

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

FACEBOOK, INC.,
Petitioner,

v.

PALO ALTO RESEARCH CENTER INC.,
Patent Owner.

IPR2021-01434
Patent 8,732,584 B2

Before DANIEL J. GALLIGAN, JOHN A. HUDALLA, and
SHEILA F. McSHANE, *Administrative Patent Judges*.

HUDALLA, *Administrative Patent Judge*.

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

Facebook, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting an *inter partes* review of claims 10, 13, and 17 (“the challenged claims”) of U.S. Patent No. 8,732,584 B2 (Ex. 1001, “the ’584 patent”). Petitioner filed a Declaration of Christopher M. Schmandt (Ex. 1002) with its Petition. Palo Alto Research Center Inc. (“Patent Owner”) filed a Preliminary Response (Paper 9, “Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. *See* 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). Under 35 U.S.C. § 314(a), we may not authorize an *inter partes* review unless the information in the petition and the preliminary response “shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” For the reasons that follow, we institute an *inter partes* review as to claims 10, 13, and 17 of the ’584 patent on all grounds of unpatentability presented.

I. BACKGROUND

A. *Real Parties-in-Interest*

Petitioner identifies Facebook, Inc., as the real party-in-interest. Pet. 1. Patent Owner identifies Palo Alto Research Center Inc., Xerox Corporation, and Xerox Holdings Corporation as real parties-in-interest. Paper 3, 2; Paper 5, 2.

B. *Related Proceedings*

The parties identify the following proceedings related to the ’584 patent (Pet. 1; Paper 3, 2–3; Paper 5, 2–3):

Palo Alto Research Center Inc. v. Facebook, Inc., No. 2-20-cv-10753-AB (C.D. Cal. filed Nov. 25, 2020) (“the underlying litigation”);

IPR2021-01264;

IPR2021-01294;

IPR2021-01461;

IPR2021-01467;

IPR2021-01472; and
IPR2021-01536.

C. The '584 patent

The '584 patent is directed to generating an information stream summary using a display metric. Ex. 1001, 1:6–9. Figure 1 of the '584 patent is reproduced below.

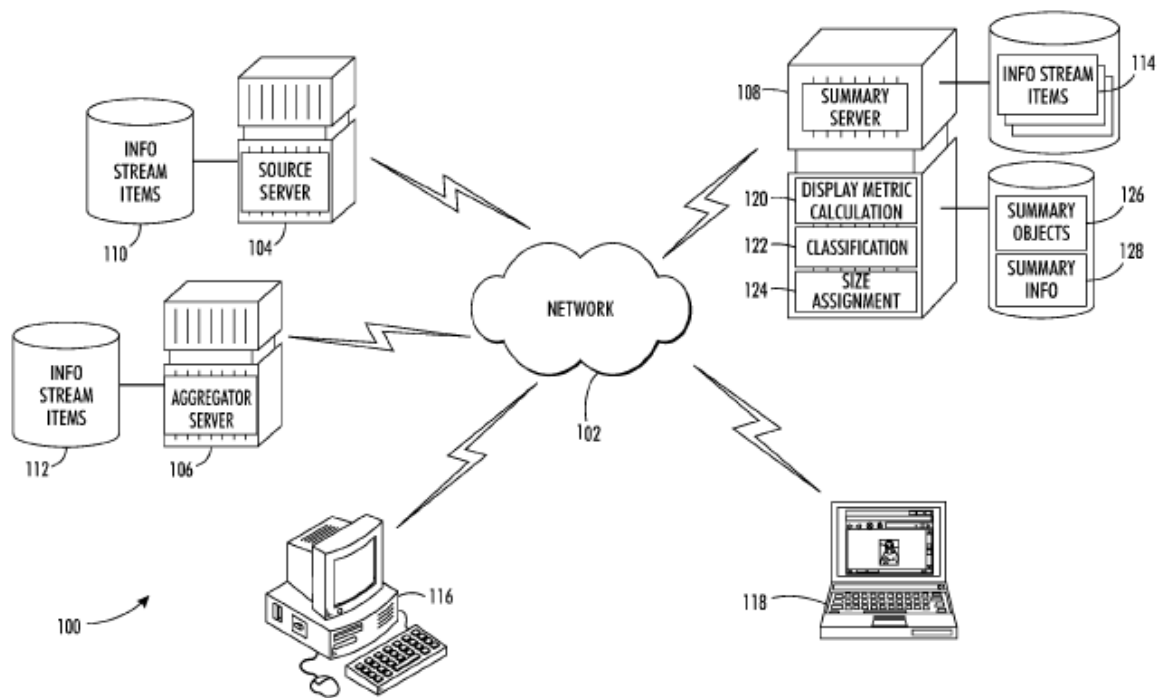


Figure 1, above, depicts system 100 for generating an information stream summary using a display metric. *Id.* at 3:9–12. Users continually post articles and Web pages and send emails to network 102,¹ and these items are maintained as a distributed data corpus through source servers 104, feed

¹ In the cited passage, the Specification mistakenly refers to “network 108,” but all other references to the network make clear the intended reference number is 102.

aggregator servers 106, summary servers 108, and other data repositories that serve as information sources. *Id.* at 2:62–67. These sources respectively serve information stream items 110, 112, 114, and other information to users who access network 102 through user devices 116, 118, such as desktop personal computers 116, laptop personal computers 118, mobile telephones (not shown), and mobile Internet devices (not shown). *Id.* at 2:67–3:5.

Summary server 108 includes display metric calculation module 120, classification module 122, and size assignment module 124. *Id.* at 3:32–34. Summary server 108 generates a summary of information stream items 110, 112, 114 using social attention data, and these summaries are used to populate a browser for review and manipulation by a user. *Id.* at 3:12–20, 3:30–32. In particular, display metric calculation module 120 calculates a display metric for each item 110, 112, 114. *Id.* at 3:35–38. The display metric is used to determine the interest that a particular information stream item 110, 112, 114 will have for a user relative to the other information stream items 110, 112, 114. *Id.* at 4:40–43. The display metric may be based on a social attention metric, which assesses the overall social attention given by users of the information stream to a particular information stream item 110, 112, 114 relative to other information stream items 110, 112, 114. *Id.* at 4:46–50. Classification module 122 classifies and groups individual information stream items 110, 112, 114 into summary objects 126 for display in the information stream summary. *Id.* at 3:38–41. Size assignment module 124 aggregates the display metrics for all information stream items 110, 112, 114 within an individual summary object 126 and determines the

size that each summary object 126 will be displayed to the user on user devices 116, 118. *Id.* at 3:46–51.

The '584 patent issued from an application filed on November 9, 2010. Ex. 1001, code (22). As discussed below, Petitioner applies the November 9, 2010, application filing date for qualifying the asserted references as prior art. *See* Pet. 4.

D. Illustrative Claim

Of the challenged claims of the '584 patent, claim 10 is independent. Claims 13 and 17 depend from claim 10. Claim 10 is illustrative of the challenged claims and recites:

10. A computer-implemented method for generating an information stream summary using a display metric, comprising:

receiving an information stream comprising a plurality of information stream items;

calculating a display metric for each of the plurality of information stream items as an indication of relevance of one such information stream item to a user by measuring social attention given to that information stream item from other users relative to at least one of the remaining information stream items, wherein the social attention is determined based on a relative degree of interest by the user in content of the information stream items by assigning a ranking to each of the information stream items based on a previous interest shown by the other users to information stream items similar to the content;

grouping the plurality of information stream items into one or more summary objects;

assigning a display size to each of the one or more summary objects based on an aggregate of the calculated display metric of each of the information stream items within

that summary object, wherein the display size of that summary object is relative to the aggregated calculated display metric;
and

displaying the one or more summary objects based on the assigned size.

Ex. 1001, 10:47–11:5.

E. Prior Art

Petitioner relies on the following prior art:

Bharat, K. et al., Personalized, *Interactive News on the Web*, Multimedia Systems 6, 349–58 (1998) (Ex. 1003, “Bharat”);

Kamba, T. et al., *Interactive Personalized Newspaper on the WWW*, Proc. SPIE 2667, Multimedia Computing and Networking 1996 (Mar. 25, 1996) (Ex. 1004, “Kamba”);

U.S. Patent No. 7,346,668 B2, filed Aug. 30, 2002, issued Mar. 18, 2008 (Ex. 1005, “Willis”); and

U.S. Patent No. 7,831,928 B1, filed July 19, 2007, issued Nov. 9, 2010 (Ex. 1006, “Rose”).

F. The Asserted Grounds

Petitioner challenges claims 10, 13, and 17 of the ’584 patent on the following grounds (Pet. 3):

Claims Challenged	35 U.S.C. §	References
10, 13, 17	103(a) ²	Bharat, Kamba, Willis
17	103(a)	Bharat, Kamba, Willis, Rose

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103. Because the ’584 patent was filed before March 16, 2013 (the effective date of the relevant amendments), the pre-AIA versions of §§ 102 and 103 apply.

II. ANALYSIS

We now consider Petitioner’s asserted grounds and Patent Owner’s arguments in the Preliminary Response to determine whether Petitioner has met the “reasonable likelihood” standard for institution under 35 U.S.C. § 314(a).

A. *Legal Standards*

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations.³ *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We also recognize that prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.” *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)).

³ The present record does not include any evidence of secondary considerations of nonobviousness.

B. Level of Ordinary Skill in the Art

Citing testimony from Mr. Schmandt, Petitioner contends a person of ordinary skill in the art

would have possessed at least a bachelor's degree in electrical engineering or computer science, and two years of work experience in developing client-server applications, including web sites and web applications, and would be familiar with common web technologies, such as HTML and HTTP, and programming languages such as Java and Perl.

Pet. 4 (citing Ex. 1002 ¶¶ 9–14). Patent Owner does not dispute Petitioner's definition of the level of ordinary skill at this time.

For purposes of this Decision, we adopt Petitioner's definition of the level of ordinary skill in the art without the qualifier “at least,” which introduces ambiguity. On the present record, we are satisfied that this definition comports with the level of skill necessary to understand and implement the teachings of the '584 patent and the asserted prior art.

C. Claim Interpretation

In an *inter partes* review, we construe each claim “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Accordingly, our claim construction standard is the same as that of a district court. *See id.* Under the standard applied by district courts, claim terms are generally given their plain and ordinary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). “There are only two exceptions to this general rule: 1) when a

patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012).

Petitioner states that it “does not believe express claim construction is necessary at this time” (Pet. 7), and Patent Owner does not address any claim constructions in the Preliminary Response. We determine that no terms of the challenged claims require explicit construction at this stage. *See, e.g., Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Patent Owner’s Arguments Regarding Discretionary Denial

Despite the fact that Patent Owner jointly stipulated with Petitioner for a stay of the underlying litigation pending the outcome of this and other *inter partes* review proceedings (*see* Ex. 1014), Patent Owner contends that we should exercise our discretion to deny institution under 35 U.S.C. § 314(a), relying on the Board’s precedential decision in *Apple Inc. v. Fintiv Inc.*, IPR2020-00019, Paper 11 (PTAB March 20, 2020) (“*Fintiv*”).⁴ Prelim.

⁴ *Fintiv* identifies a non-exclusive set of factors determine whether to exercise discretion to deny institution based on a parallel district court action, including: (1) whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted; (2) proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision; (3) investment in the parallel proceeding by the court and the parties; (4) overlap between issues raised in the petition and in the

Resp. 10–15. In particular, Patent Owner contends the existence of the stay “does not end the inquiry” as to whether we should exercise our discretion to deny institution. *Id.* at 12. Petitioner contends there is no basis for discretionary denial. Pet. 3. Petitioner also states that, in order “to mitigate concerns regarding duplicative efforts, Petitioner will not pursue invalidity in the litigation of the claims challenged in this Petition based on any instituted ground in this proceeding.” *Id.* at 3–4.

The underlying litigation was stayed based on the parties’ joint stipulation requesting the same. Ex. 1014. As a result, “all proceedings in [the underlying litigation] are stayed, and all deadlines and/or hearing dates pursuant to the Scheduling Order . . . , or arising under the Federal Rules of Civil Procedure or the Local Rules, are vacated” pending the outcome of this and other *inter partes* review proceedings. *Id.* at 2. According to *Fintiv*, “[a] district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts” and “has strongly weighed against exercising the authority to deny institution.” *Fintiv*, Paper 11 at 6; *see also Snap, Inc. v. SRK Tech. LLC*, IPR2020-00820, Paper 15 at 9 (PTAB Oct. 21, 2020) (precedential) (holding that the granting of a stay pending *inter partes* review weighs strongly against exercising discretion to deny institution).

Moreover, due to the stay, there is no longer any set trial date in the underlying litigation, which will remain at a relatively early stage.

parallel proceeding; (5) whether the petitioner and the defendant in the parallel proceeding are the same party; and (6) other circumstances that impact the Board’s exercise of discretion, including the merits. *Fintiv* at 5–6.

Petitioner's stipulation not to pursue invalidity of the challenged claims as to any instituted grounds also "mitigates to some degree the concerns of duplicative efforts between the district court and the Board, as well as concerns of potentially conflicting decisions." *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 12 (PTAB June 16, 2020) (informative). Furthermore, the merits of Petitioner's challenges appear particularly strong based on the present record. *See infra* § II.E.

Consequently, after considering the factors set forth in *Fintiv*, we determine that the record does not support exercising our discretion to deny institution under § 314(a) in favor of the underlying litigation.

E. Obviousness Ground Based on Bharat, Kamba, and Willis

Petitioner contends the subject matter of claims 10, 13, and 17 would have been obvious over the combination of Bharat, Kamba, and Willis. Pet. 11–54. Patent Owner disputes Petitioner's contentions. Prelim. Resp. 15–21.

1. Bharat

Bharat is an article related to the "*Krakatoa Chronicle*, an interactive, personalized newspaper on the World Wide Web implemented as a Java applet." Ex. 1003, 4. The Krakatoa Chronicle has a client-server architecture wherein "[a]rticles are collected and indexed at the server site, and organized into newspapers for a community of registered users." *Id.* at 5. Users download a web document containing an embedded applet to a

client-browser, and the applet then displays the newspaper and handles input from the user. *Id.*

Figure 1 of Bharat is reproduced below.

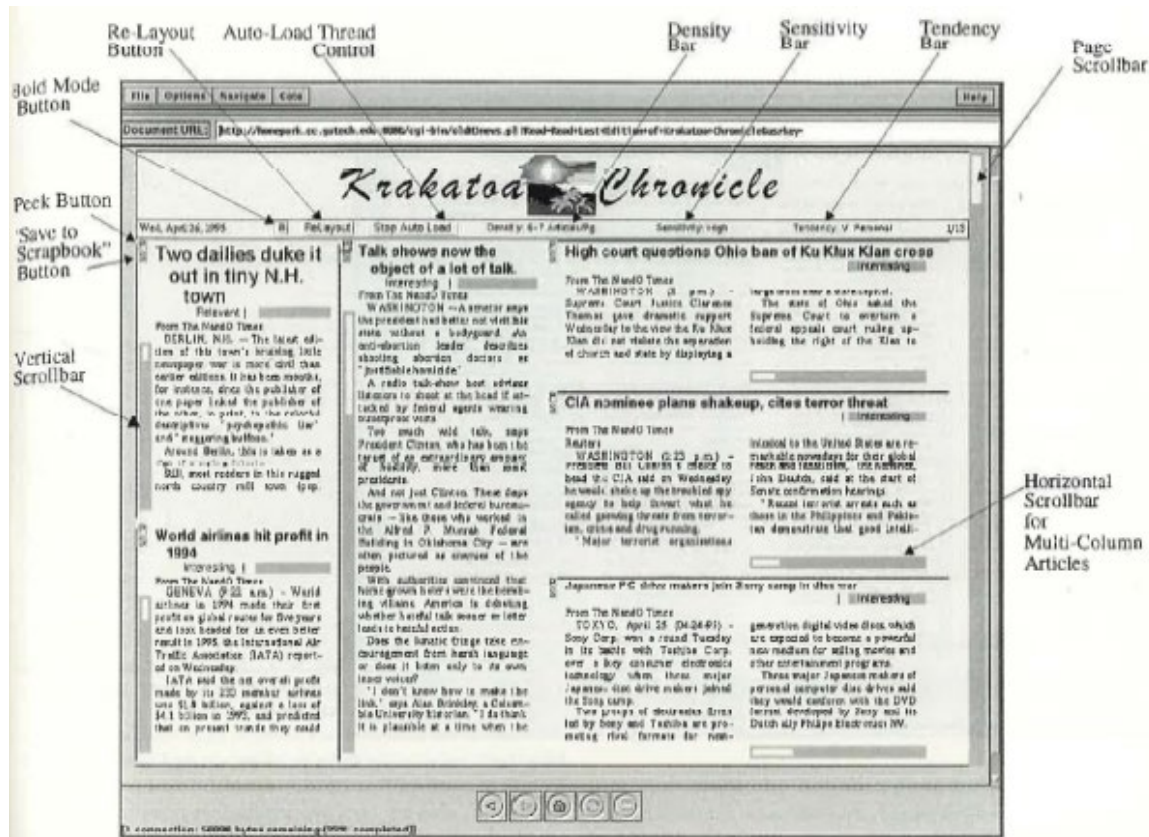


Figure 1, above, depicts a typical screen of the Krakatoa Chronicle newspaper viewed in a web browser. *Id.* at 5–6. The newspaper’s content and layout are based on the importance of each of the articles to the user (personal importance) and to the community (community importance). *Id.* Personal importance is the system’s estimate of the user’s interest in an article based on feedback given during the browsing of previous editions. *Id.* Users have individual interest profiles that track their interest in various topics. *Id.* Community importance is determined as the average of the personal importance for each of the users in the community or for users

“who have ‘significant’ opinions about the article (in the system’s estimation), determined using a pair of significance thresholds.” *Id.* at 9.

Articles are downloaded from news sources and then indexed to produce a set of document feature vectors. *Id.* at 8. Each document vector contains a list of keywords with corresponding weights, which are proportional to the merit of the keyword as being representative of that article. *Id.* at 9. Each user profile is a vector of keywords and weights (similar to document vectors) that itself is derived from document vectors by a process of weighted averaging. *Id.* Explicitly specified keywords are also a part of the user profile, and they may receive the maximum positive or negative weight as specified. *Id.*

The process of creating a newspaper involves computing the goodness of the match between the user profile and each of the articles, i.e., the computation of each article’s personal importance for the user. *Id.* at 9. Articles of high importance appear earlier in the newspaper, have titles with a larger font, and are allocated more space than articles of lesser importance. *Id.* at 5. The user may adjust a tendency bar slider to control the influence of personal and community importance ranging from “Very Personal” (where only personal importance is considered) to “Average” (where the scores are averaged) to “Fully General” (where only community importance is considered). *Id.*

Petitioner contends Bharat qualifies as prior art under 35 U.S.C. § 102(b). Pet. 10–11. Patent Owner does not contest the prior art status of Bharat at this stage.

In support of Bharat’s status as prior art, Petitioner includes testimony from Sylvia Hall-Ellis, Ph.D., a professor with experience in the field of

library science. Ex. 1007 ¶¶ 6–8. She testifies that Bharat was “published in the journal *Multimedia Systems* [and] was publicly available on or shortly after October 21, 1998,” based on a record of the journal in an engineering library at the University of Wisconsin–Madison. *Id.* ¶¶ 39–46. The journal in which Bharat appears (*Multimedia Systems*) is dated September 1998, and it includes a 1998 copyright date. Ex. 1003, 1–2. Moreover, the copy of the journal referenced in Dr. Hall-Ellis’s declaration and asserted in this case includes a stamp from the University of Wisconsin that is dated October 21, 1998. *Id.* at 3. On this preliminary record, we consider these to be indicators of publication in 1998. We also credit Dr. Hall-Ellis’s testimony regarding public accessibility, which is consistent with other evidence of record. Thus, for purposes of this Decision, we determine that Bharat qualifies as prior art under 35 U.S.C. § 102(b) because Bharat’s publication date in 1998, is more than one year before the earliest possible effective filing date of the challenged claims, which is November 9, 2010. Ex. 1001, code (22); Ex. 1003, 1–3; Ex. 1007 ¶¶ 39–46.

2. *Kamba*

Kamba (Ex. 1004) is an article about the Krakatoa Chronicle that is similar in content to Bharat. *See* Pet. 17 (“[T]he later-published Bharat discloses intervening improvements to techniques previously described in Kamba”); Prelim. Resp. 7 (“Kamba describes an early iteration of the Krakatoa Chronicle”). Unlike Bharat, Kamba includes additional discussion about social issues involved in dynamically personalizing newspapers, such as the need to balance articles in which a user is interested with general interest articles. Ex. 1004, 9.

Petitioner contends Kamba qualifies as prior art under 35 U.S.C. § 102(b). Pet. 10–11. Patent Owner does not contest the prior art status of Kamba at this stage.

In support of Kamba’s status as prior art, Petitioner again relies on testimony from Dr. Hall-Ellis. She testifies that Kamba was “published in the *Proceedings of SPIE -- the International Society for Optical Engineering*, volume 2667” and would have been publicly available on or shortly after June 19, 1996, based on a record of the volume in an engineering library at the University of Wisconsin–Madison. Ex. 1007 ¶¶ 47–52. The volume in which Kamba appears is dated “29–31 January 1996,” and it includes a 1996 copyright date. Ex. 1004, 1–3. Moreover, the copy of the journal referenced in Dr. Hall-Ellis’s declaration and asserted in this case includes a stamp from the University of Wisconsin that is dated July 8, 1996. *Id.* at 1. On this preliminary record, we consider these to be indicators of publication in 1996. We also credit Dr. Hall-Ellis’s testimony regarding public accessibility, which is consistent with other evidence of record. Thus, for purposes of this Decision, we determine that Kamba qualifies as prior art under 35 U.S.C. § 102(b) because Kamba’s publication date in 1996, is more than one year before the earliest possible effective filing date of the challenged claims, which is November 9, 2010. Ex. 1001, code (22); Ex. 1004, 1–3; Ex. 1007 ¶¶ 47–52.

3. *Willis*

Willis is a U.S. patent directed to dynamic, customized displays for presenting personalized content, such as articles. Ex. 1005, 1:19–21, code (57). In particular, Willis discloses “a system [that] incrementally

learns the user's preferences regarding previously-shown items and categories, and uses that information to decide what content should be shown to the user in the future.” *Id.* at 2:42–45. Willis describes categorizing the page view by grouping together articles of similar type or content. *Id.* at 13:29–31. In such cases, a combined priority weighting may be used to determine the grouped articles' collective prominence on the page. *Id.* at 13:33–38. Willis also describes various ways of displaying only a portion of an article, such as with a summary, headline, title, and/or link. *See id.* at 11:11–16, 11:37–43, 12:57–13:3, 13:21–24.

Petitioner contends Willis qualifies as prior art under, *inter alia*, 35 U.S.C. § 102(e) based on its filing date. Pet. 11. Patent Owner does not contest the prior art status of Willis at this stage. We have no evidence of an invention date other than the filing date of the application that led to the challenged claims. Thus, for purposes of this Decision, we determine that Willis qualifies as prior art under 35 U.S.C. § 102(e) because Willis's filing date of August 30, 2002, is before the earliest possible effective filing date of the challenged claims, which is November 9, 2010. Ex. 1001, code (22); Ex. 1005, code (22). We also determine, for purposes of this Decision, that Willis qualifies as prior art under 35 U.S.C. § 102(b) because Willis's issue date of March 18, 2008, is more than one year before the November 9, 2010, filing date of application that led to the '584 patent. Ex. 1001, code (22); Ex. 1005, code (45).

4. *Claim 10*

Claim 10 recites “[a] computer-implemented method for generating an information stream summary using a display metric.” Ex. 1001, 10:47–48.

Although Petitioner argues that the preamble of claim 10 is not limiting, Petitioner contends “Bharat and Kamba disclose a computer-implemented method for generating a personalized newspaper that includes news articles retrieved from external sites (**‘information stream summary’**).” Pet. 11 (citing Ex. 1003, 4, 8). Petitioner further contends the Krakatoa system of Bharat and Kamba uses a “weight” (i.e., the recited “display metric”) assigned to each news article “to determine the size and location of the area in which the article will appear on the personalized newspaper.” *Id.* at 12 (citing Ex. 1003, 5; Ex. 1004, 13). Patent Owner does not put forth any arguments related to the preamble of claim 10.

On the present record, and as discussed in greater detail below, we are persuaded that Bharat’s and Kamba’s Krakatoa system generates a newspaper from retrieved news articles (i.e., an “information stream summary”) based on article weights (i.e., “display metric[s]”). *See, e.g.*, Ex. 1003, 4–5, 8; Ex. 1004, 13. Because Petitioner has shown sufficiently, for purposes of institution, that Bharat and Kamba teach the preamble, we need not determine whether the preamble is limiting at this stage of the proceeding. *See Realtime Data*, 912 F.3d at 1375.

Claim 10 further recites “receiving an information stream comprising a plurality of information stream items.” Ex. 1001, 10:51–52. Petitioner cites Bharat’s and Kamba’s teachings of the Krakatoa server receiving news articles from one or more external news sites. Pet 13–15 (citing Ex. 1003, 5, 8, Fig. 6; Ex. 1004, 15). For the recited “plurality of information stream items,” Petitioner contends that Bharat’s periodic retrieval of articles teaches this aspect. *Id.* at 15–16 (citing, *inter alia*, Ex. 1002 ¶ 64). Petitioner contends “[a]n ordinarily skilled artisan would have been motivated to

consult both Bharat and Kamba to understand the features, functionality and implementation of a common system – the Krakatoa personalized newspaper system.” *Id.* at 16–17 (citing Ex. 1002 ¶ 65). Petitioner also contends an ordinarily skilled artisan would have consulted both references because “the later-published Bharat discloses intervening improvements to techniques previously described in Kamba, including an improved method of calculating the ‘community score.’” *Id.* at 17 (citing Ex. 1002 ¶ 66). Petitioner also suggests that Kamba has a more fulsome discussion of “the human and social factors the developers considered in designing the Krakatoa system.” *Id.* Petitioner additionally contends an ordinarily skilled artisan would have perceived no difficulty in combining Bharat and Kamba because they describe the same underlying system, Krakatoa. *Id.* at 18 (citing Ex. 1002 ¶ 67).

Patent Owner does not dispute Petitioner’s analysis of the “receiving” step at this juncture. On the present record, Petitioner has shown sufficiently for institution that Bharat’s and Kamba’s Krakatoa server receives articles (i.e., “a plurality of information stream items”) from one or more external news sites. *See, e.g.*, Ex. 1003, 5, 8, Fig. 6; Ex. 1004, 15. Petitioner also shows sufficiently at this stage that an ordinarily skilled artisan would have combined the teachings of Bharat and Kamba because they both concern the same system, Krakatoa, yet have different and complementary sets of details about the system. *See, e.g.*, Ex. 1002 ¶¶ 65–67.

Claim 10 further recites

calculating a display metric for each of the plurality of information stream items as an indication of relevance of one such information stream item to a user by measuring social attention given to that information stream item from other users relative to at least one of the remaining information stream

items, wherein the social attention is determined based on a relative degree of interest by the user in content of the information stream items by assigning a ranking to each of the information stream items based on a previous interest shown by the other users to information stream items similar to the content.

Ex. 1001, 10:52–62.

For “calculating a display metric,” Petitioner cites Bharat’s and Kamba’s teachings of the Krakatoa system calculating a weight for each news article. *See* Pet. 18–23. Specifically, Petitioner contends that the Krakatoa system indexes each article to produce a “document feature vector,” which “contains a list of keywords [that] were found to be highly representative of the document within the document set, and corresponding weights.” *Id.* at 19 (quoting Ex. 1003, 9) (citing Ex. 1003, 8–9; Ex. 1004, 10). Petitioner also contends that the Krakatoa system calculates a “personal score” for each article, which “represents the personal importance of the article to a particular user,” based on the document feature vector and a user profile. *Id.* at 19–20 (citing Ex. 1003, 9–10; Ex. 1004, 11). According to Petitioner, the personal score “is represented as a numerical value from -1000 to +1000.” *Id.* at 20 (quoting Ex. 1003, 9). Petitioner further contends that the Krakatoa system calculates a “community score” for each article based on an averaging of personal scores. *Id.* (citing Ex. 1003, 9; Ex. 1004, 11). Petitioner additionally contends that the Krakatoa system calculates a weight (i.e., the recited “display metric”) for each article based on the personal and community scores and a “tendency factor,” which is a user-specified factor regarding “how much influence the personal score and the community score will have in calculating the weight for an article.” *See id.* at 20–22 (citing, *inter alia*, Ex. 1003, 5, 10; Ex. 1004, 13). According to

Petitioner, the weight is the recited “indication of relevance” because the Krakatoa system determines where to place an article on a web page “based on the system’s assessment of the importance (i.e. ‘relevance’) of the article to the user.” *Id.* at 22–23 (citing Ex. 1002 ¶ 76; Ex. 1003, 5; Ex. 1004, 13) (emphasis omitted).

For “measuring social attention,” Petitioner contends that, in Bharat, the weight of a news article “is calculated based on the ‘community score’ for the news article, which in turn represents a measurement of the user interaction by other users relating to the article.” Pet. 23 (citing Ex. 1003, 9). Petitioner identifies two different types of “user actions” in the Krakatoa system of Bharat and Kamba that correspond to the recited “social attention”: (1) other users interacting with an article, such as by maximizing the article view or saving the article to a scrapbook (*id.* at 24–25 (citing Ex. 1003, 5–6, 11; Ex. 1004, 10–13)); and (2) other users providing feedback “by manipulating a graphical ‘Score Bar,’ to specify the relevance of the article to the user” (*id.* at 25 (citing Ex. 1003, 5–6; Ex. 1004, 11)). Petitioner notes that the community score is based on individual users’ personal scores for an article and that user interaction events and explicit feedback impact personal scores for an article. *Id.* at 26–28 (citing Ex. 1003, 9; Ex. 1004, 11, 13, 15).

For determining social attention “based on a relative degree of interest by the user in content of the information stream items,” Petitioner contends “the community score and weight (which incorporate the social attention) provide a ranking based on the Krakatoa system’s assessment [of] the importance of the article to the user as compared to other articles.” Pet. 33 (citing Ex. 1003, 5, 9; Ex. 1004, 13). For determining social attention “by

assigning a ranking to each of the information stream items,” Petitioner cites the Krakatoa system’s assignment of a weight to each article based on the personal and community scores. *Id.* at 29 (citing Ex. 1003, 10; Ex. 1004, 13). Petitioner further contends that the ranking is “based on a previous interest shown by the other users to information stream items similar to the content” because other users’ interest in an article increases their own personal scores for the article, which, in turn, increases the community score and weight for the article. *Id.* at 30–33 (citing Ex. 1002 ¶ 88; Ex. 1003, 10; Ex. 1004, 13). For “information stream items similar to the content,” Petitioner cites an example of how a user’s interest in articles related to a particular keyword is used to increase personal scores, and, in turn, community scores and weights, for articles related to the keyword. *Id.* at 31–33 (citing Ex. 1002 ¶ 88; Ex. 1004, 13).

Patent Owner argues that the combination of Bharat, Kamba, and Willis “does not disclose a ‘display metric’ that indicates ‘relevance of [an] . . . item to a user by measuring social attention . . . based on a relative degree of interest by the user.’” Prelim. Resp. 16 (alteration by Patent Owner). Patent Owner criticizes Petitioner’s alleged reliance on the community score for teaching this limitation and explains that the community score in the Krakatoa system “is not an indication of interest or importance to the user.” *Id.* at 17 (citing Pet. 23).

We do not agree with Patent Owner’s arguments because they misstate Petitioner’s obviousness contentions. Importantly, Petitioner maps the recited “display metric” to the weights that are calculated in the Krakatoa system for each news article, not just the community score. Pet. 18, 20–22. And Petitioner explains that an article’s weight is based in part on the

calculation of a personal score, which “represents the personal importance of the article to a particular user.” *Id.* at 19 (citing Ex. 1003, 9–10; Ex. 1004, 11). Petitioner further explains that “[t]he Krakatoa system computes the personal score by using the document feature vector . . . to determine the relevance of an article based on information in the user’s profile.” *Id.* at 19–20 (citing Ex. 1004, 11). On the present record, we do not view the fact that an article’s weight is based in part on a community score (*see id.* at 20) to detract from Petitioner’s persuasive showing that an article’s weight also incorporates a personal score, i.e., a “relative degree of interest by the user.”

Patent Owner also argues that the combination of Bharat, Kamba, and Willis “does not disclose determining social attention ‘based on a relative degree of interest . . . based on a previous interest shown by the other users to information stream items similar to the content.’” Prelim. Resp. 18.

Patent Owner characterizes Petitioner’s mapping as relying on Bharat’s and Kamba’s community keywords for teaching the recited “similar content.” *Id.* (citing Pet. 32). As such, Patent Owner argues that “nothing in Bharat or Kamba states that the **community’s** keywords represent a **particular user’s** interest in a particular article.” *Id.*

We do not agree with Patent Owner’s argument because it misapprehends Petitioner’s analysis of how Bharat and Kamba use keywords to calculate a community score. In particular, Petitioner explains that the Krakatoa system calculates a weight for each article that is based in part on a community score, which is an average of all users’ (or all significant users’) personal scores for the article. Pet. 20 (citing Ex. 1003, 9; Ex. 1004, 11). Petitioner contends that the community score “represents a measurement of the user interaction by other users relating to the article.” *Id.* at 23 (citing

Ex. 1003, 9). Petitioner also explains that other users' interest in articles with a particular keyword (in a document vector) increases their personal scores for such articles, which, in turn, increases the community scores and weight for those articles. *Id.* at 32 (citing Ex. 1002 ¶ 88). Petitioner further explains that articles "having the same keyword indicates a similarity in content." *Id.* At this juncture, Petitioner's analysis is sufficient to show that the weight (i.e., the recited "display metric") in the Krakatoa system of Bharat and Kamba is based on other users' interest in similar content.

In addition, at this stage of the proceeding, we do not agree with Patent Owner's argument that "the entire community's keywords" would be "spread across all users to reflect the community score," thus having the effect of "dilut[ing] all keywords and scores until they are homogenous and all news articles would be of equally low importance to a particular user." Prelim. Resp. 18. On the present record, we do not read Bharat and Kamba to describe the alleged concept of a "community keyword." Rather, in the Krakatoa system, each article is indexed to produce a set of document vectors with a list of keywords. Ex. 1003, 8–9. The document vectors (with keywords) are used to determine a personal score for the article based on a user's profile. Ex. 1003, 9–10; Ex. 1004, 11. In turn, the personal scores for some or all users are averaged into a community score. Ex. 1003, 11; Ex. 1004, 9. Importantly, the user may specify how much influence the personal score and the community score will have in calculating the weight (i.e., the "display metric") for an article by choosing a tendency factor. Ex. 1003, 5, 10; Ex. 1004, 9, 13. The availability of this tendency factor undermines Patent Owner's arguments (Prelim. Resp. 18–19) that the Krakatoa system does not base its weights on a given user's interests and

that the selected articles would only be based on generic “community keywords.” For these reasons, and based on the present record, Petitioner has shown sufficiently for institution that Bharat and Kamba teach the “calculating” step of claim 10.

Claim 10 further recites “grouping the plurality of information stream items into one or more summary objects.” Ex. 1001, 10:63–64. For the recited “grouping,” Petitioner notes that Bharat teaches classifying articles into sections. Pet. 35 (citing Ex. 1003, 8). Petitioner further cites Willis’s teaching of “group[ing] together articles of similar type or content, and in essence ‘categoriz[ing]’ the page view.” *Id.* at 36–37 (quoting Ex. 1005, 13:29–31) (emphasis omitted). For the recited “summary objects,” Petitioner cites Willis’s teachings of showing articles “only partially or in summary form,” such as by only showing a headline with a hyperlink to the full article. *Id.* at 41 (quoting Ex. 1005, 13:21–24) (citing *id.* at 11:11–16, 11:37–43, 12:57–13:3) (emphasis omitted). Petitioner contends an ordinarily skilled artisan would have found it obvious “to adapt the Krakatoa system described in Bharat and Kamba, based on the teachings of Willis, to not only provide category-based groupings of news articles, but to enable the groupings to present a partial or summary version of the news articles.” *Id.* at 42 (citing Ex. 1002 ¶ 103). Petitioner suggests an ordinarily skilled artisan would have been motivated to do this to avoid copyright law problems associated with copying a whole article without permission. *Id.* at 42–43 (Ex. 1002 ¶¶ 104–105). Petitioner contends an ordinarily skilled artisan would have had “more than a reasonable expectation of success” in making the combination because adapting the Krakatoa system to incorporate the teachings of Willis “would have required only routine and

conventional computer programming techniques.” *Id.* at 43 (citing Ex. 1002 ¶ 106).

Further addressing its rationale for the combination, Petitioner contends an ordinarily skilled artisan would have modified Bharat’s and Kamba’s Krakatoa system to group news articles by category in order to provide a more effective presentation of news articles. Pet. 38 (citing Ex. 1002 ¶ 99). As motivation, Petitioner cites Bharat’s suggestion of classifying articles into sections. *Id.* at 38–39 (citing Ex. 1003, 8). Petitioner contends this would have been particularly beneficial given that the Krakatoa system retrieves news articles from multiple sources. *Id.* at 40 (citing Ex. 1002 ¶ 99; Ex. 1003, 8; Ex. 1004, 15). Petitioner additionally contends an ordinarily skilled artisan would have incorporated the teachings of Willis “to enable the Krakatoa newspaper to group articles into categories, allowing it to more closely mimic the appearance and organization of a traditional print newspaper.” *Id.* at 39–40 (citing Ex. 1002 ¶ 100).

Patent Owner does not dispute Petitioner’s analysis of the “grouping” step at this juncture. On the present record, we are persuaded that Bharat teaches classifying articles into sections. *See, e.g.*, Ex. 1003, 8. We are further persuaded that Willis teaches summarizing articles. *See, e.g.*, Ex. 1005, 11:11–16, 11:37–43, 12:57–13:3, 13:21–24. Petitioner also shows sufficiently, for purposes of institution, that an ordinarily skilled artisan considering Willis would have had a reason to implement Willis’s grouping of articles in the Krakatoa system described in Bharat and Kamba: to provide a more effective presentation of news articles that mimics the appearance and organization of a traditional print newspaper. *See, e.g.*,

Ex. 1002 ¶¶ 99–100. We are further persuaded, at this juncture, that an ordinarily skilled artisan would have implemented Willis’s summarized/abridged articles in the system of Bharat and Kamba to avoid copyright issues. *See, e.g., id.* ¶¶ 104–105.

Claim 10 further recites “assigning a display size to each of the one or more summary objects based on an aggregate of the calculated display metric of each of the information stream items within that summary object, wherein the display size of that summary object is relative to the aggregated calculated display metric.” Ex. 1001, 10:65–11:3. Petitioner cites Bharat’s teaching that, in the Krakatoa system,

[t]he newspaper’s content and layout are based on the importance of each of the articles to the user and to the community Articles of high importance will appear earlier in the newspaper, have titles with larger font, and be allocated more space than articles of lesser importance.

Pet. 44 (quoting Ex. 1003, 5) (emphases and alteration by Petitioner). Petitioner contends the display size is assigned “relative to the . . . calculated display metric” because “the display area is repeatedly subdivided for the weighted articles such that higher weighted articles are assigned more space than lower weighted articles.” *Id.* at 44–45 (citing Ex. 1002 ¶ 109; Ex. 1003, 5). Petitioner also notes Bharat’s and Kamba’s teachings of “a user-controlled ‘sensitivity factor’ that can further determine[] how an article’s weight affects the display space to which [it] is assigned.” *Id.* at 45–46 (citing Ex. 1003, 5–6; Ex. 1004, 13).

Petitioner additionally contends that it would have been obvious to extend Bharat’s and Kamba’s teachings about assigning article display size to the recited “summary objects” in light of Willis. *Id.* at 46–47. According to Petitioner, “Willis discloses that when articles of similar type or content

are grouped together, ‘a combined priority weighting may be used to determine their (collective) prominence on page 800.’” *Id.* at 47 (quoting Ex. 1005, 13:36–38) (citing *id.* at 13:29–36). Petitioner contends that implementing Willis’s teachings in the Krakatoa system of Bharat and Kamba

would have predictably resulted in the Krakatoa system presenting a “**summary object**” (grouped articles) in which the display size assigned to the summary object was “**based on an aggregate of the calculated display metric of each of the information stream items within that summary object**”—i.e., the aggregate of the weights of each article in a group.

Id. (citing Ex. 1002 ¶ 113). Petitioner further contends that an ordinarily skilled artisan would have considered using a “combined weighting” to display groups of articles to be “the natural extension and byproduct of adapting Willis’s functionality of grouping related articles to Krakatoa’s use of article weights in assigning display size.” *Id.* at 48 (citing Ex. 1002 ¶ 114).

According to Patent Owner, Petitioner concedes that the combination of Bharat and Kamba does not disclose grouping information items into summary objects. Prelim. Resp. 19 (citing Pet. 35). Based on this, Patent Owner argues that Petitioner is inconsistent in suggesting that Bharat and Kamba disclose assigning a display size to that summary object. *Id.* Patent Owner emphasizes that “Bharat and Kamba disclose sizing on a per-article basis, not a per-summary object basis.” *Id.* at 20.

We do not agree with Patent Owner’s arguments because they amount to attacking the asserted references individually, rather than addressing the obviousness combination proposed by Petitioner. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking

references individually where, as here, the rejections are based on combinations of references.”). In this case, Patent Owner attacks deficiencies in Bharat and Kamba regarding the Krakatoa system’s focus on assigning display sizes to articles rather than the recited “summary objects.” Prelim. Resp. 19–20. But Petitioner further relies on Willis to modify Bharat’s and Kamba’s teachings such that the Krakatoa system assigns display sizes to summary objects, i.e., groups of articles. Pet. 46–47. Thus, Patent Owner’s arguments are not apt.

Patent Owner also argues that implementing Willis’s “combined priority weighting” in the system of Bharat and Kamba “does nothing more than split the screen into ‘equal’ halves.” Prelim. Resp. 20 (citing Pet. 47; Ex. 1003, 10). Patent Owner further argues that “the combined weightings do not serve to emphasize important/interesting articles to the user or split the screen based on aggregated calculated display size.” *Id.* at 20–21.

We do not agree with Patent Owner’s arguments on the current record. At this stage of the proceeding, we view Bharat to teach more than merely splitting the screen into two halves, because Bharat teaches “*recursively* partition[ing] the page real-estate using vertical and horizontal splits” to “create[] a partition of the page into rectangular regions.” Ex. 1003, 10 (emphasis added) (partially quoted at Pet. 45); *see also* Ex. 1002 ¶ 109 (Mr. Schmandt testifying about how Bharat teaches “repeatedly subdivid[ing]” a page). Bharat also teaches that partitioning is based on “cumulative weights of the articles on either side of [a given] split.” Ex. 1003, 10. Based on the present record, we are persuaded that, in Petitioner’s proposed combination, such weights would be the aggregate of the weights from each article in a group. *See* Pet. 46–47 (citing, *inter alia*,

Ex. 1002 ¶ 113). This is supported by Willis’s teaching that “a combined priority weighting” may be used to determine the collective prominence of a group of articles (i.e., summary objects) on the displayed page. Ex. 1005, 13:33–38. Thus, on the present record, we preliminarily find that the combination of Bharat, Kamba, and Willis teaches the “assigning” step of claim 10.

Claim 10 further recites “displaying the one or more summary objects based on the assigned size.” Ex. 1001, 11:4–5. For the recited “assigned size,” Petitioner relies on the same analysis discussed above with respect to the “assigning” step. *See* Pet. 49. Petitioner also cites Bharat’s teaching of displaying a newspaper to a user such that it may be viewed in a web browser. *Id.* (citing Ex. 1003, 5–7). Patent Owner does not dispute Petitioner’s analysis of the “displaying” step. Based on the present record, Petitioner has shown sufficiently for institution that Bharat and Kamba—as modified by Willis—teach displaying a newspaper, including groups of articles (i.e., summary objects), based on weights assigned to the groups. *See, e.g.*, Ex. 1003, 5–7.

On this record, Petitioner shows sufficiently that the combination of Bharat, Kamba, and Willis teaches all of the limitations of claim 10 for the reasons given above. Petitioner also shows sufficiently that an ordinarily skilled artisan would have had reasons to combine Bharat, Kamba, and Willis. In particular, Petitioner shows that an ordinarily skilled artisan would have consulted both Bharat and Kamba because they are complementary references about the same system, Krakatoa. *See, e.g.*, Ex. 1002 ¶¶ 65–67. Indeed, both parties acknowledge that Bharat is a later reference that includes additional details about the Krakatoa system, such as

a new method of calculating the community score. Pet. 17 (citing Ex. 1002 ¶ 66); Prelim. Resp. 7. We also are persuaded preliminarily that an ordinarily skilled artisan would have modified the Krakatoa system to include category-based groupings of news articles, as taught by Willis, to provide a more effective presentation of news articles, particularly when retrieving articles from multiple sources. *See, e.g.*, Ex. 1002 ¶ 99. Petitioner also shows sufficiently that an ordinarily skilled artisan would have been motivated to adapt the Krakatoa system based on Willis to provide for partial or summary versions of the retrieved news articles in order to avoid copyright law problems. *See, e.g.*, Ex. 1002 ¶¶ 104–105. Finally, we are persuaded preliminarily that an ordinarily skilled artisan would have reasonably expected success in combining Bharat, Kamba, and Willis. *See, e.g.*, Ex. 1002 ¶¶ 67, 106. Thus, based on the present record, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that the subject matter of claim 10 would have been obvious over the combination of Bharat, Kamba, and Willis.

5. *Claims 13 and 17*

We have reviewed Petitioner’s obviousness analysis for claims 13 and 17, which depend from claim 10. Pet. 50–54. Patent Owner relies on the same arguments discussed above with respect to claim 10. Prelim. Resp. 15–21. Based on the present record, we are satisfied that the combination of Bharat, Kamba, and Willis teaches all of the limitations of claims 13 and 17. Thus, we determine that Petitioner has established a reasonable likelihood that it would prevail in showing that the subject matter

of claims 13 and 17 would have been obvious over the combination of Bharat, Kamba, and Willis.

F. Obviousness Ground Based on Bharat, Kamba, Willis, and Rose

Petitioner contends the subject matter of claim 17 would have been obvious over the combination of Bharat, Kamba, Willis, and Rose. Pet. 55–59. Patent Owner disputes Petitioner’s contentions for the reasons discussed above. Prelim. Resp. 15–21. We have already determined that Petitioner has established a reasonable likelihood of success with respect to the obviousness ground based on Bharat, Kamba, and Willis, and we will be instituting on all challenged claims and all challenged grounds in the Petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348 (2018) (holding that the Board may not institute review on fewer than all claims challenged in the petition); 37 C.F.R. § 42.108(a) (“When instituting *inter partes* review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.”).

Nevertheless, we include the following discussion regarding Bharat–Kamba–Willis–Rose ground.

Petitioner cites Rose for teaching claim 17’s “visible actions” to the extent that Patent Owner argues that claim 17 “requires actions that can be expressly viewable to other users, such as displaying the number of ‘likes’ or ‘comments’ associated with an information stream item.” Pet. 55–56.

Patent Owner did not make any such argument at this stage, and based on the present record, we do not discern a reason to impose such a requirement. Thus, we need not further address this ground at this time.

III. CONCLUSION

After considering the evidence and arguments presented in the Petition and the Preliminary Response, we determine that Petitioner has demonstrated a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition, and we institute an *inter partes* review on all of the challenged claims and all grounds presented in the Petition. At this stage of the proceeding, we have not made a final determination as to the patentability of the challenged claim.

IV. ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314, *inter partes* review is instituted as to claims 10, 13, and 17 of the '584 patent with respect to all grounds of unpatentability presented in the Petition; and

FURTHER ORDERED that *inter partes* review is commenced on the entry date of this Order, and pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial.

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