Trials@uspto.gov
571-272-7822

Paper 12
Entered: March 15, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TWITTER, INC.,
Petitioner,

v.

PALO ALTO RESEARCH CENTER INC.,
Patent Owner.

IPR2021-01398
Patent 7,043,475 B2

Before KARL D. EASTHOM, SHEILA F. McSHANE, and CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

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

I. INTRODUCTION

Twitter, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet."), for *inter partes* review of claims 1–18 of U.S. Patent No. 7,043,475 B2 (Ex. 1001, the "'475 patent"), along with the Declaration of Dr. Don Turnbull (Ex. 1003).[1] Palo Alto Research Center Inc. ("Patent Owner") filed a Preliminary Response.[2] Paper 10 ("Prelim. Resp.").

The Board's authority to determine whether to institute an *inter partes* review is under 35 U.S.C. § 314. *See also* 37 C.F.R. § 42.4(a) (2020). To institute an *inter partes* review, the information presented in the Petition must show "a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a).

For the reasons set forth below, the information presented in the Petition establishes a reasonable likelihood that Petitioner will prevail with respect to at least one challenged claim. Accordingly, we institute an *inter partes* review of the '475 patent.

---

[1] Petitioner filed two versions of the Petition. Papers 1, 2. Paper 1 includes additional words to address claims 4, 6, 8–9, 13–14, and 17–19 of the '475 patent, and Petitioner filed an associated Motion To Waive Word Count ("Motion"), as discussed below. *See infra* § VI. Paper 2 is a shorter version of the Petition that does not include a discussion of the noted claims. Because we grant the Motion (*id.*), we consider the longer version of the Petition herein.

[2] Patent Owner states that Palo Alto Research Center Inc. is a wholly owned subsidiary of Xerox Corp., and Xerox Corp. is a wholly owned subsidiary of Xerox Holdings Corp. Paper 5, 2.

A. Related Matters

The parties indicate this Petition is relates to the following *inter partes* review of the '475 patent in *Facebook, Inc. v. Palo Alto Research Center Inc.*, IPR2021-01264 (Prelim. Resp. 3); U.S. Patent No. 8,489,599 in *Facebook, Inc. v. Palo Alto Research Center Inc.*, IPR2021-01294 (Pet. 8); U.S. Patent No. 8,489,599 in *Twitter, Inc. v. Palo Alto Research Center Inc.*, IPR2021-01458 (Prelim. Resp. 3); U.S. Patent No. 8,489,599 in *Twitter, Inc. v. Palo Alto Research Center Inc.*, IPR2021-01459 (*id.*); and U.S. Patent No. 9,208,439 in *Twitter, Inc. v. Palo Alto Research Center Inc.*, IPR2021-01430 (*id.*).

The parties also indicate this Petition relates to the following district court litigations: *Palo Alto Research Center Inc. v. Twitter, Inc.*, No. 2:20-cv-10754-AB-MRW (C.D. Cal.); *Palo Alto Research Center Inc. v. Facebook, Inc.*, Case No: 2:20-cv-10753-AB-MRW (C.D. Cal.). Pet. 8.; Prelim. Resp. 2.

B. The '475 Patent

The '475 patent generally describes creating user profiles for users who visit web pages and classifying users based on similarities using clustering techniques. *See* Ex. 1001 at code (57), Fig. 3. The system classifies "user types based on the multiple modes of information" as a user visits different web sites. *See id.* at 1:53–54. The system analyzes user's paths to different web pages and classifies users based on content at each web page and based on the path taken to the web pages. *See id.* at 4:48–6:22. The technique involves combining "feature vector[s]," which include "URL feature vector[s]," "proximal cue vectors," "content feature vectors," and other vectors "for each document or web page on the user

path." *See id.* at 6:4–20. The system combines and weights the different vectors into a "multi-modal vector," which represents a "user profile." *Id.* "The multi-modal vector allows different types of information representing the document collection to be combined and operated upon using a unified representation." *Id.* at 6:20–23.

The "content portions [that a user visits] may be documents, web pages and so forth." Ex. 1001, 3:6–7. "In various exemplary embodiments, a content feature vector reflects the content of the words contained by each document or web page in the path." *Id.* at 8:60–63.

The proximal cue vector includes "[p]roximal terms" on a web page, which "represent information cues that convey information to the simulated user" who visits the page. Ex. 1001, 4:16–18. "For example, a text 202 associated with a link 204 may provide proximal cues as to the nature of the linked information." *Id.* at 3:18–20. As another example, given the following link, "http://www.xerox.com/products/support/index.html," "the words http, www, xerox, com, products, support and index are considered as proximal cue words for" that link. *Id.* at 3:55–59; *see also id.* at 8:31–32 ("In various exemplary embodiments, proximal cue words include for example, the text of the link structure."). "It will be apparent that *any feature* of the proximal document or web page may be used to provide proximal cue words in the practice of the invention." *Id.* at 8:40–41 (emphasis added).

C. Illustrative Claim

Illustrative independent claim 10 follows with bracketed letters added to limitations for reference purposes:

10. [10.pre] A computer system to cluster user sessions using multi-modal information and proximal information, comprising:

[10.1] a user path determining circuit that selects a plurality of user paths in a collection of content portions;

[10.2] a multi-modal information determining circuit that determines multi-modal information for content portions associated with the user path;

[10.3] a proximal information determining circuit that determines proximal information for content portions associated with the user path;

[10.4] a similarity determining circuit that combines the multi-modal information for content portions and the proximal information for content portions associated with the user path to form a user profile having a unified representation; and

[10.5] a cluster and similarity measure determining circuit that clusters multi-modal information and proximal information of user profiles based on similarity.

D. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–18 are unpatentable based on the following grounds.

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1–7, 9–16, 18	103(a)[3]	Chen,[4] Pitkow[5]

[3] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (effective Mach 16, 2013) ("AIA"), amended 35 U.S.C. § 103. Because the '475 patent's effective filing date precedes the effective date of the applicable AIA amendment, the pre-AIA version of § 103 applies.

[4] Chen et al., European Patent App. 1 024 437 A2, filed Jan. 24, 2000, published Feb. 24, 2000. Ex. 1004.

[5] Pitkow et al., Mining Longest Repeating Subsequences to Predict World Wide Web Surfing, Proceedings of USITS' 99: The 2nd USENIX Symposium on Internet Technologies & Systems, Boulder, Colorado, USA, (October 11–14, 1999). Ex. 1005.

Claim(s) Challenged	35 U.S.C §	Reference(s)/Basis
1–7, 9–16, 18	103(a)	Chen, Pitkow, Chi[6]
1–18	103(a)	Chen, Pitkow, Heer[7]
1–18	103(a)	Chen, Pitkow, Chi, Heer
10–16, 18	103(a)	Chen, Pitkow, Cooke[8]
10–16, 18	103(a)	Chen, Pitkow, Chi, Cooke
10–18	103(a)	Chen, Pitkow, Heer, Cooke
10–18	103(a)	Chen, Pitkow, Chi, Heer, Cooke

Pet. 9.

II. 35 U.S.C. § 103(a)

A. Level of Ordinary Skill in the Art

Relying on the testimony of Dr. Turnbull, Petitioner proposes that a person of ordinary skill in the art at the time of the '475 patent (December 2002) "would at minimum have a bachelor's in software, computer, or electrical engineering or computer science with at least two years' experience in software development, including with respect to web data analysis, or the equivalent." Pet. 11 (citing Ex. 1003 ¶ 24). Patent Owner presents no proposed qualifications. *See generally* Prelim. Resp.

In determining the level of ordinary skill in the art, various factors to consider include the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made;

[6] Chi et al., Using Information Scent to Model User Information Needs and Actions on the Web, SIGCHI'01, Vol. No. 3, Issue No. 1, Seattle, Washington, USA. (March 31–April 4, 2001). Ex. 1006.

[7] Heer et al., Identification of Web User Traffic Composition Using Multi-Modal Clustering and Information Scent, Xerox Palo Alto Research Center, Palo Alto, California (2001). Ex. 1007.

[8] Cooke et al., U.S. Patent No. 5,966,534, filed June 27, 1997, issued Oct. 12, 1999. Ex. 1024.

sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). The prior art of record also reflects the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). For purposes of this Institution Decision, we adopt the assessment offered by Petitioner as it is consistent with the '475 patent and the asserted prior art.

B. Claim Construction

In *inter partes* reviews, the Board construes claims using the same claim construction standard employed in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (2020). Under the principles set forth by our reviewing court, the "words of a claim 'are generally given their ordinary and customary meaning,'" as would be understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Neither party proposes any explicit claim constructions. Pet. 10; *see generally* Prelim. Resp. At this stage, no need exists to construe a claim term expressly to resolve the parties' disputes. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the

extent necessary to resolve the controversy.'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.,* 200 F.3d 795, 803 (Fed. Cir. 1999))).

C. Principles of Law

A patent claim is unpatentable under 35 U.S.C. § 103 if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious 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. § 103 (2011); *see also KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness involves resolving 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 ordinary skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

D. Applied Prior Art

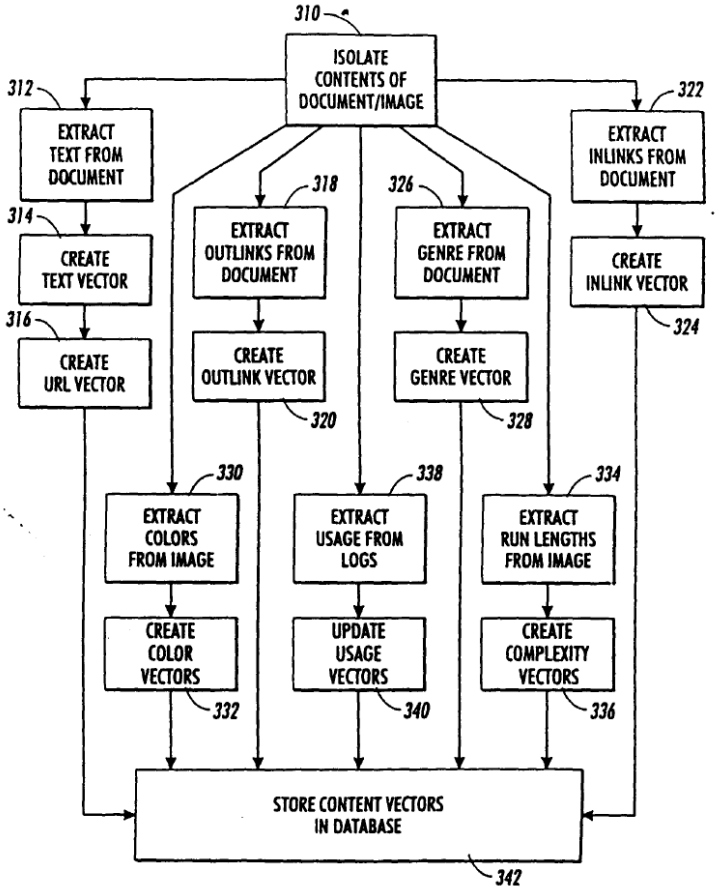
1. Chen (Ex. 1004)

Chen describes a multi-modal vector system that clusters users together according to similarities of documents viewed by the users while browsing information on the web or internet. Ex. 1004, code (57), ¶¶ 1–2. In particular, Chen discloses a "system and method for browsing, retrieving, and recommending information from a collection [of documents; the embodiments] us[ing] multi-modal features of the documents in the collection, as well as an analysis of users' prior browsing and retrieval behavior." *Id.* at code (57). The system involves "various disclosed methods for quantitatively representing documents in a document collection as vectors in multi-dimensional vector spaces, quantitatively determining

similarity between documents, and clustering documents according to those similarities." *Id.* The system "quantitatively represent[s] users in a user population, quantitatively determin[es] similarity between users, cluster[s] users according to those similarities, and visually represent[s] clusters of users by analogy to clusters of documents." *Id.*

"[E]ach document (for example, an HTML document 110) chosen from a collection 120 maps to a set of feature vectors 112, one for each modality (for example, a text vector 114 and a URL vector 116)." Ex. 1004 ¶ 37. The system includes analysis of "text content, document link, inlinks, outlinks, text genre, image color histogram, and image complexity." *Id.* ¶ 41. "The first two of the listed features are text based, inlinks and outlinks are hyperlink based, text genre is probability based, and the final two features (image color histogram and image complexity) are image-based." *Id.*

Figure 3 of Chen follows:



In relation to the embodiment as described with respect to Chen's Figure 3 above, "[t]ext is extracted from the document . . . and used to create a corresponding text vector . . . and a corresponding URL vector (step 316)." Ex. 1004 ¶ 42. In addition,

> all outlinks (hypertext links within the document that point elsewhere) are extracted (step 322) and used to create a corresponding outlink vector (step 324). Inlinks (documents within the collection that point to the subject document) are extracted (step 322) and used to create a corresponding outlink vector (step 324). Text genre is identified (step 326) and used to create a corresponding genre vector (step 328).

Id. ¶ 43.

"If the new document is or contains at least one image, then the colors are extracted from the image . . . and used to create a corresponding color histogram vector[.] Horizontal and vertical runs of a single color . . . are also extracted from the image . . . and used to create a color complexity vector[.]" *Id.* ¶ 44. "Finally, references to the document are extracted from usage logs . . . and used to update users' page access vectors[.]" *Id.* ¶ 45.

"The text feature is a term vector where the elements of the vector represent terms used in the document itself." Ex. 1004 ¶ 51. "[F]or an all-text or HTML document . . . , the text vector *is based on the document's entire text content*." Ex. 1004 ¶ 51 (emphasis added). "[E]ach text document . . . is embedded by the present invention into . . . a vector space having n_t dimensions, wherein each dimension is represented by a real number[], wherein n_t is the total number of unique words in the collection . . . ." *Id.* ¶ 53. "[T]he similarity between two text vectors can be calculated via a simple cosine distance . . . . [T]he cosine distances between pairs of documents can be used to cluster documents based on text features alone, or can be used in combination with other features." *Id.* ¶ 57. Therefore, "[i]t is also possible, and preferable under certain circumstances, to calculate an aggregate similarity between two documents[;] . . . [t]his aggregate similarity then represents the overall similarity between documents based on all possible (or practical) modalities." *Id.* ¶ 77.

Chen's "[m]ulti-modal features may take on many forms, such as user information, text genre, or analysis of images." Ex. 1004 ¶ 27. Chen's Table 1 lists "features . . . [that] are exemplary only," as follows (*id.*):

Table 1

Feature	Modality
Text Vector	text
Subject	text
URLs	text
Inlinks	hyperlink
Outlinks	hyperlink
Genre	genre
Page Usage	user info
Color Histogram	image
Complexity	image

Chen's Table 1, above, "lists several possible features and modalities . . . . usable in the invention," which Chen describes as "[m]ulti-modal features . . . . [that] can be considered a form of metadata, derived from the data (text and images, for example) and its context, and assigned automatically or semi-automatically, rather than current image search systems, in which metadata is typically assigned manually." Ex. 1004 ¶ 27.

2. Pitkow (Ex. 1005)

Pitkow describes "[m]odeling and predicting user surfing paths." Ex. 1005, 2.[9] "[The] predictive modeling techniques . . . attempt to reduce model complexity while retaining predictive accuracy." *Id.* "The techniques merge two methods: a web-mining method that extracts

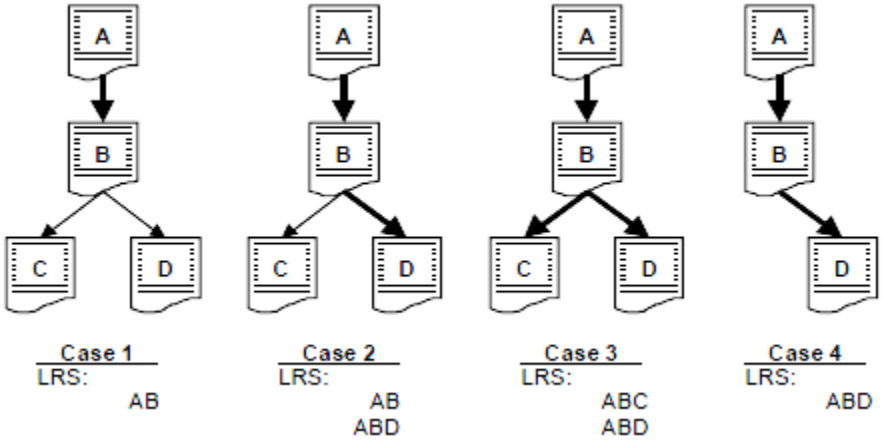
[9] Page citations refer to the original page numbers in accordance with Petitioner's citations.

significant surfing patterns by the identification of *longest repeating subsequences* (LRS) and a pattern-matching method that embodies the principle of *weighted specificity*." *Id.* "The LRS technique serves to reduce the complexity of the model by focusing on significant surfing patterns. . . . The weighted specificity principal exploits the finding that longer patterns of past surfing paths are more predictive." *Id.*

"[U]sers begin surfing a web site starting from different entry pages . . . [and] arrive at specific web pages having traveled different surfing paths[.]" Ex. 1005, 2. "The distribution of visits over all WWW pages is obtained . . . [and] then used to re-weight and re-rank the results of a textbased search engine." *Id.* at 3. "Under this model, surfer path information is viewed as an indicator of user interests, over and above the text keywords entered into a standard search engine." *Id.*

"The LRS technique treats . . . some of the paths [as] noise. This hinges off the insight that many paths occur infrequently, often as a result of erroneous navigation. Identifying repeating subsequences enables common sub-paths to be extracted." Ex. 1005, 7.

Pitkow's Figure 2, reproduced below, describes the technique:



"Figure 2. Examples illustrating the formation of longest repeating subsequences (LRS). Thick-lined arrows indicate more than one traversal whereas thin-lined arrows indicate only one traversal. For each case, the resulting LRS are listed." *Id.* at 8.

"[Figure 2] illustrate[s] . . . the case where a web site contains the pages A, B, C, and D, where A contains a hyperlink to B and B contains hyperlinks to both C and D." Ex. 1005, 8. "As shown in Figure 2, if users repeatedly navigate from A to B, but only one user clicks through to C and only one user clicks through to D (as in Case 1), the longest repeating subsequence is AB." *Id.* "If however more than one user clicks through from B to D (as in Case 2), then both AB and ABD are longest repeating subsequences. In this event, AB is a LRS since on at least one other occasion, AB was not followed by ABD." *Id.* "In Case 3, both ABC and ABD are LRS since both occur more than once and are the longest subsequences. . . . AB is not a LRS since it is never the longest repeating subsequence as in Case 4 for the LRS ABD." *Id.*

"LRS have several . . . properties. First, the complexity of the resulting n-grams is reduced as the low probability transitions are

automatically excluded from further analysis." Ex. 1005, 8. "Another interesting property of the LRS model is its bias towards specificity. Any single page-to-page transition that is always repeated as part of longer sequences is not included into the LRS model." *Id.* at 9.

3. Chi (Ex. 1006)

Chi describes modeling and predicting of user surfing paths. Ex. 1006, 1.[10] Chi's system seeks two determinations: "[f]irst, for a particular pattern of surfing, [the system] infer[s] the associated information need[;]" and "[s]econd, given an information need, and some pages as starting points, [the system] predict[s] the expected surfing patterns." *Id.*

Chi's system assumes that "user behavior in the information environment is guided by information scent, which is determined from the perception of the value and cost of the information with respect to the goal of the user." Ex. 1006, 1. Chi explains that "[o]n the Web, users typically forage for information by navigating from page to page along Web links" and "[t]he content of pages associated with these links is usually presented to the user by some snippets of text or graphic." *Id.* at 2. "Foragers use these proximal cues (snippets; graphics) to assess the distal content (page at the other end of the link)." *Id.* "Information scent is the imperfect, subjective perception of the value and cost of information sources obtained from proximal cues, such as Web links, or icons representing the content sources." *Id.*

[10] Page citations refer to the original page numbers in accordance with Petitioner's citations.

4. Heer (Ex. 1007)

Heer describes computer-implemented techniques involving "a form of clustering, called Multi-Modal Clustering (MMC), which utilizes multiple sources of information (modalities) to generate user groupings." Ex. 1007, 2.[11] That is, Heer describes a multi-modal clustering of user types. *Id.* at 4.

To model each user type, Heer's vector space model uses different modalities to represent each web page in a user path, "page content, URLs, inlinks, and outlinks." Ex. 1007, 5. Like Pitkow, Heer also uses the "LRS" technique to define surfing paths as follows:

> [A] Web-mining technique . . . extracts significant surfing paths by the identification of longest repeating subsequences (LRS). A longest repeating subsequence (LRS) is a sequence of items where (1) subsequence means a set of consecutive items, (2) repeated means the item occurs more often than some threshold *T*, where *T* typically equals one, and (3) longest means that although a subsequence may be part of another repeated subsequence, there is at least one occurrence of this subsequence where this is the longest repeating.

Id. at 4.

Heer states that "the LRS technique extracts surfing paths that are likely to re-occur and reduces noise in the usage data," and Heer's system "use[s] the LRS data mining technique to identify significant surfing paths in Web usage data." Ex. 1007, 5. Then, "[e]ach significant surfing path is treated as a user profile." *Id.* "[E]ach user profile is essentially a list of documents that represent a significant user history through the Web site." *Id.* "To represent the profile," Heer's system "build[s] up a feature vector of

[11] Page citations refer to the original page numbers in accordance with Petitioner's citations.

each Web page, and then construct[s] the profile as a weighted combination of the feature vectors." *Id.*

Heer's system generally "represent[s] each user path profile as a combination of multi-modal feature vectors describing each Web page," and then "appl[ies] the clustering technique to these user profile vectors." Ex. 1007, 4. In Heer, as indicated above,

> [e]ach significant surfing path is treated as a user profile. Thus, *each user profile is essentially a list of documents that represent a significant user history through the Web site*. To represent this profile, we build up *a feature vector of each Web page*, and then construct the profile as a weighted combination of the feature vectors.

Id. at 5 (emphasis added). Heer's method strives to "accurately represent the information at hand," and "also provide a readily calculable similarity metric, without which any clustering is impossible." *Id.*

Like the '475 patent, Heer's method uses not only "content words," but "other forms of document information such as hyperlinks, and URL tokens." Ex. 1007, 6. Heer states that its "idea . . . *is to use as much information as we have* on each item to cluster the items." *Id.* at 4 (emphasis added). Heer states that "[f]or example, the content keywords for a Web page can have their own feature vector (e.g., the frequency of each keyword's occurrences on that page), which can be combined with *feature vectors that describe the images* on that page (e.g., the color of each pixel)." *Id.* at 4 (emphasis added).

In summary, Heer's method involves embedding "[a]ll available information on items" into a "single large multi-modal vector space," defining a "similarity metric for the combined multi-modal feature vectors"

for each individual modality, and then "apply[ing] traditional clustering algorithms." Ex. 1007, 4.

5. Cooke (Ex. 1024)

Cooke describes an "automatic translation of a computer program into an application specific integrated circuit." Ex. 1024, 1:7–9. "A computer program . . . is compiled into an intermediate data structure which represents its control and data flow. This data structure is analyzed to identify critical blocks of logic which can be implemented as an application specific integrated circuit . . . ." *Id.* at 2:22–28. Specifically, "[t]he computer program source code is parsed with standard compiler technology into a language independent intermediate format. The intermediate format is a standard control and data flow graph, but with the addition of constructs to capture loops, conditional statements, and array accesses." *Id.* at 2:60–64. "These constructs capture all the high level information necessary for parallelization of the code." *Id.* at 2:67–3:2.

"The [field programmable gate array] FPGA has one or more independent blocks of reconfigurable logic. Each block may be reconfigured without affecting any other block." Ex. 1024, 5:35–37. "A reconfigurable FPGA environment presents the following problems for [the] compiler to solve: selecting the total set of functions to be implemented, partitioning the functions across multiple FPGA blocks, and scheduling the loading and activation of FPGA blocks during the program execution." *Id.* at 5:42–47. "The partitioning will group together functions that finish at close to the same time." *Id.* at 5:58–59. "The set of all such configuration tasks . . . may be scheduled with standard multiprocessor scheduling

algorithms, treating each physical FPGA block as a processor." *Id.* at 6:14–17.

E. Analysis

Petitioner asserts that the combined teachings of Chen, Pitkow, and/or Chi, and/or Heer, would have rendered one or more of claims 1–18 obvious, as set forth below. *See* Pet. 9, 21–75; *supra* § I.D (Grounds 1–4). Petitioner also asserts that the combined teachings of Chen, Pitkow, Cooke, and/or Chi and/or Heer, would have rendered one or more of claims 10–18 obvious, as set forth below. *See* Pet. 9, 21–65; *supra* § I.D (Grounds 5–8).

Patent Owner disagrees, asserting that the prior art fails to teach or suggest "combining multi-modal information and proximal information." *See* Prelim. Resp. 35–39.

1. Chen, Pitkow, and Cooke, with Heer and/or Chi, Claims 10–18

Petitioner asserts that the combined teachings of Chen, Pitkow, and Cooke, as supplemented by the teachings of Chi and/or Heer, would have rendered claims 10–18 obvious. Pet. 9, 21–75; *supra* § I.D.

i. Claim 10

The preamble of claim 10 recites a "computer system to cluster user sessions using multimodal information and proximal information." Pet. 21. Petitioner contends that, "[t]o the extent deemed limiting, the preamble is disclosed." *Id.* at n.5.

Specifically, Petitioner contends a "POSITA would have been motivated and found it obvious and straightforward to implement Chen's [collection use analysis (CUA)] techniques (including multi-modal clustering) using Pitkow's teachings of selecting user paths using LRS." Pet. 28 (emphasis omitted) (citing EX1003 ¶¶ 128–130). Petitioner

contends "that implementing Chen's CUA techniques using Pitkow's teachings of extracting information from user paths would result in the clustering of user sessions as recited . . . such that . . . information from user paths clusters user sessions. *Id.* at 30 (emphasis omitted) (citing Ex. 1003 ¶ 130). Further regarding combining Pitkow and Chen, Petitioner reasons that "in the combined system, instead of selecting documents from, e.g., the entirety of a user's browsing history, the system would beneficially analyze only websites users visited that were along user paths, as discussed above." *Id.* at 34 (citing Ex. 1003 ¶ 154).

Petitioner also contends that "Chen discloses gathering information about web pages based on a user's prior browsing behaviors, and, *inter alia*, clustering users based on that information." Pet. 31. (citing Ex. 1004 ¶¶ 22, 24, 34, 135, 165). Petitioner relies on Chen's statement that it is "desirable to be able to *exploit and combine information available from all possible modalities*." *See id.* (emphasis added) (quoting Ex. 1004 ¶ 135).

Petitioner contends that "Chen discloses proximal information," which the '475 patent describes as "text . . . associated with a link," or "text of the link structure." Pet. 30 (quoting Ex.1001, 3:43–44, 8:31–32; citing *id.* at 3:41–59, 4:12–14, 4:45–46, 8:31–46). Petitioner relies on Chen's specific disclosure of analyzing "*text surrounding an image*" *Id.* (emphasis by Petitioner) (quoting Ex. 1004 ¶ 25). At the quoted paragraph, Chen states that "[m]ulti-modal information, in the form of text surrounding an image and some simple image features, is used in this process." Ex. 1004 ¶ 25.

Petitioner explains that in Chen, "'hotlinks' are usually URLs," (Pet. 30 (quoting Ex. 1004 ¶ 5)), and further explains that Chen "describes using the text from breaking up a URL in its analysis," (*id.* (citing Ex. 1004 ¶ 59)).

Petitioner also explains that "Chen's multi-modal information includes *proximal* information, such as 'text in hyperlinks,' and 'terms in URLs . . . extracted from . . . outlinks.'" *Id.* at 13 (quoting Ex. 1004 ¶¶ 52, 62). At cited paragraph 52, Chen explains that "for purposes of the invention . . . . images do not necessarily contain text, but are described by text in the hypertext links and URLs that point to them. Images containing text (such as facsimile bitmaps) can have their text extracted via known document image decoding techniques."

Petitioner adds that, even if Chen does not disclose proximal information, it would have been obvious as advantageous and routine to employ proximal information, where Chen states that "[i]t is desirable to . . . combine information available from all possible modalities" and "[a]ny type of information that is available about users is collected [including] the text content, inlinks, outlinks, and URLs of these pages [users access]." Pet. 30–31 (quoting Ex 1004 ¶¶ 135, 165; citing Ex. 1003 ¶¶ 133–134).

Petitioner also contends that the combined teachings of Chen and Chi render using proximal information obvious for improving the system's "predictive power," as follows:

> Chen states it is "desirable to be able to exploit and *combine information available from all possible modalities*." EX1004, [0135]. Chi discloses using information about visited web page content and linkage topology (including proximal information) to similarly satisfy a user's informational needs, "suggesting information pieces to users based on a user's traversal history." EX1006, 2; *see also id.*, 3 ("proximal cues"). POSITA would have been motivated and found it obvious and straightforward to implement Chen's CUA techniques using Chi's advantageous teachings of proximal cues to improve the predictive power of the system based on this additional information being gathered from visited pages. For POSITA, it would have been obvious . . .

> in view of the similar disclosures in Chen[] and clear (including from these explicit teachings) this would provide the expected functionality and yield predictable results . . . . *See* EX1003, ¶¶135–141.

Pet. 31–32 (emphasis added). On cited page 3, Chi states that "[t]here are a variety of ways to obtain proximal cues. For example, we may look at (1) the words in the link itself, (2) the text surrounding a link, (2) the graphics related to a link, (3) the position of the link on the page, etc." Ex. 1006, 3.

Limitation 10.1 recites "a user path determining circuit that selects a plurality of user paths in a collection of content portions." Pet. 32.

Petitioner relies partly on its showing with respect to the preamble as summarized above, stating as follows:

> Chen in view of Pitkow renders obvious selecting a plurality of user paths in a collection of content portions . . . associated with each user path, as discussed in cl.10.pre. . . . [I]n the combined system, instead of selecting documents from . . . the entirety of a user's browsing history, the system would beneficially analyze only websites users visited that were along user paths . . . . *See* cl.10.pre; EX1003, ¶154.

Id. at 34 (emphasis omitted).

Addressing the repeated claim requirement for a respective "circuit" performing the operations of limitations 10.1–10.5, Petitioner explains that Chen discloses "circuits," because Chen's "Figure 1 shows . . . [a] computer system, including, *e.g.*, a specific illustrated processor 122, along with terminals (128, 130,132) that POSITA would have understood also contained processors." *See* Pet. 34.

Petitioner explains that "POSITA would further have understood that the processors in Chen . . . perform their operations using software, and that all of Chen's disclosures of, e.g., 'program[s]' to perform its operations are

disclosures of software running on processors." Pet. 35 (alteration in original) (citing Ex. 1004 ¶¶ 116, 139, Fig. 1). Petitioner points to the '476 patent specification to support its interpretation of "circuits." *See id.* ("[E]ach of the various circuits . . . can each be implemented as software routines. . . executing on a programmed general purpose computer, a special purpose computer, a microprocessor or the like." (emphasis omitted) (quoting Ex. 1001, 14:47–51)).

Alternatively, Petitioner relies on Cooke's teachings to modify or supplement Chen's software and processor teachings to teach circuits, as follows:

> [T]o the extent it is argued a distinct circuit is required for each operation, ... POSITA would have understood that using distinct circuits to perform distinct operations would advantageously result in an optimized and faster system. . . . EX1003, ¶159. . . . Alternatively with respect to Grounds 5–8, Cooke expressly describes using separate/distinct circuits for different operations, and explains this advantageously provides optimized and faster performance. EX1024, 1:7–30, 5:31–37 . . . . POSITA would have found it obvious . . . particularly in view of Chen's disclosures that "each feature is used separately" (EX1004, [0049]), each "text feature . . . can be calculated . . . as a separate and independent feature" (EX1004, [0058]), and its system benefits from a "fast" and "efficient" algorithm (EX1004, [0169]). POSITA would clearly recognize that implementing operations . . . using Cooke's teachings of separate hardware circuits would . . . have the expected functionality [and] yield predictable results . . . . EX1003, ¶¶160–162.

Id. at 36–37 (footnote omitted); *see also* (for the respective circuits) *id.* at 39 (limitation 10.2), 40 (limitation 10.3), 43 (limitation 10.4), 45 (limitation 10.5).[12]

Limitation 10.2 recites "a multimodal information determining circuit that determines multimodal information for content portions associated with the user path." Petitioner relies on some of the above-discussed arguments with respect to the preamble and limitation 10.1, stating that "Chen in view of Pitkow renders obvious performing Chen's CUA, which includes extracting content portions (including multi-modal information) for visited websites, using Pitkow's teachings of user paths." Pet. 38 (emphasis omitted) (citing Ex. 1003 ¶ 173).

Limitation 10.3 recites "a proximal information determining circuit that determines proximal information for content portions associated with the user path." Petitioner relies on the above arguments, stating as follows:

> As discussed above (cl.10.pre), Chen in view of Pitkow renders obvious implementing Chen's CUA techniques using Pitkow's teachings of user paths. *See* cl.10.pre. Chen additionally discloses that the information for content portions gathered for clustering includes proximal information about pages a user visited. EX1004, Abstract, [0006]–[0007], [0014], [0024], [0130]–[0135]. Thus, Chen in view of Pitkow renders obvious determining proximal information for content portions associated with the user path. EX1003, ¶187.
>
> To the extent further disclosure of determining proximal information is required, Chen in view of Pitkow and Chi render it obvious. *See* cl.10.pre; EX1003, ¶¶188–191.

Pet. 39–40.

[12] In the omitted footnote, Petitioner asserts that a separate circuits requirement "would be in tension with '475[patent]'s disclosures." Pet. 36 n.14 (citing Ex. 1001, 14:47–55).

Limitation 10.4 recites "a similarity determining circuit that combines the multimodal information for content portions and the proximal information for content portions associated with the user path to form a user profile having a unified representation." Pet. 40–41 (footnote omitted). Petitioner relies partly on its showing with respect to the preamble and limitations 10.1 and 10.3, wherein Chen discloses combining all manner of information, including multimodal, and at least suggests combining proximal information, and Pitkow, Chi, and Heer supplement Chen's teachings. *See id*.

Petitioner also contends as follows:

> To the extent . . . a user profile with a unified representation . . . is not satisfied by Chen in view of Pitkow . . . , this would have been obvious based on Chen in view of Pitkow and Heer (and Chi, to the extent it is argued Chen does not disclose using proximal information). Chen in view of Pitkow renders obvious clustering users based on information in a user path. *See* cl.1[pre]. Like Chen, Heer also addresses clustering of users based on multi-modal information. EX1004, [0019]; EX1007, 8. Chen discloses clustering users based on information extracted from accessed web pages. EX1004, Abstract, [0006]–[0007], [0014], [0024], [0130]–[0135]. Heer discloses using information associated with user paths to form user profiles having a unified representation. EX1007, 1, 5, Fig. 1. POSITA would have . . . found it obvious . . . to implement Chen's CUA and clustering of users using Heer's advantageous express teachings of a user profile having a unified representation (e.g., a single unified vector) so that each user could beneficially be represented by a vector, which provides a convenient mathematical form for comparing that user's vector to other users' vectors[] and clustering users by similarity. POSITA would have found it obvious . . . particularly in view of . . . the use of combined vectors in Chen (EX1004, [0049], [0067], [0072] ("larger vector"), [0077], [0130]–[0135], [0171]

> ("information . . . combined"))[] and clear this would . . . yield predictable results[.] EX1003, ¶207.

Pet. 42–43 (emphasis omitted).

Patent Owner contends that combining multi-modal and proximal information would not have been obvious. *See* Prelim. Resp. 35–39. Patent Owner first asserts the following context for limitation 10.4:

> The '475 Patent describes combining "the proximal cue feature vector" with other "feature vectors" ("multimodal information," *id.* at 4:63–64), such as "the content feature vector, the URL feature vector, the inlink feature vector, the outlink feature vector and the information need feature vector for each document or web page on the user path." *Id.* at 6:4–11. "The combined multi-modal vector represents all of the features of the user path in a unified representation." *Id.* at 8:9–11; *see also id.* at 6:20–23 ("[t]he multi-modal vector allows different types of information representing the document collection to be combined and operated upon using a unified representation.").

Prelim. Resp. 36. Patent Owner stresses that none of the applied prior art teaches or suggests combining both multimodal information and proximal information:

> Chen, Pitkow, Chi, and Heer do not disclose or render obvious combining multi-modal information and proximal information. Instead, each relates to *using either multi-modal information or proximal information, but not both*. For instance, Chen, entitled "Multi-modal information access" (Ex. 1004 at 1 . . .), "permits the use of multi-modal information, such as text and image features, for performing browsing and retrieval (of images, in the exemplary case described [in Chen])" (Ex. 1004 at [0016]). . . . Pitkow, [as Petitioner] admits, relates to selecting user paths—not combining multi-modal information and proximal information. Petition at 13-16[.] Chi, at best according to [Petitioner], "discloses using proximal information." Petition at 41[.] And Heer, entitled "Identification of Web User Traffic Composition Using Multi-Modal Clustering and Information Scent," focuses on using multi-modal information. Ex. 1007

> at 1[.] None of these references disclose or render obvious using—much less combining—both multi-modal information and proximal information.

Prelim. Resp. 36–37 (emphases added and omitted).

Patent Owner further contends that the '475 patent's combining of multimodal information and proximal information advanced the applied prior art by the authors of Heer and Chi (i.e., present inventors Jeffrey M. Heer and Ed H. Chi).

> Stepping back, ... [t]he '475 Patent inventors (Chi and Heer) were part of a larger group working on related issues. After years[,] . . . the . . . inventors came upon their invention to use and combine both multi-modal information and proximal information. *See also* Ex. 1001 at 1:53–54 ("none of these [prior] products identify user types based on the multiple modes of information that are available"). Indeed, this was the basis for the Examiner's allowance of the '475 Patent's claims . . . . Ex. 1002 at 123 (Examiner noting that "the prior art of record does not teach: combining multi-modal information for content portions associated and the proximal information for content portions associated with the user path to form a user profile having a unified representation").

Prelim. Resp. 37–38.

As quoted above, Patent Owner concedes that "each" of the prior art references relied upon by Petitioner "relates to using either multi-modal information or proximal information, but not both." Prelim. Resp. 36–37. Patent Owner also notes that Petitioner argues that Chen "combine[s] information available from all possible modalities" and that "[a]ny type of information that is available about users is collected . . . . [such as] information on the pages users access, as well as the text content, inlinks, outlinks, and URLs of these pages." *Id*. at 38 (citing Pet. 40; Ex. 1004 ¶¶ 135, 165). *Id.* at 38.

These arguments to not address Petitioner's obviousness showing, based on the rationale that Chen, as combined with Pitkow, Chi, and Heer, reasonably teaches or suggests using all manner of information related to a user's search history, including textual and proximal information, to create a better user profile for grouping users in clusters. *See* Pet. 21–26, 30–32. Patent Owner's argument also does not address the specific showing wherein, similar to the '475 patent's disclosure, in addition to multi-modal information, Chen's system analyzes text associated with hotlinks and outgoing URLs on a page. *See id.* at 22 n.7 (citing Ex. 1003 ¶¶ 60, 107), n.8 (citing Ex. 1004 ¶¶ 90, 101, 135, 165).

Limitation 10.5 recites "a cluster and similarity measure determining circuit that clusters multi-modal information and proximal information of user profiles based on similarity." Pet. 43–44.

Petitioner relies on its arguments for limitation 10.4, stating as follows:

> As discussed above (cl.10.4), it would have been obvious to form a user profile having a unified representation . . . . Further, Chen discloses clustering information of user profiles based on the similarity. EX1004, Abstract, [0006]–[0007], [0014], [0020], [0024], [0030], [0077], [0130]–[0135]. Thus, the . . . combinations of art . . . render[] obvious clustering user profiles having a unified representation. *See* cl.10.4; EX1003, ¶218.

Pet. 45 (emphases omitted).

Patent Owner relies on its arguments with respect to limitation 10.4. *See* Prelim. Resp. 39. Based on the preliminary record and foregoing summary, the Petition sufficiently shows that claim 10 would have been obvious over the combined teachings of Chen, Pitkow, and Cooke, as supplemented by the teachings of Chi and/or Heer.

ii. Claims 11–18

For claims 11–18, which depend from claim 10, Petitioner builds on its showing of claim 10 and relies further on other teachings in Chen, Pitkow, and Cooke, supplemented by Chi and/or Heer. Pet. 45–65.

Based on the preliminary record and foregoing summary, the Petition relies on the testimony of Dr. Turnbull and sufficiently shows that claims 11–18 would have been obvious over the combined teachings of Chen, Pitkow, and Cooke, as supplemented by the teachings of Chi and/or Heer. Patent Owner does not address these claims separately and relies on its arguments with respect to limitation 10.4. *See* Prelim. Resp. 35–39; *supra* § II.E.1.

iii. Summary, Claims 10–18

For the foregoing reasons, Petitioner demonstrates a reasonable likelihood that it would prevail in showing that the subject matter of claims 10–18 would have been obvious over the combined teachings of Chen, Pitkow, and Cooke, as supplemented by the teachings of Chi and/or Heer. *See supra* § I.D (asserted Grounds 5–8). Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

2. Chen, Pitkow, with Chi and/or Heer, claims 1–18;

Petitioner asserts that the combined teachings of Chen, Pitkow, supplemented by Heer and/or Chi, would have rendered claims 1–18

obvious. Pet. 9, 21–75; *supra* § I.D. Addressing claims 1–4 and 7–9, Petitioner contends as follows:

> Claims 10–13 and 16–18 are the system claim analogs of claims 1–4 and 7–9, respectively, which require the same functionality as claims 10–13 and 16–18 ***but without the circuits***. Thus, the arguments and evidence provided for claims 10–13 and 16–18 include the arguments and evidence establishing claims 1–4 and 7–9 are also unpatentable as obvious.

Pet. 65 (emphasis altered) (citing Ex. 1003 ¶¶ 94, 337–375, 402–414).

Based on the listing of grounds (*supra* § I.D) and Petitioner's showing with respect to Grounds 1–4, "without the circuits" means without reliance on the circuit teachings of Cooke. *See* Pet. 66–75. Petitioner also provides a separate showing with respect to claims 5 and 6, building on its showing with respect to claim 10 (absent the teachings of Cooke), and relying on additional teachings in Chen and Pitkow, or Chen, Pitkow, and Chi. *See* Pet. 68–75.

Based on the preliminary record and foregoing summary, the Petition sufficiently shows that claims 1–18 would have been obvious based on the combined teachings of Chen, Pitkow, as supplemented by Heer and/or Chi. *See supra* § II.E.1.i (listing Grounds 1–4). Patent Owner does not address Petitioner's showing separately, and relies on its arguments with respect to limitation 10.4. *See* Prelim. Resp. 35–39; *supra* § II.E.1.i.

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. This is not a final decision as to the patentability of claims for which *inter partes* review is instituted. Our final decision will be based on the record as fully developed during trial.

III. 35 U.S.C. § 325(d)

Institution of *inter partes* review is discretionary. *See Harmonic Inc. v. Avid Tech, Inc*., 815 F.3d 1356, 1367 (Fed. Cir. 2016) ("[T]he PTO is permitted, but never compelled, to institute an IPR proceeding."). Pursuant to 35 U.S.C. § 325(d), in determining whether to institute an *inter partes* review, "the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office." In evaluating arguments under § 325(d), the Board uses

> [a] two-part framework: (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential) ("*Advanced Bionics*"); *see also Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph) (listing factors to consider in evaluating the applicability of § 325(d)) ("*Becton Dickinson*").

The *Becton Dickinson* factors follow:

> (a) the similarities and material differences between the asserted art and the prior art involved during examination;
>
> (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
>
> (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;

> (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art;
>
> (e) whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and
>
> (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of the prior art or arguments.

Id.; *see also* Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019), available at https://www.uspto.gov/TrialPracticeGuideConsolidated, 62–63. *Advanced Bionics*, Paper 6 at 8. *Advanced Bionics* explains that *Becton Dickinson* factors (a), (b), and (d) relate to the first step, and *Becton Dickinson* factors (c), (e), and (f) relate to the second step. *Id.* at 9–11 & n.10.

As indicated above, "[i]f the 'same or substantially the same prior art or arguments previously were presented to the Office,' then the Board's decisions generally have required a showing that the Office erred in evaluating the art or arguments." *Advanced Bionics*, at 8–10 (quoting § 325(d); citing *Becton Dickinson,* Paper 8 at 24).

Patent Owner generally asserts that "the same prior art was presented [to the Patent Office] (and Chen is cumulative of Pitkow, Chi, and Heer), and whether slightly different arguments were presented is irrelevant. Petitioner's arguments would undermine both § 325(d) and *Advanced Bionics*." Prelim. Resp. 25. Specifically, Patent Owner contends as follows:

> Named inventors Jeffrey Heer and Ed Chi filed the application leading to the '475 Patent on December 19, 2002. Ex. 1001 at 1. In their application, the applicants incorporated Pitkow by reference. Ex. 1002 at 28; 00151; *see also* Ex. 1001 at 8:50–59 (same). The applicants submitted Chi during prosecution on February 27, 2003, Ex. 1002 at 58, and the Examiner considered the reference September 30, 2005, Ex.

> 1002 at 81. On October 4, 2005, the Examiner cited and discussed "Paper 2001 01 24 SIAM Data mining MMC2" ("Paper 2001") in rejecting several claims. Ex. 1002 at 78–79. Paper 2001 is a webpage printout of Heer, containing the same content. On February 17, 2006, the applicants submitted another version of Heer to the PTO in a supplemental amendment. Ex. 1002 at 107, 140. The Examiner marked Heer as considered, *id.* at 11, and allowed the claims on February 17, 2006. *Id.* at 120, 127. As a result, the Examiner was aware of Pitkow, Chi, and Heer when allowing the '475 Patent.

Id. at 17. Patent Owner further contends as follows:

> With respect to Chen, the Examiner considered substantially the same art because Chen's disclosure is substantially the same as Pitkow, Chi, and Heer. In addition, the PTO considered substantially the same arguments because the points of novelty for the '475 Patent are the same for Chen as they are for Pitkow, Chi, and Heer. This is unsurprising given the vast overlap in authors among each of Chen, Pitkow, Chi, and Heer.

Id. at 19. Patent Owner also argues that Petitioner's reliance on Chen's teachings of combining multi-modal clustering and proximal information rely on teachings that Heer includes. *Id.* at 20–23.

Patent Owner further asserts that *Advanced Bionics* instructs that if the "same or substantially the same prior art or arguments previously were presented to the Office," then the Board's decision should require a showing that the Office erred in evaluating the art or arguments. Prelim. Resp. 25 (citing *Advanced Bionics*, at 8). Patent Owner contends "Petitioner fails to show how or why the PTO erred," and "Petitioner gives brief attention to the Examiner's dealings with Heer, arguing that 'Heer was considered during prosecution only for the limited purpose of its disclosure of K-means and wave-front clustering in connection with dependent claims 9 and 18.'" *Id.*

(quoting Pet. at 87). According to Patent Owner, "the dependent claims incorporate all of the elements of the independent claims to which they refer," indicating that "the Examiner must have considered the content of Heer for all claims." *Id.* at 25–26.

Petitioner contends that "none of the combinations [in the Petition] were previously presented [to the Patent Office]." Pet. 84. Petitioner asserts that Chen, "like secondary reference" Cooke, "was not considered or even cited during prosecution." *Id*. at 83. Petitioner asserts that "[b]ecause Chen and Cooke were not previously presented, none of the combinations herein were previously presented." *Id.* at 84.

Petitioner asserts that in the Petition, "Chi and Heer are generally backup secondary references to Chen," and "Pitkow is relied on for the limited purpose of its user path disclosures." Pet. 84. Petitioner also contends that Patent Owner "never disclosed" the "primary reference" Chen, "despite" the fact that '475 patent and Chen were "both . . . assigned to Xerox," and "Chen . . . disclos[es] various claim elements *with the very language used in* [the] *'475* [patent]." *Id.* at 83.

Petitioner further contends the Petition's "Heer arguments are also not the same or substantially the same as in prosecution because Petitioner relies on *different aspects* of Heer." Pet. 85. According to Petitioner, during prosecution Patent Owner "asserted [that] none of the art [the] Examiner had cited in rejecting claims (including Heer, but not Chi) 'individually or in any combination, discloses or suggests the feature of *using proximal cues/information incorporated into a user profile clustering method or system.*'" *Id.* (quoting Ex. 1002, 98).

Petitioner asserts that "[i]n allowing claims, the "Examiner stated 'the prior art of record does not teach: combining the multi-modal information for content portions associated and the proximal information for content portions associated with the user path to form a user profile having a unified representation." Pet. 85 (quoting Ex. 1002, 123). And Petitioner contends that it "is not relying on either Chi or Heer alone for this element." *Id.* at 86.

Petitioner also contends that the "Examiner . . . overlook[ed] Chi's []proximal information disclosure and fail[ed] to combine it with other art." Pet. 88. Petitioner further contends the "Examiner similarly erred by failing to combine Heer's teaching of . . . a user profile with a unified representation [and] the presented disclosures of proximal information in other art to render obvious" the claimed combining of multi-modal information and proximal information (i.e., limitation 10.4). *Id.* at 89.

Patent Owner characterizes Heer as follows:

> The '475 Patent went beyond Heer—incorporating "proximal information" to the already-discussed "multi-modal information," and "combining" the two types of information "to form a user profile having a unified representation." Ex. 1001 at 1:53-57, claims 1 and 10 (including separate limitations related to the determination of "multi-modal information" and "proximal information," and also requirements to "combine" and "cluster" using those different pieces of information).

Prelim. Resp. 26. According to Patent Owner, "[t]his 'combining' limitation was the basis of the Examiner's allowance. . . . The Examiner did not overlook anything in Heer—in fact, the Examiner's limited use of Heer is consistent with Heer's focus on multimodal information." *Id.* (citing Ex. 1002, 123).

As an initial matter, Petitioner is correct in its assertion that Chen and Cooke were not previously before the Examiner during prosecution and

none of the combinations in the Petition were previously presented. Further, there is no overlap between the arguments made during examination and the representations of the prior art in this proceeding. Therefore, with respect to Chen and Cook, the same or substantially the same art or arguments were not previously presented. Further, even if Chen is cumulative to Heer as alleged by Patent Owner, Petitioner demonstrates that the Examiner materially erred for the reasons explained below.

As the parties indicate, the Examiner stated as reasons for allowance for the "independent claims," that "the prior art of record does not teach: combining the multi-modal information for content portions associated and the proximal information for content portions associated with the user path to form a user profile having a unified representation." *See* Pet. 85; Prelim. Resp. 26; Ex. 1002, 123. Patent Owner now argues that the primary difference between Heer (or Chen, if, as Patent Owner alleges, it is "cumulative" to Heer) and independent claims 1 and 10 is that the claims require using proximal information in the user profile. *See* Prelim. Resp. 26. But as discussed above (§ I.E.5), Patent Owner also admits that the asserted prior art at least separately teaches using proximal information and multi-modal information. *See* Prelim. Resp. 36–37 (arguing that "each" of the prior art references relied upon by Petitioner "relates to using either multi-modal information or proximal information, but not both").

Nevertheless, nothing in the prosecution history, including the Examiner's reasons for allowance or citation and limited discussion of Heer with respect to dependent claims (Ex. 1002, 78–79, 123), shows that the Examiner was aware that Heer (even if it is cumulative to Chen) taught everything in the independent claims except for combining proximal

information as part of the user profile. Also, the prosecution history does not show that Patent Owner informed the Examiner, or that the Examiner was aware, of Patent Owner's current admission that the prior art "relates to using either multi-modal information or proximal information, but not both." *See* Prelim. Resp. 36–37.

Petitioner shows that the Examiner did not apply Heer as the primary basis for rejecting independent claims 1 and 10, which Petitioner essentially does here with respect to Chen. *See* Pet. 84 (arguing that "Heer was relied on, but only for dependent claims 9 and 18") citing Ex. 1002, 78–79); *see Advanced Bionics*, Paper 6 at 10–11 & n.10 (reasoning that *Becton Dickinson* factor c, "the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection," is a material error factor). And Petitioner sufficiently shows that "Chen and Cooke were not previously presented" during prosecution. Pet. 84. As summarized above, Petitioner sufficiently shows that Chen, with Chi and other secondary references, suggests combining multi-modal information with proximal information such as surrounding text associated with links and images wherein Chen specifically teaches flexibly employing all manner of such multi-modal information to aid in assigning users to clusters. *See supra* § II.E.; Ex. 1004 ¶¶ 16, 18, 22; *Advanced Bionics,* Paper 6 at 9–11 & n.10 (reasoning that *Becton Dickinson* factor f, "additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments," and *Becton Dickinson* factor e, the extent the Petition shows error, are a material error factors).

The record, therefore, shows that the Examiner did not consider the specific prior art combinations alleged in the Petition, including with Chen

as a base reference. And even if the Examiner considered Heer as a basis for a rejection of the independent claims, and even if Chen is cumulative to Heer, the Examiner materially erred in overlooking or misapprehending Heer's teachings for the reasons outlined above and as set forth in the Petition. *See also* IPR2021-01264, Paper 13 § III (decision on institution with similar finding and analysis with respect to Heer).

For the foregoing reasons, we decline to exercise our discretion under § 325(d) to deny institution.

IV. 35 U.S.C. § 314(a)

Under 35 U.S.C. § 314(a), the Director has discretion to deny institution of an *inter partes* review. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."). As with other non-dispositive factors considered for institution under § 314(a), the Board weighs factors as part of a "balanced assessment of all relevant circumstances in the case, including the merits." Patent Trial and Appeal Board Consolidated Trial Practice Guide 58 & n.2 (Nov. 2019), https://www.uspto.gov/TrialPracticeGuideConsolidated ("CTPG") (discussing follow-on petitions and parallel proceedings).

In *General Plastic Co., Ltd. v. Canon Kabushiki Kaisha*, the Board articulated a non-exhaustive list of factors to be considered in determining whether to exercise discretion under § 314(a) to deny a petition that challenges the same patent as a previous petition. IPR2016-01357 (PTAB Sept. 6, 2017) (precedential), slip op. 9–10. The *General Plastic* factors follow:

> 1. whether the same petitioner previously filed a petition directed to the same claims of the same patent;
>
> 2. whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it;
>
> 3. whether at the time of filing of the second petition the petitioner already received the patent owner's preliminary response to the first petition or received the Board's decision on whether to institute review in the first petition;
>
> 4. the length of time that elapsed between the time the petitioner learned of the prior art asserted in the second petition and the filing of the second petition;
>
> 5. whether the petitioner provides adequate explanation for the time elapsed between the filings of multiple petitions directed to the same claims of the same patent;
>
> 6. the finite resources of the Board; and
>
> 7. the requirement under 35 U.S.C. § 316(a)(11) to issue a final determination not later than 1 year after the date on which the Director notices institution of review.

Id.

A. Factor 1

Patent Owner contends the first factor weighs in favor of denial

> because, in June 2021, Facebook and Twitter coordinated their invalidity contention work and served overlapping invalidity contentions in the parallel district court cases, *PARC v. Facebook*, . . . No. 2:20-cv-10753 (C.D. Cal., Nov. 25, 2020) & *PARC v. Twitter*, . . . No. 2:20-cv-10754 (C.D. Cal., Nov. 25, 2020). Exs. 2003–2004 (invalidity contention cover pleadings). Thus, Petitioner's is the second petition filed against similar claims of the '475 Patent that originates from a coordinated invalidity effort between Facebook and Twitter.

Prelim. Resp. 30.

As Patent Owner recognizes, the first factor examines whether the same petitioner or a related petitioner previously filed a petition directed to the same claims of the same patent. *See General Plastic* at 16; *Valve Corp.*

v. Electronic Scripting Products, Inc., IPR2019-00062, Paper 11 (PTAB Apr. 2, 2019) (precedential) ("*Valve I*"); *Valve Corp. v. Electronic Scripting Products, Inc.*, IPR2019-00064, Paper 10 (PTAB May 1, 2019) (precedential) ("*Valve II*")).

Valve II held that "when different petitioners challenge the same patent, [the Board] consider[s] any relationship between those petitioners while weighing the *General Plastic* factors." *Valve II* at 10. In weighing this factor against second petitioner Valve in *Valve II*, the Board noted that "Valve and HTC were co-defendants in the District Court litigation and were accused of infringing the '935 patent based on the same product, namely HTC's VIVE devices that incorporate technology licensed from Valve." *See id.* at 10–11. Also, Valve joined the previous petition as a party and the later-filed Valve petitions challenged the same claims as the previous petition. *See id.* at 11 (noting a "complete overlap in the challenged claims").

As Petitioner argues, similar considerations do not exist here. *See* Pet. 76–77. Petitioner did not previously file a petition challenging the '475 patent. Further, Petitioner did not seek to join the earlier Facebook petition. *See generally* IPR2021-01264. As Petitioner explains, "there is no such 'relationship' here," as Petitioner "was sued separately from, and is not a codefendant with, Facebook (the prior petitioner), nor is there any overlap between Twitter's accused products and Facebook's." Pet. 76. There is no evidence of record that Facebook and Petitioner coordinated the preparation of their respective petitions. And the evidence does not support that Petitioner picked and chose from Facebook's petition because that

petition does not cite Chen, Pitkow, Chi, or Cooke (which the Petition relies upon here). *See* IPR2021-01264, Paper 2 (Facebook petition).

Therefore, this factor favors not exercising discretionary denial.

B. Factors 2, 4, and 5

Patent Owner contends that

> Petitioner has not shown that it did not know of the alleged prior art in its Petition as of Facebook's filing of the first petition on July 16, 2021. Nor has Petitioner said that it only recently learned of its asserted prior art. In fact, Twitter admits that its attorneys involved in preparing Twitter's Petition knew of Facebook's prior art and challenged claims. Petition at 77 n.26.

Prelim Resp. 31.

As Patent Owner recognizes, some Board decisions—including the *General Plastic* decision—indicate that a petitioner bears some responsibility to provide a reasonable explanation about when it learned of the references in its petition. *See General Plastic*, Paper 9 at 10 ("Petitioner provided no meaningful explanation for the delay in filing the follow-on petitions."). *General Plastic* also reasons that "[c]onsidering other factors (i.e., factors 2, 4, and 5) allows us to assess and weigh whether a petitioner should have or could have raised the new challenges earlier." *General Plastic* at 18.

However, here, Factor 2 of *General Plastic*, "whether at the time of filing of the first petition the petitioner knew of the prior art asserted in the second petition or should have known of it," is of little probative value—Petitioner did not file a first petition and there is no significant relationship between Petitioner here and prior petitioner Facebook. Hence, the issue of whether Petitioner could have raised the prior art at issue here in the first petition is not relevant. *General Plastic* at 19–20.

Factors 4 and 5 involve the elapse of time between when Petitioner learned of Chen, Pitkow, Chi, and Cooke and when it filed the Petition, and whether Petitioner adequately explains the elapse of time between the filings of Facebook's petition and the instant Petition, respectively.

Again, the Facebook petition does not rely upon Chen, Pitkow, Chi, and Cooke (which Petitioner relies upon here). *See* IPR2021-01264, Paper 2. Therefore, as to factor 5, even assuming Petitioner knew of Facebook's prior art and challenged claims, that is not an indication that Petitioner had knowledge of this Petition's prior art combinations at the earlier time.

Further to factor 4, Petitioner states that it

> filed its Petition roughly two months after serving [Patent Owner] with its preliminary invalidity contentions on June 15, 2021 (and roughly 3 months after receiving [Patent Owner's] May 11, 2021 preliminary infringement contentions, which, for the first time, identified certain dependent claims [Patent Owner] was asserting in the case), and before receiving [Patent Owner's] final infringement contentions and narrowed claim elections (including August 3, 2021 preliminary elections)—deadlines mooted due to the stay. EX1022 (Dkt. 57, Scheduling Order), 3-4[.]

Pet. 89–90. Assuming Petitioner became aware of Chen, Pitkow, Chi, and Cooke around the time of filing of its initial invalidity contentions, the time gap between that awareness and the filing the instant Petition does not reflect an unreasonable delay in view of time required for the preparation of the Petition.

Accordingly, these factors favor not exercising discretionary denial.

C. Factor 3

As Petitioner notes, the filing date of this Petition precedes both Patent Owner's preliminary response to Facebook's petition and the institution decision in IPR2021-01264. Pet. 78. Patent Owner does not address the third factor. Prelim. Resp. 30–31.

Accordingly, this factor favors not exercising discretionary denial.

D. Factors 6 and 7

Patent Owner contends as follows:

> The Board should not waste its time and resources here considering both Facebook's use of Heer and Petitioner used of Heer and the related Chen, Pitkow, and Chi references. [Petitioner] fails, again, to offer any persuasive explanation as to why its Petition warrants the Board's limited time and resources. . . . Petitioner provides no explanation for its failure to file its Petition closer in time to Facebook, or why it did not merely join Facebook's Petition. Nor does Petitioner explain why it was unable to coordinate with Facebook here just as it has in the District Court. Joining or better coordinating with Facebook would have made sense given the overlapping art each relies on.

Prelim Resp. 31–32.

Petitioner contends factors 6 and 7 are "neutral" because

> [t]hese factors consider the Board's finite resources and requirement to issue a final determination within a year of institution. . . . Facebook's and [Petitioner's] IPR will create efficiencies for the Board in terms of understanding the background in the art, '475 itself, and two secondary references, Chi and Heer. . . . Further, there is no risk the Board could not issue a final determination within a year.

Pet. 80–81.

Given the differences in this Petition compared to the Facebook petition, joinder is not possible under current precedent. *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1336 (Fed. Cir. 2020) ("We

therefore conclude that the unambiguous meaning of § 315(c) is that it allows the Director discretion to join a person *as a party* to an already-instituted IPR but does not permit the joined party, by virtue of the joinder decision alone, to bring new issues from a second proceeding into the existing proceeding."). Also, any similarities in the prior art teachings as applied to the challenged claims will provide some basis for efficiency in timely resolving the issues of this review.

Accordingly, these factors are neutral or favor not exercising discretionary denial.

E. Conclusion on § 314(a) Discretionary Denial

Under a holistic analysis and under the particular circumstances of this case, the interests of efficiency and integrity of the patent system tilt toward not exercising discretionary denial of the Petition under § 314(a).[13]

V. OTHER CONSIDERATIONS

Patent Owner argues that Petitioner "employs numerous claim charts to illustrate its argument for Claims 10–18 and 5–6 with little to no explanation, instead relying on citations to the alleged prior art, extensive references to its expert declaration, and lengthy footnotes." Prelim. Resp. 33–34. Patent Owner provides an example with respect to limitation 10.2, which recites "a multi-modal information determining circuit that determines multi-modal information for content portions associated with the user path." *Id*. at 34. Patent Owner reproduces the following example of

[13] Given our decision, no need exists to weigh other factors raised by Petitioner. *See* Pet. 89 (factors 8 and 9).

Petitioner's "chart for 10.2": "Chen discloses a circuit (cl. 10.1) that determines (e.g., 'extract[s]' from pages) multi-modal information (see cl.10.[pre]) for content portions (cl.10.1) associated with a user's page accesses (e.g., 'pages accessed,' 'documents accessed')." *Id.* (quoting Pet. 37). Patent Owner advances other similar arguments. *Id*. at 34–35.

Contrary to these arguments, the Petition provides a sufficient showing as to all the claim limitations including, as Patent Owner acknowledges, by providing "citations to the alleged prior art." *See* Prelim. Resp. 34. In addition, the Petition supplements the claim charts with explanations outside of the charts.

VI. MOTION FOR ADDITIONAL WORDS

Petitioner moves to waive the 14,000-word limit of 37 C.F.R. §42.24(a)(1)(i) for the Petition. Paper 4 ("Motion" or "Mot."). According to Petitioner, Patent Owner "has asserted claims 1–3, 5, 7, 10–12, and 15–16 against [Petitioner] in litigation," but "[Petitioner] does not yet know whether [Patent Owner] may attempt to assert claims 4, 6, 8–9, 13–14, and 17–19 in the future." Mot. 1.

Petitioner contends that it "has limited all its asserted grounds to the same base reference, Chen, in order to present its arguments as efficiently as possible, and has endeavored not to repeat theories or explanations when claim limitations overlap." Mot. 1. Petitioner asserts that rather than seeking further briefing to address discretionary denial issues, it included "a substantive discussion of discretionary denial under both 35 U.S.C. §314 and §325, which consumed about 2950 words." *Id.* at 2. Therefore, Petitioner "respectfully requests an additional 1,635 words—an increase of only 11.7% [relative to the 14,000 words normally allotted by regulation in a petition]—

in order to address claims 4, 6, 8–9, 13–14, and 17–18 (the 'additional claims') of [the] '475 [patent] while still appropriately addressing discretionary denial issues" in the Petition without additional briefing. *Id.*

Petitioner notes that no other petitioner has challenged the additional claims and further notes that it filed another "abbreviated version of the Petition" under the 14,000 word limit that addresses claims 1–3, 5, 7, 10–12, and 15–16. *See id.* at 1; Paper 2 ("abbreviated . . . Petition," which also addresses the discretionary issues).

According to Petitioner,

> denial of this Motion would impose substantial injustice on Petitioner by effectively denying substantive review of such additional claims in this IPR, depriving Petitioner of the 'quick and cost-effective alternative[] to litigation' intended by Congress (e.g., H.R. Rep. No. 112-98, pt.1, 40 (2011), 2011 U.S.C.C.A.N. 67, 69), and requiring Petitioner to litigate (and in various respects repeat) in district court the invalidity arguments it is already presenting here for the asserted claims.

Mot. 4.

Patent Owner states that it "responds to the Petition found at Paper Number 1, which is nearly 1,500 words over the normally-permitted word count." Prelim. Resp. 1 n.1. Patent Owner "reserves the right to seek additional words in its Response if the Board grants institution." *Id.*

Under these circumstances, Petitioner's request for additional words to address the additional claims is reasonable. The record shows that the number of words (2950) allotted to two discretionary denial issues (*see supra* §§ III, IV) in the Petition exceeds (by almost a factor of two (i.e., 1.8)) the additional sought-after number of words (1,635) added in the Petition to cover the additional claims not yet asserted by Patent Owner in litigation. Therefore, had Petitioner omitted the discretionary denial arguments and

instead asked for additional briefing in reply to the arguments raised in the Preliminary Response, the first petition easily would have been under the word limit.

Accordingly, we grant the Motion. The Board commends the parties for cooperating and addressing the discretionary and substantive issues without seeking additional briefing, which aids the Board in resolving issues in a timely manner.

VII. CONCLUSION

For the foregoing reasons, we determine that the information presented establishes a reasonable likelihood that Petitioner would prevail in showing at least one of claims 1–18 of the '475 patent is unpatentable under 35 U.S.C. § 103.

VIII. ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314(a), an *inter partes* review is hereby instituted as to claims 1–18 of the '475 patent on the grounds set forth in the Petition;

FURTHER ORDERED that the Motion To Waive Word Count is *granted*; and

FURTHER ORDERED that 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; the trial will commence on the entry date of this decision.

PETITIONER:
J. Steven Baughman
Megan Raymond
PAUL, WEISS, RIFKIND, WHARTON & GARRISON LLP
sbaughman@paulweiss.com
mraymond@paulweiss.com

PATENT OWNER:
Ashley N. Moore
James E. Quigley
Alexandra Easley
MCKOOL SMITH, P.C.
amoore@mckoolsmith.com
jquigley@mckoolsmith.com
aeasley@mckoolsmith.com