

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC.

Petitioner,

v.

STERLING COMPUTERS CORPORATION

Patent Owner.

Case IPR2025-00430

U.S. Patent No. 7,716,217

PATENT OWNER'S RESPONSE

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EXHIBIT LIST

Patent Owner's Exhibit No.	Exhibit Description
2001	Declaration of Latifur Khan (March 12, 2025)
2002	Curriculum vitae of Latifur Khan
2003	Declaration of Justin Marston (March 12, 2025)
2004	"BlueSpace Mail Search" Document, Sept. 2, 2004
2005	"The Development of the Mathematical Algorithms," May 12, 2005
2006	"BlueSpace Mail Relevance," June 7, 2005
2007	"BlueSpace Mail Relevance," Aug. 16, 2005
2008	"BlueSpace Mail Relevance," Aug. 17, 2005
2009	"Importance," Sept. 18, 2005
2010	"BlueSpace Mail Relevance," Oct. 6, 2005
2011	"BlueSpace Mail Relevance," Oct. 7, 2005
2012	"BlueSpace Mail Relevance," Oct. 7, 2005
2013	"There are many cognate relevance values that must be calculated," Nov. 9, 2004
2014	Claim Chart for BlueSpace Mail Documents
2015	Supplemental Declaration of Justin Marston (July 8, 2025)
2016	<i>listing of NATURE article:</i> Marston, Justin, "Chaos in the Classroom," Jan. 25, 1996, NATURE, <i>available at</i> https://www.nature.com/articles/379306b0

Patent Owner's Exhibit No.	Exhibit Description
2017	<i>excerpt from:</i> 32nd European Union Contest for Young Scientists (2020-2021) (“Winners 1989-2019”)
2018	LinkedIn profile: Justin Marston
2019	Metadata extracted from native of EX2004
2020	Metadata extracted from native of EX2005
2021	Metadata extracted from native of EX2006
2022	Metadata extracted from native of EX2007
2023	Metadata extracted from native of EX2008
2024	Metadata extracted from native of EX2009
2025	Metadata extracted from native of EX2010
2026	Metadata extracted from native of EX2011
2027	Metadata extracted from native of EX2012
2028	Metadata extracted from native of EX2013
2029	Declaration of Latifur Khan (September 10, 2025)
2030	Declaration of Justin Marston (September 9, 2025)
2031	Declaration of Paul Marston (September 9, 2025)
2032	“BlueSpace Mail Relevance,” September 21, 2005
2033	“BlueSpace Mail Relevance,” October 2, 2005
2034	“BlueSpace Mail Relevance,” November 8, 2005
2035	“BlueSpace Mail Relevance,” November 12, 2005
2036	“BlueSpace Mail Relevance,” November 13, 2005

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2037	"Frequency analysis stats," August 21, 2005
2038	"Relevance typology 2.bmp," November 13, 2005
2039	"Relevance process flow 2.bmp," November 13, 2005
2040	<i>intentionally omitted (duplicate)</i>
2041	Log of BlueSpace documents showing BlueSpace work from June 28, 2005, until January 13, 2006
2042	Log of J. Marston privileged communications with BlueSpace counsel regarding BlueSpace work from June 28, 2005, until January 13, 2006
2043	Version of EX2010/EX1044 showing tracked changes and comments by Justin Marston
2044	Version of EX2010/EX1044 showing tracked changes and comments by Paul Marston
2045	Version of EX2010/EX1044 showing tracked changes and comments by Jon Fernyhough
2046	Redacted (for privilege) correspondence from J. Marston to B. Hoffman, January 12, 2006
2047	"Transmail Relevance Formulae," September 9, 2004
2048	"Notes on Search Document," September 13, 2004
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2063	"Comments to Jon and Justin 07.doc," October 8, 2005
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2066	"BSMR021005_jfpm3.doc," October 13, 2005
2067	"BSMR021005_jfpm4.doc," October 13, 2005
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2069	"BSMR021005_jfpm6.doc," October 14, 2005
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2072	"BlueSpaceMailRelevanceJM06,11,05.doc," November 10, 2005
2073	"BlueSpace Mail Relevance," August 21, 2005
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2077	Article: "Farewell after almost 50 years: Paul Marston, Senior Lecturer in Mathematics."
2078	Letter appointing P. Marston as lecturer at Nazarene Theological College, July 25, 2005
2079	"Twitter's Recommendation Algorithm," X Blog, March 31, 2023
2080	"Twitter Revenue and Usage Statistics (2025)," Business of Apps, Sept. 2, 2025
2081	"Twitter Is Changing Your Timeline: What You Need to Know," ABC News, Feb. 10, 2016
2082	"News Feeds, Old Content: A Brief History of Algorithmically Curated Feeds on Facebook and Twitter," Medium, April 29, 2019

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2084	Complaint, <i>Sterling v. X Corp.</i> , Case No. 1:24-cv-00552 (W.D. Texas)
2085	Complaint, <i>Sterling v. Meta</i> , Case No. 1:24-cv-00551 (W.D. Texas)
2086	"Our Approach to Facebook Feed Ranking," Meta, June 11, 2025
2087	"Facebook Feed AI System," Meta, June 4, 2025
2088	"Meta Reports Fourth Quarter and Full Year 2024 Results," Meta, Jan. 29, 2025

I. INTRODUCTION

Sterling Computers Corporation (“Patent Owner”) submits this Response to the Petition of Meta Platforms, Inc. (“Petitioner”) seeking *inter partes* review (“IPR”) of U.S. Patent No. 7,716,217 (“the ‘217 Patent”). As set forth herein, Petitioner has failed to meet its burden to establish that any of the challenged claims are unpatentable.

The ‘217 Patent describes and claims inventions relating to determining a relevance score of sent pieces of electronic content (e.g., emails, instant messages, etc.) and displaying the electronic messages to a recipient based on the relevance determination. As described in the specification, determining the relevance score of an electronic message involves very complicated mathematics as applied to actions by a recipient to the electronic message. Using the relevance score, in part, to determine the order in which electronic messages are displayed provides significantly greater benefits to users of applications for managing messages.

The claims cover inter-person communications systems and methods that display content to a recipient based on relevance to the recipient. A relevance score is determined for every electronic message in the system because relevance is used to determine the order in which electronic messages are displayed to each user in the system. The relevance score is personalized to the specific user. In order to determine the relevance score for a piece of sent electronic content, the system tracks the

actions of both the specific user (e.g., a “first” user) and also tracks the actions of a plurality of users (i.e., other recipients of sent pieces of electronic content – e.g., a “second” user). For example, a piece of sent electronic content would receive a higher relevance score if the first user opened the message and forwarded it on to other users and if a second recipient of the same piece of content also read the message and, e.g., replied to it.

The prior art relied on by the Petitioner never tackled the problem of **both** (1) determining a relevance score for piece of sent electronic content based on the first user's actions and (2) identifying other users that are “*recipient[s]*”¹ of that same content and are also “*cognate*” to the first user.

With respect to the Rose reference, Rose does not teach, suggest, or render obvious “*determin[ing] the relevance score based* at least in part on the first determined measure of relevance” – i.e., “*actions of the [first user]* on the piece of electronic content.” This is because Rose is focused on **predicting** whether newly received content is **likely** to be relevant to the first user – i.e., assigning a relevancy score **before** the user has interacted with the content. Rose states repeatedly that its ranking is based upon a “prediction” of relevance for items “to be presented” (i.e., not yet presented) to the first user. As such, Rose ranks each item **before** the first

¹ Italics denote claim language.

user reads and rates it. Rose does not teach or suggest scoring an item after the first user rates it – i.e., scoring an item based upon the **first user's actions**.

Petitioner asserts, incorrectly, that Rose **re**-scores an item after the first user has rated it. Petitioner contends that, after the first user rates an item, and after the first user's profile is updated based upon that rating, Rose then **re**-calculates a **new** ranking score for the item based upon the updated profile. The citations that Petitioner and its expert cite in support of this argument do **not**, however, disclose **re**-scoring an item (i.e., increasing or decreasing a relevance score) after the first user rates it. Neither does any other statement in Rose. Nevertheless, in the Institution Decision, the Board preliminarily agreed with Petitioner, finding that Rose must **re**-calculate a relevance score **after** the first user rates the item. The basis for the Board's finding is Rose's statement that "all of the messages addressed to that user are ranked." The cited passage, however, does not suggest **re**-scoring. Even if Rose never **re**-scores content (which it does not), Rose still ranks "all of the messages addressed to that user" because Rose ranks "all of the messages addressed to that user" **before** each message is presented to the first user (when it is "unread"). Rose contains no disclosure, however, of re-scoring an item after the first user has read and rated it. Because Rose does not teach or suggest re-scoring an item after the first user has ranked it, Rose also does not teach, suggest, or render obvious

“determin[ing] the relevance score of the piece of electronic content” based upon “actions of the [first] user on the piece of electronic content.”

Rose also does not teach, suggest, or render obvious *“identify[ing] 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.”* Rose does not *“identify”* a second user (or group of users) that is *“cognate to the [first] user.”* Although Rose’s prediction formula takes into account how other users rated an item (in order to predict whether the first user will likely find the item to be relevant), Rose correlates the ratings for that item provided by **all other users**, including other users with historical feedback that is both similar and dissimilar (and neutral) as the first user. Rose does not *“identify”* users that **only** provided similar ratings (historical feedback) as the first user. Therefore, Rose does not teach, suggest, or render obvious *“identify[ing]”* a second user that is *“cognate to the [first] user.”*

In its Ground 3, Petitioner attempts to fill this gap by using Bieganski to supply this limitation. Bieganski, however, does not teach, suggest, or render obvious *“**determin[ing] the relevance score based** at least in part on” “**actions of the [first user]**.”* Therefore, this limitation is missing from **both** references. Moreover, because of the differences between Bieganski and the ‘217 Patent, a skilled artisan would not be motivated to combine Rose and Bieganski to create the ‘217 Patent inventions and would not expect to succeed in doing so.

Turning to Dumais, Dumais also does not render obvious the “*identify...*” limitation. For this limitation, Petitioner relies upon Dumais’ “collaborative filtering to group users based on similar ‘usage of items.’” Decision, at 34-36. However, nothing in Dumais “*identiffies]*” whether another user received the same e-mail that the user doing the searching received and, certainly, nothing in Dumais “*identiffies]*” another user of the system that **both** received the same piece of electronic content as the person doing the searching **and also** “*is cognate to the user.*”

Even if Dumais did disclose the “*identify...*” limitation (which it does not), Dumais still would not render obvious any claim because Dumais is not prior art. As set forth in the declarations of inventors Justin and Paul Marston, and the corroborating documents, the inventors had conceived of the inventions in the ‘217 Patent by at least as early as June 7, 2005, which is earlier than the priority date of Dumais. In its Institution Decision, the Board preliminarily agreed that Patent Owner had corroborated the inventor’s testimony with documents demonstrating conception. Decision, at 30-33; *see also* **EX2004 & EX2006**. The Board found, however, that there were “questions regarding gaps in Patent Owner’s diligence” and that “additional relevant evidence” should be introduced to show diligence. Along with the previously submitted evidence (**EX2003** through **EX2014**), the (1) supplemental declaration of Justin Marston (**EX2030**), (2) declaration of Paul Marston (**EX2031**), and (3) additional documentation relating to diligence (**EX2032**

through **EX2078**) corroborate the inventors' testimony regarding diligence and show reasonable diligence. Therefore, Patent Owner has established both that the inventors conceived of their invention prior to the priority date of Dumais and also that they were reasonably diligent in reducing the invention to practice. Therefore, Dumais is not prior art and does not render obvious any claim of the '217 Patent.

II. BACKGROUND

A. The '217 Patent

The '217 Patent involves systems and methods relating to person-to-person communications. **EX1001**; *see also* **EX2029**, ¶¶49-90 (describing inventions in '217 Patent). Every claim requires electronic communications, including “a sender,” a “sent” “*piece of electronic content*,” and “a recipient.” **EX1001**, Claims 1, 6, 7. “Electronic content” is defined broadly to include all electronic content that is sent from a sender to a recipient. **EX1001**, 3:43-51; **EX1003**, at 58.

The '217 Patent is designed to assist users to efficiently manage their electronic content. For example, the '217 Patent addresses the large volume of email that people may receive. **EX1001**, 1:27-34. In order to find the important emails prior to the invention of the '217 Patent, users were forced to mine through email using “unintelligent mechanisms (e.g., keyword, sender, recipient, and/or date range searches).” *Id.* 1:40-44. To address this problem, the '217 Patent determines a “*relevance score*” for each “*piece of electronic content that is sent*

from a sender to a user.” Id., Claims 1, 6, 7. The invention determines relevance and importance values by monitoring users’ actions (*id.*, 6:1-3) – i.e., “the ways users interact with the electronic mail system, e.g. reading mails, replying to mails, changing settings.” *Id.* 8:32-35.

The system tracks and uses the first user’s actions to determine a relevance score. *Id.* 11:10-23. The system also monitors and uses the actions of **other users**; every claim requires “track[ing] actions by a **plurality of users** ...” *Id.*, Claims. The focus of the ‘217 Patent is on how different users interact with the same piece of sent content. *Id.* 36:28-29; *id.*, 36:59-62 (“[I]t may be particularly useful to a given user to know what, for example, cognate users, have done with the electronic mail object soon after it arrives.”). In order to do so, every claim of the ‘217 Patent requires “identify[ing]” at least one other “user” that is both (1) “a recipient” of the same piece of electronic content and (2) “cognate to the [first] user.” *Id.* 33:58-62 & Claims; *see also id.* 42:62-63 (a cognate group consists of “users most similar to a given user/recipient”).

The “first measure of relevance” is “based at least in part on one or more actions of the user on the piece of electronic content.” **EX1001**, Claims 1, 6, 7.

The “second measure of relevance” is “based at least in part on one or more measures derived from the group consisting of”: [i] “a local importance describing an importance of the sender to the user,” [ii] “a global importance describing an

importance of the sender within an organization with which the plurality of users are associated,” [iii] “a content relevance determined responsive to content of the piece of electronic content,” and [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.”²

EX1001, Claims 1, 6, 7.

B. The “*identify ...*” Limitation in the ‘217 Patent.

Every claim of the ‘217 Patent requires “*identify[ing] 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.*” **EX1001**, at Claims.

In the ‘217 Patent, “*identify[ing]*” a second “*user*” that is both “*cognate*” and a “*recipient*” is one of the steps required for assessing “*determining a relevance score of a piece of electronic content.*” **EX1001**, at Claims. The ‘217 Patent discusses **why** it imposes this “*identify ...*” requirement in every claim. **EX2029**, ¶¶70-81.

With respect to “*identify[ing]*” another “*recipient*,” the ‘217 Patent explains that the actions of other “*recipients*” can help determine “the relevance of content in a given user’s folders.” **EX1001**, 12:27-30. For example, if most users interact with

² The ‘217 Patent makes clear that users can provide active feedback to “improve [the] accuracy of the relevance analysis engine.” **EX1001**, at 7:64-67.

the object (e.g., read it or forward it), it is more likely to be relevant to other recipients, but if most users delete the object, it is less likely that the object is relevant to other recipients. *Id.* 12:35-44; **EX2029**, ¶73. When determining “the relevance value seen by the recipient,” the system considers “the actions of all the other recipients.” **EX1001**, 36:33-41; **EX2029**, ¶77. The ‘217 Patent teaches that “communal filtering... may use the behavior of other recipients of a given piece of content to determine the content’s relevance to the user in question—communal relevance.” **EX1001**, 43:61-64 (emphasis added); **EX2029**, ¶81.

With respect to “*identify[ing]*” another “*user*” that is “*cognate to the [first] user*,” the ‘217 Patent teaches that “a ‘cognate group’ for a user” may be “identified” “based on historical actions” “and/or a direct input by a user.” *Id.* 14:59-15:11. The ‘217 Patent also explains why it does so. **EX2029**, ¶¶70-81. **First**, “the actions of this particular group on an electronic mail object will give more indication of its relevance to the user than would a global reaction to the electronic mail.”

Id.; **EX2029**, ¶74. **Second**, the “relevance analysis engine” uses information about the users in the “*cognate*” group to calculate values, including cognate relevance value, cognate importance value, and local relevance, each of which is calculated based upon users in the cognate group for that recipient and/or cognate relevance scores. **EX1001**, 25:37-26:52 (emphasis added); **EX2029**, ¶75. **Third**, if the “*cognate*” group finds a sender to be important, that information is taken into

consideration when determining “importance.” **EX1001**, 29:59-30:15; **EX2029**, ¶76. **Fourth**, when determining “the relevance value seen by the recipient,” the system considers “the actions ... of the group cognate to r.” **EX1001**, 36:33-41; **EX2029**, ¶7783. **Fifth**, “actions of those in [a user’s] cognate group” is one of the factors used to calculate each user’s local importance values. **EX1001**, 44:64-43:3; **EX2029**, ¶78. **Sixth**, the “cognate relevance value is ... input into the final figure for local relevance,” which “is based on the actions of those in the group cognate to the recipient.” **EX1001**, 43:4-7 **EX2029**, ¶79.

For all of these reasons, the specification explains that the purpose of “*identifying*” a second user that is both “*a recipient of the piece of electronic content*” and also “*is cognate to the user*” is for the purpose of tracking that second user’s actions to assist in determining a relevancy score for a piece of electronic content.

C. ‘217 Patent Math.

The ‘217 Patent discloses complex math and algorithms used to make the relevancy determinations disclosed in the claims. **EX2029**, ¶¶82-90.

The patent defines a layered framework for computing importance and relevance of electronic mail. *Id.*, ¶90. User behavior drives two individual scores: Individual Relevance Components (IRC), reflecting how a user interacts with a content, and Individual Importance Components (IIC), reflecting how important an entity is to that user, based on the actions of that user. *Id.*, ¶84 (citing **EX1001**,

20:50-54). The global Importance averages IICs across the system, and Global Relevance averages IRCs weighed by global importance. *Id.*, ¶84 (citing **EX1001**, 25:58-64).

To capture personalization, each user has a Cognate Group of similar users, leading to Cognate Relevance and Cognate Importance based on group averages. *Id.*, ¶85. The system identifies these cognate groups for each of the users individually based on the past actions of the user in question. *Id.*, ¶85 (citing **EX1001**, 25:65-26:10). This group contains n other users who are considered most similar based on their past action or historical data. *Id.*, ¶85.

These values feed into Local Importance, the user-specific importance of a sender, combining IIC, cognate, and global importance. *Id.*, ¶86 (citing **EX1001**, 26:24-30 & 29:64-30:15).

To compute the Individual Importance Component (IIC) for a sender, the system evaluates significant local user actions on past emails, applying a time-based weighting so that recent actions count more. *Id.*, ¶87 (citing **EX1001**, 31:30-35, 31:40-45 & 31:60); *see also id.* (discussing calculation of the IIC (*eq. 4*) (citing **EX1001**, 32:30-35)).

Using this value the system can begin computing global importance value (*eq. 5*). *Id.*, ¶88 (citing **EX1001**, 32:60-65). An additional element of the calculation is related to the receipt of mail objects from a more important sender,

which increases the importance of the recipient. *Id.*, ¶88. This can also be used to identify shared importance based on who are the other recipient of the same mail object. *Id.*, ¶88 (discussing equations and citing **EX1001**, 33:11-18 & 33:40-50).

Additionally, using the individual IIC for each of the cognate groups, the cognate importance for a particular sender can be calculated. *Id.*, ¶89 (discussing equation and citing **EX1001**, 34:5-10). Thus, the Local Importance of a sender to a given recipient is computed as a function of three factors (**EX1001**, 34:18-24): (1) *the Individual Importance Component (IIC)*, reflecting the recipient's own actions toward that sender, (2) *the Cognate Importance (I^c)*, derived from the IICs of users in the recipient's cognate group, and (3) *the Global Importance (I)*, based on the organization-wide values determined in the latest system review. *Id.*, ¶89. **The local importance here depends on the cognate importance or other similar users, as well as the global importance in the system.** *Id.*, ¶89. This is different from frameworks which do not consider the effect of the group on a particular user. *Id.*, ¶89 (discussing equations and citing **EX1001**, 34:25).

Finally, the system also explains that global importance changes slowly, reflecting long-term organizational perception of an entity, with adjustments typically made through periodic reviews or queued updates, while new entities may change more quickly. *Id.*, ¶90. Cognate importance evolves faster than global values, as it reflects averages across a user's cognate group, and local importance

is the most responsive, adjusting at run-time to user actions but stabilizing once sufficient history exists. *Id.*, ¶90 (citing **EX1001**, 36:12-67). For relevance, global values also update moderately, more rapidly for newer content, whereas cognate relevance is recalculated more frequently and serves as the most immediate guide for prioritization. *Id.*, ¶90. Local relevance combines personal, cognate, and global signals, updating dynamically with user actions and through periodic refreshes. *Id.*, ¶90. Together, this hierarchy ensures that recent interactions and new content are reflected quickly, while established patterns change more gradually. *Id.*, ¶90.

D. Petitioner’s Grounds

Petitioner challenges Claims 1-22 of the ‘217 Patent (the “Challenged Claims”) pursuant to three grounds:

Ground	Challenged Claims	Asserted Prior Art	Statutory Grounds
1.	1-3, 5-9, 13-15, 18-19, 22	Dumais	§ 103
2.	1-3, 5-9, 13-15, 18-19, 22	Rose	§ 103
3.	1-3, 5-9, 13-15, 18-19, 22	Rose, Bieganski	§ 103

III. PERSON OF ORDINARY SKILL

The Board adopted Petitioner’s description of a person having ordinary skill in the art: a POSITA “would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or a similar field, and two to three years of experience with systems estimating relevance for various types of content” and

“[m]ore work experience could substitute for education and vice versa.” Decision, at 7-8. Although Patent Owner's expert had proposed a different definition (EX2001, ¶14), the Board's definition does not affect his analysis. EX2029, ¶14. Patent Owner and its expert adopt the Board's definition for purposes of this Response.

IV. CLAIM CONSTRUCTION

A. Legal Standard

In this proceeding, the claim terms must be construed according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–15 (Fed. Cir. 2005).

B. The “computer program module” terms are not subject to Section 112(6).

The parties dispute whether the recitation in claims 1 and 6 of four “computer program modules comprising” (1) “*a monitoring module*,” (2) “*a first relevance measurement module*,” (3) “*a second relevance measurement module*,” and (4) “*a relevance analysis module*” (collectively, “module limitations”) should be treated as means-plus-function limitations. For the purposes of institution, the Board preliminarily agreed with Patent Owner that these limitations do not invoke § 112 ¶6. Decision, at 12. That preliminary determination is correct. EX2029, ¶¶21-44.

The “*module*” limitations are entitled to the presumption that they do not invoke § 112 ¶6. Decision, at 12. In order to overcome that presumption, Petitioner

must show by a preponderance of the evidence that POSITA would ***not*** have understood the “computer program modules”—including the recited modules at issue here – to connote structure in light of the claim as whole. *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1365 (Fed. Cir. 2022) (internal citation omitted). Petitioner has not met that burden, because the recited modules at issue here expressly recite structure in light of the claim as whole. **EX2029**, ¶¶21-44.

The claims recite a computer program stored on a computer readable storage medium: “*a computer-readable storage medium storing computer program modules configured to execute on the computer processor, the computer program modules ...*” **EX1001**, Claim 1. Limitations such as these recite structure. *See Zeroclick, LLC v. Apple, Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018); *Dyfan*, 28 F.4th at 1367-68. Moreover, the ‘217 Patent states that “*computer program*” refers to software instructions. **EX1001**, Claims 1 & 6; **EX2029**, ¶¶21-44. The specification states that when “*modules*”³ are contained on a “*computer-readable storage medium*” as claimed, “the functionality [of the modules] ... may be carried out in response to one

³ The ‘217 Patent defines the term “*module*” as “any program, circuitry, logic, and/or functionality implemented in either software and/or hardware.” **EX1001**, 6:36-38. “[C]omputer program modules” explicitly indicates that the recited “*modules*” are “programs,” and the fact that they are described as being stored on “*a computer-readable storage medium*” means that the recited modules are software instructions. The specification confirms that the recited “*modules*” are software instructions that “may run on any type of computer system” **EX1001**, 6:65-7:2.

or more processors executing software instructions stored on the computer-readable medium.” **EX1001**, 7:2-12 (emphasis added). *See also e.g.*, **EX1003**, at 83; **EX1001**, 6:37-39. Thus, the written description describes the recited modules in the *very language* that was held dispositive in *Dyfan*—“software instructions”—confirming that the modules constitute structure. *Dyfan*, 28 F.4th at 1367-68; *see also* **EX2029**, ¶¶21-44; **EX2003**, ¶¶15-16.

The claims explain what the structure is for each “*module*” and what each “*module*” does, confirming that these are software instructions that constitute structure. **EX1001**, at Claims 1 & 6; **EX2029**, ¶¶21-33; *see also* Claims 2 & 13 (“*content presentation module*”); *id.* Claims 3 & 14 (“*search module*”); **EX2029**, ¶¶34-41.

In addition to the claims, the specification also explains what the structure is for each “*module*” and what each “*module*” does. **EX1001**, 6:39-42 (“*monitoring module*”); *id.* 6:4-11 (“*first relevance measurement module*”); *id.* 25:45-49 (same); *id.* 25:55-26:52 (same); *id.* 6:45-48 (same); *id.* 26:24-30 (“*second relevance measurement module*” and local importance); *id.* 25:55-59 (“*second relevance measurement module*” and global importance); *id.* 41:17-25 (“*second relevance measurement module*” and content relevance); *id.* 25:65-26:10 & 26:11-17 (“*second relevance measurement module*” and actions by cognate recipients); *id.* 25:37-26:52 (“*relevance analysis module*”); *id.* 26:53-61 & Figure 21 (same).

Petitioner's cases are distinguishable. In *Williamson v. Citrix Online LLC*, 792 F.3d 1339, 1344 (Fed. Cir. 2015), unlike the present case, nothing in the claim language “impart[ed] structure” to the distributed learning control module. *Id.* at 1351. Similarly, in *Grecia v. Samsung Electronics America, Inc.*, 780 Fed. App's 912, 915 (Fed. Cir. 2019), the term at issue was “customization module,” with no indication in the intrinsic evidence as to what it was or how it was tied to any structure; the limitation was “purely functional and fails to describe any structure.” In *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008), and *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1313-15 (Fed. Cir. 2011), unlike the present case, the limitations were written in means-plus-function form, so Section 112(6) applied.

For all these reasons, the Board's preliminary finding that the terms should be given their plain and ordinary meaning – and not treated as means-plus-function limitation under Section 112(6) – was correct.

C. Construction of “cognate to the user”

In the Institution Decision, the Board found that Patent Owner was seeking to impose two requirements on the claim term “cognate.” Decision at 14. Patent Owner's proposed constructions, however, did not impose either requirement.

First, the Board understood that Patent Owner required that the “cognate” limitation to requires that the other user “receive content which the user has also

received.” Decision at 14-15. That is not, however, a requirement that Patent Owner imposed for the “*cognate*” limitation. Instead, the requirement that the second user receive “the *same* electronic content” as the first user relates to the “*recipient*” limitation (not the “*cognate*” limitation). The point that Patent Owner made was simpler: the “*identify...*” step encompasses **both** the “*cognate*” limitation **and** the “*recipient*” limitation.

Second, the Board understood that Patent Owner required that the “*cognate to the user*” limitation requires that “the other user’s actions on that content must be tracked in order to determine the content’s relevance.” Decision at 14-15. That is not, however, a requirement that Patent Owner imposed for the “*cognate*” limitation. The point that Patent Owner was making with respect to “*tracking*” limitation is that **one** of the reasons the system “*identiffies*” a second, “*cognate*” user is so the system can track that second user’s actions on the piece of electronic content. The specification explains this at length. *See supra* at 8-10 (citing **EX2029**, ¶¶70-81 & **EX1001**). Although this step of tracking the actions of the second, cognate user is optional in the claims (i.e., part of a Markush group), it is one of the reasons **why** “*identify[ing]*” this second user is required. *Id.*

D. Construction of “a recipient”

Applying *Phillips*, the proper construction of “*a recipient*” is a specific type of user – i.e., a user that has **received** a piece of electronic content **sent** from a

sender. **EX2029**, ¶136. Nevertheless, Petitioner and its expert seem to be construing “*a recipient*” to be any “user” that “used,” an item. **EX1003**, ¶¶120 (citing **EX1005**, [0052]); *see also* Petition, at 31. The claims and specification (as well as plain and ordinary language), however, make clear that “*a recipient*” is not just a “user” that interacted with, used, or looked at content, but, instead, is a user that **received** the piece of electronic content **sent** from a **sender**. *E.g.*, **EX1001**, Claim 1 (system is for “*determining a relevance score of a piece of electronic content sent from a sender,*” and system “*identif[ies] ... a recipient*” for the purpose of tracking “*actions on the piece of electronic of the at least one other of the plurality of users that is a recipient of the piece of electronic content*” (emphasis added)); *id.* 2:26-28 (“FIG. 4 shows different techniques as to how an electronic mail object may be **sent to** external **recipients**” (emphasis added)); *see also* **EX2029**, ¶136 (collecting citations from specification confirming that “*a recipient*” must have received **sent** content). Petitioner’s attempt to read “*a recipient*” to mean any user that simply “uses” any content (e.g., a webpage on the Internet) ignores both the claim language and the specification. **EX2029**, ¶136. Construing “*a recipient*” to require that the user actually received a piece of electronic content sent by a sender conforms with the plain and ordinary definition of “*a recipient*.” *Id.*

For these reasons, “*a recipient*” of a piece of electronic content should be construed to mean a “user” that has received electronic content “*sent from a sender*.”

V. THE BOARD SHOULD NOT INSTITUTE ON ANY OF PETITIONER'S GROUNDS 1-3

A. Legal Standards

1. Petitioner's Burden

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

2. Obviousness

To prevail on its obviousness challenges, Petitioner must prove by a preponderance of the evidence that “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 316(e) & 35 U.S.C. § 103.

“[E]ven when all claim limitations are found in prior art references, the factfinder must ... determine ... whether there is a motivation to combine teachings from separate references.” *Star Scientific, Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1374–75 (Fed. Cir. 2011) (citations omitted). There must be some reason to combine the prior art in the way embodied by the patent; some motivation or

incentive is needed. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007). “A reason for combining disparate prior art references is a critical component of an obviousness analysis; ‘this analysis should be made explicit.’” *InTouch Technologies, Inc. v. VGO Communications, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (quoting *KSR*, 550 U.S. at 418). Put another way, “there ... must be evidence that ‘a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.’” *Ecolchem, Inc. v. S. California Edison Co.*, 227 F.3d 1361, 1375 (Fed. Cir. 2000) (internal citation omitted).

“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

The Federal Circuit has held that, “[i]f references taken in combination would produce a ‘seemingly inoperative device,’” “such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness.” *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354 (Fed. Cir. 2001) (internal citations omitted).

In order to render obvious some claim, the piece being combined must have existed in the prior art to begin with. *E.g.*, MPEP, § 2141 (discussing *KSR* and stating that obviousness involves “a combination of **known** elements” (emphasis added); *accord* MPEP, § 2143 (listing “examples of rationales that may support a conclusion of obviousness,” which require “**known**” methods, elements, or techniques or solutions that are “obvious to try” (emphasis added)).

B. The Board Should Reject Grounds 2 & 3 Because Rose, Alone or in Combination with Bieganski, Does Not Render Obvious Any Claim of the ‘217 Patent.

The Board should reject Petitioner's Grounds 2 and 3 because Rose, alone or in combination with Bieganski, does not render obvious any claim of the ‘217 Patent. This is because Rose does not teach, suggest, or render obvious at least two limitations that are required by every claim of the ‘217 Patent, and Petitioner does not even contend that Bieganski fills in one of those missing limitations.

First, Rose does not teach, suggest, or render obvious “**determin[ing] the relevance score based** at least in part on the first determined measure of relevance” – i.e., based upon “**actions of the [first user]** on the piece of electronic content.” EX2029, ¶¶167-179. The invention in Rose is directed to **predicting** the likely relevance of an item for a first user **before** the first user reads and ranks the item. As a result, Rose does not consider the first user's own actions to rank an item.

Second, Rose does not teach, suggest, or render obvious “*identify[ing] at least one other of the plurality of users ... that is cognate to the [first] user.*” EX2029, ¶¶180-193. Although Rose considers the feedback of other users in the system, Rose considers the feedback of **all other users**.

1. The Rose and Bieganski References

a) Rose.

Rose is titled “System for ranking the relevance of information objects accessed by computer users.” EX1005; *see also* EX2029, ¶¶99-113 (describing Rose). Rose is focused on the predicted relevance of a piece of electronic content to a recipient **before** an electronic mail object is opened: “[i]nformation presented to a user via an information access system is ranked according to **a prediction of the likely degree of relevance** to the user’s interests.” *Id.* at Abstract (emphasis added); *id.* at 2:6-7 (“It is desirable, therefore, to employ a system for **predicting** the **likely** relevance of items of information to a particular user ...” (emphasis added)). In contrast to prior art that ranked items based upon content alone, in Rose, the prediction of relevance is based upon both (1) attributes of the item (e.g., content, or event times) (“attribute-based prediction”) and (2) community feedback (“correlation-based prediction”). *Id.* at Abstract, 6:6-11, 7:35-37 & 8:13-17.

Because Rose is based on predicting relevancy before the first user has read and rated the content, Rose does not teach or suggest using the first user's actions to determine a relevancy score. *See generally* EX1005; EX2029, ¶112.

Rose does not teach or suggest re-scoring or re-ranking an item after the predictive ranking score is determined; for example, Rose does not teach or suggest re-scoring an item after the first user has rated it. *See generally* EX1005; EX2029, ¶113.

b) Bieganski.

Bieganski is titled “System, method and article of manufacture for making serendipity-weighted recommendations to a user.” EX1007; *see also* EX2029, ¶¶114-124 (describing Bieganski). The application that led to the issuance of the Bieganski patent was filed on July 17, 1998.

Bieganski seeks to provide a “reliable computerized process for estimating the quality of the content of most items that are the subject of a recommender system.” EX1007, 1:47-49. Bieganski is focused on how a recommender system recommends “non-textual multimedia content such as movies and videos.” EX1007, 1:49-50.

Bieganski explains that existing recommendation systems often tend to suggest the most popular items to users – i.e., “the highest-ranking positive preference values.” EX1007, 3:1-3. Bieganski explains that this technique does not always provide a desirable effect because the recommendations can be obvious to

the user, such that the system has provided the user with no value. EX1007, 3:3-8; 5:22-25. For example, a recommendation to purchase milk at the grocery store would be an obvious recommendation, and not very helpful, because the customer already had that knowledge. EX1007, 3:8-20. Traditional systems typically provide obvious, expected recommendations, but they often lack the element of novelty that serendipitous suggestions offer. EX1007, 5:22-25.

Bieganski addresses this limitation of existing recommender systems by introducing “serendipity” into recommendation systems. EX1007, 3:30-33. A serendipitous recommendation suggests items that a user would not normally encounter, thereby enhancing discovery and diversity. EX1007, 5:13-22.

The recommendation system described in the Bieganski patent includes three core components:

- (a) the recommendation engine,
- (b) the serendipity control function applicator, and
- (c) the serendipity integration unit.

EX1007, 5:55-58.

The outputs of the recommendation engine and the serendipity control function are fed into the serendipity integration unit. EX1007, 5:59-61. This unit produces a final set of recommendations that are both serendipity-weighted and filtered, resulting in a balanced mix of accuracy and novelty. EX1007, 5:61-63.

The recommendation engine uses automated collaborative filtering to generate candidate items. EX1007, 6:27-29. It groups users with shared interests into affinity groups or neighborhoods. EX1007, 6:29-31. To form a neighborhood for a target user, the engine identifies users with preference profiles most similar to that of the target. EX1007, 6:31-34. Similarity is typically measured by counting the number of shared items between profiles. EX1007, 6:34-36.

Bieganski uses two thresholds to limit the neighborhood size: minimum neighbor similarity and maximum neighborhood size. EX1007, 7:16-19. Once a neighborhood is identified, the engine generates a set of candidate items by selecting all items found in the profiles of the neighbors, excluding any already present in the target user's profile. EX1007, 7:66-8:3.

The serendipity control function is a mathematical function that maps an item's popularity in the community to a probability value. EX1007, 9:54-57. Several strategies are proposed. EX1007, 9:64-11:67.

Finally, the serendipity integration unit combines the predictive accuracy of the recommendation engine with the serendipitous value of the items to produce a refined list of recommendations. EX1007, 15:34-37.

2. Rose Does Not Teach, Suggest, or Render Obvious
“determin[ing] the relevance score ... based at least in part on”
“actions of the user on the piece of electronic content.”

Every claim of the ‘217 Patent requires “*determin[ing] the relevance score*” “*based at least in part on the first determined measure of relevance*” – i.e., based upon “*one or more actions of the user on the piece of electronic content.*” EX1001, at Claims 1, 6 & 7. Rose, however, does not teach, suggest, or render obvious using “*actions of the [first] user*” on a piece of content to “*determine[] “the relevance score”* for that same piece of content. EX2029, ¶¶167-179.

In many ways, Rose is a different invention from the ‘217 Patent inventions. EX2029, ¶¶158-166. Rose is focused on **predicting** whether an item **will be** relevant to a particular user. *Id.* ¶171 (citing EX1006, Abstract). Rose explains that, in the past, systems predicted relevance based upon objective criteria specified by the user, but, in that objective approach, “potentially relevant items of information can be missed.” EX1006, at 1:64-2:5. Rose’s system solves these problems by “**predicting** the **likely** relevance of items of information to a particular user, so that items of interests can be ranked and the need to deal with large amounts of irrelevant information can be avoided.” *Id.* at 2:5-9 (emphasis added). Because Rose predicts the relevancy of content before it is presented to the first user, Rose does not use the first user’s **own actions** on an item to determine the item’s relevance score for the

first user. *Id.*; *see generally* EX1006.⁴ There is no disclosure of using “*actions of the [first] user on the piece of electronic content*” to “*determine[]*” “*the relevance score*” for that same piece of content.

Rose uses two measures to “*determine[]*” “*the relevance score*”: correlation-based predictions (i.e., predictions based upon other users’ feedback) and attribute-based predictions (i.e., predictions based upon the documents’ content, such as keywords or date). EX1006, 7:35-37. Correlation-based predictions are based upon community feedback – i.e., “indications provided by **other** users.” *E.g.*, EX1006, 6:61-52 (emphasis added); *id.* 6:60-7:34. Correlation-based predictions are not, therefore, based upon “*actions of the [first] user*.” Attribute-based predictions are based upon the attributes of the document. EX1006, 6:11-25; 6:51-59; *id.* 8:12-16. For example, attribute-based predictions in Rose may include the words/terms that appear in a document or the date/age of a document. *Id.*; EX1006, 8:13-17. Attribute-based predictions in Rose also are not based upon “*actions of the [first] user on the piece of electronic content*” because Rose **predicts** whether an item will be relevant to the first user at a time when the first user has not yet rated (“*act[ed]*” upon) the item.

⁴ Instead, the first user’s rating of an item is used for **different** purposes, including predicting whether the item will be relevant to “**other** users” and to adjust the first user’s profile to better predict the relevance of **future** documents for the first user. EX2029, ¶172.

a) Rose Does Not “determine the relevance score” Using the First User's Updated User Profile – i.e., a User Profile Updated after the First User Rates the Content.

Petitioner asserts that the first user's **updated** profile – i.e., the first user's profile after the first user has rated an item – is a “*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.*” E.g., Pet. 54 (asserting that the “update[d] ... user profile” “contain[s] a *first measure of relevance*”). Petitioner points to the disclosure in Rose that, after the first user rates an item, the first user's user profile is updated to indicate that user's preferences (e.g., significant terms in the document can be given increased weight in the user's profile). *Id.* Petitioner contends that this updated user profile is “*a first measure of relevance.*” Pet. 46, 54–55 (citing Ex. 1006, 4:33–35, 5:21–23). Assuming, *arguendo*, that the first user's updated profile could be “*a first measure of relevance,*” Rose never uses that updated user profile to “*determine the relevance score.*” This is because Rose is about **predicting** relevance of an item for the first user **before** the first user rates it. Therefore, the user profile that Rose uses to “*determine the relevance score*” is the profile **before** the first user rates the item. In other words, at the time that Rose uses the first user's profile to determine an attribute-based prediction (and at the time that Rose uses that attribute-based prediction to produce a ranking score), the first user's profile **does not yet contain** any “*actions of the [first] user on the piece of electronic content.*”

Petitioner contends that Rose **does** use the first user's updated user profile to “*determine the relevance score*” because, Petitioner contends, Rose **updates** (i.e., recalculates) the relevance score for each item **after** the first user has rated it. In particular, Petitioner's expert asserts that when the first user “rates electronic content, the system updates weights for ‘significant terms in that document’ in the user's profile, which then **increases (or decreases) the relevance [score] of that document** for that user.” EX1003, ¶182 (emphasis added & citing EX1006, 6:36-43). There is no evidence in Rose supporting this opinion that the relevance score is updated (i.e., “increases (or decreases)”). The passage that Petitioner's expert cites does not support his conclusion. The citation states: “Each time a user provides a new response to a retrieved message, **the profile vector is modified** in accordance with the results of the indication”; “[f]or example, if the user indicates interest in a document, all of the significant **terms** in that document can be **given increased weight in the user's profile**.” EX1006, 6:36-43 (emphasis added); *see also* EX2029, ¶175. This citation states only that the first user's rating is used to update the first user's **profile**. EX1006, 6:36-43; EX2029, ¶175. The passage says nothing about thereafter using that updated user profile vector to update **the ranking score** of that particular document. *Id.* Rose does not teach or suggest updating **the ranking score** for an item **after** the first user has read and rated it. EX2029, ¶¶113, 175-178.

In the Institution Decision, the Board preliminarily agreed with Petitioner, finding that Rose must re-calculate a relevance score for an item after the first user rates the item (i.e., after the first user's profile is updated to reflect the first user's rating of the item). The Institution Decision cited two passages in Rose as alleged support for its finding that Rose re-scores an item after the first user rates it, but neither passage supports a finding that Rose re-scores an item.

First, the Board cited Rose's statement that "all of the messages addressed to that user are ranked." Decision, at 22 (quoting EX1006, at 4:40-59). Rose's statement that "all of the messages addressed to that user are ranked," however, does not suggest that Rose re-scores an item after the first user has rated that item. This is because, even if Rose does not re-score an item after the first user rates it (which Rose does not), Rose still ranks "all of the messages addressed to that user." This is because Rose ranks "all of the messages addressed to that user" **before** each message is presented to the first user (when it is "unread" and not yet rated). Rose contains no disclosure, however, of re-scoring an item after the first user has rated the item. Because Rose does not teach or suggest re-scoring, Rose also does not teach, suggest, or render obvious "*determin[ing] the relevance score of the piece of electronic content*" based upon an updated user profile (i.e., a user profile that has been updated after the first user rates the item).

Importantly, Rose provides context for the passage about ranking “all of the messages” to which the Board cites. The full passage states:

Once the user's profile is retrieved, all of the messages **to be provided** to the user are **ranked on the basis of a predicted degree of relevance** to the user. For example, in an e-mail system, all of the messages addressed to that user are ranked.

EX1006, at 4:38-42 (emphasis added). Because the ranking is “on the basis of a *predicted* degree of relevance,” Rose necessarily ranks items based upon a user profile **before** it is updated to reflect the first user’s actual rating of the item. The passage makes clear that, when Rose talks about ranking “all of the messages,” it is referring to ranking each message **before** it is rated by the first user. This is because the passage states that each message is “ranked on the basis of a **predicted** degree of relevance to the user.” In other words, each message is **not** ranked based upon actual relevance to the first user (i.e., the first user’s actual rating). Furthermore, the passage states that the messages being ranked are those “**to be provided** to the user” – i.e., the messages that have **not yet** been provided to the user. This language confirms that Rose only ranks an item for the first user **before** the first user rates the item, and Rose does **not re**-rank the item after the first user has rated the item.

The second passage that the Board cited as alleged support for its finding that Rose **re**-scores an item after the first user rates it is the statement that Rose ranks “messages in an electronic mail network . . . according to their likely degree of relevance and displayed with an indication of their relative ranking”; “[f]or example,

they can be displayed in order of rank.” Decision, at 22 (citing Ex. 1006, 2:25–35 & Fig. 3). The **complete** citation, however, paints a fuller picture: “items of information **to be presented** to the user, e.g., messages in an electronic mail network or documents within a particular bulletin board category, are ranked according to their **likely** degree of relevance and displayed with an indication of their relative ranking. For example, they can be displayed in order of rank.” Ex. 1006, 2:25–35 (emphasis added). The complete citation clarifies that it is only **unread** messages that are displayed in order of rank. This is because the passage discusses displaying the messages “**to be presented** to the [first] user” – i.e., messages that have **not yet been** presented to the first user. In addition, the passage discusses displaying messages “according to their **likely** degree of relevance” – i.e., according to their **predicted** degree of relevance; not according to the actual relevance as indicated by the first user’s rating of the item.

In contrast to the dearth of evidence supporting Petitioner’s position that Rose **recalculates** (or updates) a ranking score for each item after the first user rates it, there is ample evidence that Rose does **not** re-rank items. Nineteen separate statements discuss “predicting” whether an item is likely to be relevant to the first user. EX2029, ¶¶170 (collecting references). Numerous other citations discuss that the content being ranked is content “to be presented” to the first user – i.e., content not yet presented to the user. *Id.* ¶¶177. Moreover, although Rose discusses updating

the user's profile after the first user rates each item, Rose never discusses using that updated profile to update the item's relevance score for the first user. Rose does not teach, suggest, or render obvious re-ranking an item after the first user rates it.

Common sense (in view of Rose's teachings) also demonstrates why Rose does not re-rank an item after the first user rates it. The aim in Rose is to predict whether an item to be presented to the first user is likely to be relevant to the first user. Once the first user has rated that item, there is no longer any value in "predicting" whether that item will be relevant to the first user; the system already knows whether the first user gave the item a thumbs up (relevant) or a thumbs down (not relevant). Indeed, to continue to rank items for the first user after the first user rated them would be contrary to Rose's aim to "avoid[]" "deal[ing] with large amounts of irrelevant information." EX1006, at 2: 5-9.

If Petitioner were correct that Rose re-ranks each item after the first user rates it, that would lead to absurd results. Assume, for example, that the first user receives an e-mail inviting the first user to a cat cafe. Assume, as well, that every single one of the other users rated this cat café email as relevant (thumbs up). Assume, as well, that – before the first user rates the cat cafe message – the first user's profile is neutral as to cat cafes (e.g., no terms in the user profile indicate a preference for, or dislike of, either cats or cafes). Based upon the first user's neutral profile and the community of users' positive ratings, Rose would likely calculate a high ranking score for the

item, predicting that the first user will also find the item relevant, and, therefore, displaying that unread cat cafe message at the top of the first user's inbox. However, assume that the first user is allergic to cats and, therefore, when the first user opens the message and reads it, the first user gives the message a "thumbs down" rating. That rating is used to update the first user's profile. At that point in time, there is no longer any need to predict a score for the cat cafe message, because the system knows that the first user does not find it relevant. Under Petitioner's interpretation, however, the system would nevertheless continue to re-rank that same (now read) message for the first user. If that were true, that would mean that, even though the system already knows that the first user is not interested in the cat cafe message, the message could still receive a high rank in the first user's inbox. This is because Rose's relevance score is calculated using a prediction formula that uses not only on the first user's profile (attribute-based prediction), but also community feedback (correlation-based prediction). Because the rest of the community found the message relevant, the message would not drop to the bottom of the first user's inbox. It makes no sense, however, to continue to consider community feedback – i.e., to re-calculate the relevance score – after the first user's actual rating is known. EX2029, ¶¶176-177. Doing so is contrary to Rose's aim to avoid dealing with "irrelevant information." EX1006, at 2:5-9. For all of these reasons, Rose does not re-rank an item after the first user has rated it. EX2029, ¶¶167-178.

b) Rose Does Not “determine the relevance score” for Content Using Updated Vector Comparisons – i.e., a Comparison that Uses the User’s Profile after Updated with the First User’s Rating.

In addition to contending that the first user’s **updated** user profile is a “*first measure of relevance*” used to “*determine a relevance score*,” Petitioner contends that the vector comparison – i.e., the comparison (or similarity) between the user profile vector and the document profile vector – is another “*first measure of relevance*.” Petition, at 55. Petitioner’s argument is, again, based upon an assumption that, after the first user rates a piece of content, and after the user profile is updated, Rose then also updates (1) the vector comparison between the (updated) user profile vector and the document profile vector and (2) the ranking score for the piece of content. For all of the reasons stated above, this premise that Rose **re-ranks** an item after the first user rates the item is unsupported by any evidence (and is contrary to common sense). *Supra* at 27-35.

The fact that Rose does not update the vector comparison based upon the **updated** user profile is further confirmed by Rose’s characterization of “the similarity between the document's vector and the user's profile vector” as “[o]ne factor in the **prediction** of a user's **likely** interest in a particular piece of information.” EX1006, at 6:51-53 (emphasis added). This disclosure reiterates that the vector comparison is done **before** the first user rates the content.

In sum, neither of the pieces of information that Petitioner cites as the “*first determined measure of relevance*” – i.e., (1) an updated user profile (updated after the user rates the content) or (2) an updated comparison between the updated user profile vector and the document profile vector – is used to “*determine the relevance score*” in Rose. Instead, Rose “*determine[s] the relevance score*” based upon its prediction of relevancy before the first user’s rates each item. As a result, Rose does not use “*actions of the [first] user on the piece of electronic content*” to “*determin[e] the relevance score.*” Therefore, Petitioner has not met its burden of proving that Rose renders obvious any claim.

3. Rose Does Not Teach, Suggest, or Render Obvious “*identify[ing] 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.*”

Every claim of the ‘217 Patent requires “*identify[ing] 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.*” Rose does not teach, suggest, or render obvious this limitation. EX2029, ¶¶180-193. Although Rose considers feedback from the community of users in determining a relevance score, Rose does not teach, suggest, or render obvious “*identify[ing]*” a **subset** of users – i.e., only those users that are “*cognate to the [first] user.*” Instead, Rose considers the feedback from **all other users** that have rated the item that is going to be presented to the first user (i.e., the item for which relevancy is being predicted). EX2029, ¶¶185-193.

In Rose, a first user's interest in information is predicted based on correlations with preferences expressed by all other users who retrieved that same item. EX2029, ¶185. Indeed, the only algorithm Rose discloses for correlating users correlates the feedback of all other users. EX2029, ¶¶186-188. In Rose, a prediction score P_{ij} for the i -th user regarding the j -th document can be computed as:

$$P_{ij} = \sum_{k \neq i, j} (R_{ik} \times V_{kj})$$

where R_{ik} represents the correlation between users i and k , and V_{kj} denotes the weight or feedback provided by user k on document j . EX1006, 7:24. Thus, when predicting the interest of the first user (i) in a particular electronic object (j), correlations from all users except the first user (i) are considered, and all users' ratings on the same object are factored into the calculation. EX2029, ¶186.

Rose discloses how to calculate a “prediction score for User C regarding Document 1.” In doing so, the algorithm considers all of the other users – i.e., A, B, and D in the example. *Id.* The algorithm considers all of these other users' feedback regardless of whether the other users had similar historical feedback as the first user. For example, in the example matrix, the feedback of all other users (here, Users A, B, and D) is considered, even though, for example, User D almost always provided opposite feedback as compared to the first user (User C). *See* EX1006, at Fig. 6, Table 42. Thus, Rose considers the feedback of every user that accessed the item.

Using misleading excerpts from three discrete parts of Rose, Petitioner argues that Rose uses the correlation matrix “to *identify* ‘users whose interests ... are similar or opposed’ or ‘*users having similar feedback responses.*’” Pet., at 57 (emphasis in original and quoting Rose, 5:57-60, 6:61-7:1, 7:39-51). None of the passages in Rose that Petitioner stitches together, however, teach or suggest “*identify[ing]*” another “*user*” (or group of users) that is “*cognate to the [first] user.*”

The first excerpt from Petitioner's misleading statement (EX2006, at 5:57-60) mentions “users whose interests ... are similar or opposed.” The complete sentence states: “[One user's rating] is used to update the user's profile for the movie database, as well as provide information to rank that movie for viewing by other users whose interests in movies are similar or opposed.” EX1006, at 5:57-60. In other words, the passage states only that one user's rating can be used to help predict relevancy for **all other users**, regardless of whether their interests “are similar or opposed.” The passage does **not** teach or suggest “*identify[ing]*” another “*user*” that is “*cognate to the [first] user.*”

The second excerpt from Petitioner's misleading statement (EX1006, 6:61-7:1) discusses using the correlation matrix to indicate a degree of correlation between the first user and **all other users**: “From this table, a correlation matrix **R** can be generated, whose entries indicate the degree of correlation between the **various users**' interests in commonly retrieved messages.” *Id.* (emphasis added).

The passage also does **not** teach or suggest “*identify[ing]*” another “*user*” that is “*cognate to the [first] user.*”

The third excerpt from Petitioner's misleading statement (EX1006, 7:39-51) includes the verb “identify,” but it does so in the context of “identify[ing]” **attributes**, not identifying another “*cognate*” “*user.*” It states: “In this approach, regression methods are employed **to identify the most important attributes** that are used as predictors, e.g., salient terms in a document and users having similar feedback responses, and how much each one should be weighted.” Rose, 7:39-51 (emphasis added); EX1003, ¶187. The verb “identify” in this passage (which Petitioner and its expert emphasize (EX1003, ¶187; Pet. 57-58)), refers to “identify[ing]” “**attributes** that are used as predictors”; the passage does not refer to “*identify[ing]*” other “*users*” that are “*cognate to the [first] user.*” Moreover, the reference to “users having similar feedback responses” (1) does teach or suggest “**identify[ing]**” such users (or treating such users any differently than every other user); (2) does not teach or suggest “*identify[ing]*” “users having similar feedback responses” **as the first user** (i.e., “*cognate to the [first] user*”); and, certainly, (3) does not teach or suggest “*identify[ing]*” “users having similar feedback responses” to the first user **that also “is** *a recipient of the piece of electronic content*” being scored.

For all of these reasons, Rose does not teach or suggest “*identify[ing]*” other “*users*” that are “*cognate to the [first] user.*”

Moreover, there is no support for a finding that it would have been obvious to add that limitation that is missing from Rose. Petitioner asserts that “[t]o the extent Rose does not explicitly identify a group of users based on this correlation,” a POSITA would have “found it obvious” to add that missing claim limitation – i.e., to “identify” users “based on correlations.” EX1003, ¶188. In Ground 2, Petitioner does not, however, specify any prior art patent or printed publication in which Petitioner contends such a limitation is found. *See* 37 C.F.R. § 42.104(b)(4) (stating that a petition for inter partes review (IPR) “must specify where each element of the claim is found in the prior art patents or printed publications relied upon”). Instead, Petitioner relies upon the general knowledge of a POSITA, arguing that “[a] POSITA would be familiar with simple techniques that identify the top ... users that are relevant to a particular user.” EX1003, ¶188. This is impermissible. *See* 37 C.F.R. § 42.104(b)(4). Petitioner has not met its burden to show that it would have been obvious to add this feature to Rose.

For all of these reasons, Rose does not teach, suggest, or render obvious “*identify[ing]*” other “*users*” that are “*cognate to the [first] user.*”

4. Ground 3: The Combination of Rose and Bieganski Does Not Render Obvious Any Challenged Claim.

The combination of Rose and Bieganski also does not render obvious Claims 1-3, 5-9, 13-15, 18-19, and 22 of the '217 Patent. EX2029, ¶¶195-203.

As discussed above, every claim of the '217 Patent requires “*determining the relevance score*” for a piece of content “**based at least in part on**” “**actions of the [first] user on the piece of electronic content.**” As set forth above, Rose does not disclose this limitation, and Petitioner does not argue that Bieganski discloses this limitation.⁵ See generally Pet.; EX2029, ¶¶195-197. As a result, the combination of Rose and Bieganski does not render obvious any claim.

5. Ground 3: A POSA Would Not Be Motivated to Combine Rose and Bieganski.

In addition to the fact that Rose and Bieganski do not teach, suggest, or render obvious “*determining the relevance score*” based upon “*actions of the [first] user,*” the Rose-Bieganski combination also does not render obvious any claim because a

⁵ Nor could it, for Bieganski does not use the first user's own actions on an item to determine whether the item should be recommended to the first user. EX1007. Instead, Bieganski teaches that “items that the customer has already selected” (i.e., items that the first user has already interacted with) should be “[e]liminat[ed]” from the set of candidate items up for recommendation. EX1007, at 8:1-5. Because Bieganski does not use the first user's own actions on an item to develop its recommendations, it also does not disclose any math or algorithm that would take into consideration the first user's own actions on the item. See generally EX1007.

skilled artisan would not be motivated to combine Rose and Bieganski to arrive at the inventions in the '217 Patent. EX2029, ¶¶198-203.

Petitioner argues that, to the extent it is missing from Rose (which it is), Bieganski supplies the “*identify...*” limitation (as well as the “*second relevance measurement*”; the specific measures that are the “*second measure of relevance*”; and several dependent claims). Pet. 72-77; EX1003, ¶¶232-237. Petitioner's position, however, ignores the numerous reasons why a POSITA would **not** have been motivated to combine the references and would not have expected to be successful in doing so.

First, a skilled artisan would not be motivated to look to Bieganski at all to solve the problems involving sent pieces of electronic content that the '217 Patent was trying to solve. Because Bieganski is directed to a different type of content. EX2029, ¶201; EX1001, 1:10-45. Bieganski addresses recommending a particular type of content: non-textual multimedia content such as movies and videos. EX1007, 1:45-50. Although – as the Board points out (Decision, at 29) – Bieganski also discusses that it could apply to “textual information sources,” the “textual” sources that Bieganski references include books, magazines, publications, articles, and “Internet documents.” EX1007, at 17:44-50; *see also id.* at 17:59-18:6 (discussing deficiencies with prior art mechanisms for returning lists of items by search engines). None of these “textual information sources” address “sent” electronic content, such

as e-mails or other messages. In contrast, every claim of the '217 Patent addresses “*electronic content sent from a sender to a user.*” EX1001, at Claims (emphasis added). Thus, a skilled artisan would not look to Bieganski to solve problems relating to “sent” content.

In addition to the fact that a skilled artisan would not look to Bieganski to solve the problems in the '217 Patent inventions, a skilled artisan would not expect to succeed in combining Rose and Bieganski. This is because combining Rose and Bieganski would not be as simple of a change as Petitioner and its expert suggest. EX2029, ¶202. In particular, the two threshold selections in Bieganski – i.e., minimum neighbor similarity and maximum neighborhood size – are not trivial. *Id.* Furthermore, these thresholds may vary from one targeted user to another one. *Id.* For these reasons, it would not have been obvious to combine Rose and Bieganski to come up with the inventive solutions set forth in the '217 Patent.

For all of these reasons, Petitioner has not met its burden to show that Rose (alone or in combination with Bieganski) renders obvious any claim of the '217 Patent.

C. The Board Should Reject Ground 1 Because Dumais Is Not Prior Art to the '217 Patent.

Dumais is the only reference or primary reference for Ground 1 advanced by Petitioner. Dumais, however, is not prior art to the '217 Patent. As set forth in the first Declaration of Justin Marston, the inventors of the '217 Patent⁶ conceived of their invention at least as early as June 7, 2005, and, therefore, the '217 Patent has a priority date that is earlier than the Dumais priority date. *See generally* **EX2003**; *see also* **EX2014 & EX2015**.

The priority date of Dumais is June 29, 2005. **EX1006**. The conception of the '217 Patent predates this. *See* **EX2003, EX2004, EX2006, EX2014**. In particular, as set forth in the first declaration of Justin Marston, **EX2004** and **EX2006** are draft documents prepared by the inventors on September 2, 2004, and June 7, 2005 (hereinafter, collectively, the "Conception Documents"). These Conception Documents disclose each limitation of the Challenged Claims. *See* **EX2014**. Additional evidence cited in the first declaration of Justin Marston show continued work on the mathematics for the relevance model between September 2, 2004, and the filing of the provisional patent application on January 13, 2006. **EX2005-EX2013**; *see also* **EX2019-EX2028** (additional metadata). Accordingly, the inventors of the '217 Patent conceived of their invention prior to June 7, 2005.

⁶ The inventors' background is set forth in their declarations and exhibits cited within. **EX2003, EX2015, EX2030, EX2031, EX2016-EX2018 & EX2075-2078**.

Importantly, Petitioner does not dispute that the Conception Documents disclose every limitation of the '217 Patent claims. *See generally* Pet. Instead, Petitioner challenges whether the testimony is sufficiently corroborated and whether the inventors were reasonably diligent in reducing the invention to practice. Decision, at 33-34.

Regarding corroboration, the Board found that the Conception Documents (e.g., **EX2004** & **EX2006**) “*themselves* are evidence of conception, which do not require further corroboration,” and that, even if they were not, Patent Owner’s argument that the metadata is additional corroboration was an argument “reasonably based on the manner in which metadata is created.” Decision, at 33 (citing *Price v. Symsek*, 988 F.2d 1187, 1195 (Fed. Cir. 1993)). The Board was correct in these findings that the Conception Documents corroborate conception by at least June 7, 2005.

Regarding diligence, the Board preliminarily found that there were “questions regarding gaps in Patent Owner’s diligence,” and the Board invited Patent Owner “to introduce additional relevant evidence and to explain why the evidence corroborates Mr. Marston’s testimony [that the time periods reflect ongoing refinement of formulas to implement the BlueSpace relevance model] or otherwise shows reasonable diligence.” Decision, at 34-25.

Pre-AIA section 102(g) allows a patent owner to antedate a reference by proving earlier conception and reasonable diligence in reducing to practice. *Monsanto Co. v. Mycogen Plant Sci., Inc.*, 261 F.3d 1356, 1362 (Fed. Cir. 2001). The critical period begins just prior to the competing reference's effective date and ends on the date of the invention's reduction to practice. *Id.* at 1363. The issue of reasonable diligence "turns on the factual record, and [the Federal Circuit] review[s] Board determinations as to diligence for support by substantial evidence in the record." *In re Steed*, 802 F.3d 1311, 1317 (Fed. Cir. 2015). An inventor's testimony regarding diligence must be corroborated by evidence. *Brown v. Barbacid*, 436 F.3d 1376, 1380 (Fed. Cir. 2006). A "variety of activities" may corroborate an inventor's testimony of diligence and such corroborating evidence is considered "as a whole" under a rule of reason. *Id.*

Under a rule of reason analysis, "[a]n evaluation of all pertinent evidence must be made so that a sound determination of the credibility of the inventor's story may be reached." *See Price v. Symsek*, 988 F.2d 1187, 1195 (Fed. Cir. 1993). A patent owner need not prove the inventor continuously exercised reasonable diligence throughout the critical period; it must show there was reasonably continuous diligence. *See, e.g., Tyco Healthcare Grp. v. Ethicon Endo-Surgery, Inc.*, 774 F.3d 968, 975 (Fed. Cir. 2014); *Monsanto*, 261 F.3d at 1370. Under this standard, an inventor is not required to work on reducing his invention to practice every day

during the critical period. *See Monsanto*, 261 F.3d at 1369. Periods of inactivity within the critical period do not automatically vanquish a patent owner's claim of reasonable diligence. For example, in *Monsanto*, the Federal Circuit held that substantial evidence supported the jury's presumed finding that an inventor was reasonably diligent where there was no corroborating evidence of any activity for a series of months. *Id.* at 1370. The Federal Circuit explained that, notwithstanding the absence of daily notebook entries and the resulting gaps during the critical period, "the work involved in the experiments was continuous in nature" and therefore the reduction to practice was "reasonably continuous." *Id.*

"In determining whether an invention antedates another, the point of the diligence analysis is not to scour the patent owner's corroborating evidence in search of intervals of time where the patent owner has failed to substantiate some sort of activity." *Perfect Surgical Techniques, Inc. v. Olympus America, Inc.*, 841 F.3d 1004, 1011 (Fed. Cir. 2016). Instead, the purpose is "to assure that, in light of the evidence as a whole, 'the invention was not abandoned or unreasonably delayed.'" *Id.* (quoting *Brown v. Barbacid*, 436 F.3d 1376, 1379 (Fed. Cir. 2006)). "That an inventor overseeing a study did not record its progress on a daily, weekly, or even monthly basis does not mean the inventor necessarily abandoned his invention or unreasonably delayed it." *Id.* Under a rule of reason analysis, inventors are not required to corroborate every day the application was worked on, every activity the

inventors performed in their daily occupations, or specify precisely what work was done. *See Perfect Surgical*, 841 F.3d at 1011 (internal citation omitted).

In this case, Patent Owner has antedated the Dumais reference by proving earlier conception (by June 7, 2005), and reasonable diligence in reducing to practice between June 28, 2005 (just prior to the competing reference's effective date), and January 13, 2006 (the date of constructive reduction to practice (when the provisional patent application was filed)). In response to the Board's suggestion that Patent Owner "introduce additional relevant evidence" to show reasonable diligence, Patent Owner has done precisely that: Patent Owner has provided additional evidence that both corroborates Justin Marston's testimony and shows reasonable diligence, including testimony from both Justin Marston and Paul Marston (the two inventors of the '217 Patent) and numerous documents corroborating their testimony that, during the critical period, they were refining the formulas to implement the BlueSpace relevance model and continuously exercised reasonable diligence. **EX2030** (J. Marston declaration); **EX2031** (P. Marston declaration); **EX2032** through **EX2074** (corroborating documentation).

In addition, Patent Owner submitted evidence – including testimonial evidence and corroborating documents – to show that, during the critical period, Justin Marston had numerous other obligations running the company BlueSpace, and Paul Marston was working a full-time position as a lecturer on statistics. **EX2030** (J.

Marston declaration); **EX2031** (P. Marston declaration); **EX2042** (log of privilege communications); **EX2041** (log of BlueSpace work); **EX2076-EX2078** (P. Marston background). These concurrent occupational obligations may be taken into consideration when assessing diligence. *Perfect Surgical*, 841 F.3d at 1011 (vacating and remanding Board's decision that patent owner failed to antedate reference and holding that, "[o]n remand, the question before the Board is whether all of [patent owner's] evidence, considered as a whole and under a rule of reason, collectively corroborates [the inventor's] testimony that he worked reasonably continuously **within the confines of his and [his patent prosecution attorney's] occupations** to diligently finalize the patent application during the ... critical period" (emphasis added)).

Patent Owner's evidence, considered as a whole and under a rule of reason, collectively corroborates the inventors' testimony that they worked reasonably continuously within the confines of their occupations, to diligently finalize the patent application during the critical period. Therefore, Patent Owner has antedated the Dumais reference by proving earlier conception (by June 7, 2005), and reasonable diligence in reducing the invention to practice during the critical period.

Because Dumais is not prior art to the '217 Patent, Dumais does not render obvious any claim of the '217 Patent.

D. The Board Should Reject Ground 1 Because Dumais, Alone or in Combination With Petitioner's Other References, Does Not Render Obvious Any Claim of the '217 Patent.

Even if Dumais were prior art to the '217 Patent (which it is not), Petitioner has failed to show that Dumais, alone or in combination with Petitioner's other cited references, renders obvious any claim of the '217 Patent. *See* **EX2029**, ¶¶133-156.

1. Dumais

Dumais, which is entitled "Sensing, Storing, Indexing, and Retrieving Data Leveraging Measures of User Activity, Attention, and Interest" (**EX1006**), focuses on the retrieval of data *in response to a search*, not on the receipt of emails, messages, or other electronic content. *See, e.g.,* **EX1006**, at Abstract (discussing "items returned in a search"); **EX2029**, ¶¶91-98 (describing Dumais). The focus of Dumais is query modification, i.e., modifying the list of results returned in response to a search query, which is focused on a single user, including a single user's interest, via tags. **EX1006**, [0040]; **EX2029**, ¶¶126-132.

The inventions in the '217 Patent are very different from the invention in Dumais, in many ways. **EX2029**, ¶¶126-132.

2. Dumais Does Not Teach or Suggest the "identify..." limitation.

Every claim of the '217 Patent requires "identify/ing 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 [first] user." Ex. 1001, at Claims (emphasis added). In Ground 1, Petitioner relies exclusively upon Dumais to supply this limitation. *E.g.,* Petition, at

1. Dumais, however, does not teach or suggest this limitation, including both because (1) Dumais does not teach or suggest the “identify at least one of the other plurality of users that is a recipient of the piece of electronic content” limitation; and (2) Dumais does not disclose “*identify[ing]*” a user that is **both** “a recipient” of the piece of content being scored and also “*cognate to the [first] user.*” EX2029, ¶¶133-156.

As an initial matter, Petitioner's position that Dumais discloses the “*identify...a recipient*” limitation is based upon an incorrect construction of “*recipient*” – i.e., one that does not require that the user actually received content sent from a sender. Instead, Petitioner and its expert and its expert define “*a recipient*” to be any user that “used” an item. Petition, at 33 (citing **EX1006**, [0022], [0040]); *see also* **EX1004**, ¶¶245, 247. That definition, however, is incorrect. *See supra* at 18-19; **EX2029**, ¶136. A POSA would understand that, in the ‘217 Patent, “*a recipient*” is another user that **received** a piece of **sent** electronic content from a **sender**. *E.g.*, **EX1001**, 2:26-28 (“an electronic mail object may be **sent to** external **recipients**”); *see also supra* at 18-19; **EX2029**, ¶136.

In the ‘217 Patent, when the first user receives a piece of electronic content (e.g., an email), the system takes a number of steps to determine whether the content will be relevant to the first user. As part of this process, the ‘217 Patent requires “identify[ing]” another user (or group of users) that received **that same piece of**

content that is being scored for the first user. Dumais contains no such teaching or suggestion.

The passage in Dumais that Petitioner and its expert cite is the following:

Models can be derived for individuals or groups of individuals at 570 such as via collaborative filtering techniques that develop profiles by the analysis of similarities among individuals or groups of individuals. Similarity computations can be based on the content and/or usage of items.

EX1005, ¶52. This passage discusses grouping together users based upon their similar “usage of itemss” (plural). *Id.* (emphasis added). In other words, if two users consistently visited many of the same websites, they might be grouped together to create a group profile. There is no disclosure in Dumais, however, of creating a group consisting of both the first user and another user (or group of users) that received **the specific piece of content being scored**. Dumais does not teach the active step of “**identify/ing**” another user (or group of users) that received the piece of content being scored for the first user. EX2029, ¶140.

In the Institution Decision, the Board found that, because Dumais’s “groups users based on similar usage of data items” (including e-mails), a POSITA “would understand that Dumais at least suggests that users are grouped based upon receiving the same email.” Decision, at 36 (citing Ex. 1006 ¶¶ 52, 55). To the contrary, however, given Dumais’s purpose and teachings, it would not make sense to group together two (or more users) on the sole basis that they received the same, single

email. This is because, in Dumais, the purpose of collaborative filtering is to create profiles for users that are new to the system. *Id.* Grouping together two (or more) users that received the same, single email would not help to develop a profile for new users in Dumais. Nothing in Dumais teaches or suggests grouping together users in that manner, and nothing in Dumais teaches or suggests “*identify[ing]*” another user that received “*the piece of electronic content*” that is being scored for the first user. *See generally* EX1004; EX2029, ¶¶133-156.

Petitioner's expert argues that “Dumais contemplates users receiving and interacting with the same email, including identifying all of those receiving an email message based on inclusion in the TO or CC fields.” EX1003, ¶121. There is no support in Dumais for this argument, and Petitioner's expert cites none. *Id.*; EX1005; EX2029, ¶138. Dumais does not discuss any e-mail fields, including that Dumais does not discuss using the information in the TO or CC fields of e-mails. *See generally* EX1003.

For all of these reason, Dumais contains no disclosure of “*identify[ing]*” a second user that received “*the piece of electronic content*” that the first user received (i.e., the piece of content that is being scored).

The '217 Patent's “*identify*” limitation requires not only that the second “*user*” be a “*recipient*,” **but also** that the “*user*” be “*cognate to the [first] user*.” EX2029,

¶¶133-156. Dumais, however, does not teach or suggest “*identify[ing]*” another user that is “*cognate to the [first] user*” **and** “*a recipient*.” **EX2029**, ¶¶133-156.

Petitioner relies upon collaborative filtering in Dumais to satisfy the “*identify* ...” limitation, but Dumais does not “*identify*” a second, “*cognate*” “*user*” **that is also** “*a recipient of the piece of electronic content*” being scored for the first user. **EX1005**, Claim 1; **EX2029**, ¶¶133-156. For example, assuming *arguendo* that Dumais were to create a group of two (or more) users that received a single email (which, as discussed above, would make no sense in Dumais) and assuming that the first user (i.e., the user for which the content is being scored) is part of that group, Dumais does not also attempt to “*identify*” some other user (or group of users) within that group **that also is “cognate” to the first user**. Conversely, assume that Dumais were to create a group of two (or more) users that had similar historical “usage of items.” For example, all of the users spent time visiting websites relating to a particular topic. Assuming that the first user (i.e., the user for which the content is being scored) is part of that group, Dumais does not also attempt to “*identify*” some other user (or group of users) within that group **that also** received the piece of content that the first user received and that is being scored.

The ‘217 Patent explains **why** the system needs to “*identify*” this “*cognate*”/“*recipient*” user. **EX2029**, ¶¶70-81. For example, in the ‘217 Patent, the purpose of identifying other “*cognate*” users is so that the actions of those “*cognate*”

users on the piece of content being scored can be monitored and considered in determining a relevance score for that piece of content. **EX2029**, ¶¶70-81. Collaborative filtering in Dumais does not do any of this. *Id.* ¶¶133-156. In contrast, Dumais uses collaborative filtering to “predict likely or possible profiles for new users.” *Id.* ¶143 (citing **EX1006**, [0055]). Nothing in Dumais shows an appreciation of the desirability of, or mechanisms or mathematics required to, “*identify*” another user that is “*cognate to the [first] user.*” *Id.* ¶¶133-156. Dumais does not appreciate – or lay out the math that would be required to take into account – the relationship between the primary user and another user, including that Dumais does not attempt to “*identify*” another “*user*” that is **both “a recipient” and also “cognate” to the first user.** *Id.* ¶¶133-156.

For all of these reasons, Dumais does not disclose “*identify[ing] 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.*” **EX1001**, at Claims. Because every claim of the ‘217 Patent requires this limitation, Dumais does not render obvious any claim of the ‘217 Patent.

VI. SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

Secondary considerations also demonstrate non-obviousness of the claims of the '217 Patent. *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); MPEP § 2143.

First, the invention's commercial success demonstrates non-obviousness. Meta uses the invention in its products known as Instagram & Facebook. *See EX2095*. For example, Facebook calculates a "relevance score" to rank posts on a user's Feed based upon "signals" that include both on the first user's own actions on the post (e.g., if the first user "liked this post"), as well as other signals, such as "Topic(s) that the post is about" or "how many of your friends liked the post." **EX2086; EX2087**. Facebook introduced this algorithmically curated News Feed in 2011. *Id.*; **EX2082**. Its success is demonstrated, for example, by the fact Meta's revenue in 2024 was over \$164 billion. **EX2088**. Moreover, Facebook continues to use its algorithmically curated News Feed today, and other social media platforms like Twitter (in 2016) followed suit. **EX2082**.

X Corp. uses the invention in its product known as "X" (formerly known as, and hereinafter, "Twitter"). E.g., **EX2084**. For example, Twitter uses the '217 Patent concept of "cognate" relevancy in its algorithm, including using data about "[w]hat Tweets did the people I follow recently engage with?" and "[w]ho likes similar Tweets to me, and what else have they recently liked?" **EX2079**. Twitter has realized

commercial success using this model, with an estimated 388 million monthly active users in 2024, and generating over \$2 billion in revenue every year from 2016-2024.

EX2080.

Second, the long felt but unresolved needs demonstrates non-obviousness. The '217 Patent recognized the long felt, but unresolved, need for a system that better determines the relevance of electronic content. The patent discusses, for example, the voluminous amount of electronic content that users receive each day, and the problem that so much of the content "is irrelevant" and, even where a set of the content is "somewhat relevant," it is still incredibly time consuming for the recipient "to determine which ones are more important than others." **EX1001**, at 1:26-34. It explains that "typical" applications are resigned to providing "unintelligent mechanisms" for mining through the content. **EX1001**, at 35:-44. The need for a more intelligent mechanism for recipients to mine through voluminous electronic content they received was, therefore, identified as a long felt, but unresolved, need.

Third, the failure by others demonstrates non-obviousness. For example, Meta praises its algorithm-based Facebook feed as a better experience than its prior, reverse-chronological feed. *See, e.g.*, **EX2082**. However, Meta did not implement the algorithm in Facebook until 2011; prior to that time, Meta showed posts to users in a reverse-chronological order. *Id.*

Fourth, praise by others demonstrates non-obviousness. For example, when Meta moved from a reverse-chronological order feed to its algorithm-based feed, Mark Zuckerberg described the change as resulting in a News Feed that is “more like your own personal newspaper,” where “[y]ou won’t have to worry about missing important stuff,” and “[a]ll of your news will be in a single stream with the most interesting stories featured at top.” **EX2082**.

Fifth, the recognition of the problem being solved demonstrates non-obviousness. As discussed above, the ‘217 Patent recognizes the problem that typical applications for managing voluminous electronic content were resigned to providing unintelligent mechanisms (e.g., keyword, sender, recipient, and/or date range searches) for mining through electronic content like email. **EX1001**, at 35:-44.

Finally, the copying of the invention by competitors demonstrates non-obviousness. X Corp. copied the invention when it implemented relevancy-based timelines in 2016. **EX2081**; *see also* **EX2084**. Meta copied the invention when Facebook introduced its “algorithmically curated News Feed” in 2011, behaving “more like your own personal newspaper” and featuring “what matters most” (**EX2082**) and when Instagram introduced its “engagement-based feed” in 2016. **EX2083**; *see also* **EX2085**. This copying of the invention by competitors demonstrates non-obviousness.

VII. CONCLUSION

For the reasons set forth herein, Patent Owner respectfully submits that Petitioner has not met its burden of proving that the Rose reference, the combination of Rose and Bieganski, or Dumais renders obvious any claim of the '217 Patent.

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. 42.6(e), I certify that on this 5th day of November, 2025, a true and correct copy of the foregoing **Patent Owner's Response** was served by electronic mail on Petitioner's lead and backup counsel at the following addresses:

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