known HTML or JavaScript functions) in known systems (*i.e.*, HTML documents). EX1003, ¶180.

iii. **Claim 10: The method of claim 1, further comprising embedding a tracking feature in the derivative document to collect data indicative of user interaction with the derivative document.**

As discussed in §VIII.A.ii, *supra* (incorporated here), the Hailey-Harrop combination renders claim 1 obvious. Claim 10 is obvious over Hailey and Harrop in further view of Davis. EX1003, ¶181.

Davis teaches a tracking feature that collects data indicative of user interaction with the interactive document. For example, Davis teaches embedding a tracking program in an HTML document, the tracking program monitoring and collecting information regarding how a user interacts with the HTML document. *See* EX1007, 8:13-20 (“the tracking program may simply monitor the amount of time the user spends interacting with the Web page or may monitor details of choices (such as links) made by individual users within a particular Web page.”). Davis uses the tracked information to generate personalized documents (*e.g.*, HTML documents). EX1007, 4:33-36 (“...another object of the present invention to provide means for assembling a resource, such as a Web page or a highly targeted ad banner, in accordance with a historic user profile.”); EX1003, ¶182.

As discussed in §VIII.C.i, *supra* (incorporated here), a POSITA would find it obvious to include a tracking feature to collect data indicative of user interaction—such as the one taught by Davis—in the systems of Hailey and/or Harrop.

Accordingly, the combined teachings of Hailey, Harrop, and Davis render obvious claim 10. EX1003, ¶183

iv. **Claim 20: The system of claim 11, wherein the derivative document is embedded with a tracking feature to collect data indicative of user interaction with the derivative document.**

In addition to all the limitations of claim 11, the Hailey/Harrop/Davis combination renders claim 20 obvious for the same reasons discussed regarding claim 10. *See* §§VIII.A.ii, VIII.A.vii, VIII.C.iii, *supra* (incorporated here); EX1003, ¶184.

D. **Ground 4: Claims 5- 6 and 15-16 are rendered obvious by Hailey, Harrop and Ohashi**

i. **Reasons to Combine**

a. **Analogous Art**

Ohashi is analogous art to the Hailey-Harrop combination, as well as the '816 Patent. Ohashi is in the same field of endeavor, namely document assembly and creation. EX1008, 1:52-59 (“ Specifically speaking, a layout template that specifies a layout in which multiple information storage frames are arranged in a specified layout region is produced in advance, and at a layout job, layout elements (e.g., character information and image information) being laid out are stored in each information storage frame according to the layout template...”). As with the '816 Patent, Ohashi is classified in International Patent Class G06F, Electronic Digital

Data Processing. EX1008, 1 (field (51)). Accordingly, a POSITA would have considered Ohashi to be analogous art to Hailey and Harrop, and the '816 Patent. EX1003, ¶185.

b. Motivation to Combine

A POSITA would have been motivated to combine the teachings of Ohashi with the teachings of Hailey and Harrop. Ohashi teaches a system and method which provides “convenient [way] to extract a layout from an existing laid-out document to form a layout template automatically.” EX1008, 1:60-64; *see* §VII.E, *supra* (incorporated here); EX1003, ¶186. Similarly, a POSITA would have recognized that Hailey and Harrop each appreciate the advantage of creating document templates from which customized documents can be made. EX1006, 1:8-11 (“Document assembly refers to the generation of an instance document from one or more source documents. In general, a source document is a generic template document, and additional information specific to the relevant circumstances is required to generate an instance document from one or more source documents.”); EX1005, ¶3 (“Document production systems that insert customer-specific content into a pre-fabricated document are known”). EX1003, ¶186.

A POSITA would have been motivated to combine Ohashi’s teaching of automatically creating layout templates based on an existing document with the

teachings of Hailey and Harrop to enable a user to create templates based on a preferred document that the user possesses but lacks layout rules. EX1003, ¶187.

c. Reasonable Expectation of Success

The references include similar arrangements of well-understood components and use predictable technology in routine and conventional ways. EX1003, ¶188.

A POSITA would have found it routine and predictable to include the automatic layout template creation feature of Ohashi in the systems of Harrop and Hailey. *Id.* Each of Ohashi, Harrop, and Hailey describe the use of structured document templates which include content and rules for assembling the content written in XML format. EX1005, ¶8; EX1006, 8:22-23; EX1008, 17:43-50. A POSITA would have understood that implementing Ohashi's automatic layout template system have merely required implementing known code functions (*e.g.*, Ohashi's automatic layout template system) in a known way (*e.g.*, using known XML expressions) in known systems (*i.e.*, document assembly systems of Harrop and Hailey which use XML). EX1003, ¶188.

ii. Claim 5: The method of claim 4, further comprising converting the derivative document into a master document by embedding rules into at least one of the second set of modular items.

As discussed in §§VIII.A.ii, VIII.A.v, *supra* (both incorporated here), the Hailey-Harrop combination renders obvious all the limitations of claims 1 and 4.

Claim 5 is rendered obvious over Hailey and Harrop in further view of Ohashi. EX1003, ¶189.

Ohashi teaches converting a rendered derivative document (e.g., a document image) into a master document (e.g., layout template) by embedding rules into the modular items (content) of the derivative document. Specifically, Ohashi teaches analyzing the attributes of various content in a document image to automatically create a layout template. EX1008, 19:6-35; *see also* §VII.E, *supra* (incorporated here). Ohashi teaches that layout rules are created based on the content in the document image and that those layout rules are stored in a database and are associated with the layout template so that the rules and layout template are used in conjunction with each other. EX1008, 16:64-17:8, 17:43-50, 18:49-54 A POSITA would understand that associating the layout rules and layout templates is the same as “embedding” the rules in the modular items (content) of the document image from which the layout template is made. EX1003, ¶190. Indeed, the ’816 Patent describes that “embedding” rules may simply be associating rules and content together:

For instance, page A1 has embedded rule ‘if country=UK’ that when the condition is met (i.e., the personalization request indicates country=UK) page A1 will be selected or displayed. ***It should be noted that the example is for illustration purpose only.*** For example, ***a ruleset can be associated with a content item via a mapping relationship (e.g., specified by rule ID and content ID) or be directly stored with the content data structure.***

EX1001, 19:3-10. Accordingly, Ohashi teaches converting a rendered document (document image) to a master document (layout template) by embedding rules (layout rules) in a set of modular items (content).

For the reasons discussed in §VIII.D.i, *supra* (incorporated here), a POSITA would have found it obvious to combine Ohashi's teaching of automatically creating layout templates based on an existing document with the teachings of Hailey and Harrop to enable a user to create templates based on a preferred document that the user possesses but lacks layout rules. EX1003, ¶191. Accordingly, the Hailey-Harrop combination as modified by Ohashi renders claim 5 obvious.

iii. **Claim 6: The method of claim 5, further comprising removing the reference to break the link between at least one modular item and the derivative document.**

The Hailey/Harrop/Ohashi combination renders obvious all of the limitations of claim 5 and further renders claim 6 obvious. *See* §§VIII.A.ii, VIII.D.ii, *supra* (both incorporated here). EX1003, ¶192.

A POSITA would understand that “the link” recited in claim 6 is intended to refer to the “reference for linking the one or more modular items to the derivative document” defined in limitation 1[D], despite the error in antecedent basis for the claimed “link” of claim 6. EX1003, ¶193. As explained below, the Hailey-Harrop combination renders claim 6 obvious.

As discussed in §VIII.A.ii.e, *supra* (incorporated here), Harrop teaches creating a link (hypertext anchor and associated question and answer data), aka a “reference for linking” between modular items from the XML source document and the instance document. Harrop further teaches that after the instance document is generated (which document includes the hypertext anchors) and “[w]hen the user is satisfied with the instance document,” the user may press a button to generate an output document. EX1006, ¶69. The output document may be generated in “Adobe® portable document format (PDF),” “HTML (*without controls*), XML, or in rich text format (RTF).” *Id.* As Dr. Bederson explains, a POSITA would understand that Harrop’s teaching of generating a pdf, HTML document “without controls,” XML, or RTF document means that the output documents will not include the hypertext anchors which link the modular items to the derivative document. EX1003, ¶194. Accordingly, Harrop teaches that these hypertext anchors (i.e., the claimed “link”) are removed when the output document is created. *Id.* Accordingly, the Hailey-Harrop combination renders the limitations of claim 6 obvious.

- iv. **Claim 15: The system of claim 14, wherein the one or more processors are further configured to convert the derivative document into a master document by embedding rules into at least one of the second set of modular items.**

In addition to all the limitations of claims 11 and 14, the Hailey/Harrop/Ohashi combination renders this claim obvious for the same reason

discussed regarding claim 5. *See* §§VIII.A.vii, VIII.A.x, VIII.D.ii *supra* (incorporated here); EX1003, ¶195.

- v. **Claim 16: The system of claim 15, wherein the one or more processors are further configured to remove the reference to break the link between at least one modular item and the derivative document.**

In addition to all the limitations of claims 11, 14, and 15, the Hailey/Harrop/Ohashi combination renders this claim obvious for the same reasons discussed regarding claim 6. *See* §§VIII.A.vii, VIII.A.x, VIII.D.iii, VIII.D.iv, *supra* (incorporated here); EX1003, ¶196.

IX. DISCRETIONARY DENIAL IS NOT WARRANTED

“Early challenges to patents favor robust, predictable patent rights and weigh against discretionary denial.” *Imperative Care, Inc. v. Inari Med., Inc.*, IPR2025-00289, Paper 9 at 2 (PTAB June 12, 2025). The ’816 Patent was issued less than three years ago, on September 12, 2023. Patent Owner sent Petitioner a notice of alleged infringement of the ’816 Patent and a demand to cease and desist the use and sale of the accused product approximately two weeks later, on November 1, 2024. Petitioner promptly informed Patent Owner of Petitioner’s belief that the ’816 Patent was invalid. On October 20, 2025, Petitioner filed a Petition for *inter partes* review challenging all claims of a related patent, U.S. patent 12,118,290 which shares the same specification and is directed to the same general invention as the ’816 Patent.

On January 28, 2026, in response to the petition challenging the '290 patent, Patent Owner statutorily disclaimed all of the invention(s) claimed by the '290 patent.

Considering Patent Owner's notice of invalidity theories and an IPR challenge against a related patent with the same specification, Patent Owner cannot claim any settled expectations in the '816 Patent. *See Cambridge Indus. USA Inc. v. Applied Optoelectronics, Inc.*, IPR2025-00434, Paper 11 at 2-3 (PTAB June 26, 2025) (denying requests for discretionary denial on three petitions challenging patents that "have not been in force for a significant period of time (issued in 2020, 2019, and 2019)," finding that "Patent Owner has not developed strong settled expectations that favor discretionary denial as to at least those patents"). Petitioner, therefore, is proactively challenging the '816 Patent to protect the market for its products and its customers from improper infringement allegations by Patent Owner that threaten Petitioner's compelling economic and business interests.

Further, none of the references relied on in this petition were before the Office during prosecution. Had the Examiner reviewed the petition and evidence cited herein, the '816 Patent would not have been issued. In other words, it would have been a material error by the Office to issue the '816 Patent had the Examiner been aware of the combined teachings of Harrop and Hailey. Thus, the circumstances surrounding this Petition weigh strongly against discretionary denial.

X. CONCLUSION

Petitioner has established a reasonable likelihood that the Challenged Claims are unpatentable.

Respectfully submitted,

Dated: July 16, 2026

By: /Ryan N. Miller/
Ryan North Miller
Reg. No. 68,262

Counsel for Petitioner, Foleon Inc.

PETITIONER MANDATORY NOTICES

Real Party-in-Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that Foleon, Inc., Newion Investments Capital Early Stage Fund B.V., Newion II B.V., and CC&P IM B.V. are real parties-in interest.

Related Matters

Pursuant to 37 C.F.R. § 42.8(b)(2), to the best knowledge of the Petitioner, the '816 Patent is not involved in any pending cases.

Lead and Back-up Counsel and Service Information

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Respectfully submitted,

Dated: July 16, 2026

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and in reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 13,997. Pursuant to 37 C.F.R. § 42.24(a)(1), this word count excludes the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: July 16, 2026

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Ryan N. Miller
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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.205(b), the undersigned certifies that on the 16th day of July, 2026, a complete and entire copy of this Petition for Inter Partes Review and all supporting exhibits was provided via Federal Express to:

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