

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

X CORPORATION,
Petitioner,

v.

STERLING COMPUTERS CORPORATION,
Patent Owner.

Case No. IPR2025-00299
U.S. Patent No. 7,716,217

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

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37 C.F.R. § 42.8	79
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35 U.S.C. § 102	3
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35 U.S.C. § 315	79

EXHIBIT LIST

No.	Short Name	Reference
1001	217 Patent	Certified Copy of U.S. Patent 7,716,217
1002	217 File History	Certified File History of 7,716,217
1003	828 Provisional	Certified United States Provisional Patent Application No. 60/758,828.
1004	Houh Decl.	Expert Declaration of Dr. Henry Houh
1005	Houh CV	Curriculum Vitae of Dr. Henry Houh
1006	<u>Dumais</u>	U.S. Patent Application Publication 2007/0016553A1
1007	<u>Kircher</u>	U.S. Patent Application Publication 2003/0195937A1
1008	<u>Krug</u>	Certified Translation of WIPO Patent 2003/023650A2
1009	Sch. Order	Order 32 (Scheduling Order) in <i>Sterling Computers Corporation v. X Corp.</i> , Case No. 1:24-cv-00552 (W.D. Tex. May 22, 2024)
1010	Sch. Hr. Tr.	Oct. 21, 2024, Transcript of Initial Pretrial (Scheduling) Conference in <i>Sterling Computers Corporation v. X Corp.</i> , Case No. 1:24-cv-00552 (W.D. Tex. May 22, 2024).
1011	Goldberg	David Goldberg, et al., <i>Using Collaborative Filtering To Weave An Information Tapestry</i> , COMMUNICATIONS OF THE ACM, 35:12 (Dec. 1992).
1012	Kennedy	U.S. Patent 6,134,582
1013	Mailk	U.S. Patent Application Publication 2004/0078447
1014	587 Application	International Application PCT/US07/60587
1015	587 File History	File History of PCT/US07/60587
1016	RESERVED	
1017	118 File History	File History of 11/426,118

1018	605 Provisional	Provisional Patent Application NO. 60/693,605.
1019	Shaw	U.S. Patent 6,249,807
1020	Karamchedu	U.S. Patent Application Publication 2004/0054744
1021	Fitzpatrick	U.S. Patent Application Publication 2006/0168029
1022	Yao	U.S. Patent Application Publication 2003/0187937
1023	Segal	Richard Segal, et al., <i>SpamGuru: An Enterprise Anti-Spam Filtering System</i> , CEAS 2004, FIRST CONFERENCE ON EMAIL AND ANTI-SPAM, (July, 2004).
1024	Carlson	U.S. Patent Application Publication 2005/0267973
1025	Sood	U.S. Patent 7,941,491
1026	Kirsch	U.S. Patent Application Publication 2005/0091319
1027	Boykin	P. Oscar Boykin, et al., <i>Personal Email Networks: An Effective Anti-Spam Tool</i> , ARXIV.ORG, 4 (Feb. 2004)
1028	Horvitz	International PCT Application WO2001/069432
1029	Lui	Andrew K. Lui, et al., <i>An Advanced Organizer for Asynchronous Discussion Forums</i> , IEEE (2005).
1030	Claypool	Mark Claypool, et al., <i>Combining Content-Based and Collaborative Filters in an Online Newspaper</i> , ACM SIGIR WORKSHOP ON RECOMMENDER SYSTEMS (Aug. 1999).
1031	Brun	U.S. Patent Application Publication 2007/0168430
1032	Linden	Greg Linden, et al., <i>Amazon.com Recommendations Item-to-Item Collaborative Filtering</i> , IEEE INTERNET COMPUTING (2003).
1033	Frankowski	International PCT Application WO2001/53973
1034	Dabbish	Laura A. Dabbish, et al., <i>Understanding Email Use: Predicting Action on a Message</i> , CHI (2005).
1035	Basu	Chumki Basu, et al., <i>Recommendation as Classification: Using Social and Content-Based</i>

		<i>Information in Recommendation</i> , AAAI-98 PROCEEDINGS (1998).
1036	Melville	Prem Melville, et al., <i>Content-Boosted Collaborative Filtering for Improved Recommendations</i> , PROCEEDINGS OF THE EIGHTEENTH NATIONAL CONFERENCE ON ARTIFICIAL INTELLIGENCE (Jul. 2002).
1037	Alspector	Joshua Alspectot, et al., <i>Comparing Feature-Based and Clique-Based User Models for Movie Selection</i> , PROCEEDINGS OF THE THIRD ACM CONFERENCE ON DIGITAL LIBRARIES (1998).
1038	Balabanovic	Marko Balabanovic, et al., <i>Content-Based Collaborative Recommendation</i> , COMMUNICATIONS OF THE ACM (Mar. 1997).
1039	Kussmaul	U.S. Patent 7,860,933
1040	Rose	U.S. Patent 6,202,058
1041	MSFT Comp.	Microsoft Computer Dictionary, 3ed (1997).
1042	Levenshtein	Jan 2005 – Lvenshtein Distance – Wikipedia
1043	<u>Marston</u>	U.S. Patent Application Publication 2004/0260710

LISTING OF CHALLENGED CLAIMS

Element	Claim Limitation¹
Claim 1	
1[pre]	A computer-implemented system for determining a relevance score of a piece of electronic content sent from a sender to a user, the relevance score determined with respect to the user, the computer-implemented system comprising:
1[a]	a computer processor; and
1[b]	a computer-readable storage medium storing computer program modules configured to execute on the computer processor, the computer program modules comprising:
1[c]	a monitoring module configured to track actions by a plurality of users associated with an application for managing electronic content;
1[d]	a first relevance measurement module coupled to the monitoring module and configured to determine a first measure of relevance of the piece of electronic content based at least in part on one or more actions of the user on the piece of electronic content;
1[e]	a second relevance measurement module coupled to the monitoring module and configured to:
1[f]	identify at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user, and
1[g]	determine a second measure of relevance of the piece of electronic content [as] based at least in part on one or more measures derived from the group consisting of:
1[g][i]	a local importance describing an importance of the sender to the user,
1[g][ii]	a global importance describing an importance of the sender within an organization with which the plurality of users are associated,

¹ Element numbering herein refers to this Listing of Challenged Claims.

1[g][iii]	a content relevance determined responsive to content of the piece of electronic content, and
1[g][iv]	one or more actions on the piece of electronic content of the at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user; and
1[h]	a relevance analysis module configured to determine the relevance score of the piece of electronic content sent from the sender to the user, the relevance score being determined based at least in part on the first determined measure of relevance and on the second determined measure of relevance.
Claim 2	
2	The system of claim 1, further comprising: a content presentation module configured to present the piece of electronic content to the user in accordance with the determined relevance score and to present to the user a value describing the determined relevance score.
Claim 3	
3	The system of claim 1, further comprising: a search module configured to search the electronic content in accordance with the determined relevance score.
Claim 4	
4	The system of claim 1, wherein the piece of electronic content comprises an electronic mail object in a relational mail system.
Claim 5	
5	The system of claim 1, wherein the electronic content comprises at least one of an email, a document, an instant message, and an SMS message.
Claim 6	
6[pre]	A computer program product for determining a relevance score of a piece of electronic content sent from a sender to a user, the relevance score determined with respect to the user, the computer-program product having a computer-readable storage medium having computer program instructions encoded thereon comprising:

6[a]	a monitoring module configured to track actions by a plurality of users associated with an application for managing electronic content;
6[b]	a first relevance measurement module coupled to the monitoring module and configured to determine a first measure of relevance of the piece of electronic content based at least in part on one or more actions of the user on the piece of electronic content;
6[c]	a second relevance measurement module coupled to the monitoring module and configured to:
6[d]	identify at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user, and
6[e]	determine a second measure of relevance of the piece of electronic content based at least in part on one or more measures derived from the group consisting of:
6[e][i]	a local importance describing an importance of the sender to the user,
6[e][ii]	a global importance describing an importance of the sender within an organization with which the plurality of users are associated,
6[e][iii]	a content relevance determined responsive to content of the piece of electronic content, and
6[e][iv]	one or more actions on the piece of electronic content of the at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user; and
6[f]	a relevance analysis module configured to determine the relevance score of the piece of electronic content sent from the sender to the user, the relevance score being determined based at least in part on the first determined measure of relevance and on the second determined measure of relevance.
Claim 7	
7[pre]	A computer-implemented method for determining a relevance score of a piece of electronic content sent from a sender to a user, the relevance score determined with respect to the user, the computer-implemented method comprising:
7[a]	tracking actions by a plurality of users associated with an application for managing electronic content;

7[b]	identifying at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user,
7[c]	determining a first measure of relevance of the piece of electronic content based at least in part on one or more actions of the user on the piece of electronic content;
7[d]	determining a second measure of relevance of the piece of electronic content based at least in part on one or more measures derived from the group consisting of:
7[d][i]	a local importance describing an importance of the sender to the user,
7[d][ii]	a global importance describing an importance of the sender within an organization with which the plurality of users are associated,
7[d][iii]	a content relevance determined responsive to content of the piece of electronic content, and
7[d][iv]	one or more actions on the piece of electronic content of the at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user; and
7[e]	determining the relevance score of the piece of electronic content sent from the sender to the user, the relevance score being determined based at least in part on the first determined measure of relevance and on the second determined measure of relevance.
Claim 8	
8	The system of claim 1, wherein identifying at least one other of the plurality of users that is cognate to the user comprises analyzing historical actions of the at least one other of the plurality of users with respect to historical actions of the user.
Claim 9	
9	The system of claim 8, wherein the at least one other of the plurality of users is cognate to the user, and the user is not cognate to the at least one other of the plurality of users.
Claim 10	
10	The system of claim 4, wherein the electronic mail object includes one or more submessages.

Claim 11	
11	The system of claim 10, wherein the submessages are represented in the electronic mail object as references to submessage content stored in a data store of the relational mail system.
Claim 12	
12	The system of claim 4, wherein the electronic mail object has an associated job code representing a business process with which the electronic mail object is associated.
Claim 13	
13	The computer program product of claim 6, further comprising: a content presentation module configured to present the piece of electronic content to the user in accordance with the determined relevance score and to present to the user a value describing the determined relevance score.
Claim 14	
14	The computer program product of claim 6, further comprising: a search module configured to search the electronic content in accordance with the determined relevance score.
Claim 15	
15	The computer program product of claim 6, wherein the electronic content comprises at least one of an email, a document, an instant message, and an SMS message.
Claim 16	
16	The computer program product of claim 6, wherein the piece of electronic content comprises an electronic mail object in a relational mail system.
Claim 17	
17	The computer program product of claim 16, wherein the electronic mail object includes one or more submessages that are represented in the electronic mail object as references to submessage content stored in a data store of the relational mail system.
Claim 18	

18	The method of claim 7, further comprising: presenting the piece of electronic content to the user in accordance with the determined relevance score and presenting to the user a value describing the determined relevance score.
Claim 19	
19	The method of claim 7, further comprising: searching the electronic content in accordance with the determined relevance score.
Claim 20	
20	The method of claim 7, wherein the piece of electronic content comprises an electronic mail object in a relational mail system.
Claim 21	
21	The method of claim 20, wherein the electronic mail object includes one or more submessages that are represented in the electronic mail object as references to submessage content stored in a data store of the relational mail system.
Claim 22	
22	The method of claim 7, wherein identifying at least one other of the plurality of users that is cognate to the user comprises analyzing historical actions of the one other of the plurality of users with respect to historical actions of the user.

I. INTRODUCTION

X Corp. (“Petitioner”) petitions for inter partes review of claims 1-22 (“Challenged Claims”) of U.S. Patent 7,716,217 (EX1001)² and requests cancellation of those claims.

The claims of the ’217 Patent describe a computerized system for assigning relevance scores to electronic content. EX1001, Abstract. The claims recite a series of “*computer program modules*”³ to (1) monitor user actions, (2) determine a first measure of relevance based on those user actions, (3) identify a second user that is “*cognate*” to the first user, and (4) determine a second measure of relevance based on one or more “*measures*.” EX1001, c.1. A “*relevance analysis module*” then determines a “*relevance score*” based on the first and second “*measure of relevance*.” *Id.*

The claimed subject matter was neither novel nor nonobvious as of January 2006 (the earliest priority). Dumais (EX1006) discloses every limitation of the independent claims. Dumais discloses “a data processing architecture” (EX1006, [0022]) that (1) includes “monitor component 110” to “observ[e] when files are opened or closed...[or] interacted with,” (EX1006, [0022]), (2) “tag component 140 [to] assign weights or scores according to monitored data activities” (EX1006,

² The ’217 Patent is asserted in two parallel district court actions. *Infra* §IX.C.

³ Italics indicate claim language.

[0023]), (3) “collaborative filtering techniques that develop profiles by the analysis of similarities among individuals or groups of individuals” (EX1006, [0052]), and (4) computes similarities based on the “usage of items” by the group (EX1006, [0052]). Dumais then determines an overall relevance “ranking” based on a combination of tag component 140 and collaborative filtering. EX1006, [0051].

The Challenged Claims would also have been obvious based on a combination of Kircher (EX1007) and Krug (EX1008) (“Kricher/Krug”). Kircher discloses a system for “prioritizing [] electronic messages” and “rank[s] messages.” EX1007, [0039]-[0010]. Krug uses (1) the “usage behavior” of an individual or a “group of users” to calculate an (2) “action equivalence” ranking. EX1008, [0028], [0107]-[0109]. Krug (3) also uses “usage behavior” of a “group of users” to build a user profile and (4) uses the user profile to weight the relevance of a piece of content. EX1008, 4, 6. Krug then determines an overall “comparison value” which is used to “rate the relevance of the object.” EX1008, [0054].

Accordingly, the Challenged Claims would have been obvious by January 2006.

II. IDENTIFICATION OF CHALLENGE

A. Grounds for Challenge

Ground	Claims	Prior Art
1	§103 1-3, 5-9, 13-15, 18-19, 22	<u>Dumais</u>
2	§103 1-3, 5-9, 13-15, 18-19, 22	<u>Dumais</u> in view of <u>AAPA</u>
3	§103 1-22	<u>Dumais</u> in view of <u>Marston</u>

4	§103	1-3, 5-9, 13-15, 18-19, 22	<u>Kircher</u> and <u>Krug</u>
5	§103	4, 10-12, 16-17, 20-21	<u>Kircher</u> and <u>Krug</u> with <u>Marston</u>

B. Prior Art

The earliest alleged priority date for the Challenged Claims is January 13, 2006. *Infra* §IV.B. Each reference qualifies as prior art under at least pre-AIA 35 U.S.C. §102(a), §102(b), or §102(e).

Reference	Priority	Statue
<u>Dumais</u>	Jun. 29, 2005	§102(e)
<u>Kircher</u>	Apr. 16, 2002	§102(b)
<u>Krug</u>	Sept. 7, 2001	§102(b)
<u>Marston</u>	Feb. 28, 2003	§102(b)

III. OVERVIEW OF THE TECHNOLOGY

By the late 1980s, users were “inundated by a huge stream of incoming [electronic] documents” and spam. EX1011, 1, 4; EX1012, 1:1-67; EX1022, [0002]; EX1023, 1; EX1024, [0005]. To address this issue, content management systems for sorting email/documents based on their relevance became ubiquitous. EX1007, [0004]-[0009]; EX1026, Abstract; EX1025, 4:20-23; EX1027, *passim*; EX1023, 1; EX1028, 3:21-4:14; EX1029, 1-2; EX1030, 1; EX1004, ¶¶76-78.

Content-Based Filtering: By 1992 “[s]everal mail systems” and document management systems filtered documents “based on a document’s contents.” EX1011, 1; EX1030, 2. A common approach for content filtering involved calculating a relevance score by analyzing the occurrence of certain words in a

message and correlating those words with importance. EX1025, 6:4-18; EX1031, Abstract; EX1007, [0048]; EX1040, 6:36-60; EX1004, ¶¶79-82.

Collaborative Filtering: Collaborative filtering was another common way to filter relevant documents. EX1011, 1; EX1030, 1. Collaborative filtering uses peer opinions to predict the interest of others. EX1030, 1. Users indicate their opinions in the form of ratings (or actions) on various pieces of information, and the collaborative filter correlates the ratings with those of other users to determine how to make future predictions for the rater. *Id.* Many systems in the early 2000s ranked information by a “prediction of the likely degree of relevance to the user’s interests” based on “correlations of interests between users.” EX1040, Abstract (Apple); EX1006, Abstract (Microsoft); EX1011, 4, 9; EX1032, 1; EX1029, 1-2; EX1033, 3:17-4:2; EX1028, 3:4-14; EX1022, Abstract, [0028]; EX1004, ¶¶83-89.

Local and Global Importance Filtering: It was also common to filter documents based on the local or global importance of the author of the document. EX1034, 4; EX1026, [0025], [0027]; EX1028, 8:1-39, 11:21-28; EX1004, ¶¶90-92.

Often multiple types of filtering and relevance scoring would be used in a single system to gain the benefits of multiple techniques. A POSA at the time would have understood that systems including multiple filtering techniques often “outperformed” systems using a single filtering technique. EX1035, 1; EX1030, 1-2, 4; EX1036; EX1037; EX1038; EX1011, 1; EX1034, 6; EX1004, ¶¶93-97.

Systems would often track a user's (or group) interactions with content to gather data about the relevance of content and build the models discussed above. It was common for systems to "personalize" content feeds based on "user's actions." EX1011, 1; EX1024, Abstract; EX1006, Abstract; EX1025, 8:32-40; EX1039, 3:44-47. Content management systems would also assign each document a relevance score. These scores allowed systems to compare and rank relevant documents. EX1040, Abstract, 6:59-66; EX1006, Abstract; EX1011, 2; EX1007, [0015]; EX1031, Abstract; EX1023, 1; EX1004, ¶¶98-100.

By 2005, it was also well-known that PCs and laptops had processors and memories that stored software code that could run on the processor. EX1028; EX1004, ¶101.

IV. '217 PATENT

A. Overview

The '217 Patent relates to an "electronic mail system" that "determines [the] relevance...[of] a piece of electronic content" to the user. EX1001, Abstract. EX1001, c.1; 3:34-36; EX1004, ¶41.

The specification describes two types of relevance values: "incoming relevance" and "post-reading relevance." EX1001, 8:63-66. Incoming relevance is the "estimated relevance [of a piece of content] to a recipient before [it]...is opened." EX1001, 8:63-66. Post-reading relevance is the "relevance assigned after an

electronic mail object is opened and dealt with.” EX1001, 8:63-9:1. Here, the independent claims require “*a first measure of relevance...based at least in part on one or more actions of the user.*” EX1001, c.1. Therefore, the claims of the ’217 Patent are directed to post-reading relevance because they require a measure of relevance assigned after an object is “dealt with.” EX1004, ¶¶42-46.

B. Prosecution History

The ’217 Patent was filed on January 16, 2007 and claims priority to provisional application 60/758,828 (EX1003) filed on January 13, 2006. EX1004, ¶¶47-48; EX1004, ¶¶59-71 (discussing the extended prosecution history); EX1014; EX1017, 120-26 (citing EX1019, EX1020), 137-47, 154-62 (citing EX1021); EX1015; EX1018.

During prosecution, the examiner rejected the pending claims multiple times based on Malik (EX1013). EX1002, 279. Applicants attempted to distinguish Malik by arguing that it did not disclose determining relevance based on user actions “on a piece of electronic content.” EX1002, 236, 252, 260-261, 295-298. However, the examiner explained that “applicant’s claimed Background and Summary is a mischaracterization of the state of the prior art.” and cited to where Malik disclosed every limitation of the claim. EX1002, 735; EX1004, ¶49.

Attempting to overcome Malik, Applicant initiated multiple examiner interviews. EX1002, 252, 290-91, 306. In August 11, 2009 and January 11, 2010

interviews the examiner noted that “[t]he arguably novel feature is that the claimed invention bases the ‘Relevance’ on the actions of another user ‘ON The Piece of Content’” and that “Applicant seemed to agree to amend to further specify the ‘actions’ in the last limitation were based on ‘others’ (i.e. another person forwards it, another person deletes it).” EX1002, 306; EX1004, ¶¶50-55.

Applicant subsequently amended the claims to include, among other things, the Markush group in Element–1[g][iv] (reciting “*one or more actions on the piece of electronic content of the at least one other of the plurality of users.*”). EX1002, 319-326. The examiner did not consider the impact of the Markush group on the claim or the prior art. Since the “arguably novel feature” is an optional component of a Markush group, the claims were never shown to be novel or non-obvious. EX1004, ¶¶56-58.

C. Level of Ordinary Skill in The Art (POSA)

A POSA at the time of the purported inventions of the ’217 Patent would have had at least a bachelor’s degree in electrical or computer engineering, or a related field, and two to three years of experience with web or email-based content management systems; a higher level of education or skill can make up for less experience, and vice versa. EX1004, ¶¶1-23, 102-105; EX1005.

V. CLAIM CONSTRUCTION

Except for the terms discussed below or unless otherwise indicated the claim terms should carry their “ordinary and customary meaning.” *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

A. The “*computer program module*” terms are subject to §112, ¶ 6⁴

Claims 1 and 6 recite four separate “*computer program modules*”: (1) “a *monitoring module*,” (2) “a *first relevance measurement module*,” (3) “a *second relevance measurement module*,” and (4) “a *relevance analysis module*” (collectively “*computer program modules*”). Although the claims do not recite a “means for,” each “*module*” limitation invokes §112, ¶ 6 if “the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Diebold Nixdorf, Inc. v. Int’l Trade Comm’n*, 899 F.3d 1291, 1299 (Fed. Cir. 2018).

“‘[M]odule’ is a well-known nonce word that can operate as a substitute for ‘means’ in the context of §112, para. 6.” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1350 (Fed. Cir. 2015). Here, recitation of “*modules*” does not convey to a POSA any structure or algorithm to perform those functions, or a “name for

⁴ Petitioner reserves the right to argue in district court that the Challenged Claims are indefinite under 35 U.S.C. § 112, ¶ 6. *Samsung Elecs. Am., Inc. v. Prisia Eng’g Corp.*, 948 F.3d 1342, 1355 (Fed. Cir. 2020) (indefiniteness does not preclude Board from addressing patentability of claims on §§ 102/103 grounds).

structure.” *Grecia v. Samsung Elecs. Am. Inc.*, 780 F. App’x 912, 914 (Fed. Cir. 2019); EX1004, ¶¶107-110,113. The specification explains that “a ‘module’ may be **any** program, circuitry, logic, and/or functionality implemented in either software and/or hardware” and acknowledges that “any combination of the modules shown therein, may run on **any** type of computer system.” EX1001, 6:36-38, 6:65-66.

In short, the recited “*computer program modules*” are “a generic description for software or hardware that performs a specified function.” *Williamson*, 792 F.3d at 1350; EX1004, ¶¶111-114. As in *Williamson*, “the word ‘module’ provides no indication of structure because it recites the same black box structure for performing the specified function as if the term ‘means’ had been used.” 792 F.3d at 1350. Thus, the presumption that the “*module*” limitations do not invoke 35 U.S.C. §112, ¶ 6 is rebutted. The “*module*” terms are means-plus-function limitations.

Further, because the recited “*modules*” are computer-implemented, the structure corresponding to the claimed functions “is not [a] general-purpose computer, but rather the special-purpose computer programmed to perform the disclosed algorithm.” *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008). In rare cases, generic computer functions such as “processing,” “receiving,” and “storing” “can be achieved by any general-purpose computer without special programming.” *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1316 (Fed. Cir. 2011). This is not such a case.

Each recited “*module*” performs a specific function—*e.g.*, tracking user actions, determining measures of relevance based on user actions, identifying user that are “cognate” to a first user, and determining relevance scores. EX1004,¶112. These “specific functions...would need to be implemented by programming a general-purpose computer to convert it into a special-purpose computer” and are not coextensive with “basic functions of a microprocessor.” *Katz*, 639 F.3d at 1316 (citing *Aristocrat Techs. Australia Pty Ltd. v. Int’l Game Tech.*, 521 F.3d 1328, 1337 (Fed. Cir. 2018)); EX1004,¶112. Thus, the corresponding structure are the disclosed algorithms needed to program general-purpose computers to perform the claimed functions. The claimed functions and corresponding structure—algorithms to program general-purpose computers—are summarized in the table below and described in more detail thereafter:

Claim Term	Function/Structure
“ <i>monitoring module</i> ”	<u>Function:</u> track actions by a plurality of users <u>Structure:</u> Software and/or algorithm(s) disclosed at 15:51-58, 16:31-57.
“ <i>first relevance measurement module</i> ”	<u>Function:</u> determine a first measure of relevance of the piece of electronic content-based at least in part on one or more actions of the user on the piece of electronic content <u>Structure:</u> Software and/or algorithm(s) disclosed at 28:63-29:41.

“second relevance measurement module”	<u>Function:</u> (1) see Element–1[f]. (2) see Elements–1[g]-1[g][iv]. <u>Structure:</u> <u>Function (1):</u> Software and/or algorithm(s) disclosed at 14:59-15:11, 25:65-26:10, 43:30-46:60. <u>Function (2):</u> Software and/or algorithm(s) disclosed at 25:40-44, 25:55-58, 26:11-17, 29:42-31:4, 31:21-32:41, 32:42-33:57, 33:58-34:12, 34:14-48, 41:7-25.
“relevance analysis module”	<u>Function:</u> see Element–1[h]. <u>Structure:</u> Software and/or algorithm(s) disclosed at 26:46-52, 35:62-36:6.

1. Functions

Since these terms are subject to §112, ¶ 6, “[t]he first step...is to identify the function explicitly recited in the claim.” *Asyst Technologies, Inc. v. Empak, Inc.*, 268 F.3d 1364, 1369 (Fed. Cir. 2001). The court uses “ordinary principles of claim construction” to identify claimed functions. *Id.*

The claimed function for each “*computer program module*” is expressly recited in the claims. EX1004, ¶¶115-116,122-123,130-132,148-149.; EX1001, 1:49-52 (“monitoring module”), 6:39-42, 8:31-40 (relevance based on user actions), 14:59-15-11 (identifying a cognate user); 25:40-44 (calculating relevance), 26:11-17; 26:46-52 (calculating relevance based on a first and second measure), 1:52-61.

2. Corresponding Structures

“The next step is to identify the corresponding structure set forth in the written description that performs the particular function set forth in the claim.” *Asyst*, 268 F.3d at 1369. For computer-implemented claims, the disclosed structure in the specification is the “algorithm” which enables a general-purpose computer to be programmed to perform the claimed functions. *WMS Gaming, Inc. v. International Game Technology*, 184 F.3d 1339 (Fed. Cir. 1999); *Finisar*, 523 F.3d at 1340.

Monitoring Module: The “monitoring module 252...monitors and registers user actions.” EX1001, 1:49-52. Therefore, monitoring module 252 performs the claimed function of tracking actions by a plurality of users. EX1004, ¶¶117-121.

The specification states that in a “relational mail architecture,” each piece of content “is managed as a single instance object during its life in the mail system.” EX1001, 15:51-58. The “granularity” afforded by the “relational mail architecture” “may allow the electronic mail system to record all actions by users in the system.” *Id.* Alternately, the system can be a “plug-in to the email client” of a “conventional email system” that can “tag content with ‘flags’ so that it can track what happens to the content.” EX1001, 16:31-57; 27:11-40 (noting without detail that the system “marks” content). Therefore, the structure described by the specification for carrying out the claimed function is either (1) a “relational mail architecture” or (2) tags or flags within “conventional email system[s].” EX1004, ¶¶117-121.

First Relevance Module: An “Individual Relevance Component” (IRC) is “a relevance score for a piece of content respective to a given individual user and is based on the actions of that user.” EX1001, 25:45-49. The IRC determines a measure of relevance based in part on actions of the user. EX1004, ¶¶124-129.

The specification also states that “a plurality of factors may make up the IRC.” EX1001, 28:63-29:41. The “plurality of factors” discussed throughout 28:63-29:41, include dichotomous factors (i.e., True/False; opening an email) and cardinal scale factors (i.e., how many times an email is opened). *Id.* The specification does not describe how to calculate the IRC from these factors. However, this “does not preclude the Board from addressing the patentability of the claims on section 102 and 103 grounds” because the prior art discloses the claim under any reasonable construction. EX1004, ¶¶124-129; *Samsung Elecs.*, 948 F.3d at 1355.

Second Relevance Module: The second relevance module performs two functions: (1) identifying a cognate user and (2) determining a second measure of relevance. EX1004, ¶131.

For (1), identification of a “cognate group” is based on “similar past user actions and assessments, and/or a direct input by a user.” EX1001, 14:59-15:11; *infra* §V.D. “Cognate groups” may be determined using “role or group based; collaborative filtering; fingerprinting; cluster models; search-based methods; frequency analysis; and importance value correlation.” EX1001, 43:30-37, 43:30-

37. A POSA would have understood that the cognate group is identified using techniques described in 43:30-37. *Id.*, 25:65-26:10; EX1004, ¶¶133-135.

For (2), as explained below (§V.E), each possible “*measure*” considered in the “*second measure of relevance*” is part of a Markush group. EX1004, ¶¶133-134, 136-147.

Local Importance: “[T]he local importance to the recipient of the sender” may be a function of “individual importance component (IIC).” EX1001, 34:14-48. The IIC may “be a weighted function”/sum (below) of “assessments” as described in 31:21-32:33. EX1001, 32:24-35; EX1004, ¶¶137-139. A POSA would have understood that no single component of the weighted sum is necessary: if a component is missing, it would equal zero and not contribute to the overall score. *Id.*; EX1001, 28:46-48.

$$IIC_{sr} = w_1 \frac{1}{n_s} \sum_{x=1}^{n_s} f^t(\text{del}; \text{no}) + w_2 \frac{1}{m_s} \sum_{x=1}^{m_s} f^t(t_{x1} / L_{\alpha 1}) + w_3 \sum_{x=1}^y f^t(R(T_x)) + w_4 f^t(I_{rs}^{\text{assigned}}).$$

Global Importance: “[A] global importance value is an importance score for an entity respective to the entire system” and is “part of a large interconnecting matrix of importance values.” EX1001, 25:55-58, 30:63-31:3. Global importance can be calculated based on (1) a “weighted sum of individual

importance components” (*id.*, 32:46-47); (2) importance of mail objects received (*id.*, 33:1-11); (3) an assigned value given to the sender by HR (*id.*, 33:21-28); and (4) “transferred post importance,” (EX1004, ¶¶140-142), according to the following formula:

$${}^k I_s^g = \alpha^{(k-1)} I_s^g + (1 - \alpha) \left[\begin{array}{l} w_1 f \left(\sum_{r=1}^n f \{ IIC_{sr}^{(k-1)}, I_r^g \} \right) + \\ w_2 f \left(\sum_{j=1}^m {}^{(k-1)} I_s / N_j; \frac{1}{m} \sum_{j=1}^m {}^{(k-1)} I_s / N_j \right) + \\ w_3 f({}^o HR_s^t) + w_3 f({}^o HR_s^p) \end{array} \right].$$

As above, POSA would have understood that no single component of the weighted sum is necessary. *Id.*

Content: The specification states that “statistical techniques,” such as correlating certain words or frequencies of words with content relevance, can “identify terms within the content of any electronic mail object that statistically increase the likelihood that it is relevant to the recipient.” EX1001, 41:7-25; EX1004, ¶143.

Actions By Cognate Users: The “cognate relevance value” is a “score for a piece of content respective to a given recipient based on a weighted average of the IRC’s of the n users considered to be the cognate group for that recipient.” EX1001, 26:11-17. The algorithm above for the First

Measurement Module is also used to calculate the cognate relevance value.

EX1004, ¶¶144-147.

Relevance Analysis Module: The “local relevance” is “a function of the user’s own IRC, the global and cognate relevance scores, and the combined importance relating to that mail.” EX1001, 26:46-52; 35:62-36:6. The “input” into the local relevance is “a weighted average of the local importance values of all the senders, [and] the combined importance ${}^xCI_{\{s\}}^1$.” EX1001, 30:29-33. Although the specification does not describe how to calculate local relevance from these “inputs,” the Board is not “preclude[d]” from addressing patentability on §§102/103 grounds as the prior art discloses the claim under any reasonable construction. EX1004, ¶¶148-155.; *Samsung Elecs.*, 948 F.3d at 1355.

B. “*content presentation module*”

Claims 2 and 13 recite a “*content presentation module*.” Claim 2 depends on claim 1 and claim 13 depends on claim 6. The “*content presentation module*” is an additional example of a “*computer program module*” discussed above. *Supra* §V.A; EX1004, ¶156.

§112, ¶ 6: For the same reasons, the “*content presentation module*” term is subject to §112, ¶ 6. The term “*module*” as used in the claims and specification is a generic nonce term. EX1001, 6:36-38, 6:65-66. The claims also confirm that

“*content presentation module*” is defined by its function and does not convey to a POSA the name for structure. *Williamson*, 792 F.3d at 1350; EX1004, ¶157.

Function: The “*content presentation module*” has two functions defined by the express claim language: (1) “*to present the...content...in accordance with the determined relevance score,*” and (2) “*to present...a value describing the determined relevance score.*” EX1004, ¶158.

Structure: “[M]ail presentation module 260” can be used to “for generating any one or more of the various types of web pages” or “non-web user interfaces may also or instead be presented.” EX1001, 7:28-34. Figures 9–20 also show “screenshot[s] of an example of a mail view web page.” EX1001, 2:41-3:9. A POSA would have understood that corresponding structure for the “*content presentation module*” is “mail presentation module 260” (7:28-34) and Figs. 9–20. EX1004, ¶¶159-161.

C. “*search module*”

Claims 3 and 14 recite a “*search module.*” Claim 3 depends on claim 1. Claim 14 depends on claim 6. The “*search module*” is another example of a “*computer program module*” discussed above. *Supra* §V.A; EX1004, ¶162.

§112, ¶ 6: For the same reasons, the “*search module*” term is subject to §112, ¶ 6. The term “*module*” as used in the claims and specification is a generic nonce term. EX1001, 6:36-38, 6:65-66. The claims confirm that “*search module*” is

defined by its function—“provid[ing] a user with search capabilities” (EX1001, 6:60-64)—and does not convey the name for structure to a POSA. *Williamson*, 792 F.3d at 1350; EX1004,¶163.

Function: The function of the “*search module*” is “*search[ing] the electronic content in accordance with the determined relevance score.*” EX1004,¶164.

Structure: “[S]earch module 262” is “used to provide a user with search capabilities in accordance with the relevance and importance scores determined by the relevance analysis engine 252.” EX1001, 6:60-64. “[S]earch module 262 may be used for performing any of the search techniques described herein,” including searching using “search criteria (e.g., keywords, dates, specific senders).” EX1001, 7:32-34, 7:42-45, 8:9-12. A POSA would have understood that because traditional search criteria do not search content “*in accordance with the determined relevance score,*” the algorithm disclosed at 8:9-12 is the corresponding structure for the “*search module.*” EX1004,¶¶165-168.

D. “*identify at least one other of the plurality of users...that is cognate to the user*”

A POSA would have understood that in the context of the ’217 Patent “*identify[ing] at least one other of the plurality of users...cognate to the user,*” means identifying at least one user in a group of other users who share similar past user actions and assessments, and/or are defined by direct input by the user. EX1004,¶169.

The specification “acts as a dictionary when it expressly defines terms used in the claims.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir. 2005). Here, the specification defines:

Cognate Group: for each user, over time, the system identifies a “cognate group” of the n other users regarded as most similar. **This group is defined** by similar past user actions and assessments, and/or a direct input by a user...

EX1001, 25:65-26:2.

The claims support the specification’s express definition. Claim 8 (depending from claim 1) requires identifying cognate users by “*analyzing historical actions*” of users. EX1004, ¶¶170-172. Likewise, claim 1 recites “*a second measure of relevance*” based on “*one or more actions*” of cognate users; further supporting that “*identify[ing]*” cognate users are based on past user actions and assessments. *Id.*

A POSA would also have understood that the specification uses “cognate group” to consistently mean other users who share similar past user actions and assessments—“each recipient may have their own cognate group of those the system regards as **most similar** to that recipient.” EX1001, 26:4-6. The “relevance analysis engine” may determine “‘cognate’ entities and users by automatic analysis of users’ actions.” EX1001, 15:3-8; 25:65-26:2, 42:64-67; 43:5-7; 43:30-35. Therefore, “*identify[ing]*” cognate users is based on “analysis of users’ actions.” EX1004, ¶172.

During an examiner telephonic interview, the applicant discussed how “[t]he arguably novel feature is that the claimed invention bases the ‘Relevance’ on the **actions of another user** ‘ON The Piece of Content,’ and not just any actions of another (*i.e.*, “group of administrators adjusting values for [the] group.”). EX1002, 306. The applicants “agree[d] to amend to further specific the ‘actions’ in the last limitation were based on ‘others.’” *Id.* Therefore, identification of cognate users who performed similar past actions is part of the claims’ purported “novel feature” and is reflected in identification of cognate users based on past user actions and assessments. EX1004, ¶173.

E. Markush group

Each independent claim requires the “*second measure of relevance*” to be “*based at least in part on one or more measures derived from the group consisting of...*” A “*group consisting of*” signals a Markush group, which “lists specified alternatives in a patent claim.” *Gillette Co. v. Energizer Holdings, Inc.*, 405 F.3d 1367, 1372 (Fed. Cir. 2005). Here, the claim includes “qualifying language”—*i.e.*, “*one or more*”—such that this Markush group may be considered “open.” *Abbott Lab's v. Baxter Pharm. Prod., Inc.*, 334 F.3d 1274, 1281 (Fed. Cir. 2003).

Where a Markush group is “open,” “members of the Markush group are... **alternatively** usable for the purposes of the invention.” *Id.* The entire Markush Group “is disclosed by the prior art if one alternative in the Markush group is in the

prior art.” *Fresenius USA, Inc. v. Baxter Int’l, Inc.*, 582 F.3d 1288, 1298 (Fed. Cir. 2009). Therefore, prior art need only disclose **one** of Claim Elements–1[g][i]–[iv]. EX1004,¶174.

VI. DETAILED EXPLANATION OF GROUNDS FOR INVALIDITY

A. Grounds 1-2: Dumais (with or without AAPA) renders Claims 1-3, 5-9, 13-15, 18-19 and 22 obvious

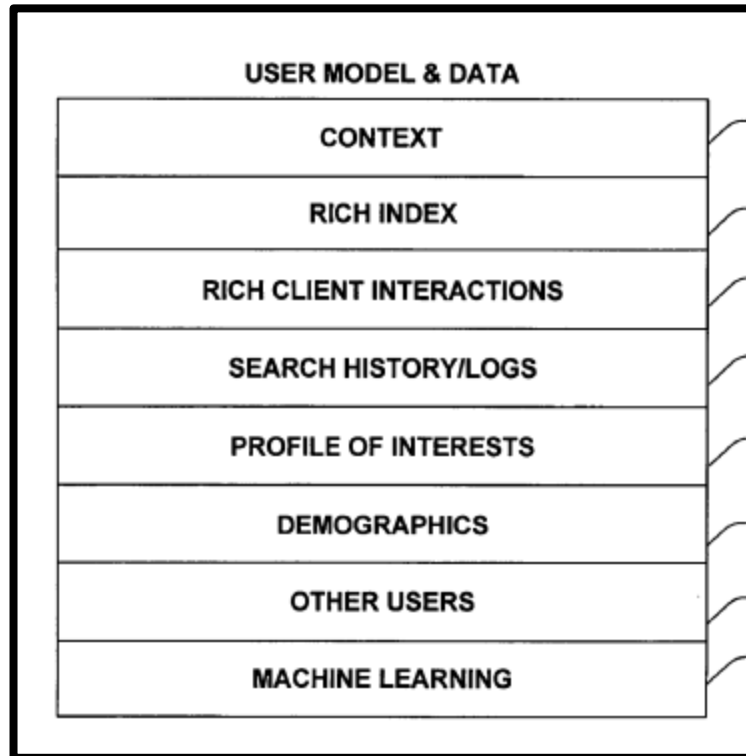
1. Dumais

Dumais was filed on June 29, 2005, and published on January 18, 2007. Dumais is prior art under at least §102(e) because it was filed before the earliest possible priority date of the ’217 Patent. EX1004,¶¶176-177.

Dumais “employs user activity or interaction data to perform various computer-related tasks.” EX1006, [0022], Fig. 1. Interactions with data items (*e.g.*, documents, emails, websites, *etc.*) are monitored and “tagged.” EX1006, [0019], [0023], [0031]–[0033]; EX1004,¶¶178-180. Based on the interactions, the tag component then “assigns” a weight or score to that data item in the database to indicate the “importance” of the item. EX1006, [0023]. Dumais also assigns content-based scores based on a textual analysis of the document. EX1006, [0025]; EX1004,¶181.

Dumais uses a “user model,” depicted in Figure 5 below, that can “differentiate personalized searches from generalized searches and to facilitate rich

data processing according to determined activity data.” EX1006, [0043]; EX1004, ¶¶182-187.



Id., Fig. 5.

The “user model” can be obtained from multiple sources and can be created for individuals and groups via “collaborative filtering techniques that develop profiles by the analysis of similarities among individuals or groups of individuals.” EX1006, [0052], [0043]-[0049]. The “user model” is derived by examining content and usage data and using machine learning techniques to adapt to user characteristics based on user interactions. EX1006, [0053]; EX1004, ¶¶182-187.

2. Claims 1/6/7

The '271 Patent includes three independent claims which overlap significantly. EX1004, ¶¶72-75. Claims 6 and 7 are broader than claim 1 and are directed to a “*computer program product*” and “*computer-implemented method*,” respectively. Where claims overlap, they are addressed together.

The “*computer program module*” terms are means-plus-function terms as construed above. *Supra* §V.A. To the extent Patent Owner (“Sterling”) argues the claims do not invoke § 112, ¶ 6, the claims would be broader and Dumais would disclose the claim under their ordinary meaning. In particular, Dumais discloses “*monitoring*” user actions (§VI.A.2.e), “*a first measure of relevance*” (§VI.A.2.f), “*identifying*” a cognate user (§VI.A.2.h), “*a second measure of relevance*” (§VI.A.2.i), “*determin[ing] the relevance score*” (§VI.A.2.n) under their plain and ordinary meaning. Claim 7 does not recite the “*computer program module*” terms and is not a means-plus-function claim.

a. **Elements–1[pre]/7[pre]**

Dumais renders obvious Elements–1[pre]/7[pre]. EX1004, ¶¶188,368-369.

Dumais is a “*computer-implemented system*” and “*computer-implemented method*.” Dumais discloses “system 100” and, in Fig. 8 describes “computer 812” as an “exemplary environment 810.” EX1006, [0017], [0070] [0022], Figs. 1, 4; EX1004, ¶¶189-191.

Dumais processes and assigns relevance rankings and scores to “data items” like “documents, files, email messages, calendar appointments, web pages,” etc. (i.e., a “*piece of electronic content*”). EX1006, [0031]. The “data items” can include “email messages” and can be “forwarded, replied to, sent to.” EX1006, [0022], [0031]. An email, for example, is “*sent from a sender to a user.*” EX1004, ¶192.

Dumais also determines “*a relevance score of a piece of electronic content.*” Dumais discusses “[m]ethods...to influence the rank of items returned in a **search**,” an example being a “relevance feedback” score. The “relevance feedback” score is calculated in a two-step process: (1) “a query generates results,” (2) the results are then re-ranked or selected from a larger set of alternatives by factoring in activity data. EX1006, Abstract, [0041]. The relevance feedback ranks data items and is “*a relevance score of a piece of electronic content.*” EX1004, ¶¶193,195.

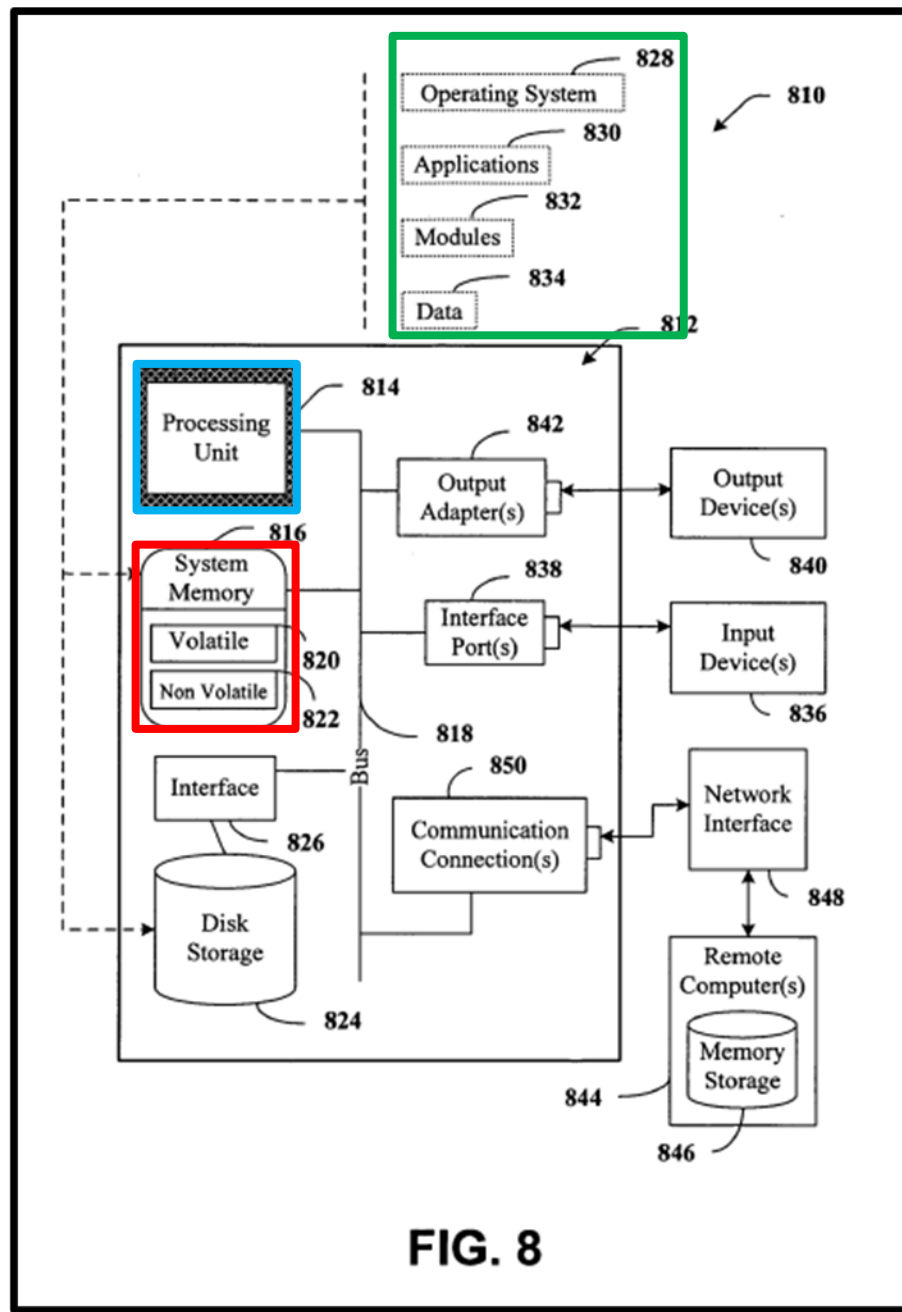
Dumais’ system can also create personalized search results with “user models” based on statistical similarity and category matching. EX1006, [0042], [0053]. Because Dumais’ purpose is to influence the rank of items returned in a search to prioritize relevant objects, a POSA would have understood the personalized search results are a “*relevance score.*” EX1006, [0003]. Dumais’ “ranking score” is based on probabilistic computation (a number between 0 and 1) and therefore is a numerical score. EX1006, [0053], [0033], cl.17. A POSA would

have understood that Dumais determines “*a relevance score of a piece of electronic content.*” EX1004, ¶¶194-195.

Dumais discloses a “*relevance score determined with respect to the user.*” Dumais’ system includes “[a] personalization component 410 [which] includes a user model 420 based on user activity.” EX1006, [0040]. Since the personalization component, **personalizes** results of a query with respect to the user and accounts for the user’s prior actions, a POSA would have understood the “*relevance score [is] determined with respect to the user.*” EX1006, [0041], cl.17; EX1004, ¶¶196-197.

b. **Element–1[a]**

Dumais renders obvious “*a computer processor.*” Dumais discloses a “computer” with a “processing unit” (**blue**). EX1006, [0070], Fig. 8; EX1004, ¶¶198-199.



c. **Element-1[b]**

Dumais renders obvious Element-1[b]. As seen in Figure 8 above, Dumais’ “computer” has “system memory” (**red**)—i.e., “*computer-readable storage medium[s]*.” EX1006, [0070], Fig. 8, [0072]-[0073]; EX1004, ¶¶200-201.

Figure 8 also shows “[o]perating system 828,” which allocates resources to system applications “through program modules 832 and program data 834 stored either in system memory 816 or on disk storage 824” (collectively **green**)—i.e., “*storing computer program modules.*” EX1006, [0074], [0020], [0072]. The applications, components, and software described by Dumais are “*program modules configured to execute on the computer processor.*” EX1004, ¶202.

d. **Element–6[pre]**

Dumais renders obvious Element–6[pre]. Dumais discloses “*determining a relevance score of a piece of electronic content sent from a sender to a user, the relevance score determined with respect to the user*” (§VI.A.2.a) and “*having a computer-readable storage medium having computer program instructions encoded thereon*” (§VI.A.2.b-VI.A.2.c). A POSA would recognize that a “*computer implemented system*” can be a “*computer program product.*” EX1004, ¶¶336-337.

e. **Elements–1[c]/6[a]/7[a]**

Dumais renders obvious Elements–1[c]/6[a]/7[a]. EX1004, ¶¶203,338-339,370-371.

Dumais’ “monitor component” tracks user data interaction. EX1006, [0022]. It observes actions such as “when files are opened or closed, edited...replied to, etc.,” and the amount of interaction time with files. EX1006, [0022], [0019]. “[T]he activity or interaction can be monitored and subsequently **tagged to a data item.**”

EX1006, [0019], [0023]. Dumais “*track[s] actions*” and uses tags/flags to track user activity throughout the system. EX1004, ¶205.

Dumais also discloses “global database 490 of user statistics” which can include “user activity or interaction data.” EX1006, [0040]. Dumais discloses “collaborative filtering techniques” (*supra* §III), which evaluate similarities of multiple users, “based on the content and/or usage of items” by those multiple users. EX1006, [0052]. Dumais “*track[s] actions by a plurality of users.*” EX1004, ¶206.

Dumais is “*an application for managing electronic content*” because it is a “data processing” and “information retrieval” system, that manages electronic content. EX1006, [0010]-[0013], [0031]. Likewise, the “global database 490 of user statistics” are the user statistics of “*a plurality of users associated with*” the system of Dumais. EX1006, [0040]; EX1004, ¶207.

Dumais renders obvious a “conventional email system” because it manages email. EX1006, [0010]-[0013], [0031]. If Sterling argues Dumais is not a “conventional email system,” it would be obvious to include one within Dumais because “conventional” email systems were “conventional” and well-understood, and ranking and weighting systems like Dumais were commonly used in them. *Supra* §III; EX1004, ¶¶208-211. Because “conventional” email was ubiquitous a POSA would have understood that improving the functionality of “conventional” email would have a large potential market of users. Therefore, a POSA would have

had a high likelihood of success, and such a combination would have been obvious to try. EX1004,¶211.

Dumais renders obvious a “conventional email system” and uses tags/flags to track user activity throughout the system. Dumais discloses a “*monitoring module*” under Petitioner’s construction. *Supra* §V.A;⁵ EX1004,¶¶204,208.

Ground 2: If Sterling argues Dumais is not a conventional email system, it would have been obvious to include one within Dumais. The ’217 patent admits “conventional”/“traditional” email systems were known. EX1001, 2:17 (“FIG. 1A shows a traditional prior art email system.”). A “conventional email system” is applicant admitted prior art (AAPA). EX1004,¶¶209-212.

f. **Elements–1[d]/6[b]/7[c]**

Dumais renders obvious Elements–1[d]/6[b]/7[c]. EX1004,¶¶223,340-341,374-375.

In Dumais “activity or interaction[s] can be monitored and subsequently **tagged to a data item.**” EX1006, [0019]. “[T]ag component 140 assigns weights or scores according to monitored data activities.” EX1006, [0023]. The “determined weight information for activity is associated or tagged to one or more data items.” EX1006, [0023], [0035]. Therefore, the “weight[] or score[]” for a given data item

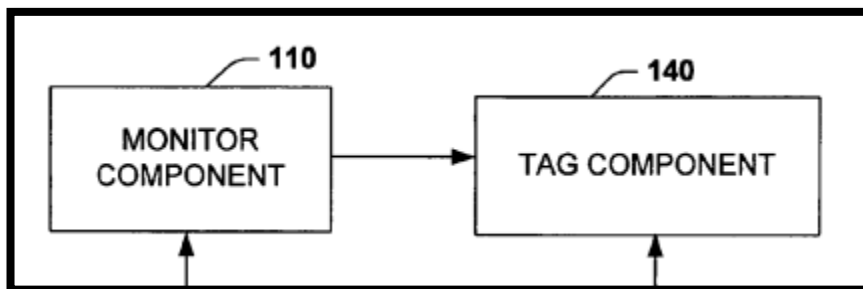
⁵ Element-7[a] does not require the “*monitoring module.*”

(*“a first measure of relevance of the piece of electronic content”*) is calculated based on “monitored data activities” (*“based at least in part on one or more actions of the user on the piece of electronic content.”*). EX1004, ¶225.

Dumais also discloses the *“first relevance measurement module”* under Petitioner’s construction. *Supra* §V.A;⁶ EX1004, ¶¶226-227. Dumais explains that “weights or scores” are variable and “can reflect the amount or pattern of the user’s interaction with a given piece of data or application,” such as “type **and** intensity of the activity,” and are based on “a **plurality of differing activities.**” EX1006, [0008], [0023], [0007]. Dumais evaluates many of the same dichotomous or cardinal factors as the ’217 patent, such as “opening,” “replies,” “clicks,” and “forwards.” *Compare* EX1001, 29:2-13 *with* EX1006, [0008]. Therefore, tag component 140 uses a “plurality of factors,” including dichotomous and cardinal scale factors, to calculate the *“first measure of relevance.”* EX1004, ¶¶224,226-227.

The *“first relevance measurement module [is also] coupled to the monitoring module.”* Tag component 140 and monitor component 110 are connected and communicate with each other. EX1006, [0020], Fig. 1.

⁶ Element-7[c] does not require the *“first relevance measurement module.”*



Tag component 140 and monitor component 110 are “coupled” because they physically execute from the same memory on the same processor and work together to calculate the “weight and score.” §VI.A.2.b-VI.A.2.c; EX1006, [0008], [0023]; EX1004, ¶¶228-229.

g. Elements–1[e]/6[c]

Dumais renders obvious Elements–1[e]/6[c]. EX1004, ¶¶230,342-343.

Explained below, the “*second relevance measurement module*” is composed of “personalization component 410” and “user model 500.” *Infra* §§VI.A.2.h-VI.A.2.i. Personalization component 410 uses “user model 420,” which is “based on user activity,” and a “global database” of user statistics to personalize searches by ranking the most relevant data items higher. EX1006, [0040]-[0041], Fig. 4. User model 500 employs “user activity or interaction data,” among “many different sources of information,” to “build a model of the user that accurately reflects their interests” and personalize search results. EX1006, [0053]; EX1004, ¶¶232-235.

A POSA would have recognized that “personalization component 410” and “user model 500” could be used together along with tag component 140 and monitor

component 110, as these components perform calculations “based on user activity.” EX1006, [0040], [0043], [0079]. If Sterling argues otherwise, it would have been obvious to combine “personalization component 410” and “user model 500” to achieve “successful personalization” by creating “a model of the user that accurately reflects their interests.” *Id.*, [0043]; EX1004, ¶236.

Dumais discloses the “*second relevance measurement module*” under Petitioner’s construction. *Supra* §V.A; EX1004, ¶¶231,237. “[P]ersonalization component 410” and “user model 500” disclose the subcomponents of the “*second relevance measurement module*.” *Infra* §§VI.A.2.h-VI.A.2.i.

The “*second relevance measurement module*” is coupled to the “*monitoring module*” for the same reasons as above (§VI.A.2.f). “[P]ersonalization component 410” and “user model 500” are “based on user activity,” (EX1006, [0040], [0043]), thus, a POSA would have understood they are “*coupled*” to the monitoring module. *Id.*, [0022]; EX1004, ¶¶238-239.

h. **Elements–1[f]/6[d]/7[b]**

Dumais renders obvious Elements–1[f]/6[d]/7[b]. EX1004, ¶¶240,344-345,372-373.

Dumais’s “personalization component 410” and “user model 500” can be “derived for individuals or **groups of individuals**.” EX1006, [0052]. Using “collaborative filtering techniques,” Dumais analyzes “similarities among

individuals or groups of individuals” based on “previous user activities from a group of users” and “usage of items” to “indicate preferences for a given user.” EX1006, [0052], [0055]. Dumais discloses identifying at least one user in a group of other users who share similar past user actions and assessments (i.e., usage of items)—i.e., “*identify[ing] at least one other of the plurality of users...that is cognate to the user.*” Identifying a group of users includes “*identify[ing] at least one other...user.*” EX1004, ¶¶242-244.

A POSA would have understood that at least one user in the group “*is a recipient of the piece of electronic content.*” First, Dumais explains that “[m]onitoring can...determine when the data items 130 are interacted with by **users**” (plural). EX1006, [0022]. Second, Dumais discloses a “global database 490 of user statistics” which “can be associated with user activity or interaction data.” *Id.*, [0040]. A POSA would have understood that “global database 490” includes “user activity or interaction data” for multiple users on a single data item. EX1004, ¶245.

Third, because Dumais includes “collaborative filtering techniques” (§III) and the “[s]imilarity computations [for collaborative filtering] can be based on...**usage of items,**” a POSA would have understood that the “group of users” identified by Dumais are “*a recipient of the piece of electronic content.*” A POSA would have understood that two users who interact with the same item offer the greatest indicator of relevance of that item. EX1028, 3:4-14. Because Dumais uses a vector-based

similarity calculations for collaborative filtering (EX1006, [0052]-[0055]), two users who had similar interactions with the same data item would have a high degree of similarity and would be grouped. EX1004, ¶¶245-247.

As explained above, Dumais uses “collaborative filtering techniques,” to identify a group of users, and identifies at least one user in a group of other users who share similar past user actions and assessments. Dumais discloses function (1) of the “*second relevance measurement module*” and identifies a cognate user under Petitioner’s construction. *Supra* §V.A;⁷ §V.D; EX1004, ¶¶241,248-250.

i. **Elements–1[g]/6[e]/7[d]**

Dumais renders obvious Elements–1[g]/6[c]/7[d]. EX1004, ¶¶251,346-347,376-377.

Dumais explains that “personalization component 410” and “user model 500” generate personalized search results based on statistical similarity and category matching. EX1006, [0025], [0040]-[0043], [0053]. Based on these matchings, and other factors, Dumais personalizes searches by ranking the most relevant data items higher. *Id.* Dumais’ personalized ranking is a “*second measure of relevance of the piece of electronic content.*” EX1004, ¶¶253-254.

⁷ Element-7[b] does not require the “*second relevance measurement module.*”

Explained above (§V.D), the “*second measure of relevance*” is a *Markush* group calculated with specified alternative “*measures.*” The personalized ranking of Dumais is calculated “*based at least in part on one or more measures*” discussed below. §§VI.A.2.l-VI.A.2.n. Dumais discloses function (2) of the “*second relevance measurement module*” under Petitioner’s construction. EX1004, ¶¶252,255-257.

j. **Elements–1[g][i]/6[e][i]/7[d][i]**

Dumais renders obvious Elements–1[g][i]/6[e][i]/7[d][i]. EX1004, ¶258,348-349,378-379.

User model 500 uses “many different sources of information” to personalize search results, such as “client interactions” and “recent or frequent contacts.” EX1006, [0043], [0046]. Explained above (§VI.A.2.a), Dumais’ data items can include emails that are “forwarded, replied to, sent to.” EX1006, [0022], [0031]. A POSA would have understood that “recent or frequent contacts” indicate the “recipient’s actions towards senders” and describe the “*importance of the sender to the user*”—e.g., a “frequent” contact is more important to the user than a less frequent contact. EX1004, ¶¶260-262; EX1001, 32:24-26. The “client interactions” and “recent or frequent contacts” are used to personalize search results and are, therefore, a “*local importance.*” *Id.*

Dumais also discloses that user model 500 uses “statistical/mathematical models” for “modeling users and determining preferences.” EX1006, [0053]. A POSA would have understood that a weighted function is one of the easier “statistical/mathematical models” to implement and use, it was also well understood and commonplace at the time, and obvious to try. *Supra* §III. Therefore, it would have been obvious to use the “client interactions” and “recent or frequent contacts” in a weighted sum to calculate the “*local importance*.” Dumais discloses “*local importance*” under Petitioner’s construction. EX1004, ¶¶259,261; §V.A.

k. **Elements–1[g][ii]/6[e][ii]/7[d][ii]**

Dumais renders obvious Elements–1[g][ii]/6[e][ii]/7[d][ii]. EX1004, ¶¶265,350-351,380-381.

Dumais’ “user model” can be based on “**relationships in an organizational chart**,” which a POSA would have understood are commonly used to evaluate importance of individuals within an organization (*e.g.*, managers, subordinates). EX1006, [0049]; EX1028, 11:24-28. Dumais’ data items can include emails that are “forwarded, replied to, sent to.” EX1006, [0022], [0031]. Therefore, organizational chart would describe the “*importance of the sender within an organization*.” EX1004, ¶¶267-270.

Dumais discloses “*global importance*” under its ordinary meaning and Petitioner’s construction because the organizational chart is a “directly assigned value[.]” EX1001, 33:22; *supra* §V.A. EX1004, ¶¶266-267.

l. **Elements–1[g][iii]/6[e][iii]/7[d][iii]**

Dumais renders obvious Elements–1[g][iii]/6[e][iii]/7[d][iii]. EX1004, ¶¶271,352-353,382-383.

Dumais explains that “content-based scores can be assigned for documents” based on “similarity of a user’s query to the content of the document.” EX1006, [0025]. Dumais’ “personalization component” includes a “statistical similarity match (in which users interests and content are represented as vectors and matched to items).” EX1006, [0042]. [0052]. A POSA would have understood that the “content-based scores” and “statistical similarity match” are “*a content relevance determined responsive to content of the piece of electronic content.*” EX1004, ¶¶273-276.

Dumais uses “statistical similarity match[es]” for correlating words using vector-based calculations. EX1004, ¶¶272,274. Dumais discloses “*content relevance*” under Petitioner’s construction. *Supra* §V.A.

m. **Elements–1[g][iv]/6[e][iv]/7[d][iv]**

Dumais renders obvious Elements–1[g][iv]/6[e][iv]/7[d][iv]. EX1004, ¶¶277,354-355,384-385.

As explained above (§VI.A.2.h), using “collaborative filtering techniques” (§III), Dumais “develop[s] profiles” of user interests based on “similarities among individuals or groups of individuals” (i.e., “*at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user*”). EX1006, [0052]. The similarity computations can be based on the “content and/or **usage of items**” (i.e., “*one or more actions on the piece of electronic content.*”). EX1006, [0052]; §VI.A.2.h. Therefore, the personalization provided by “personalization component 410” and “user model 500” will be affected by the actions of cognate users on the piece of electronic content. EX1004, ¶¶279-283.

Dumais also explains that user model 500 “can be employed with user activity or interaction data” and uses “correlation coefficients, vector-based similarity calculations, and statistical Bayesian methods” for collaborative filtering. EX1006, [0043], [0055]. A POSA would have understood that Dumais uses the same tracking and weighting as the “*first measurement module*” and that the statistical techniques described by Dumais are used to calculate the relative weights of data items, as they indicate a level of similarity or importance. It would have been obvious to a POSA to use a weighted mean to apply a level of importance to each user’s activity. Using a weighted mean for collaborative filtering was well-known and common, therefore, a POSA would have known it offered a predictable and obvious to try solution.

EX1004,¶278,282. Dumais discloses Elements–1[g]/6[e][iv] under Petitioner’s construction. *Supra* §V.A.

n. **Elements–1[h]/6[f]/7[e]**

Dumais renders obvious Elements–1[h]/6[f]/7[e]. EX1004,¶¶284,356-357,386-387.

Dumais discloses “*first*” and “*second measure[s] of relevance*.” §§VI.A.2.f, VI.A.2.i. Dumais’ “user model” uses “user activity or interaction data” (i.e., “*first measure of relevance*”) and “many different sources of information” (i.e., “*second measure of relevance*”), to personalize search rankings. EX1006, [0050], [0043]-[0049]; Fig. 5. The personalized search results are based on the “*first*” and “*second measure[s] of relevance*” and are a “*relevance score of the piece of electronic content sent from the sender to the user*.” EX1004,¶¶286-289; §VI.A.2.a.

Likewise, Dumais explains that activity data 150 (i.e., “*first measure of relevance*”) is used in conjunction with “content-based scores” (i.e., “*second measure of relevance*”) “when ranking, [to] give more weight to terms that appear in documents or sections of a document that have been edited or the user has spent lots of time reading.” EX1006, [0025]. The ranking is based on the “*first*” and “*second measure[s] of relevance*” and is also a “*relevance score*.” EX1004,¶290; §VI.A.2.a.

Dumais calculates “relevance feedback” in a two-step process. First, search results are ranked using “personalized search results” from the “personalization component” and “user model” (“*second measure*”), and second, the results are re-ranked based on activity data (“*first measure*”). EX1006, [0011], [0041]. The “relevance feedback” score (§VI.A.2.a) is based on both the first and second measures of relevance. EX1004, ¶¶291-293.

Moreover, since “*relevance score*” is calculated using “measures” discloses in Sections VI.A.2.f, VI.A.2.h–VI.A.2.m, Dumais uses the same inputs (“user’s own IRC, the global and cognate relevance scores, and the combined importance relating to that mail”) to calculate the scores as the ’217 Patent. EX1001, 26:49-51; 35:62-36:6. Dumais discloses the “*analysis module*” under Petitioner’s construction. *Supra* §V.A; EX1004, ¶¶285,294-295.⁸

3. Claims 2/13/18

Dumais renders obvious Claims 2/13/18. EX1004, ¶¶296,358-359,388-389.

Dumais’ search results can be displayed in a “user interface display.” EX1006, [0036]. Search results (returned from “content searching, activity-based searching, and or combinations thereof”) “may be highlighted in one color” to indicate that a data item (i.e., email) has “a higher activity score.” *Id.* The data items

⁸ Element-7[e] does not require the “*analysis module*.”

are presented “*in accordance with the determined relevance score.*” The highlighting and annotations are “*a value describing the determined relevance score.*” EX1004,¶¶298-299.

It would have been obvious to display “*determined relevance score[s]*” because Dumais is (1) already displaying documents ranked according to that score, and (2) doing so was commonplace. EX1004,¶300.

Dumais discloses the “*content presentation module*” under both its ordinary meaning and Petitioner’s construction because. Dumais’ email inbox works in a similar way as “mail presentation module 260.” EX1001, 6:55-60; EX1004,¶¶297,301-302.⁹

4. Claims 3/14/19

Dumais renders obvious Claims 3/14/19. EX1004,¶¶303,360-361,390-391.

Dumais states that “system 100 depicts a general diagram for **personalizing search results**,” and “personalization component 410” and “user model 500” “influence search results...or modify[] results 440 returned from a search” by ranking and re-ranking results. EX1006, [0040]; *supra* §VI.A.2.g. Therefore, Dumais searches data items “*in accordance with the determined relevance score.*” EX1004,¶¶305-306.

⁹ Claim 18 does not require the “*content presentation module.*”

Dumais discloses “*search module*” under both its ordinary meaning and Petitioner’s construction because Dumais ranks search results and indicates how likely each content item will be of interest to a user. EX1006, [0043], [0053]; EX1004, ¶¶304,305-306, §VI.A.2.g.¹⁰

5. Claims 5/15

Dumais’ data items (“*electronic content*”) include at least “**documents, files, email messages**, calendar appointments, web pages.” EX1006, [0031]. Dumais discloses Claims 5/15. EX1004, ¶¶312-313,362-363.

6. Claims 8/22

Dumais discloses identifying at least one user in a group of other users based on similar past user actions and assessments (i.e., usage of item). §VI.A.2.h. Dumais identifies a cognate user based on analysis of “*historical actions*” of the user and cognate user. EX1004, ¶¶314-316,396-397.

7. Claim 9

“[P]ersonalization component 410” and “user model 500” use collaborative filtering to identify similarities among individuals based on “content and/or usage of items.” EX1006, [0052], [0055]; §VI.A.2.h. A POSA would have understood that because the system attempts to “predict likely or possible profiles” for a user, there

¹⁰ Claim 19 does not require the “*search module*.”

are instances where User-A may be cognate to User-B, but User-B would not be cognate to User-A. *Supra* §III. Dumais explains that “a retrieval algorithm could be limited to those aspects of the user’s corpus that pertain to the query” where User-A could limit their search to the “previous 1 month” while User-B limits their search to “the previous 3 days.” EX1006, [0051]. A POSA would have appreciated that if User-A and B worked together closely over the last 3 days (but never before) then User-A would be cognate to User-B, but User-B would not be cognate to User-A. Moreover, since collaborative filtering was well-known, allowing User-A to be cognate to User-B, but not vice versa would have been obvious. EX1004, ¶¶317-322; *supra* §III.

B. Ground 3: Dumais/Marston renders Claims 1-22 obvious

The combination of Dumais and Marston’s relational mail architecture (Dumais/Marston) would have been obvious. EX1004, ¶217.

A POSA would have been motivated to combine Dumais and Marston. Marston and Dumais are analogous art to the ’217 Patent because all three relate to email and content management systems and are in the same field of endeavor. EX1043, [0003]; EX1001, Abstract; EX1006, [0031]; EX1004, ¶218.

In addition, a POSA would have been motivated to include Marston’s “relational mail architecture” in Dumais’ system to take advantage of benefits of a “relational mail architecture,” including that it removes unnecessary duplicate

emails and “significantly reduces infrastructure costs,” and “provides enterprises with the content granularity they need to enforce regulatory compliance and other policies.” EX1043, Abstract; EX1004,¶219.

Additionally, a POSA would have been motivated to combine Marston and Dumais for the reasons discussed below. *Infra* §VI.C.4. Including that (1) Dumais helps counteract the proliferation of spam and irrelevant documents. EX1006, [0019]. [0043]; *supra* §III; EX1030, 1, 2 (citing [1] EX1037 and [2] EX1038); EX1034, 6; EX1035, 1; EX1036. (2) Collaborative filtering techniques (such as Dumais) were well-known to improve the accuracy of relevance calculations (*supra* §IV.B). (3) Increased utilization of electronic communication in the workplace would greatly enhance the ability of a designer of an electronic messaging system to include more sophisticated systems for managing a user’s electronic messages such as Dumais and Marston. EX1004,¶220.

Likewise, Dumais stores emails using objects (EX1006, [0033]), Dumais/Marston would require only simple substitution, for which a POSA would have had a high likelihood of success. Likewise, combining Dumais and Marston will be a combination of old elements and yield a predictable result. EX1004,¶221.

1. Claims 1/6/7

Marston discloses a “relational mail architecture,” which is a “*monitoring module*” structure. *Supra* §V.A. Marston is discussed for Elements–1[c]/6[a]. The analysis for the other elements of Claims 1 and 6 are the same as in **Ground 1**.

a. **Elements–1[c]/6[a]**

If Sterling argues that Dumais is not a conventional email system, or that it would not have been obvious to include one, Marston discloses “[a] messaging system [that] uses a relational model.” EX1043, [0010]. Marston explains that each message and sub-message are stored “as a discrete object that can be individually referenced.” EX1043, [0022], [0010]. Each message includes a series of pointers to the “current submessage 38: and “history submessages.” EX1043, [0046]. Marston’s relational mail architecture fully aligns with the description of “a relational architecture” in the ’217 Patent. EX001, 3:56-4:4, 15:51-58. Marston discloses the “*monitoring module*” because it discloses a “relational mail architecture.” EX1004, ¶¶213-217; *supra* §V.A.

2. Claims 2-3, 5, 8-9, 13-15, 18-19, and 22

Dumais/Marston renders obvious Claims 2-3, 5, 8-9, 13-15, 18-19, and 22, for the same reasons as in **Ground 1**. *Supra* §§VI.A.3–VI.A.7.

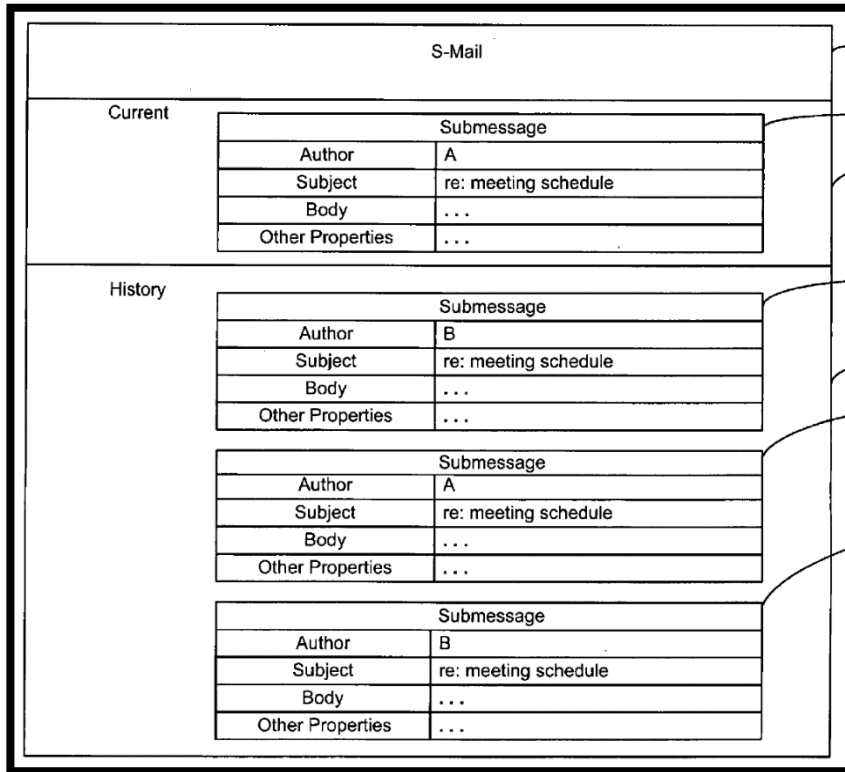
3. Claims 4/16/20

Marston discloses a “relational mail system” where each message and sub-message are stored “as a discrete object that can be individually referenced.”

EX1043, [0022], [0010]; §VI.B.1.a. Dumais/Marston renders obvious Claims 4/16/20. EX1004, ¶¶308-311,364-365,392-393.

4. Claim 10

Marston explains that each message object includes a series of pointers to the “current submessage 38: and “history submessages.” EX1043, [0046], [0035]. In Figure 2, the “history portion 14 contains a list of individual submessages 18,20,22.” EX1043, [0036];



Dumais/Marston renders obvious Claim 10. EX1004, ¶¶323-327.

5. Claim 11

In Marston, each message includes a series of pointers (i.e., “*references to submessage content*”) to the “current submessage 38: and “history submessages.”

EX1043, [0046]; §VI.B.4. Marston teaches:

storing messages...in a data store...wherein the data store stores the messages and submessages.

EX1043, cl.25.

Dumais/Marston renders obvious Claim 11. EX1004, ¶¶328-332.

6. Claim 12

Marston explains that sub-message objects can include “job codes” that “index the message given the particular business processes.” EX1043, [0039].

Dumais/Marston renders obvious Claim 12. EX1004, ¶¶333-335.

7. Claims 17/21

Claims 17/21 are taught for the same reasons as Claim 10 (i.e., “*one or more submessages*”/“*references to submessage*”) and Claim 11 (“*stored in a data store.*”) *Supra* §§VI.B.4-VI.B.5; EX1004, ¶¶366-367, 394-395.

C. Ground 4: Kircher/Krug renders Claims 1-3, 5-9, 13-15, and 18-22 obvious

Kircher discloses a system for “prioritizing” and “ranking” electronic messages and email. EX1007, [0039]. Kircher “monitor[s] a user’s actual response to receiving an electronic message” and ranks messages in an ordered list of emails according to the user’s response. *Id.*, [0046], [0102], [0049], Fig.3B.

Likewise, Krug uses “usage behavior” of an individual or “group of users” to build user profiles. EX1008, 4, 6. In Krug, “each object is assigned at least one object profile that describes properties of the object.” *Id.*, [0016]. Krug then calculates a “comparison value”—indicative of relevance of objects—by comparing object profiles and user profiles. *Id.*, [0020], [0048], Fig.1.

A POSA would have been motivated to combine the filtering and ranking techniques of Kircher and Krug. *Infra* §VI.C.3. Moreover, a POSA would have been motivated to combine Krug’s user profile and object profile comparison system into and Kircher’s electronic message sorting and ranking system. EX1004, ¶¶398-399.

1. Kircher

Kircher was filed on April 16, 2002, and published on October 16, 2003 (more than one year before the earliest possible priority date) and qualifies as prior art under §102(b). EX1004, ¶¶400-401.

Kircher “evaluates messages” and prioritizes emails and ranks them with “numerical value[s].” EX1004, ¶¶402-403; EX1007, [0026], [0039], [0049]-[0051]; Fig. 3B. The “numerical value[s]” are generated using “fuzzy logic” to evaluate criteria, such as importance of the sender, degree of personalization, the user’s likely action, and/or message content. EX1007, [0015], [0039]-[0040], [0044], [0055]-[0062], [0066]-[0071], [0076]-[0091], Figs. 7, 9-12, 4, 5A, 5B, 5C; EX1004, ¶¶404-

407. Kircher operates on a “computing device.” EX1007, [0021], [0024], [0047], Fig. 2; EX1004, ¶¶408-409.

2. Krug

Krug was filed on September 6, 2002, and claims priority to September 7, 2001. Krug is prior art under §102(b) because it was published more than one year before the earliest possible priority date. EX1004, ¶¶410-411.

Krug “relates to a method and a device for determining relevant objects” and presenting those objects to the user “in the order of their relevance.” EX1008, [0001], [0006], [0128], [0130]. “Several types of objects are provided... in particular HTML, WMTL or XHTML documents.” EX1008, [0006]; EX1004, ¶412.

Each user has a profile with characteristic properties. EX1008, [0011], [0056], Fig. 2, [0034], [0057]. Each object has an object profile created from the profiles of users and groups who have accessed or interacted with the object. EX1008, [0016], [0031], [0038], [0049], [0081], [0092]-[0093]; EX1004, ¶413.

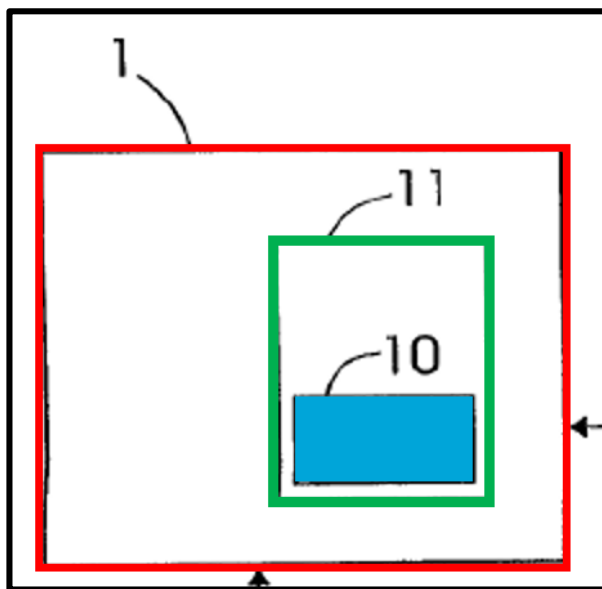
Krug calculates a “comparison value,” “determined based on the match between the determined user profile and object profile.” EX1008, [0019]-[0020], [0048], [0053], Fig. 1. The “comparison value” “rate[s] the relevance of the object” and “can assume values between 0 and 100.” *Id.*, [0027]-[0030], [0033], [0081]-[0096], [0104-0129], Figs. 3, 6a; EX1004, ¶¶414-415. Krug then “sort[s] the objects according to their relevance and presenting the objects in the order of their

relevance.” EX1008, [0103], Fig. 6, [0041]-[0042], [0050]-[0052], [0090]-[0098], Figs. 1, 4a, 4b; EX1004, ¶¶416-421.

3. Kircher/Krug

In the combination, Kircher’s email management application (including its prioritization and filtering techniques) would have been combined with Krug’s prioritization and filtering techniques. EX1004, ¶422.

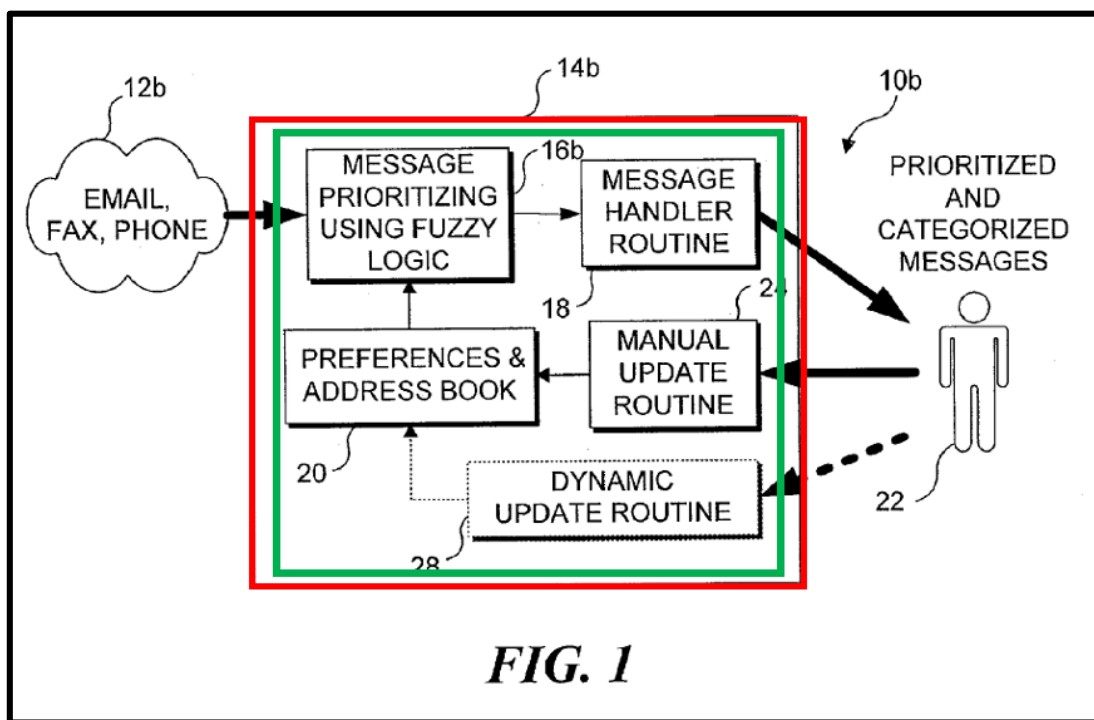
Krug’s computer program analyzes “objects” (*i.e.*, electronic content), then ranks those objects by relevance. EX1008, [0130]. Krug’s program (web browser (**green**)) can be added to existing document management systems as a plug-in (**blue**). EX1008, [0099]; EX1004, ¶423.



“The software program 10 logs the user’s access to and interactions with objects 4,” and the “usage intensities and intrinsic values for the objects that the user

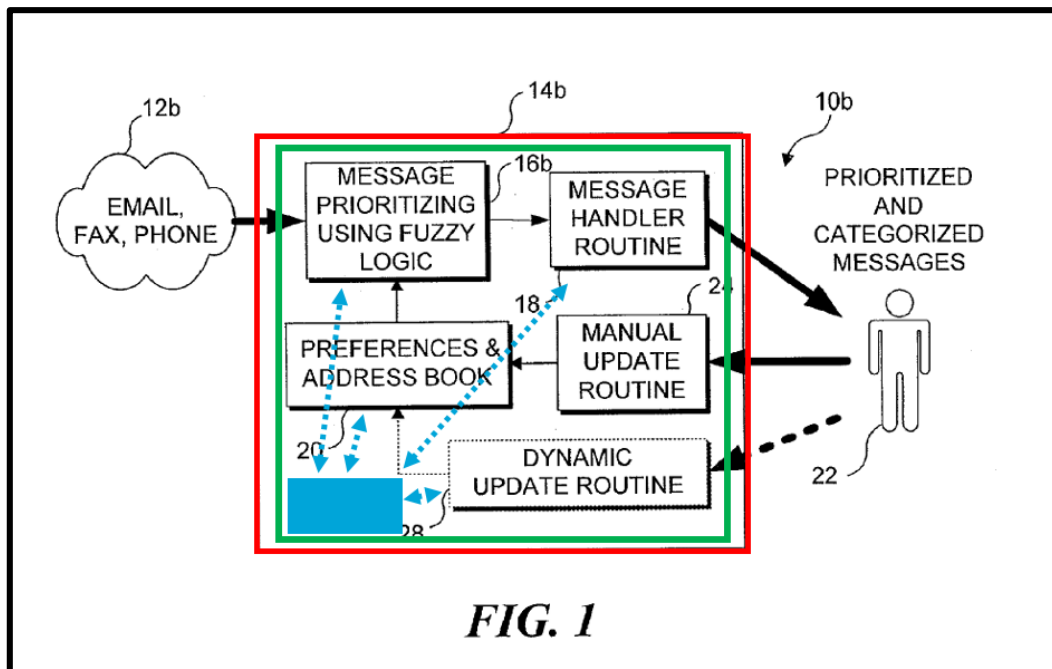
has accessed or interacted with are stored on the user computer 1 (client) in a memory region 12.” EX1008, [0099], [0101]. EX1004, ¶424.

Kircher’s system ranks emails or other electronic messages received by a computing device. EX1007, [0021], [0039]. Kircher’s “computing device 14 b” (**Red**) also includes “a computer program” (**Green**) for managing and prioritizing electronic messages. EX1004, ¶425.

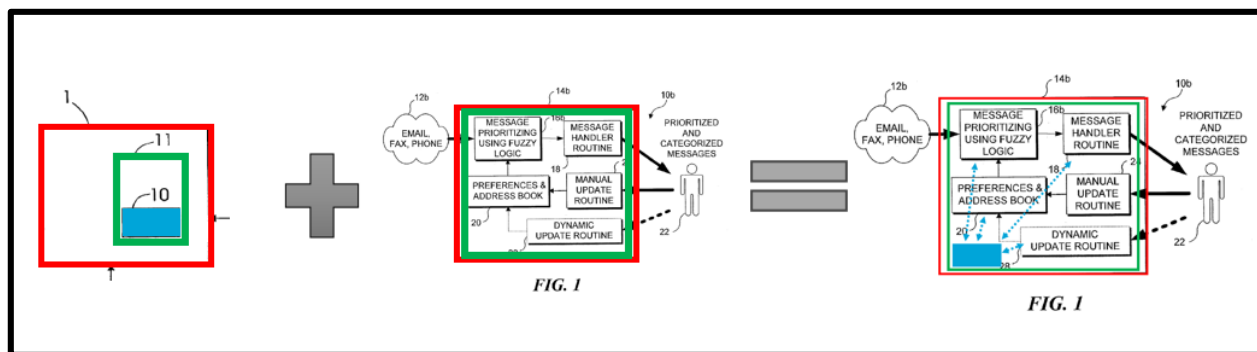


Kircher’s ranking system employs “fuzzy logic,” which “typically include[s] more than one rule.” EX1007, [0012], [0044]. It would have been easy and predictable to integrate additional rules into Kircher’s “fuzzy logic”—as Kircher envisions “more than one rule” and “[a]n entire group of rules.” *Id.*; EX1004, ¶426.

It would have been a matter of simple substitution to include the plug-in that embodies Krug (Blue) (including its relevance measurement and ranking system) into Kircher's "computer program" (Green) (including its fuzzy logic). EX1004, ¶427.



The combination would have been a combination of known elements of Krug and Kircher—which would have been easily combinable given they both involve software on a computer—with each performing their known functions and yielding a predictable result. EX1008, [0099], EX1007, [0021]; EX1004, ¶428.



Both Krug and Kircher envision sorting and ranking electronic content by their relative relevance using a numerical score. *Supra* §§VI.C.5.a, VI.C.5.n. In Kircher, emails are ranked “according to the likely importance” and a “numerical value correspond[ing] to expected user action”; Krug teaches “sorting the objects according to their relevance and presenting the objects in the order of their relevance” with a numerical value to represent relevance (**purple**); EX1007, [0026], [0049]; EX1008, [0103]; Fig. 6; EX1004, ¶¶429-430.

Usage intensity/intrinsic value			Absolute intrinsic value		
Object	IA	WU	Object	WO	
http://www.microsoft.com	1,8	1,98	O1 http://www.microsoft.com	0,11	
http://www.mirrow.net	1,79	1,12	O2 http://www.mirrow.net	1,12	
http://www.friends.ur	1,63	1,98	...	1,8	
http://www.jaroslaw.com	1,62	1,08	...	1,4	
http://www.alibi.net	1,6	1,58	...	1,5	
http://www.jabaona.com	1,47	1,35	Oj	1,35	
http://www.sportsworld.de	1,42	2,03	...	2,30	
http://www.ibm.com	1,42	1,78	...	1,78	
http://www.xtoy.com	1,11	1,45	...	1,45	
http://www.hacker.net	1,01	1,87	...	1,87	
http://www.javanet.com	0,9	1,76	...	1,76	
http://www.fengshui.de	0,89	0,12	...	0,12	
http://www.hasi.com	0,81	1,58	On http://www.geistpunkt	1,8	

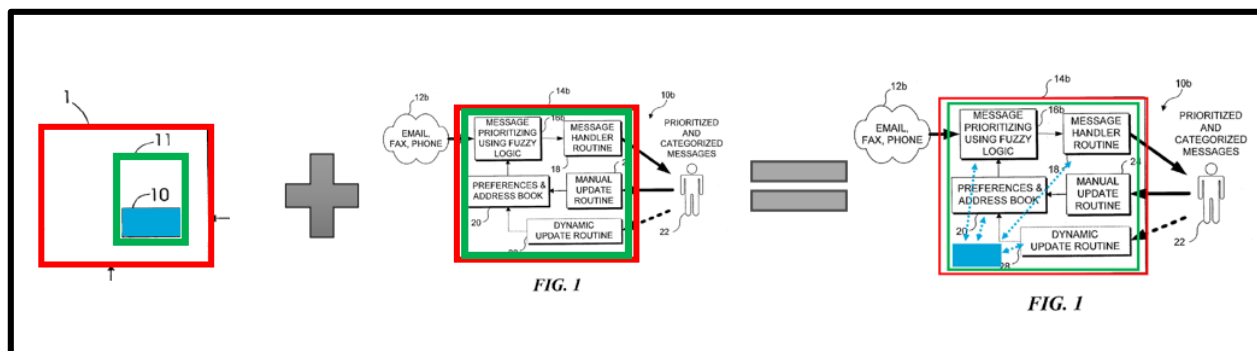
It would have been obvious to include numerical rankings of Krug in Kircher's system. A POSA would have understood that it was commonplace to

combine multiple types of relevance measures together (§III) and would have known that combining Krug's and Kircher's relevance rankings would have been straightforward, with a high likelihood of success. Because Kircher and Krug disclose analogous functionality, a POSA would have prioritized efficiency and common sense in implementing the individual, nonredundant features into the combined system to obtain the benefits of both. EX1004, ¶¶432-433.

4. Motivations to Combine

A POSA would have ample reasons and motivations to combine Kircher and Krug. EX1004, ¶434.

Combining Kircher and Krug (including their filtering and ranking techniques) would have been simple substitution and a POSA would have had a high likelihood of success in making the combination. *Supra* §VI.C.3; EX1004, ¶435.



Kircher and Krug are analogous art to the '217 Patent. All three disclose improvements for email and content management systems. EX1001, Abstract; EX1007, [0010]; EX1008, Abstract. Kircher and Krug are also both related to solving the spam problem and identifying relevant documents to users—the same

objectives of the '217 Patent. *Compare* EX1001, 1:26-30, with EX1007, [0002]; EX1008, [0002]; EX1004, ¶436.

A POSA would have recognized that Kircher/Krug is merely a combination of old elements and obvious to try. Electronic content filtering and sorting based on user preference and message content had existed for at least a decade before the '217 Patent's earliest possible priority date. *Supra* §III. A POSA would have recognized that Kircher/Krug constituted nothing more than a simple substitution of one known element for another to obtain a predictable result. EX1004, ¶¶437-438.

A POSA would have been motivated to take advantage of Krug's collaborative filtering. Krug explains that “the usage intensity for accessing the objects can be used as an ‘intrinsic value’ of an object, which describes the relative importance of the object.” EX1008, [0027]. Such techniques were well-known to improve the accuracy of relevance calculations. *Supra* §III; EX1004, ¶439.

Kircher explains that a known issue with several prior art systems was a failure to “‘learn’ a recipient's preferences based on the recipient's response to the messages.” EX1007, [0005]-[0007]. Thus. “it would be desirable to...employ a more useful prioritization paradigm” by learning based on user actions and more accurately ranking and processing future messages. *Id.*; EX1004, ¶440.

Both references target reduction of spam and irrelevant documents. EX1007, [0002]; EX1008, [0002]. It was well-known that systems combining multiple

filtering techniques often outperformed systems that relied on one technique. *Supra* §III; EX1035, 1; EX1036; EX1030, 1, 2 (citing EX1037; EX1038); EX1034, 6. Likewise, a POSA would have had a reasonable expectation of success when combining Kircher and Krug, because combining multiple techniques for filtering was well-known and predictable, and would have been obvious to try. EX1011, 1; EX1030, 2-4; EX1004, ¶¶440-442.

The use of handheld devices was becoming commonplace by the early-2000s, and sorting through emails on a small display to find the important messages was time consuming. EX1007, [0003]. Therefore, a POSA would have been motivated to look to sorting techniques, like those described in Kircher and Krug, to alleviate this issue. EX1004, ¶443.

A POSA would have understood that given the rise in spam accompanying the increasing utilization of electronic communication in the workplace in the early 2000's, such electronic messaging systems would have been enhanced by more sophisticated systems such as Kircher for reducing spam/unimportant emails. EX1007, [0002]-[0009]; EX1004, ¶444.

In sum, a POSA would have been highly motivated to combine Kircher's electronic message sorting and ranking system with Krug's electronic content sorting and ranking system. EX1004, ¶¶445-446.

5. Claims 1/6/7

To the extent the claims are not means-plus-function claims they would be broader and Kircher/Krug would disclose the claims under their ordinary meaning. EX1004, ¶¶72-75. Kircher/Krug discloses “*monitoring*” user actions (§VI.C.5.e), “*a first measure of relevance*” (§VI.C.5.f), “*identifying*” a cognate user (§VI.C.5.h), “*a second measure of relevance*” (§VI.C.5.i), “*determin[ing] the relevance score*” (§VI.C.5.n) under their plain and ordinary meaning.

a. **Elements–1[pre]/7[pre]**

Kircher/Krug renders obvious Elements–1[pre]/7[pre]. EX1004, ¶¶447,632-633.

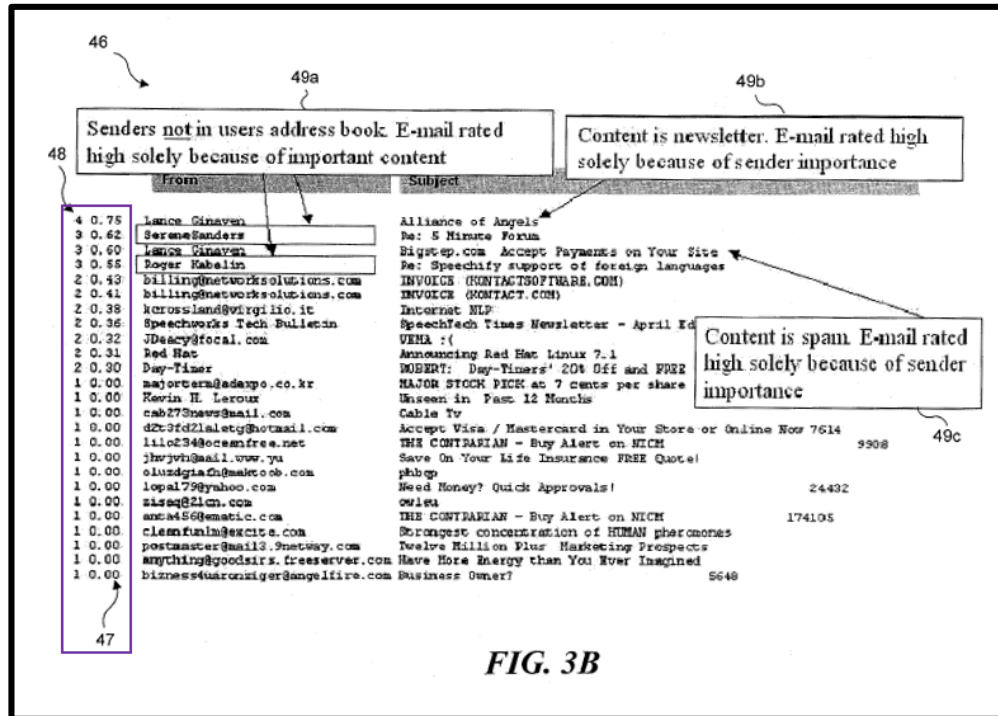
Kircher is a “*computer-implemented system*” and “*computer-implemented method.*” In Figures 1-2, Kircher discloses “system 10b” implemented on “[c]omputing device 14b.” EX1007, [0039]; [0024]. Kircher’s processor executes machine instructions that “carry[] out a plurality of functions generally consistent with” Kircher’s system. EX1007, [0021]; EX1004, ¶448. In Kircher/Krug, Krug’s relevance measurement and ranking system is combined with Kircher’s “computer program.” §VI.C.3; EX1004, ¶¶449-451.

In Krug, each user has a “user profile” that “describes characteristic properties of the user.” EX1008, [0011], [0056], Fig. 2. The user profile is broken into static and dynamic (changes based on the user's interactions with objects) parts. EX1008, [0034], [0057]. Likewise, “each object is assigned at least one **object profile** that

describes properties of the object.” EX1008, [0016], [0081]. In Krug, an “object” is a “*piece of electronic content*.” EX1008, [0006], [0040]; EX1004, ¶452.

Krug calculates a “comparison value...based on the match between the determined user profile and the object profile.” EX1008, [0020]. The “comparison value” “rate[s] the relevance of the object” and “can assume values between 0 and 100.” EX1008, [0054]. Krug’s “comparison value” is “*a relevance score of a piece of electronic content*.” EX1004, ¶453.

Kircher “**rank[s] messages** based upon probable importance to the recipient.” EX1007, [0010]. Kircher depicts “an email inbox 46” which contains numerous emails (i.e., “*piece of electronic content*.”). Fig.3; EX1007, [0049]. Where “column 48 indicates the importance of each email by a **ranking number**” and “column 47 includes the **numerical value assigned to each email**.” *Id.*, [0050]-[0051]. Krug’s “comparison value” would have been combined with Kircher’s “ranking number” (column 48) and “numerical value” (column 47) (**purple**), such that Kircher’s emails would have been ranked (in-part) using Krug’s comparison value. Kircher/Krug discloses “*a relevance score of a piece of electronic content*.” EX1004, ¶¶454-455.



The “comparison value” is “*determined with respect to the user.*” Krug notes that “[t]he relevance of the object **for the user** can be determined individually,” and “the same search query can lead to different results for different users.” EX1008, [0044]. Kircher teaches that “messages” are “ranked according to the likely importance of each message **to the recipient.**” EX1007, [0049], [0052], Abstract. The comparison values of Kircher/Krug are “*determined with respect to the user.*” EX1004, ¶¶456-457.

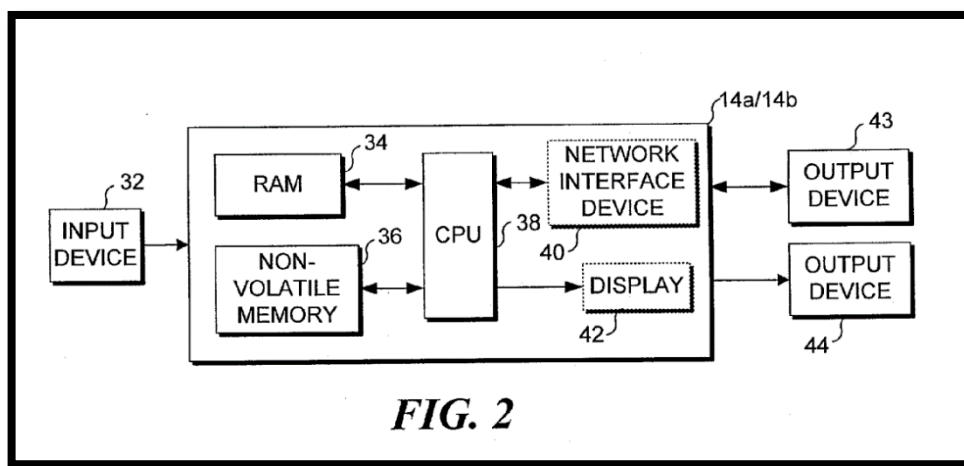
The “*piece of electronic content*” is “*sent from a sender to a user.*” Kircher depicts (Fig. 3B) “an email inbox 46” which contains numerous emails. EX1007, [0049]. Figure 3B also includes a “From” column. A POSA would have understood

that an email is a “*piece of electronic content*” and is “*sent from a sender to a user.*”

EX1007, Abstract. EX1004, ¶¶458-459.

b. Element–1[a]

Kircher/Krug renders obvious “*a computer processor.*” Kircher describes “a computing device” which includes a central processing unit (CPU) 38.” EX1007, [0047], Fig. 2; EX1004, ¶¶460-461.



c. Element–1[b]

Kircher/Krug renders obvious Element–1[b]. EX1004, ¶462.

Kircher’s “computing device” includes “**random access memory (RAM) 34, and a nonvolatile memory 36,**”—i.e., “*storage medium[s].*” EX1007, [0047]; EX1004, ¶463.

Kircher’s “memory” includes “a plurality of machine instructions defining an executable application” and its processor (§VI.C.5.b), is coupled to the memory, and can “access the machine instructions” to execute such instructions and “carry[] out

a plurality of functions.” EX1007, [0021], [0047]. Krug’s plug-in (§VI.C.3), would have been integrated with Kircher’s “computer program” (“*computer program modules*”) so that the software program would have been stored on a “*computer-readable storage medium*” and executed by the “*computer processor*” of Kircher. EX1004, ¶¶464-466.

d. **Element–6[pre]**

Kircher/Krug renders obvious Element–6[pre], for the same reasons as above. *Supra* §VI.A.2.d, §§VI.C.5.a-VI.C.5.c; EX1004, ¶¶600-601.

e. **Elements–1[c]/6[a]/7[a]**

Kircher/Krug renders obvious Elements–1[c]/6[a]/7[a]. EX1004, ¶¶467,602-603,634-635.

Krug “*track[s] actions by a plurality of users.*” Krug teaches that when a user accesses an object (EX1008, [0061]) “usage analysis is performed” based on “the user’s interaction with the object.” EX1008, [0063]. “User interactions” may include, for example, “scrolling,” “clicking,” or “entering information.” EX1008 [0007]; [0061], [0028]. “An intensity factor I” is calculated, “indicat[ing] how strong the user’s interaction with the object was.” EX1008, [0063]. The “central computer” receives “intensity factors I” from multiple user interactions as inputs to calculate an “absolute usage intensity matrix $I^A(U,O)$ ” that contains “usage intensity

$I^A(U_j, O_k)$ ” for multiple (j-th) users on a per object (k-th) basis. EX1008, [0064], [0071]; EX1004, ¶¶469-470.

$I^A(U_j, O_k) = f \left(ti_{m+1}^A(U_j, O_k); B_{m+1}^A(U_j, O_k) \right)$, where
 $ti_{m+1}^A(U_j, O_k)$ is the absolute interaction time of the j-th user for the k-th object, and
 $B_{m+1}^A(U_j, O_k)$ is the absolute rating of the j-th user for the k-th object.

Krug tracks “*track[s] actions by a plurality of users*” (i.e., j-th users). EX1008, [0071], [0032]; EX1004, ¶471.

Krug’s object profile is adjusted with “each usage of an object by a user.” The formula shows the “degree of adjustment is a function of the usage intensity” and “frequency and temporal sequence of the accesses.” EX1004, ¶472.

$O_m^{(k)} = (O_{1,m}^{(k)}, \dots, O_{n,m}^{(k)})$, where $O_m^{(k)}$ is the vector of profile values of the k-th object after the m-th interaction.

EX1008, [0082]-[0083]. A POSA would have understood that the object profile stores each n-value $O_{n,m}^{(k)}$ of every interaction with object k and thus that the object profile is a flag or tag because it not only “describes properties of the object,” EX1041, 168, 460, but also “track[s] what happens to the content throughout the system. EX1001, 16:37-38; EX1004, ¶473.

Kircher also “*track[s] actions*” via a dynamic update routine that monitors “a user’s **actual response to receiving an electronic message.**” EX1007, [0046], [0094]-[0108]; EX1004, ¶477-481.

Kircher discloses a “conventional email system.” Kircher explains that “**email**, faxes, and telephone messages...are received by a computing device 14 b.” EX1007, [0039], [0025]-[0026], [0101]-[0109]; Fig. 3A-B. Kircher discloses “systems and methods for managing electronic message.” EX1007, [0009]. A POSA would have understood that Kircher’s “conventional email system” is “*an application for managing electronic content.*” A POSA would have understood that the users of Krug and Kircher are “*associated with*” the application. EX1004, ¶475.

Therefore, Kircher/Krug discloses a “*monitoring module*” because it uses tag/flags to track user actions in a “conventional email system.” *Supra* §V.A; EX1004, ¶468,475,482.

f. **Elements–1[d]/6[b]/7[c]**

Kircher/Krug renders obvious Elements–1[d]/6[b]/7[c]. EX1004, ¶¶483,604-605,638-639.

Krug’s “action equivalence” is “*a first measure of relevance.*” EX1008, [0028], [0107]. “Action equivalence” is based on “usage intensity (intensity factor I)” of an individual user or user groups, and “increases the importance of objects with high usage intensity”—*i.e.*, “action equivalence” is “*based at least in part on*

one or more actions of the user on the piece of electronic content.” EX1008, [0028], [0107]. The “action equivalence” allows users to find personal favorites more easily because those objects/documents will “have a **higher comparison value** and are therefore **potentially among the relevant objects.**” EX1008, [0009]; EX1004, ¶485.

Krug teaches a “*first relevance measurement module.*” “[A]ction equivalence” is based on a “plurality of factors” such as those described throughout 28:63-29:41 of the ’217 Patent. *Supra* §V.A; EX1004, ¶¶486-488. The “action equivalence” is based on “usage intensity (intensity factor I),” and usage intensity is based on a “plurality of factors,” such as “actual active time for interaction” and “the user’s rating of the object.” EX1008, [0069]. For example, as shown below:

$$I_{m+1} = f(t_{m+1}, B_{m+1}); \text{ where}$$

I_{m+1} is the intensity factor of the $m+1$ -th interaction;
 t_{m+1} is the active interaction time;
 B_{m+1} is the user rating for the object; and
 f increases with both parameters.

Krug teaches an action equivalence calculated using “usage intensity (intensity factor I).” Therefore, a POSA would have understood the action equivalence and usage intensity are “*coupled.*” Moreover, the “*first relevance measurement module*” is coupled to the “*monitoring module*” because (in the

combination) they are both executed by the same computer and are part of the same code base. *Supra* §§VI.C.5.b-VI.C.5.c; EX1004,¶¶484,490-491.

g. **Elements–1[e]/6[c]**

Kircher/Klug renders obvious Elements–1[e]/6[c]. EX1004,¶¶492,606-607.

Krug’s “comparison value” is calculated using the following formula:

$$\mathbf{TRm(k)} = \rho ((\mathbf{WOm(k)}, z1), (\mathbf{WCm(k)}, z2), (\mathbf{WUm(k)}, z3), (\mathbf{GRm(k)}, z4), (\mathbf{OCm(k)}, z5), (\mathbf{d(Us(j)), Om(k)}, z6), (\mathbf{HA(k)}, z7)) , \quad \text{where}$$

EX1008, [0106]-[1007].

Explained below, the comparison value ranking is the “*second relevance measurement*,” and is based on different measures of relevance (*e.g.*, local importance, global importance, *etc.*). EX1004,¶496. The “*second relevance measurement module*” is coupled to the “*monitoring module*” for the same reasons described above (§VI.C.5.f). The “comparison value” uses usage intensities described above and is executed on the computer processor. EX1004,¶¶493,497-499.

h. **Elements–1[f]/6[d]/7[b]**

Kircher/Krug renders obvious Elements–1[f]/6[d]/7[b]. EX1004,¶¶500,608-609,636-637.

Krug’s “user profile” includes “aspects,” including gender, age, interests, *etc.* EX1008, [0011], [0014], [0034], [0056]-[0057], Fig. 2. The value of each aspect changes based on the “user’s interactions with objects.” *Id.* Moreover, groups of

users (user groups) can be assigned their own “user profile.” EX1008, [0027], [0031]. All user profiles are “easily comparable.” *Id.* “Groups of users can be specified (for example, all women) or determined automatically (for example, **all users who access a specific object**).” *Id.* Therefore, user groups include a “*plurality of users that is a recipient of the piece of electronic content.*” EX1004, ¶503-505.

Krug teaches joining a “group can be initiated by a user himself, i.e., it can be done explicitly”—i.e., by “direct input by a user.” EX1001, 25:65-26:10; EX1008, [0031]. Krug teaches *identify[ing] at least one other of the plurality of users...that is cognate to the user.* *Supra* §V.D. Identifying a group of users includes “*identify[ing] at least one other...user.*” EX1004, ¶502,506.

Group assignments can also be made “implicitly, e.g., based on the presence of certain properties of the user.” EX1008, [0031]. For example, “group profiles are assigned to the user groups, each of which is an average user profile of the group” or “a plurality of typical user profiles.” *Id.*, [0056], [0038]. Because group profiles “characterize usage behavior and properties of the users to whom they are assigned” and may be assigned based on the user’s “behavior,” a POSA would have understood that group profiles can be assigned based on the grouping of other users similar past user actions and assessments (i.e., typical users are assigned to a user group). *Id.*, [0056], [0011]. For this additional reason, Krug teaches identifying a cognate user

under Petitioner’s construction (or the ordinary meaning). *Supra* §V.D; EX1004,¶¶502,507-508.

Krug also teaches that “a plurality of typical user profiles,” may be identified using a “clustering method.” EX1008, [0038]. And user groups can be identified based on “the presence of certain properties of the user,” such as gender or access to specific objects (i.e., role or group-based determinations). *Id.*, [0031]. Krug also discloses collaborative filtering (§VI.C.4). Therefore, Krug discloses function (1) of the “*second measurement module*” under Petitioner’s construction. *Supra* §V.A; EX1004,¶¶509-511.

i. **Elements–1[g]/6[e]/7[d]**

Kircher/Krug renders obvious Elements–1[g]/6[c]/7[d]. EX1004,¶¶512,610-611,640-641.

As explained above (§VI.C.5.a), Krug teaches a “comparison value” used to “rate the relevance of the object.” EX1008, [0054]. The comparison value is calculated “*based at least in part on one or more measures*” and is a “*second measure of relevance of the piece of electronic content.*” EX1004,¶¶514-516; §§VI.C.5.i–VI.C.5.m;§VI.C.5.g. Alternatively, a POSA would have understood that “individual criteria” used to calculate the comparison value are themselves “*a second measure of relevance.*” EX1004,¶517.

A POSA would have been motivated to include Kircher's sender importance into Kircher/Krug because the POSA would have known that relevance can be affected by importance of the message sender to the receiver. EX1034, 4; EX1026, [0025], [0027]; EX1028, 11:21-28; *supra* §III. A POSA would have understood that including the sender importance in Krug's comparison value would involve no more than an adding an extra "individual criteria" to the calculation of the "comparison value." EX1004, ¶¶518-520.

As shown below, Kircher/Krug teaches function (2) of the "*second measurement module*" under Petitioner's construction. *Supra* §V.A; EX1004, ¶¶513,521-522.

j. **Elements–1[g][i]/6[e][i]/7[d][i]**

Kircher/Krug renders obvious Elements–1[g][i]/6[e][i]/7[d][i]. EX1004, ¶¶523,612-613,642-643.

"[A]n important aspect" of Kircher's "invention is determining how to quantify the senders[sic] 'importance.'" EX1007, [0048]. In Kircher, analysis of the sender's importance is "made up of two parts." *Id.*, [0072]. First, "a base value" is set based on, for example, whether the sender is a VIP. *Id.* Second, the "base value" is "adjusted based on additional factors" such as whether a VIP is copied on the email. *Id.* Therefore, setting a sender as a VIP is "*describing an importance of the sender to the user.*" EX1004, ¶¶525-526.

A POSA would have also understood that Kircher uses a weighted function of a series of “assessments.” Being on the VIP list is assigned a set weight of 0.7, which is then adjusted based on additional factors (i.e., other assessments). Kircher performs many of the same assessments used to calculate the local importance in the ’217 patent. Compare EX1007, [0072] with EX1001, 31:41-43. Kircher/Krug teaches “*local importance*” under Petitioner’s construction. *Supra* §V.A; EX1004, ¶¶524,527-531.

k. **Elements–1[g][ii]/6[e][ii]/7[d][ii]**

Kircher/Krug renders obvious Elements–1[g][ii]/6[e][ii]/7[d][ii]. EX1004, ¶¶532,614-615,644-645.

Kircher’s VIP list can also be “*a global importance*.” Like the ’217 patent, Kircher can assign VIP status by “directly assigned values.” EX1001, 33:22; EX1007, [0072] (“a person identified as a VIP.”) For the same reason, Kircher assigns VIP status under Petitioner’s construction. *Supra* §V.A; EX1004, ¶¶533-534.

It would have been obvious to assign VIP status based on the sender’s importance “*within an organization with which the plurality of users are associated*.” For example, it was well-known that “organizational relationships relative to the user drawn from an organization chart” could be used to determine sender importance —i.e., managers and subordinates. EX1028, 11:24-28. A POSA

would have been motivated use organizational relationships, because doing so was common and well-understood. EX1004,¶¶535-538.

l. **Elements–1[g][iii]/6[e][iii]/7[d][iii]**

Kircher/Krug renders obvious Elements–1[g][iii]/6[e][iii]/7[d][iii]. EX1004,¶¶539,616-617,646-647.

One “individual criteria” in Krug’s “comparison value” is “initial priority” (§VI.C.5.g (delineated as GRm(k))). EX1008, [0115]. “Initial priority” is determined based on results from “various (full-text) search engines.” EX1008, [0115]. Krug’s “full-text analysis method” includes “using a similarity measure for character strings, such as the Levenshtein distance.” EX1008, [0041]. The “Levenshtein distance” is a statistical technique for correlating the similarity of certain words between two strings. EX1042. Kircher also teaches a twelve steps process used to “analyze the message content,” which results in an email content vector. EX1007, [0066], [0071], Fig. 7. Therefore, the initial priority of Krug and content analysis of Kircher is “*a content relevance determined responsive to content of the piece of electronic content.*” EX1004,¶¶541-544.

Moreover, the “Levenshtein distance” is a statistical technique. Kircher/Krug discloses the “*content relevance*” under Petitioner’s construction. *Supra* §V.A; EX1004,¶¶540,545-546.

m. **Elements–1[g][iv]/6[e][iv]/7[d][iv]**

Kircher/Krug renders obvious Elements–1[g][iv]/6[e][iv]/7[d][iv]. EX1004, ¶¶547,618-619,648-649.

Krug’s “individual criteria” also includes “action equivalence” (§VI.C.5.g (delineated as HA(k))). Krug calculates “action equivalence” based on “usage intensity (intensity factor I)” of an individual user or user groups. EX1008, [0028], [0107]; §VI.C.5.f. For user groups, the “collective action equivalence” factors in “aggregated usage intensity for objects.” *Id.*, [0110]. The “collective action equivalence” is calculated by an “absolute usage intensity matrix $I^A(U,O)$ ” that contains “usage intensity $I^A(U_j,O_k)$ of the k-th object by the j-th user.” EX1008, [0071]; *supra* §VI.C.5.e. The “action equivalence” is calculated based on “*one or more actions on the piece of electronic content.*” EX1004, ¶¶549-551.

Likewise, Krug uses user groups to identify “*at least one other of the plurality of users that is a recipient of the piece of electronic content and that is cognate to the user.*” §VI.C.5.h. Since “collective action equivalence” is also based on user groups, Krug teaches this claim element. EX1004, ¶552.

Moreover, “action equivalence” is based on an “aggregate” of the “absolute usage intensity matrix $I^A(U,O)$.” Therefore, a POSA would have understood it is based on a weighted average of the same techniques described above for the “*first measurement module.*” *Supra* §VI.C.5.f.; EX1004, ¶548,552-555.

n. **Elements–1[h]/6[f]/7[e]**

Kircher/Krug renders obvious Elements–1[h]/6[f]/7[e]. EX1004,¶¶556,620-621,650-651.

Kircher/Krug discloses “a first” and “second measure of relevance.” §§VI.C.5.f,VI.C.5.i. Krug’s individual “action equivalence” (delineated as **HA(k)** (**blue**)) (i.e., the “first measure of relevance”) is combined with other “individual criteria” (such as the initial priority (delineated as GRm(k) (**red**)), and the group “action equivalence” (**blue**)) to calculate a “comparison value” (i.e., the “second measure of relevance”), as shown below. *Supra* §§VI.C.5.i–VI.C.5.m. In the combination, Kircher’s sender importance is an additional “individual criteria” used to calculate the “comparison value.” Therefore, the “comparison value” is calculated “based at least in part on the first determined measure of relevance and on the second determined measure of relevance.” Alternatively, a POSA would have understood that any “individual criteria” used to calculate the “comparison value” could be a “second determined measure of relevance.” EX1004,¶¶560-564.

TRm(k)= ρ ((WOm(k), z1), (WCm(k) , z2), (WUm(k), z3), (GRm(k),z4), (OCm(k), z5), (d(Us(j), Om(k)),z6), (HA(k), z7)), where

W_{Om}(k) is the absolute intrinsic value of the k-th object;
W_{Um}(k) is the user-specific intrinsic value of the k-th object;
W_{Cm}(k) is the intrinsic value of any user group for k-th object;
GR_m(k) is the initial priority of an object;
OC_m(k) is the community weight of the object; and
HA(k) is the action equivalence of the object.

Moreover, the “comparison value” is “a relevance score of the piece of electronic content” because it is used to “rate the relevance of the object” and “can assume values between 0 and 100.” EX1008, [0054]; §VI.C.5.a. In the combination, the “numerical values assigned to each email” in Kircher (column 47) (purple) would have been based in part on the “comparison value.” EX1004, ¶559.

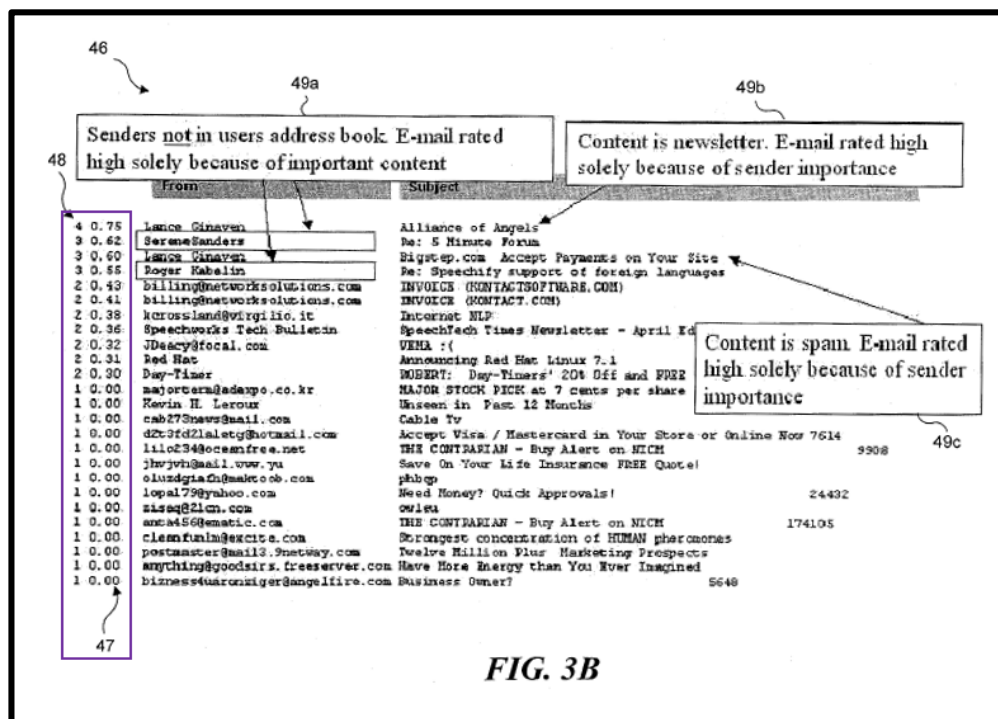


FIG. 3B

Because the “comparison value” is calculated using “individual criteria,” the same inputs (such as “user’s own IRC, global and cognate relevance scores, and combined importance relating to that mail”) are used to calculate the “comparison value” as in the ‘217 Patent. EX1001, 26:46-52; 35:62-36:6. Kircher/Krug discloses “*the relevance analysis module*” under Petitioner’s construction. EX1004, ¶¶557,565-566.

6. Claims 2/13/18

Kircher/Krug renders obvious Claims 2/13/18. EX1004, ¶¶567,622-623,652-653.

Kircher discloses an “email inbox” with emails “prioritized in accord with the present invention”-i.e., “*present[s] the piece of electronic content to the user.*” In the combination, “numerical values assigned to each email” in Kircher (column 47) would be based in part on the “comparison value.” EX1007, [0049]-[0051], Fig. 3. The “email inbox” “*present[s] to the user a value describing the determined relevance score*” (i.e., column 47). *Id.*; EX1004, ¶¶569-571.

Kircher/Krug also discloses the “*content presentation module*” under Petitioner’s construction because Kircher/Krug’s email inbox works in a similar way as “mail presentation module 260.” EX1001, 6:55-60; EX1004, ¶¶568,572-573.

7. Claims 3/14/19

Kircher/Krug renders obvious Claims 3/14/19. EX1004,¶¶574,624-625,654-655.

The “comparison value...can be used to rate the relevance of the object to the search query.” EX1008, [0020]. Therefore, a POSA would have understood that Krug’s search “help[s] rank search results and indicate to the user how likely each piece of content is to be of interest,” and thus discloses the “*search module*” under Petitioner’s construction. EX1004,¶¶575-578.

8. Claims 5/15

In Krug, “objects are embodied as **electronic documents**.” EX1008. [0006], [0040]. In Kircher, “**email, faxes, and telephone messages** compris[e] electronic messages.” EX1007, [0039]. Kircher/Krug discloses Claims 5/15. EX1004,¶¶584-587,626-627.

9. Claims 8/22

Kircher/Krug teaches identifying at least one user in a group of other users based on similar past user actions and assessments. §VI.C.5.h. Kircher/Krug identifies a cognate user based on analysis of the “*historical actions*” of the user and cognate user. EX1004,¶¶588-590,660-661.

10. Claim 9

Krug explains that “using the clustering method,” user profiles for “users who have accessed the object” may be assigned to “a plurality of typical user profiles.”

EX1008, [0038]-[0039]; *supra* §VI.C.5.h. But “non-typical users are not taken into account” when calculating object profiles. *Id.* Krug explains that “[f]or a search query, a user can select the profile of a user group in order to use their characteristic properties to rate the relevance of the objects.” EX1008, [0031]. A POSA would have understood that User-A can be assigned Group A (non-typical users) and would not be cognate to User-B in Group B (typical users), but User-B “can select the profile of a user group” and join Group C (all users who access a specific object) for a search and; unless User-A has also selected Group C as part of their search criteria, User-B would cognate to User-A through Group C; but User-A would not be cognate to User-B. Kircher/Krug discloses claim 9. EX1004, ¶¶591-593.

D. Ground 5: Kircher/Krug with Marston renders Claims 1 4, 10-12, 16-17, and 20-21 obvious

It would have been obvious to include Marston’s “relational mail architecture” in Kircher/Krug. EX1004, ¶¶580-582. A POSA would have also been motivated to make the combination for the same reasons as above. *Supra* §VI.C.4.

A POSA would have been motivated to include Marston in Kircher/Krug to take advantage of the benefits of “relational mail architectures,” as explained above (§VI.B). EX1043, Abstract. As Krug already stores emails using objects (EX1008, [0006], [0040]), the combination would have been a matter of simple substitution and a POSA would have had a high likelihood of success. EX1004, ¶582.

Kircher/Krug with Marston renders Claims 1 4, 10-12, 16-17, and 20-21 obvious for the same reasons as above:

Claims	Section(<i>Supra</i>)	Expert
4/16/20	§VI.B.3	EX1004,¶579-580,628-629,656-657..
10	§VI.B.4	EX1004,¶594-595.
11	§VI.B.5	EX1004,¶596-597.
12	§VI.B.6	EX1004,¶598-599.
17/21	§VI.B.7	EX1004,¶630-631,658-659.

VII. SECONDARY CONSIDERATIONS

Petitioner is unaware of any secondary considerations evidence bearing a nexus to the purported claimed invention. No secondary considerations were asserted or relied on during prosecution. EX1002. If Sterling introduces alleged evidence, “weak secondary considerations generally do not overcome a strong prima facie case of obviousness” such as the one presented here. *Genentech, Inc. v. Sandoz Inc.*, 55 F.4th 1368, 1378 (Fed. Cir. 2022). Petitioner reserves the right to address secondary considerations should Sterling raise them. EX1004,¶¶662-664.

If Sterling argues that the BlueSpace Mail system shows non-obviousness of the challenged claims, Sterling has failed to (1) show any nexus between BlueSpace Mail and such claims, or (2) show that BlueSpace Mail was commercially successful, solved a long-felt need, or otherwise was an improvement over the prior art. EX1004,¶¶665-666.

VIII. DISCRETIONARY DENIAL IS NOT WARRANTED

A. §314(a)

Nearly every *Fintiv* factor weights against discretionary denial.

Factor 1: The Sterling-X Matter (*Infra* §IX.C) is managed by Judge Pitman, EX1010, 2:2-9, who regularly grants stays pre-institution. *UMBRA Technologies Ltd. v. Cisco Systems, Inc.* Case 1-23-cv-00903, Dkt. 40 (WDTX Apr. 25, 2024).

Factor 2: The Court issued a scheduling order setting Markman for October 22, 2025, and trial for April 5, 2027. EX1009, 4, 6. Therefore, the FWD will issue nearly a year before trial in the Sterling-X Matter.

Factor 3: There has been very little investment in the Sterling-X Matter: invalidity/infringement contentions have not been exchanged, claim construction briefing has not started. EX1009. Petitioner intends to move to stay pre-institution which will eliminate any unnecessary investment in the Sterling-X Matter.

Factor 4: Invalidity/infringement contentions have not been exchanged in the Sterling-X Matter; therefore, at this time there is no overlap of issues.

Factor 5: The Sterling-X Matter and this IPR have the same parties.

Factor 6: A “compelling unpatentability challenge...alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.” June 21, 2022, Vidal Memo, 4-5. The instant Petition raises a compelling unpatentability challenge.

B. §325(d)

Denial under §325(d) is not warranted because none of the prior art relied on herein—*i.e.*, Dumais, Kircher, Krug, and Marston—was considered during

examination of the Challenged Claims. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019- 01469, Paper 6 at 8 (PTAB Feb. 13, 2020).

IX. MANDATORY NOTICES

A. Grounds for Standing (37 C.F.R. §42.104(a))

Petitioner certifies it is not barred from requesting IPR of the '217 patent. Petitioner has filed a civil action challenging the validity of any claim of the '217 patent. 35 U.S.C. §315(a). The '217 patent has not been the subject of a prior IPR by Petitioner. Further, the '217 patent issued more than nine months prior to the date of this Petition.

B. Real Parties-in-Interest (§42.8(b)(1)):

Petitioner X Corp. is the real party-in-interest.

C. Related Matters (§42.8(b)(2)):

Petitioner identifies the following related matters:

- *Sterling Computers Corporation v. X Corp.*, Case No. 1:24-cv-00552 (W.D. Tex. May 22, 2024) (“Sterling-X Matter”)
- *Sterling Computers Corporation v. Meta Platforms, Inc.*, Case No. 1-24-cv-00551 (W.D. Tex. May 22, 2024) (“Sterling-Meta Matter”)

D. Counsel, Service, and Fee Information (§42.8(b)(3)):

Pursuant to 37 C.F.R. §42.8(b)(3) and 37 C.F.R. §42.10(a), Petitioner appoints:

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Pursuant to 37 C.F.R. §42.10(b), a power of attorney is being filed with this designation of counsel.

E. Fee for *Inter Partes* Review (§42.15(a))

The U.S. Patent & Trademark Office is authorized to charge the fee specific by 37 C.F.R. §42.15(a), and any other required fees, to Deposit Account No. 50-3672.

X. CONCLUSION

Claims 1-22 of the '217 patent are unpatentable based on the grounds described above.

Dated: December 12, 2024

Respectfully Submitted,
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CERTIFICATE OF COMPLIANCE

I hereby certify that this brief complies with the type-volume limitations of 37 C.F.R. §42.24, because it contains 13,698 words as calculated by Microsoft Word's word-count feature. This total excludes the cover page, signature block, and the parts of the Petition exempted by 37 C.F.R. §42.24(a)(1).

Dated: December 12, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §42.6(e), I hereby certify that on this 12th day of December, 2024, I caused to be served a true and correct copy of the foregoing and any accompanying exhibits by express mail on the following counsel:

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