

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC
Petitioner,

v.

VEVEO, INC.,
Patent Owner.

Case IPR2017-00944
Patent 7,895,218 B2

Before LYNNE E. PETTIGREW, MINN CHUNG, and
KEVIN C. TROCK, *Administrative Patent Judges*.

TROCK, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and
37 C.F.R. § 42.73

I. INTRODUCTION

Comcast Cable Communications, LLC (“Petitioner”) filed a request for *inter partes* review of claims 1–36 (the “challenged claims”) of U.S. Patent No. 7,895,218 B2 (Ex. 1001, “the ’218 patent”). Paper 2 (“Pet.”). Veveo, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). We instituted an *inter partes* review of all of the challenged claims, but not all the grounds, set forth in the Petition. Paper 9 (“Dec. Inst.”). Subsequent to the Supreme Court’s decision in *SAS Institute, Inc. v. Iancu*, 138 S. Ct. 1348 (2018), we modified our Institution Decision to include all grounds argued in the Petition. Paper 23.

Patent Owner filed a Response (Paper 16, “PO Resp.”) and Petitioner filed a Reply (Paper 21, “Pet. Reply”). Subsequent to our modification of the Institution Decision, Patent Owner filed a Supplemental Response (Paper 30, “Supp. Resp.”) and Petitioner filed a Supplemental Reply (Paper 33, “Supp. Reply”) to address the added grounds. A hearing was held on July 13, 2018, a transcript of which has been entered into the record (Paper 35, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). We base our decision on the preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Having reviewed the arguments of the parties and the supporting evidence, we find that Petitioner has demonstrated by a preponderance of the evidence that each of the challenged claims is unpatentable.

A. *The '218 Patent*

The '218 patent discloses a method and system for “identifying a television content item desired by a television viewer from a set of television content items.” Ex. 1001, Abstract. The claims recite methods and systems to incrementally identify and select television content items associated with descriptive terms that characterize the items. *Id.* at claims 1 and 19. The '218 patent explains that the system receives from the television viewer a reduced text search entry directed at identifying the desired television content item. *Id.* at 2:43–59. The search entry is a prefix substring of one or more words relating to the desired television content item. *Id.* The system dynamically identifies a group of one or more television content items from the set of television content items having one or more descriptors matching the search entry as the television viewer enters each character of the search entry. *Id.* The system then transmits the names of the identified group of one or more television content items to be displayed on a device operated by the television viewer. *Id.*

The '218 patent also discloses that the search entry can allow multiple names to be entered, preferably without regard to the order. *Id.* at 4:19–26. The results list for the search is preferably dynamically culled by the text input of each character. *Id.* The results are preferably ordered based on a relevance function that can be a domain specific combination of, e.g., popularity, temporal relevance, location relevance, personal preferences, and the number of words in the input search string. *Id.*

B. Challenged Claims

Petitioner challenges claims 1–36 of the '218 patent. Claims 1 and 19 are independent and are substantially similar, the principal difference being that claim 1 recites a method and claim 19 recites a system. Claim 1 is illustrative.

1. A method of incrementally identifying and selecting a television content item to be presented from a relatively large set of selectable television content items, the television content items being associated with descriptive terms that characterize the selectable television content items, the method comprising:

using an ordering criteria to rank and associate subsets of television content items with corresponding strings of one or more descriptor prefix strings, each descriptor prefix string being a variable length string containing a subset of the characters of the descriptive terms that characterize the selectable television content items, wherein each descriptor prefix string contains less than all characters of the descriptive terms;

subsequent to ranking and associating the television content items with strings of one or more descriptor prefix strings, receiving incremental text input entered by a user, the incremental text input including a first descriptor prefix of a word entered by the user for incrementally identifying at least one desired television content item of the relatively large set of television content items, wherein the first descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item;

selecting and presenting on a display device the subset of television content items that is associated with the first descriptor prefix string;

subsequent to receiving the first descriptor prefix, receiving subsequent incremental text input entered by the user, the subsequent incremental text input including a second descriptor prefix of a word entered by the user for incrementally identifying the at least one desired television content item and

forming a string of prefixes including the first descriptor prefix and the second descriptor prefix in the order received, wherein the second descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item; and

selecting and presenting on the display device the subset of television content items that is associated with the string of prefixes received.

Ex. 1001, 9:58–10:32.

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent. 37 C.F.R. § 42.100(b). Consistent with that standard, we assign claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention, in the context of the entire patent disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). In our Decision Instituting *Inter Partes* Review, we did not construe expressly any claim terms. *See* Dec. Inst. 6–7.

In the Petition, Petitioner proposes constructions for the claim terms “television content item,” “the first and second prefixes are in an ordered format/unordered format,” “word separator,” “stop words,” and “phonetically equivalent words.” Pet. 12–17.

In the Patent Owner Response, Patent Owner proposes a construction for the phrase “selecting and presenting on the display device the subset of

television content items that is associated with the string of prefixes received,” recited in claims 1 and 19, as well as constructions for the terms “relatively large set” and “subsets.” See PO Resp. 17–27. Patent Owner does not provide alternative constructions to those provided by Petitioner, but does contest Petitioner’s construction of “television content items.” *Id.* at 27–28.

In Reply, Petitioner contests Patent Owner’s proposed constructions and requests that the Board not construe expressly any of Patent Owner’s proposed terms. We discuss the contested terms below.

1. *“selecting and presenting on the display device the subset of television content items that is associated with the string of prefixes received”*

Patent Owner argues that this phrase, recited in independent claims 1 and 19, should be construed to require “selecting and presenting the subset that was previously ‘associated with’ the singular, combined string of descriptor prefix strings matching the string of prefixes received.” *Id.* at 17. Patent Owner argues that “[t]his is required by the plain language of the claims and is consistent with the ’218 patent’s description of pre-processing television content items.” *Id.* at 17–18. Patent Owner argues that the “two recitations of ‘selecting and presenting’ subsets of television content items recite that the subsets must be ‘**associated with**’ the ‘first descriptor prefix string,’ and the ‘string of prefixes received,’ respectively.” *Id.* at 19 (citing Ex. 2009 ¶ 61). Patent Owner argues “the first ‘selected and presented’ subset is associated with a string of one descriptor prefix; the second subset is associated with the singular combined string of two descriptor prefixes.” *Id.* Patent Owner argues that this construction is consistent with the Specification, where Figure 6 purportedly shows precomputed “records”

used for searching that include prefix strings with more than one word. *Id.* at 19–20.

Petitioner contests Patent Owner’s proposed construction, arguing that this construction is narrower than and inconsistent with the broadest reasonable construction. Pet. Reply 2. Petitioner argues that Patent Owner’s proposed construction would exclude a method to rank and associate subsets of television content items with corresponding strings of only one descriptor prefix string. *Id.* at 9. Petitioner also argues that Patent Owner’s proposed construction corresponds to an example that the ’218 patent characterizes as “not practical” (*id.* at 5), excludes the only embodiment illustrated in Figure 6 (*id.* at 6), and is not supported by the plain meaning of the claims, (*id.* at 9–10).

Petitioner also asserts that “[i]n parallel litigation, Patent Owner explicitly argued *for* the exact broader construction that it is now advocating *against*.” *Id.* at 2–3. Petitioner argues that in parallel litigation Patent Owner advocated for a claim construction broad enough to cover both single word and multi-word prefixes. *Id.* at 3 (citing Ex. 1017 ¶ 9). Petitioner argues that a person of ordinary skill in the art would have understood that “the subset of television content items that is associated with the string of prefixes received” involves selecting and presenting television content items that have been pre-associated with a first descriptor prefix string of a first word, and that also have been preassociated with a second descriptor prefix string of a second word. *Id.* at 11 (citing Ex. 1014 ¶¶ 12, 19–20).

Patent Owner’s proposed construction of “*selecting and presenting . . . the subset of television content items that is associated with the string of prefixes received*” as “selecting and presenting the subset that

was previously ‘associated with’ the singular, combined string of descriptor prefix strings matching the string of prefixes received” is flawed in several respects. First, claims 1 and 19 do not recite a “singular, combined string of descriptor prefix strings.” Rather, the claim recites selecting and presenting “*the subset of television content items that is associated with the string of prefixes received.*” The “*string of prefixes received*” refers to “*receiving incremental text input entered by a user . . . including a first descriptor prefix of a word entered by the user,*” and “*subsequent to receiving a first descriptor prefix . . . receiving subsequent incremental text input entered by the user . . . including a second descriptor prefix of a word entered by a user.*” Patent Owner’s proposed construction ignores the plain meaning of the claim and attempts to read a limitation into the claim that is not recited therein.

Second, pursuant to the claim language, an ordering criteria is used to rank and associate subsets of television content items with corresponding strings of *one or more* descriptor prefix strings, not a “singular, *combined* string of descriptor prefix strings.” A reasonable construction of this claim would allow for associating subsets of television content items with corresponding strings of *one* descriptor prefix string, as well as *more than one* descriptor prefix string. Patent Owner’s proposed construction of a “singular, *combined* string of descriptor prefix strings” would preclude a method wherein subsets of television content items each are associated with one descriptor prefix string.

For example, Figure 6 of the ’218 patent, shown below, illustrates a data structure to enable dynamic search leveraging off pre-indexed substring

prefixes in accordance with one or more embodiments of the invention. Ex. 1001, 3:25–29.

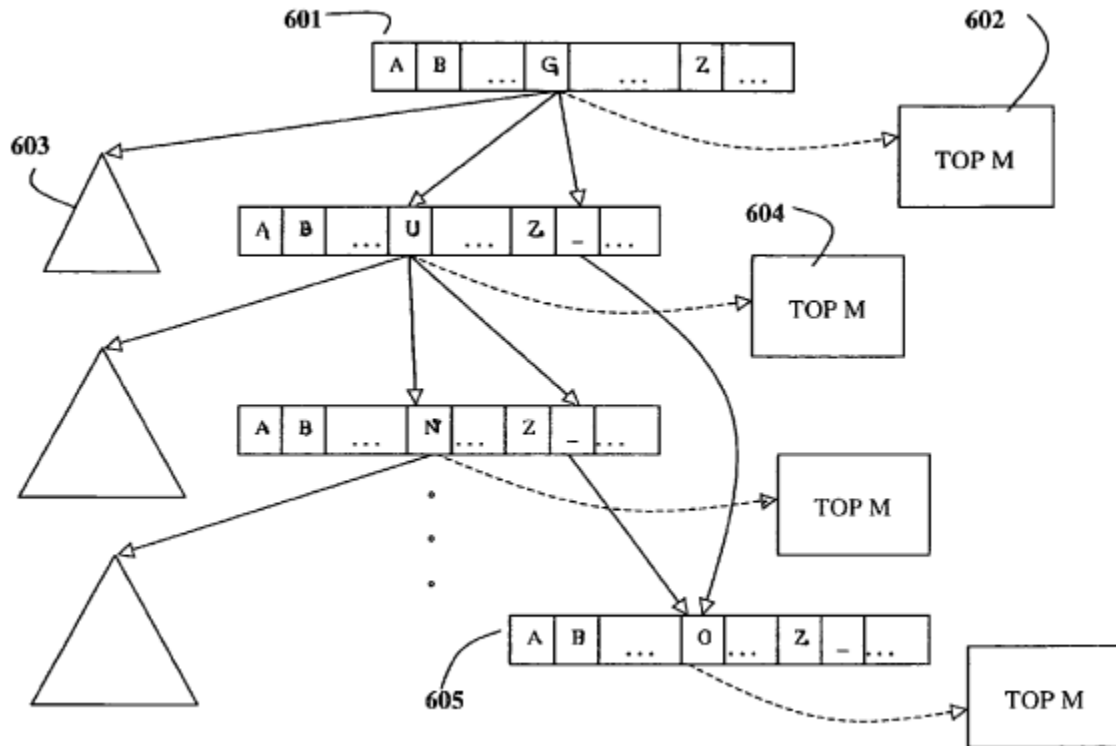


Figure 6, shown above, illustrates an index where prefixes are only one word, where $C=1$ (C being the number of words for which prefixes are pre-computed). *Id.* at 7:2–3, 27–31, 40–43. Dr. Larry Kerschberg, Patent Owner’s declarant, testified that claim 1 was broad enough to include the case where $C=1$, and should be construed to allow single-word prefix strings as well as multiple-word prefix strings. Ex. 1019, 75:18–22, 111:19–25, 125:9–20. Dr. Edward Fox, Petitioner’s declarant, agrees. Ex. 1014 ¶¶ 8–10. Patent Owner’s counsel, however, contended at oral argument that single word indexing, as shown in Figure 6, was not an example of claim 1. Tr. 35:6–14. Under Patent Owner’s proposed construction, single word indexing, as illustrated Figure 6, would not fall within the claim.

Figure 6 also illustrates a data structure to “enable dynamic search.” Ex. 1001, 3:25–28. At oral argument, however, Patent Owner’s counsel contended that its construction of claim 1 did not encompass dynamic searching either. Tr. 34:18–35:4. However, “[a] construction which excludes the preferred embodiment is ‘rarely, if ever correct.’” *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 747, 755 (Fed. Cir. 2016). Although the ’218 patent does not describe Figure 6 as illustrating a “preferred embodiment,” it does describe the example illustrated in Figure 6 (where K=2 and C=1) as a “practical implementation” of the invention. Ex. 1001, 7:24–31, 40–44. Patent Owner’s proposed construction, therefore, is suspect because it excludes Figure 6’s illustrated single word indexing and dynamic searching, and is inconsistent with its own declarant’s testimony.

Finally, Petitioner asserts that in parallel litigation Patent Owner explained the last step of claim 1 as the “system selects and displays program information associated with both the first and second prefixes.” Pet. Reply 2. (citing Ex. 1017 ¶¶ 7–8 (emphasis added)). Petitioner asserts that Patent Owner further stated “[t]he user then inputs a second, a prefix of a second word to search. And the system then goes through a second selection step to display program information associated with both the first and second prefixes.” *Id.* at 2–3 (quoting Ex. 1018 ¶¶ 21–22 (emphasis added by Petitioner)). Petitioner asserts that Patent Owner also stated “once that step of inputting and returning the results for the prefix for the second word, the claim is completed at this point.” *Id.* at 3 (citing Ex. 1018 ¶ 24 (emphasis added by Petitioner)).

Patent Owner’s interpretation of claim 1 in parallel litigation is broader than the one it proposes here. The Federal Circuit, however, has cautioned that “[t]he broadest reasonable interpretation of a claim term may be the same as or broader than the construction of a term under the *Phillips* standard,” but it “cannot be narrower.” *In re CSB-Sys. Int’l, Inc.*, 832 F.3d 1335, 1341 (Fed. Cir. 2016) (quoting *Facebook, Inc. v. PragmaTV, LLC*, 582 F. App’x 864, 869 (Fed. Cir. 2014)). Patent Owner’s explanation of the operation of claim 1 provided in parallel litigation is broader than Patent Owner’s proposed construction here and is more consistent with our reading of claim 1.

For all the reasons stated above, we decline to adopt Patent Owner’s proposed construction of “*selecting and presenting . . . the subset of television content items that is associated with the string of prefixes received.*” Rather, we interpret this phrase to include selecting and presenting television content items that have been associated with a first descriptor prefix string of a first word and also have been associated with a second descriptor prefix string of a second word.

2. “*relatively large set*”

Independent claims 1 and 19 each recite the term “*relatively large set.*” Patent Owner proposes that the term “relatively large set” should be construed to mean a “set that is large enough to organize the set into smaller subsets based on a categorization scheme.” PO Resp. 20–22. As support, Patent Owner points to descriptions in the Specification such as “***a semi-structured space of any size,***” “***a large subspace obtained by a focused web crawl,***” and “***where the search space size is large, it can be possible to organize the space into smaller sub-spaces.***” *Id.* at 20–21 (citing Ex. 1001,

6:4–14). Patent Owner also points to some examples in the Specification of “relatively large search spaces.” *Id.* at 22. These include “a listing of 1,500 items [and] examples of 150,000 items.” *Id.*

Petitioner argues that the term “relatively large” does not appear in the Specification and that nothing in the Specification specifically guides interpreting a “relatively large set.” Pet. Reply 12. Petitioner also argues that the Specification does not suggest any connection between “a categorization scheme” and a “relatively large set.” *Id.*

We note that the district court, in parallel litigation, found in its claim construction order that the examples noted by Patent Owner did “not give meaning to the phrase ‘relatively large set of selectable television content items.’ They are provided as examples in a discussion about the invention’s treatment of ‘entity and term space complexity’ in designing search mechanisms.” Ex. 1012, 27. The district court also found that “there is no reference point provided [in the Specification] that would allow a POSITA to determine the scope of the term ‘relatively large set of selectable television content items,’” finding claims 1 and 19 to be invalid as indefinite. *Id.* at 28–29. Moreover, Drs. Kerschberg and Fox do not agree on what a “relatively large set” would be. See Ex. 2009 ¶¶ 63–66; Ex. 1014 ¶¶ 21–26.

For these reasons, we decline to adopt Patent Owner’s proposed construction of “relatively large set.” We interpret this term according to its ordinary and customary meaning as it would be understood by a person of ordinary skill in the art in the context of the entire patent disclosure.

3. “*subsets*”

Patent Owner proposes that the term “subsets” should be construed to mean “sets that are less than all the elements of a given set.” PO Resp. 23–27. Patent Owner argues that during prosecution of the ’218 patent, the applicant disclaimed the scope of the term “subsets” to fewer than each of the content items. *Id.* at 23. Patent Owner argues this occurred when the applicant amended the claims to recite “using an ordering criteria to rank and associate ***subsets*** of television content items,” and stated that “[t]his feature ***avoids*** ... performing a search ***on each of the items in the collection*** of television content items.” *Id.* at 23–24 (citing Ex. 1002, 12). Patent Owner argues that “[t]he ’218 patent uses the term ‘subset’ consistently with its plain meaning to refer to ‘a set that is less than all the elements of a given set.’” *Id.* at 24 (citing Ex. 2009 ¶ 69).

Patent Owner also cites to extrinsic evidence to support its construction (*id.* at 25–26 (citing Ex. 2009 ¶ 71; Ex. 2012, 3)), and argues that Petitioner’s declarant used the term “subset” in his deposition in a manner consistent with this meaning. *Id.* at 25.

Petitioner argues that the alleged disavowal is ambiguous and amenable to multiple reasonable interpretations. Pet. Reply 15. For example, Petitioner argues that the prosecution history reasonably could be interpreted as explaining the benefits of “directly match[ing] the prefix input entered by the user to a subset of content items” when performed instead of “transforming the text input into query instructions and performing a search.” *Id.* (quoting Ex. 1002, 19).

Petitioner also argues that the ’218 patent does not support Patent Owner’s proposed construction limiting “subsets” to only proper subsets,

noting that the Specification refers to “a preferably partial subset,” “a subset,” and “a proper subset.” *Id.* at 15. Petitioner further argues that Patent Owner’s construction also makes certain claim phrases unnecessary. For example, claim 1 recites “each descriptor prefix string . . . containing a subset of the characters of the descriptive terms,” which when interpreted using Patent Owner’s construction, renders superfluous claim 1’s further recitation, “wherein each descriptor prefix string contains less than all characters of the descriptive terms.” *Id.* at 16.

The ’218 patent does not provide a unique definition for the term “subset.” Rather, the ’218 patent appears to use three closely related terms, “subset” (Ex. 1001, 6:47–51), “partial subset” (*id.* at 4:10–11), and “proper subset” (*id.* at 7:6–8). Patent Owner’s proffered construction appears to align with the term “proper subset,” i.e. less than all of the elements of a set.

Patent Owner’s proffered construction, however, is inconsistent with testimony provided by Drs. Kerschberg and Fox. Dr. Kerschberg testified that a “subset” could be “all of the television content items.” Ex. 1019, 163:8–13. Dr. Fox also testified that a “subset” may include a full set. Ex. 2010, 33:2–22.

Prosecution history disclaimer is a “demanding standard.” *Avid Tech., Inc. v. Harmonic, Inc.*, 812 F.3d 1040, 1045 (Fed. Cir. 2016). “[F]or prosecution disclaimer to attach, our precedent requires that the alleged disavowing actions or statements made during prosecution be both clear and unmistakable.” *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325–26 (Fed. Cir. 2003). “Where the alleged disavowal is ambiguous, or even ‘amenable to multiple reasonable interpretations,’ we have declined to find prosecution disclaimer.” *Avid Tech.*, 812 F.3d at 1045.

We are not persuaded that the alleged “disavowal” is unambiguous, but instead it appears to be open to other reasonable interpretations. During prosecution, for example, Patent Owner did not argue that “subset” was limited to a “proper subset,” but instead argued the benefits of “matching,” wherein the claimed “method directly matches the prefix input entered by the user to a subset of content items” to “avoid the computational complexity and burden of transforming the text input into query instructions.” Ex. 1002, 19.

For these reasons, we decline to adopt Patent Owner’s proffered construction, and instead interpret the term “subset” according to its ordinary and customary meaning as it would be understood by a person of ordinary skill in the art in the context of the entire patent disclosure as “all, or less than all, of the items of a set.”

4. *“television content item”*

With respect to the term “television content item,” Petitioner proposes the construction “an identifiable audiovisual data object, or an identifiable data object about an audiovisual data object.” Pet. 12–13. To support this proposed construction, Petitioner relies on the Specification, which states “television content items can include a wide variety of video/audio content including, but not limited to, television programs, movies, music videos, video-on-demand, or any other identifiable content that can be selected by a television viewer.” *Id.* at 13 (citing Ex. 1001, 3:46–50; Ex. 1009 ¶ 49).

Patent Owner disagrees with Petitioner’s proposed construction, but does not propose an alternative construction. *See* PO Resp. 27–28. Patent Owner asserts that construction of this term “is not material to Gross’s and Robarts’s failure to disclose any challenged claim.” *Id.* at 27. Patent Owner

also argues “Petitioner’s proposed construction conflates ‘descriptive terms’ with ‘television content items.’” *Id.* (citing Ex. 2009 ¶ 73). Patent Owner argues “[t]he claims separately recite that television content items are ‘associated with descriptive terms,’” and points to testimony by Petitioner’s declarant to support its argument. *Id.* at 27–28.

In Reply, Petitioner points to Patent Owner’s assertion that construction of the term “television content item” is not material to any challenged claim under Gross and Robarts and therefore urges us not to construe expressly this term.

Here, the Specification explains that “television content items can include a wide variety of video/audio content including, but not limited to, television programs, movies, music videos, video-on-demand, or any other identifiable content that can be selected by a television viewer.” Ex. 1001, 3:46–50. Thus, one of ordinary skill in the art reading the Specification would understand that a “television content item” would have identifiable video and/or audio content that can be selected by a television viewer, including, but not limited to, examples such as television programs, movies, music videos, and video-on-demand.

Because the Specification provides sufficient explanation as to what a “television content item” is so that one of ordinary skill in the art would readily understand the term, and the parties apparently assert the term is not material to whether any challenged claim is unpatentable on grounds based on Gross and Robarts, we decline to construe expressly this term and instead interpret the term according to its ordinary and customary meaning as it would be understood by a person of ordinary skill in the art in the context of the entire patent disclosure.

B. Level of Ordinary Skill in the Art

Petitioner's Declarant, Dr. Fox, opines that a person of ordinary skill in the art would have had at least a bachelor's degree in computer science and at least two years of experience in the field of search-query processing, designing, constructing, and/or testing systems that utilize data and/or information search techniques. Ex. 1009 ¶ 46.

Patent Owner's Declarant, Dr. Kerschberg, expresses the opinion that a person of ordinary skill in the art would have had two years of experience in the field of search-query processing with particular experience analyzing, constructing and testing systems that utilize data and/or information search techniques. Ex. 2009 ¶ 17.

The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. Factors that may be considered in determining the level of ordinary skill in the art include the: (A) type of problems encountered in the art; (B) prior art solutions to those problems; (C) rapidity with which innovations are made; (D) sophistication of the technology; and (E) educational level of active workers in the field. In a given case, every factor may not be present, and one or more factors may predominate. *See In re GPAC*, 57 F.3d 1573, 1579 (Fed. Cir. 1995); *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Envtl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983).

Declarants agree that a person of ordinary skill would have had two years of experience in search-query processing, constructing, and testing systems that utilize data and/or information search techniques. Dr. Fox opines that a person of ordinary skill would have had at least a bachelor's

degree in computer science, whereas Dr. Kerschberg expresses no opinion as to the field or level of education of one of ordinary skill. *See* Ex. 1009 ¶ 46; Ex. 2009 ¶ 17.

We find that Dr. Fox’s opinion that one of ordinary skill in the 2004–2005 time-period would have had a bachelor’s degree in computer science to be reasonable given the relative complexity of the technology described in the ’218 patent and the prior art of record.

Accordingly, we find that a person of ordinary skill in the art in the field of the ’218 patent would have had a bachelor’s degree in computer science or comparable education and at least two years of experience in the field of search-query processing, constructing, and/or testing systems that utilize data and/or information search techniques.

C. Prior Art References

Petitioner relies upon the following references:

(1) U.S. Patent Application Publication No. US 2004/0133564 A1, published July 8, 2004 (“Gross”) (Ex. 1003);

(2) U.S. Patent No. 8,051,450 B2, issued Nov. 1, 2011 (“Robarts”) (Ex. 1004);

(3) U.S. Patent Application Publication No. 2003/0093794 A1, published May 15, 2003 (“Thomas”) (Ex. 1005);

(4) U.S. Patent Application Publication No. 2004/0194141 A1, published Sep. 30, 2004 (“Sanders”) (Ex. 1006);

(5) U.S. Patent No. 6,026,398, issued Feb. 15, 2000 (“Brown”) (Ex. 1007);

(6) U.S. Patent Application Publication No. 2005/0256846 A1, published Nov. 17, 2005 (“Zigmond”) (Ex. 1008).

D. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Ground 1: Claims 1–7, 9–13, 17–25, 27–31, 35, and 36 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gross and Robarts. Pet. 11.

Ground 2: Claims 8 and 26 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gross, Robarts, and Thomas. *Id.*

Ground 3: Claims 14 and 32 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gross, Robarts, and Sanders. *Id.*

Ground 4: Claims 15, 16, 33, and 34 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Gross, Robarts, and Brown. *Id.*

Ground 5: Claims 1, 2, 4–7, 9, 11–13, 17–20, 22–25, 27, 29–31, 35, and 36 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Robarts and Zigmond. *Id.*

Ground 6: Claims 3, 10, 21, and 28 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Robarts, Zigmond, and Gross. *Id.*

Ground 7: Claims 8 and 26 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Robarts, Zigmond, and Thomas. *Id.*

Ground 8: Claims 14 and 32 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Robarts, Zigmond, and Sanders. *Id.*

Ground 9: Claims 15, 16, 33 and 34 are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Robarts, Zigmond, and Brown. *Id.*

E. Overview of Prior Art References

1. Gross (Ex. 1003)

Gross pertains to incrementally searching a variety of search targets, such as digital files, emails, email attachments, Web pages, databases, and the like. Ex. 1003 ¶ 10. Gross teaches generating indexes that contain content information and attribute information corresponding to the search targets. *Id.* ¶ 11. The index includes a data structure that associates character strings found with a file or document containing the search targets. *Id.* ¶¶ 40, 46. The search is performed incrementally so that the results (i.e., the identification of the corresponding search targets) are provided or narrowed substantially immediately after each character in a search string is entered by a user. *Id.* ¶ 10.

Figure 2B illustrates an example search lookup operation in Gross. At state 202B one or more search characters or strings are received. Ex. 1003 ¶ 48. At state 204B the character or character strings are located in a word file, which is part of the fixed index. *Id.* ¶¶ 46, 48. At state 206B the pointer or pointers for the character or character strings in an occur-offsets file are located. *Id.* ¶ 48. At state 208B document occurrence information is read from the occur file using the located pointers. *Id.* The occur-offsets file and occur file are also part of the fixed index. *Id.* ¶ 46. At state 210B the search results are presented to the user. *Id.* ¶ 48. The search results are displayed in the list pane or area, and the view area or pane displays the contents of the first item or a selected item from the list area. *Id.* Figure 2B is set out below.

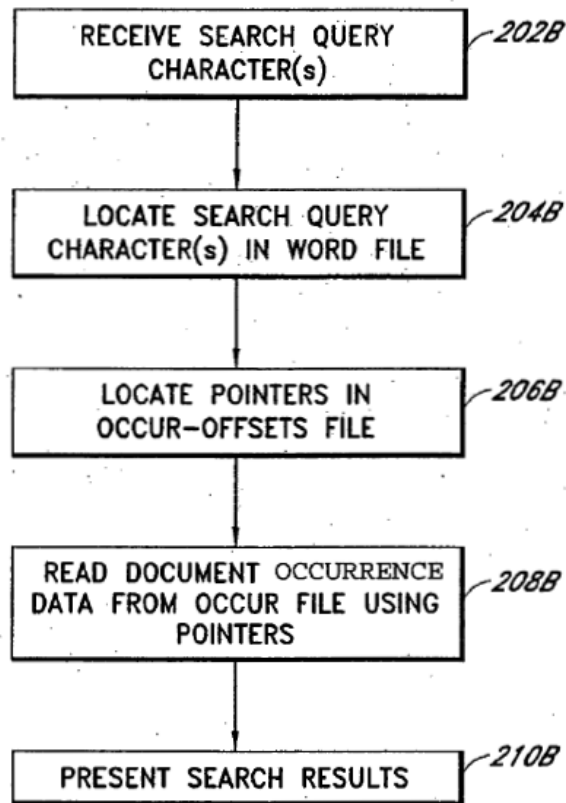


Figure 2B, shown above, illustrates an example search lookup operation in Gross.

Gross also describes the use of prefixes such that

[i]n one optional embodiment, the index stores “prefix” entries, which further enhances the speed of incremental filtering or searching. For example, in addition to bare or complete words, such as “dog,” common prefixes, such as “d” or “do”, are stored as well. The “d” prefix entry contains information indicating which documents or files contain a word or character string starting with “d”. By preparing this information during indexing, the response for the first letter or two of a filtering or search operation is greatly enhanced as compared to a standard inverted index, which would have to locate thousands of matches at the time of receiving the user query, thereby resulting in slow filtering operations.

Id. ¶ 51.

Gross also describes a “sort” file provided for each attribute column. The sort files are cached sort orders for the documents or files in the fixed index, when sorted by that column. *Id.* ¶ 52. The user can optionally specify that a particular attribute is to be used as a default sort key when presenting a document list. *Id.* Thus, for example, the user can specify that as a default sort for email, emails should be automatically sorted and ordered according to date/time received. *Id.* In this example, the precomputed default sort list, also referred to as a master sort list, would then be sorted according to date/time, and the master sort list would be almost instantly presented with the pre-computed sort list when the user clicks on the email tab. *Id.*

2. *Robarts (Ex. 1004)*

Robarts provides an interactive television network with an electronic program guide (EPG) that facilitates both simple and complex searches. Ex. 1004, Abstract, 1:13–16. Robarts discloses a system for presenting a list of choices of television programming based upon entry of characters from a remote control handset. *Id.* at 4:37–55. For example, Robarts describes receiving entry of characters via a keypad, where the keys represent both numbers and letters, and incrementally displaying results based on the entered characters. *Id.* at 4:46–55, 19:11–20.

Robarts also describes associating program and network names with identification numbers via mapping prior to a search. *Id.* at 18:66–19:9. Robarts also shows examples of query results provided in an ordered list. *Id.* at 18:1–56.

3. *Zigmond (Ex. 1008)*

Zigmond provides an interactive client-server data search system that accepts search inputs from a user. Ex. 1008, Abstract. In Zigmond, a program is pre-mapped into different prefix bins based on the prefixes of words in the program title. Titles beginning with the letter A are mapped to the A bin, titles beginning with the letter B are mapped to the B bin, and so on. *Id.* at Fig. 2, ¶¶ 39–44. Zigmond also provides bins for character combination prefixes. For example, titles beginning with the letters AB are mapped to the AB bin, titles beginning with the letters AC are mapped to the AC bin, and so on. *Id.* at Fig. 3, ¶¶ 45–48. The pre-mapped list of titles in a bin are then provided in response to a user's entry that includes the prefix associated with that bin. *Id.* ¶ 48.

4. *Thomas (Ex. 1005)*

Thomas is directed to a computer system that analyzes content from various sources, including television, to identify programs of interest to a user based on a user profile. Ex. 1005, Abstract. The computer system monitors TV news programs and breaks down the TV news programs into individual stories. *Id.* ¶ 33. For each story, the computer system can produce metadata that describes various categories of information, which may include, among others, a classification of the type of story, identification of the people, companies, or products in the story, a description of the event in the story, and the location of the event in the story. *Id.* ¶¶ 34–40. A client system then ranks the stories based on these categories of information, including the location of the event in the story. *Id.* ¶ 43. After a user request, the stories are presented to the user based on the ranking. *Id.*

5. *Sanders (Ex. 1006)*

Sanders provides an interactive television network with an electronic program guide (EPG) that organizes and presents program viewing information to a viewer and allows for creation of queries to facilitate both simple and complex searches of the EPG. Ex. 1006, Abstract. Sanders provides a system for presenting progressively changing search results to a viewer as characters are entered, i.e., a new and/or modified search is initiated as each character is added to the search string. *Id.* ¶ 25. Sanders describes ways of ordering the display of results including by relevance, alphabetically, chronologically, and others. *Id.* ¶¶ 71, 74.

6. *Brown (Ex. 1007)*

Brown provides a data processing system and method including enhanced database access, indexing, and searching techniques. Ex. 1007, Abstract, 3:27–29. Brown discloses an index system for a dataset where words and alternative spellings, misspellings, and phonetically similar words are maintained. *Id.* at 3:27–65.

F. Ground 1 - Obviousness Over Gross and Robarts

Petitioner contends that claims 1–7, 9–13, 17–25, 27–31, 35, and 36 of the '218 patent would have been obvious over the combined teachings of Gross and Robarts. Pet. 31–39. Claims 1 and 19 are independent and are substantially similar. Claim 1 recites a method and claim 19 recites a system.

1. *Independent Claims 1 and 19*

a. *Preamble*

With respect to the preamble “incrementally identifying and selecting a television content item to be presented from a relatively large set of

selectable television content items, the television content items being associated with descriptive terms that characterize the selectable television content items,” Petitioner asserts that Gross teaches incrementally identifying content items associated with descriptive terms within a specific database. Pet. 31 (citing Ex. 1003, Abstract, ¶¶ 10, 32, 36, 60). To the extent Gross does not explicitly teach “television content items,” Petitioner argues that it would have been obvious to combine Gross’ indexing and search system with Robarts’ television content items in a database to provide search results that included television content items. *Id.* at 32 (citing Ex. 1004, Abstract, 1:13–19, 4:37–55).

In response, Patent Owner argues that Petitioner presented no argument or evidence that Gross or Robarts teaches a “relatively large set of selectable television content items,” as recited in independent claims 1 and 19. PO Resp. 32–37. Patent Owner also argues that Dr. Fox provided evasive and contradictory testimony, and did not articulate a coherent opinion about the term. *Id.* at 33–36.

In reply, Petitioner argues that Gross teaches a relatively large set of content items where it explains that “Gross provides for searching many search targets, including files, emails, Web pages, specific databases, interactive television networks, and the like.” Pet. Reply 22 (citing Pet. 26, 31). Petitioner also refers to Gross’ paragraph 51, which explains that Gross’ index can locate at least “thousands of matches.” *Id.* (citing Ex. 1014 ¶¶ 29–30).

As we discussed, *supra*, under claim construction, although the term “relatively large set” is recited in the claims of the ’218 patent, the term does not appear, and is not defined, in the patent’s written description. Moreover,

as noted above, the district court in parallel litigation found that “there is no reference point provided [in the Specification] that would allow a POSITA to determine the scope of the term ‘relatively large set of selectable television content items,’” and found claims 1 and 19 to be invalid as indefinite. Ex. 1012, 28–29.

Patent Owner argues, however, that the ’218 patent provides some examples of the size a “relatively large set” where it refers to a listing of 1,500 items and a search space of 150,000 items. PO Resp. 22 (citing Ex. 1001, 9:11–31; Ex. 2009 ¶ 65). Dr. Fox testifies that a person of ordinary skill in the art would have understood that Gross’ description of using search targets such as files, emails, email attachments, Web pages, and specific databases may be in the thousands. Ex. 1014 ¶ 30 (citing Ex. 1003 ¶¶ 10, 51).

Gross also discusses using an index that stores prefix entries to enhance greatly filtering or search operations compared to a standard inverted index, which may have to locate thousands of matches at the time of receiving a user query. Ex. 1003 ¶ 51. Dr. Kerschberg testifies, and Dr. Fox agrees, that a person of ordinary skill in the art would have understood what constitutes a relatively large set “in the context of any problem they’re trying to solve.” Ex. 1019, 218:6–10; Ex. 1014 ¶ 30. Based on this evidence, we find that one of ordinary skill in the art would have understood Gross’ discussion of search operations that would locate thousands of matches using conventional techniques to be a “relatively large set” as that term would be understood in the context of the ’218 patent. Further, to the extent Gross may not teach or suggest “selectable television

content items,” Robarts does so in the context of an EPG database. See Ex. 1004, Abstract, 1:16–19, 2:18-23, 58–63.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “incrementally identifying and selecting a television content item to be presented from a relatively large set of selectable television content items, the television content items being associated with descriptive terms that characterize the selectable television content items,” recited by claim 1 and similarly recited by claim 19.

b. *“using an ordering criteria to rank and associate subsets of television content items with corresponding strings of one or more descriptor prefix strings”*

With respect to the recited “using an ordering criteria to rank and associate subsets of television content items with corresponding strings of one or more descriptor prefix strings,” Petitioner asserts Gross teaches a system for searching emails and files, i.e., “content items,” which includes an index engine that indexes the targets and stores the indexes in a data repository or database. Pet. 32 (citing Ex. 1003 ¶ 38). Petitioner asserts the index engine creates an index that includes a data structure that associates files and documents with strings of one or more descriptor prefix strings (i.e., “associate subsets of television content items with corresponding strings of one or more descriptor prefix strings”). *Id.* Petitioner points to Gross’ explanation that “in addition to bare or complete words, such as ‘dog,’ common prefixes, such as ‘d’ or ‘do’, are stored as well. The ‘d’ prefix entry contains information indicating which documents or files contain a word or character string starting with ‘d’.” *Id.* (citing Ex. 1003 ¶ 51).

Petitioner asserts that Gross teaches a user can specify that a particular attribute (e.g., date/time received for emails) may be used as a default sort key when presenting a list and that “a pre-computed sort list for a plurality of documents or files, or for every document or file in a selected search tab or interface is stored in high speed local memory RAM, sorted by the current sort order.” Pet. 33 (citing Ex. 1003 ¶¶ 52–53). Citing the Declaration of Dr. Fox, Petitioner argues a user using the default sort key setting, for date/time for example, before a search corresponds to the recited “using an ordering criteria to rank.” *Id.* (citing Ex. 1009 ¶¶ 84–85).

Patent Owner argues that Petitioner has failed to show that Gross teaches or suggests using an ordering criteria to rank subsets of television content items because Petitioner cites exclusively to Gross’ teaching of sorting, not ranking. PO Resp. 39–41. Patent Owner also argues that Gross teaches ranking items only after receiving incremental text input from a user, not before as the claim purportedly requires. *Id.* at 41–42. Patent Owner further argues that Gross does not teach or suggest ranking a plurality of subsets. *Id.* at 42–44. Patent Owner argues that Gross only teaches sorting all items in an index, not merely a subset. *Id.* at 42.

The ’218 patent’s written description does not use or define the terms “sort” or “rank.” The term “rank” appears in the claims, but is not defined there. Contrary to Patent Owner’s argument, Gross is not required to use the specific word “rank” in order to teach or suggest the subject matter claimed by the ’218 patent. See *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1369 (Fed. Cir. 2009) (“the earlier application need not describe the claimed subject matter in precisely the same terms as found in the claims at issue”).

Here, Dr. Kerschberg testified that sorting is a type of ranking because “ranking would incorporate sorting as a special case.” Ex. 1019, 189:7–13. Moreover, Dr. Kerschberg agreed that the claim language could cover both ranking the preindex terms and ranking the search results. *Id.* at 136:9–16.

With respect to Patent Owner’s argument that Gross teaches ranking items only after receiving incremental text input from a user (PO Resp. 41–42), Gross states explicitly that the sort order “is pre-computed *before* receiving a user sort instruction.” Ex. 1003 ¶ 52 (emphasis added). Gross teaches pre-computing a sort list for content based on a particular attribute (e.g., date/time received for emails). *Id.* ¶¶ 52–53. Contrary to Patent Owner’s argument, just because a pre-computed sort can also be used in an incremental search process does not mean that the pre-computed sort list was not computed before receiving incremental text input from the user. *See* Ex. 1014 ¶¶ 34, 36.

With respect to Patent Owner’s argument that Gross teaches only sorting all items in an index, and not a subset (PO Resp. 42), sorting all items in a list includes sorting a subset of items in that list. *See* Ex. 1014 ¶¶ 39–40. As noted above under claim construction, Dr. Kerschberg testified that a “subset” could be “all of the television content items.” Ex. 1019, 163:8–13. Dr. Fox testified that a “subset” may include a full set. Ex. 2010, 33:2–22.

Moreover, according to Dr. Fox, Gross teaches “using an ordering criteria to rank and associate subsets of television content items.” Ex. 1014 ¶¶ 40–42. For example, Gross describes “a pre-computed sort list for a plurality of documents or files, **or** for every document or file in a selected search tab or interface is stored in high speed local memory RAM, sorted by

the current sort order.” Ex. 1003 ¶ 53 (emphasis added). Dr. Fox testifies that a person of ordinary skill in the art would have understood Gross’ description of “a plurality of documents or files”—described as an alternative to “every document or file”—as showing “less than all” documents (*i.e.*, a subset). Ex. 1014 ¶ 42.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “using an ordering criteria to rank and associate subsets of television content items with corresponding strings of one or more descriptor prefix strings,” recited by claim 1 and similarly recited by claim 19.

c. *“each descriptor prefix string being a variable length string containing a subset of the characters of the descriptive terms that characterize the selectable television content items, wherein each descriptor prefix string contains less than all characters of the descriptive terms”*

With respect to the recited “each descriptor prefix string being a variable length string containing a subset of the characters of the descriptive terms that characterize the selectable television content items, wherein each descriptor prefix string contains less than all characters of the descriptive terms,” Petitioner asserts Gross teaches that the index stores “prefix” entries such as the characters “d” or “do” for the complete word “dog.” Pet. 33 (citing Ex. 1003 ¶¶ 51, 150).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross teaches an index that stores “prefix” entries such as the characters “d” or “do” for the complete word “dog.” See Ex. 1003 ¶¶ 51, 150. We are persuaded by Petitioner’s evidence and arguments that one of ordinary skill in the art would have understood

that creating an index using the initial characters of terms as described by Gross teaches use of variable length strings of those terms.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “each descriptor prefix string being a variable length string containing a subset of the characters of the descriptive terms that characterize the selectable television content items, wherein each descriptor prefix string contains less than all characters of the descriptive terms,” recited by claim 1 and similarly recited by claim 19.

- d. *“subsequent to ranking and associating the television content items with strings of one or more descriptor prefix strings, receiving incremental text input entered by a user”*

With respect to the recited “subsequent to ranking and associating the television content items with strings of one or more descriptor prefix strings, receiving incremental text input entered by a user,” Petitioner relies on Gross’ Figure 4B, set out below.

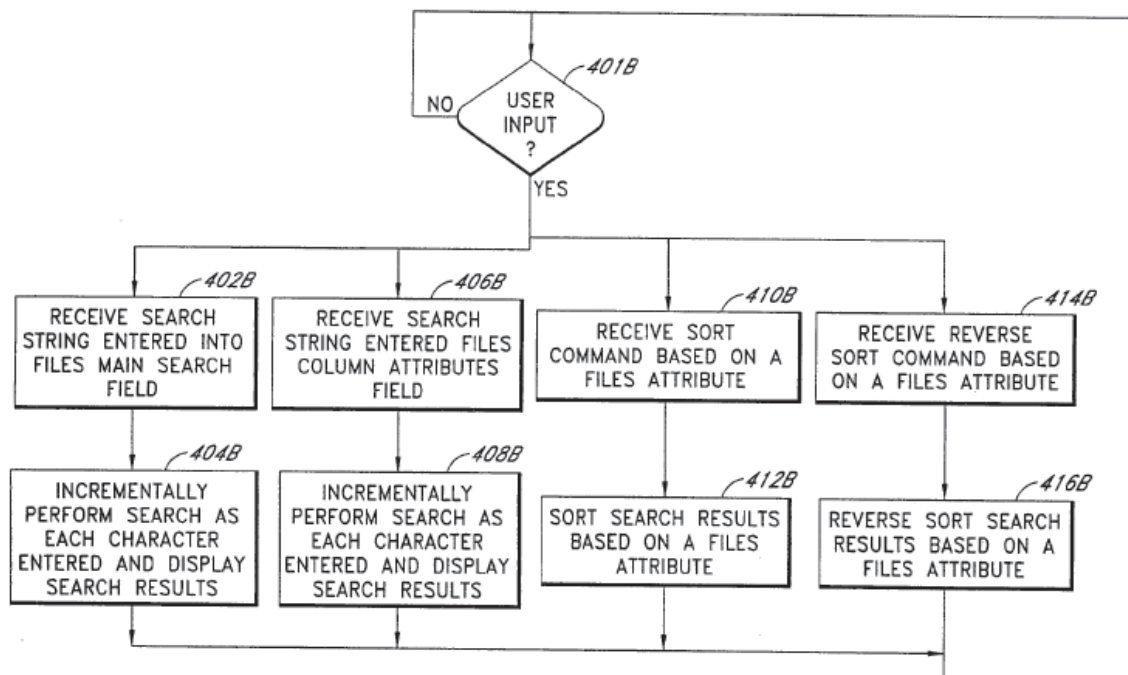


Figure 4B, shown above, illustrates Gross' incremental process for searching files. Petitioner explains that the YES line from step 401B above indicates receiving entry of user text at 402B or 404B for a search as each character is entered. Pet. 34. Dr. Fox's testimony supports this explanation. Ex. 1009 ¶ 87.

Patent Owner does not contest specifically Petitioner's evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Figure 4B of Gross illustrates incremental searching performed after receipt of a search string. We are persuaded by Petitioner's evidence and arguments that one of ordinary skill in the art would have understood that Gross teaches receiving incremental text input from a user and conducting a search with those received character strings subsequent to indexing the content items.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “subsequent to ranking and associating the television content items with strings of one or more descriptor prefix strings, receiving incremental text input entered by a user,” recited by claim 1 and similarly recited by claim 19.

- e. *“the incremental text input including a first descriptor prefix . . . wherein the first descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item”*

With respect to the recited “the incremental text input including a first descriptor prefix of a word entered by the user for incrementally identifying at least one desired television content item of the relatively large set of television content items, wherein the first descriptor prefix contains less than

all characters of the word the user is using to incrementally identify the at least one desired television content item,” Petitioner relies on Gross’ teaching that the index stores prefix entries, for example, the characters “d” and “do” are stored as prefixes for the complete word “dog.” Pet. 35 (citing Ex. 1003 ¶¶ 51, 150).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross teaches an index that stores “prefix” entries such as the characters “d” or “do” for the complete word “dog.” See Ex. 1003 ¶¶ 51, 150. Based on this evidence, we are persuaded that one of ordinary skill in the art would have understood that creating a search index using the initial characters of search terms teaches use of variable length strings for those search terms.

We find, therefore, that the combination of Gross and Robarts teaches or suggests

the incremental text input including a first descriptor prefix of a word entered by the user for incrementally identifying at least one desired television content item of the relatively large set of television content items, wherein the first descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item,

recited by claim 1 and similarly recited by claim 19.

- f. “selecting and presenting on a display device the subset of television content items that is associated with the first descriptor prefix string”

With respect to the recited “selecting and presenting on a display device the subset of television content items that is associated with the first descriptor prefix string,” Petitioner explains that in Figure 4B (shown above), at step 404B, after the user has entered a single character into the main search field, a search is incrementally performed, and the list pane or area 308B, shown in Figure 3B below, displays search results. Pet. 35 (citing Ex. 1003 ¶ 118).

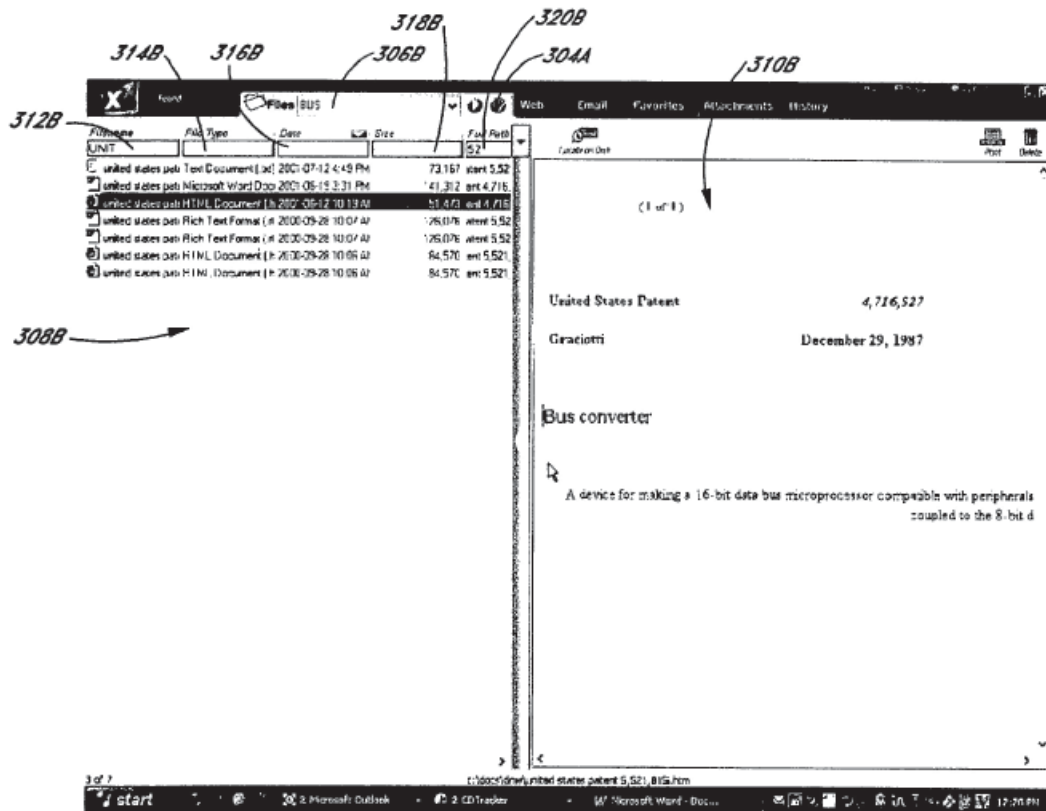


Figure 3B of Gross, shown above, illustrates a user interface displaying search results.

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Figure 3B of Gross teaches that after a user has entered a single character into the main search field, a search is incrementally performed, and the list pane or area 308B, shown in Figure 3B, displays the search results. We are persuaded by Petitioner's evidence and arguments that one of ordinary skill in the art would have understood that such a display of incremental search results teaches a presentation of content items associated with the search string.

We find, therefore, that the combination of Gross and Robarts teaches or suggests "selecting and presenting on a display device the subset of television content items that is associated with the first descriptor prefix string," recited by claim 1 and similarly recited by claim 19.

g. "subsequent to receiving the first descriptor prefix, receiving subsequent incremental text input entered by the user"

With respect to the recited "subsequent to receiving the first descriptor prefix, receiving subsequent incremental text input entered by the user," Petitioner relies on Gross' incremental search process shown in Figure 4B (above), explaining that as each additional character is entered, step 404B, the system incrementally performs a search, i.e., the system receives subsequent incremental text. Pet. 36–37.

Patent Owner does not contest specifically Petitioner's evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross' Figure 4B shows an incremental search procedure where the system receives subsequent incremental text. We are persuaded by Petitioner's evidence and arguments that a person of ordinary skill in the art would have understood Gross' Figure 4B as teaching the receipt of incremental text input by a user.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “subsequent to receiving the first descriptor prefix, receiving subsequent incremental text input entered by the user,” recited by claim 1 and similarly recited by claim 19.

h. “the subsequent incremental text input including a second descriptor prefix . . . wherein the second descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item”

With respect to the recited

the subsequent incremental text input including a second descriptor prefix of a word entered by the user for incrementally identifying the at least one desired television content item and forming a string of prefixes including the first descriptor prefix and the second descriptor prefix in the order received, wherein the second descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item,

Petitioner asserts that Gross teaches an index that stores “prefix” entries, that multiple search words or strings may be the inputs searched, and that such inputs can be treated as prefixes. Pet. 38. For example, Petitioner asserts Gross teaches that for an entry of “Jo D,” documents with the strings “Jon” and “David,” “Joe” and “Daniel,” and “John” and “Doe” are identified. *Id.* A subsequent text entry to add “h” to “Jo” to have the search now be “Joh D” will narrow the search results to only documents having at least one string of “Joh” and at least one string of “D.” *Id.* (citing Ex. 1003 ¶ 150).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross teaches an index that stores “prefix” entries, such that multiple search words or strings may be the inputs searched. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross’ explanation of the operation of this search process teaches the use of first and second search strings in the order received to identify content items. *See* Ex. 1009 ¶ 91.

We find, therefore, that the combination of Gross and Robarts teaches or suggests

the subsequent incremental text input including a second descriptor prefix of a word entered by the user for incrementally identifying the at least one desired television content item and forming a string of prefixes including the first descriptor prefix and the second descriptor prefix in the order received, wherein the second descriptor prefix contains less than all characters of the word the user is using to incrementally identify the at least one desired television content item,

recited by claim 1 and similarly recited by claim 19.

- i. *“selecting and presenting on the display device the subset of television content items that is associated with the string of prefixes received”*

With respect to the recited “selecting and presenting on the display device the subset of television content items that is associated with the string of prefixes received,” Petitioner relies on Gross’ Figure 4B (above). Petitioner asserts that at step 404B after the user has entered the two prefixes to form a string of prefixes (e.g., “Jo D”) into the main search field, a search is incrementally performed, and the list pane or area 308B displays search results for the multiprefix string. *Id.* (citing Ex. 1003 ¶¶ 118, 150).

Petitioner asserts that strings of descriptor prefix string(s), “Jo” and “D,” are indexed to documents and files with whole words that include the prefixes. *Id.* at 38–39. Petitioner explains that the results in Gross are the content items associated with the string of prefixes received, i.e., “Jo D.” *Id.* at 39 (citing Ex. 1003 ¶ 51).

Patent Owner argues that Petitioner “mischaracterizes the claim as allowing the selected and presented items to be ***separately*** (1) associated with ‘the first descriptor prefix string’ ***and*** (2) associated with ‘the second descriptor prefix string.’” PO Resp. 28. Patent Owner argues that “the claims recite that the selected and presented television content items must be ‘associated with’ a ***single*** ‘string’ that contains both the first descriptor prefix and second descriptor prefix.” *Id.* at 28–29 (citing Ex. 2009 ¶ 75). We disagree.

We considered Patent Owner’s proposed construction, *supra*, and declined to adopt it. Patent Owner’s argument rests on an unreasonably narrow claim construction of “associated with” as limiting “the string of prefixes received” to a pre-indexed, unitary “string of prefixes received.” This would require that the selected and presented television content items be associated with a single, combined prefix string comprising both the first descriptor prefix *and* the second descriptor prefix.

Patent Owner’s proposed construction would preclude the method illustrated in Figure 6 of the ’218 patent, a “practical implementation” of an embodiment of the invention, where prefixes are only one word.

Dr. Kerschberg, however, testifies that claim 1 is broad enough to allow single-word prefix strings as well as multiple-word prefix strings. Ex. 1019, 75:18–22, 111:19–25, 125:9–20. Dr. Fox agrees. Ex. 1014 ¶¶ 8–10. Patent

Owner's construction is so narrow that it would not encompass dynamic searching (Tr. 34:18–35:4) even though Figure 6 illustrates a data structure to “enable dynamic search” (Ex. 1001, 3:25–26).

We find, therefore, that the combination of Gross and Robarts teaches or suggests “selecting and presenting on the display device the subset of television content items that is associated with the string of prefixes received,” recited by claim 1 and similarly recited by claim 19.

j. Conclusion on limitations of claims 1 and 19

For all the reasons stated above, we are persuaded that Petitioner has shown by a preponderance of the evidence that the combination of Gross and Robarts teaches all the limitations of independent claims 1 and 19.

2. Dependent Claims 2–7, 9–13, 17, 18, 20–25, 27–31, 35, and 36.

Petitioner contends that dependent claims 2–7, 9–13, 17, 18, 20–25, 27–31, 35, and 36 would have been obvious over the combined teachings of Gross and Robarts. Pet. 40–47. As noted above, Claims 1 and 19 are independent and are substantially similar to each other, except that claim 1 recites a method and claim 19 recites a system. Claims 2–7, 9–13, 17, and 18 depend from claim 1, either directly or indirectly. Claims 20–25, 27–31, 35, and 36 depend from claim 19, either directly or indirectly. The two sets of dependent claims are substantially similar to each other and are discussed in relevant pairs where possible.

a. Dependent Claims 2, 20

Dependent claim 2 recites “[t]he method of claim 1, wherein the first and second prefixes are in an ordered format.” Dependent claim 20 recites a similar limitation. Petitioner asserts that Gross discloses that multiple words can be entered, and results are based on the exact word sequence in the

search entry field, which, Petitioner argues, is the recited “ordered format.” Pet. 40. Petitioner points to Gross’ statement that “[t]he user can specify that an exact word match is to be performed.” *Id.* (citing Ex. 1003 ¶ 172). Petitioner also asserts that Gross provides an option where a punctuation symbol follows a character string, and is followed by a space character (e.g., “mark-”) so the string is searched as an exact match. *Id.* Petitioner argues that a character string including two prefixes and a space will only match results with the first word preceding the second word (e.g., “mark-down”), i.e., “in an ordered format.” *Id.* Dr. Fox testifies that “such a search may include multiple words in the search field (i.e., first and second prefixes).” Ex. 1009 ¶ 93.

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross describes a procedure for performing an exact word or character string match. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross is using such prefixes in an ordered format.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the first and second prefixes are in an ordered format,” recited by claim 2, and similarly recited by claim 20.

b. Dependent Claims 3, 21

Dependent claim 3 recites “[t]he method of claim 1, wherein the first and second prefixes are in an unordered format.” Dependent claim 21 recites a similar limitation. Petitioner asserts that Gross discloses that a user

can use Boolean operations for entry of multiple prefixes in a search, corresponding to the claimed “unordered format.” Pet. 40. Petitioner argues that Gross teaches a search entry with Boolean operation(s), e.g., “Jo AND D”, incrementally searches and provides results of files that include “Jo” and “D” in the file name whether D or Jo comes first in the file name, i.e., an unordered format. *Id.* (citing Ex. 1003 ¶¶ 56, 68; Ex. 1009 ¶ 94).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross describes a procedure for using Boolean operations that provides incremental searching regardless of the order of the search strings. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that by using Boolean operations in this manner Gross is using search terms in an “unordered format.”

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the first and second prefixes are in an unordered format,” recited by claim 3, and similarly recited by claim 21.

c. Dependent Claims 4, 22

Dependent claim 4 recites “[t]he method of claim 1, wherein the first and second prefixes are separated by a word separator.” Dependent claim 22 recites a similar limitation. Petitioner asserts that Gross discloses entry of “Joh Do,” which is at least part of two prefixes, “Joh” and “Do,” separated by a space, i.e., a word separator. Pet. 41 (citing Ex. 1003 ¶ 150; Ex. 1009 ¶ 95).

Patent Owner does not contest specifically Petitioner's evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross describes a procedure where multiple prefixes may be used for searching. Gross states “[t]he user can enter multiple separate search words or strings and each one will optionally be treated as a prefix.” In the example provided by Gross, “Joh Do” uses a space to separate the two prefixes “Joh” and “Do.” Ex. 1003 ¶ 150. We are persuaded by Petitioner's evidence and arguments that a person of ordinary skill in the art would have understood that Gross is using a space as a “word separator.”

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the first and second prefixes are separated by a word separator,” recited by claim 4, and similarly recited by claim 22.

d. Dependent Claims 5, 23

Claim 5 recites “[t]he method of claim 1, wherein the selected and presented subset of television content item [sic] comprises two or more television content items, and wherein the selected and presented subset of television content items are ordered for presentation in accordance with a given relevance function.” Dependent claim 23 recites a similar limitation.

Petitioner asserts that Gross teaches that search results can include more than one matching result, and that results can be ordered so only relevant results are displayed. Pet. 41 (Ex. 1003 ¶ 81; Ex. 1009 ¶ 96). Gross states, “[f]or example, if the user requests that only search results that are likely to be relevant are to be displayed, then only the higher ranked search results are displayed to the user.” Ex. 1003 ¶ 81. Petitioner argues Gross

also teaches pre-sorting results based on date/time sent for emails. *Id.* (citing Ex. 1003 ¶¶ 52, 110–115).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this claim. See PO Resp. 28–45.

We agree with Petitioner that Gross teaches ordering results based on relevance. Gross states explicitly, “if the user requests that only search results that are likely to be relevant are to be displayed then only the higher ranked search results are displayed to the user.” Ex. 1003 ¶ 81. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross is teaching selecting and presenting items, such as emails, ordered for presentation in accordance with a particular relevance function, such as the date/time the emails were sent.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the first and second prefixes are in an unordered format,” recited by claim 5, and similarly recited by claim 23.

e. Dependent Claims 6, 24

Dependent claim 6 recites “[t]he method of claim 5, wherein the given relevance function comprises popularity of the television content items.” Dependent claim 24 recites a similar limitation. Petitioner asserts that to the extent Gross may not explicitly disclose ordering search results based on popularity of the content items, Robarts discloses an EPG providing a list of programs, where the system has “actively weeded out less popular channels.” Pet. 42 (citing Ex. 1004, 13:1–2). Petitioner argues filtering out unpopular channels includes ordering because the system has to order the channels by popularity in order to remove the least-popular ones. *Id.*

Petitioner argues a person of ordinary skill in the art would have understood that excluding less popular content from a content list shows “the given relevance function comprises popularity of the television content items.” *Id.* (citing Ex. 1009 ¶¶ 97–98).

Petitioner also argues a person of ordinary skill would have been motivated to implement Robarts teaching of ordering content items based on popularity as an additional relevancy technique to the others being ordered as taught by Gross, to allow for “only search results that are likely to be relevant” to be displayed, thereby enhancing the user experience. *Id.* (citing Ex. 1003 ¶ 81; Ex. 1009 ¶ 99). Petitioner argues that with the Robarts and Gross combination, the exclusion of less-popular content items covers the claimed “ordered for presentation in accordance with a given relevance function” with the given relevance function comprising “popularity of the television content items.” *Id.*

Patent Owner argues that Robarts’ “weed[ing] out” less popular channels does not disclose that the content items are “ordered for presentation in accordance with” the “popularity of the television content items.” PO Resp. 44 (citing Ex. 2009 ¶ 93). Patent Owner argues that Petitioner conflates “ordering” and “filtering.” *Id.* at 45 (citing Ex. 2009 ¶ 94). Patent Owner argues that Robarts’ “[w]eed[ing] out less popular channels” is a filtering, not ordering, function that can be performed by comparing channel popularity against a threshold without ordering the channels. *Id.*

We disagree with Patent Owner. The test for obviousness is not whether a certain operation described in a reference can be performed in a particular way, but rather, what the reference teaches or suggests to one of

ordinary skill in the art. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Moreover, one cannot show non-obviousness by attacking references individually where a combination of references is being used. *Id.* at 426.

Here, Petitioner relies on the combination of Gross and Robarts to teach or suggest the recited limitations. Patent Owner did not contest Petitioner's evidence showing that Gross teaches selecting and presenting a "subset of television content items are ordered for presentation in accordance with a given relevance function," as recited by dependent claim 5, *supra*. Claim 6 depends from claim 5, and adds the limitation "wherein the given relevance function comprises popularity of the television content items."

To the extent Gross does not teach "popularity" as a given relevance function, Petitioner relies on Robarts' teaching of an EPG providing a list of programs, where the system has "actively weeded out less popular channels." Pet. 42 (citing Ex. 1004, 13:1–2). Petitioner argues a person of ordinary skill would have been motivated to implement Robarts' teaching of ordering content items based on popularity as an additional relevancy technique to the others taught by Gross. Patent Owner's argument that Robarts' process "which has actively weeded out less popular channels" can be performed by comparing channel popularity against a threshold without ordering the channels, ignores the combination with Gross that teaches ordering content items for presentation in accordance with a given relevance function, in this case, popularity, as taught by Robarts.

We find, therefore, that the combination of Gross and Robarts teaches or suggests "[t]he method of claim 5, wherein the given relevance function

comprises popularity of the television content items,” recited by claim 6, and similarly recited by claim 24.

f. Dependent Claims 7, 25

Dependent claim 7 recites “[t]he method of claim 5, wherein the given relevance function comprises temporal relevance of the television content items.” Dependent claim 25 recites a similar limitation.

Petitioner argues Gross teaches pre-sorting results based on date/time. Pet. 43 (citing Ex. 1003 ¶¶ 52, 81, 110–115). Petitioner argues a person of ordinary skill in the art would have understood this as teaching ordering based on “temporal relevance.” *Id.* (citing Ex. 1009 ¶ 100).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. *See* PO Resp. 28–45.

We agree with Petitioner that Gross describes pre-sorting results based on date/time. *See* Ex. 1003 ¶¶ 52, 81, 110–115. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross is teaching the use of an item’s date and time as a way of ordering the presentation of the items.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 5, wherein the given relevance function comprises temporal relevance of the television content items,” recited by claim 7, and similarly recited by claim 25.

g. Dependent Claims 9, 27

Dependent claim 9 recites “[t]he method of claim 1, wherein the incremental text input specifies at least a portion of a title of the at least one desired television content item.” Dependent claim 27 recites a similar limitation.

Petitioner asserts Gross teaches that the file search field can include the name of a file (i.e., “a title”). Pet. 43 (citing Ex. 1003 ¶ 74). Petitioner also asserts Robarts teaches an EPG database of television content items. *Id.* (citing Ex. 1004, Abstract, 1:13–19, 4:37–55). Petitioner argues a person of ordinary skill would have applied the title search capability of Gross to the EPG database of television content items of Robarts. *Id.* (citing Ex. 1009 ¶ 101).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that the combination of Gross and Robarts teaches using the name of an item, such as the title of a television program, to search and select television programs. See Ex. 1003 ¶¶ 52, 81, 110–115. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that the combination of Gross and Robarts teaches incremental text searching using the title of a television program.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the incremental text input specifies at least a portion of a title of the at least one desired television content item,” recited by claim 9, and similarly recited by claim 27.

h. Dependent Claims 10, 28

Dependent claim 10 recites “[t]he method of claim 1, wherein the method is implemented in a server system remote from the user.”

Dependent claim 28 recites a similar limitation.

Petitioner argues Gross discloses that its system may be implemented by a server-based search application. Pet. 43. Ex. 1003 ¶ 35, Figs. 5, 6.

Dr. Fox testifies that Gross teaches “the search system includes a client-based search application. Other embodiments can utilize a server-based search application.” Ex. 1009 ¶ 102 (citing Ex. 1003 ¶ 35). Dr. Fox also testifies Gross teaches that “the user can access the search functionally using a thin client” and “the user can access over a network a remote search system and engine using a browser.” *Id.* (citing Ex. 1003 ¶ 173). Dr. Fox explains that this allows a user to access the search functionally using a thin client, without needing to download to or otherwise store the search application on the user’s terminal. *Id.*

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. *See* PO Resp. 28–45.

We agree with Petitioner that Gross teaches the use of a server-based search application. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that the combination of Gross and Robarts teaches use of a server-based system remote from the user that allows incremental text searching of television programs.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the method is implemented in a server system remote from the user,” recited by claim 10, and similarly recited by claim 28.

i. Dependent Claims 11, 29

Dependent claim 11 recites “[t]he method of claim 1, wherein the method is implemented in a device included in or proximate to a television set for displaying the subset of television content items.” Dependent claim 29 recites a similar limitation.

Petitioner argues Gross teaches that its system may be implemented by a client-based search application on an “interactive television.” Pet. 49 (citing Ex. 1003 ¶ 35, 60, FIG. 1; Ex. 1009 ¶ 103). Petitioner argues a person of ordinary skill in the art would have understood that a client-based search application, where the indexing and searching operations are implemented on a user’s terminal, shows “the method is implemented in a device included in or proximate to a television set for displaying the subset of television content items.”

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross teaches a client-based search application using an interactive television. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that in such a system the indexing and searching operations are implemented on a user’s terminal, such as a personal computer or an interactive television. See Ex. 1003 ¶¶ 59–60.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the method is implemented in a device included in or proximate to a television set for displaying the subset of television content items,” recited by claim 11, and similarly recited by claim 29.

j. Dependent Claim 12

Dependent claim 12 recites “[t]he method of claim 1, further comprising determining the descriptive terms prior to receiving the incremental text input from the user.”

Petitioner asserts Gross teaches that indexing of content, including determining descriptive terms, occurs before searching. Pet. 44 (citing Ex. 1003 ¶¶ 40, 51, 82, FIG. 2A). Dr. Fox testifies that Gross' indexing can include prefixes or whole words, which are found in the analyzed content. Ex. 1009 ¶ 104.

Patent Owner does not contest specifically Petitioner's evidence with respect to this limitation. See PO Resp. 28–45.

We agree that Gross teaches pre-search indexing of content. Gross explains “the index stores ‘prefix’ entries, which further enhances the speed of incremental filtering or searching.” Ex. 1003 ¶ 51. “By preparing this information during indexing, the response for the first letter or two of a filtering or search operation is greatly enhanced.” *Id.* We are persuaded by Petitioner's evidence and arguments that a person of ordinary skill in the art would understand that Gross indexes prefix entries prior to receiving incremental searches.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, further comprising determining the descriptive terms prior to receiving the incremental text input from the user,” recited by claim 12.

k. Dependent Claims 13, 31

Dependent claim 13 recites “[t]he method of claim 12, wherein determining the descriptive terms comprises identifying a set of candidate terms comprising ordered or unordered words.” Dependent claim 31 recites a similar limitation.

Petitioner argues that Gross teaches an index that stores “prefix” entries including multiword prefixes (*i.e.*, “unordered words”). Pet. 44

(citing Ex. 1003 ¶ 51, 150). Dr. Fox testifies that such an index increases the speed of incremental searching for both ordered and unordered words. Ex. 1009 ¶ 105.

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree that Gross teaches an index storing multiword prefixes. Gross explains “the index stores ‘prefix’ entries, which further enhances the speed of incremental filtering or searching.” Ex. 1003 ¶ 51. Gross gives an example of searching using this index: “If [the] user then adds an ‘h’ to ‘Jo’ so that the search strings are now ‘Joh D’ then the list of search results will be substantially immediately narrowed to present only documents having at least one string beginning with ‘Joh’ and one string beginning with ‘D,’ such as a document containing (‘John’ and ‘Doe’).” Ex. 1003 ¶ 150. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross’ index contains prefix entries of ordered and unordered words.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 12, wherein determining the descriptive terms comprises identifying a set of candidate terms comprising ordered or unordered words,” recited by claim 13 and similarly recited by claim 31.

1. Dependent Claims 17, 35

Dependent claim 17 recites “[t]he method of claim 1, further comprising providing the user with visual cues to assist the viewer in entering generally optimal incremental text input for a search.” Dependent claim 35 recites a similar limitation.

Petitioner asserts Gross discloses that as text is inputted, the content displayed in a view area or pane may be auto-scrolled down to the first matching character or character string, which may be highlighted or otherwise emphasized (i.e., “visual cues”). Pet. 45 (citing Ex. 1003 ¶ 49; Ex. 1009 ¶ 106).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree that Gross teaches a view area or pane that may be auto-scrolled down to the first matching character or character string, which may be highlighted or otherwise emphasized. Gross explains “the content can be displayed in the view pane . . . substantially immediately upon selecting that page in the list pane, so that the user can immediately see the matching word ‘matisse’ in context.” Ex. 1003 ¶ 49. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross’ visual display assists the viewer in entering the appropriate incremental text search.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, further comprising providing the user with visual cues to assist the viewer in entering generally optimal incremental text input for a search,” recited by claim 17 and similarly recited by claim 35.

m. Dependent Claims 18, 36

Dependent claim 18 recites “[t]he method of claim 1, wherein the descriptive terms include at least one of title, cast, director, description, and keyword information relating to the television content item.” Dependent claim 36 recites a similar limitation.

Petitioner asserts Gross teaches that a content item may be indexed based on file name (i.e., “title”). Pet. 45 (citing Ex. 1003 ¶ 118; Ex. 1009 ¶ 107). Petitioner argues that if the recited “title” is interpreted to not include a file name, a title of a television content item is disclosed in Robarts. *Id.* (citing Ex. 1004, 7:2–7, 1:41–47; Ex. 1009 ¶ 181).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that Gross teaches that a content item may be indexed based on file name (i.e., “title”) and that Robarts teaches using the name or title of a television program to search and select television programs. See Ex. 1003 ¶ 118. Robarts explains, “[t]he data fields contain program titles, actor names, whether the program has closed captioning or stereo audio, the scheduled time of the program, the network name, description text, and the like.” Ex. 1004, 7:2–7. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood that Gross and Robarts teach the use of titles for incremental text searching of content items.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he method of claim 1, wherein the descriptive terms include at least one of title, cast, director, description, and keyword information relating to the television content item,” recited by claim 18, and similarly recited by claim 36.

n. Dependent Claim 30

Dependent claim 30 recites “[t]he system of claim 19, wherein the plurality of subsets of television content items is present in the system prior to receiving the incremental text input from the user.”

Petitioner argues that by combining the teachings of Gross and Robarts, the “content items” of Gross are expanded to include the “television content items” taught by Robarts. Pet. 47. Petitioner argues Gross discloses indexing before a user search. *Id.* (citing Ex. 1003, FIG. 2C, ¶¶ 51, 77; Ex. 1009 ¶ 112).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. See PO Resp. 28–45.

We agree with Petitioner that the combination of Gross and Robarts teaches indexing television programming prior to receiving incremental text input. As discussed *supra* with respect to dependent claims 9, 12, and 18, we are persuaded that a person of ordinary skill in the art would have understood that the combination of Gross and Robarts teaches having an index of content items, including television programming, prior to receiving incremental text searches.

We find, therefore, that the combination of Gross and Robarts teaches or suggests “[t]he system of claim 19, wherein the plurality of subsets of television content items is present in the system prior to receiving the incremental text input from the user,” recited by claim 30.

o. Conclusion on Limitations of Dependent Claims 2–7, 9–13, 17, 18, 20–25, 27–31, 35, and 36.

For all the reasons stated above, we are persuaded that Petitioner has shown by a preponderance of the evidence that the combination of Gross and Robarts teaches all the limitations of dependent claims 2–7, 9–13, 17, 18, 20–25, 27–31, 35, and 36.

3. Motivation to Combine

Petitioner contends a person of ordinary skill in the art would have been motivated to combine Gross and Robarts because they would have

been aware that Gross' indexing and search system could be applied to specific databases that include video-type files, and would have found it advantageous to use known EPG databases, such as those taught by Robarts, for indexing and searching for television content items. Pet. 27. Petitioner asserts a skilled artisan would have combined the indexing and search elements of Gross' system with Robarts' EPG database because of the user's need for a single consistent interface that simplifies tasks, for example, an interface that allows a user to search files, documents, and web sites, as taught by Gross to include allowing the user to search television content items in an EPG database as taught by Robarts. *Id.* at 27–28. Petitioner argues that a person of ordinary skill in the art would also expect this modification to lead to a predictable result - a prefix indexing and search system that includes searching for television content items in an EPG database. *Id.* at 28.

Patent Owner does not contest specifically Petitioner's arguments on the motivation to combine Gross and Robarts. Neither party provides any objective evidence of nonobviousness, such as commercial success, long felt need, or failure of others. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

Petitioner has articulated clearly a motivation to combine Gross and Robarts in the manner proffered by Petitioner, to modify Gross' incremental prefix search system of video files to include an EPG database as taught by Robarts. Pet. 26–28. A person of ordinary skill would have had a reason, the knowledge, and the skills to modify Gross' incremental search system to use an EPG database to search for television content. Ex. 1009 ¶ 83. Thus, Petitioner's proposed combination appears to be the predictable use of prior

art elements, i.e. incremental prefix searching, pre-association with content items, indexing video-file types, and EPG databases, according to their established functions. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Gross' incremental prefix searching is retained and is used to locate television content from an EPG database.

We are persuaded that Petitioner has shown by a preponderance of the evidence that a person of ordinary skill in the art at the time of the invention would have been motivated to combine Gross and Smith in the manner proffered by Petitioner.

CONCLUSION ON GROUND 1

Based on the complete record, we determine that Petitioner has established by a preponderance of the evidence that claims 1–7, 9–13, 17–25, 27–31, 35, and 36 of the '218 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Gross and Robarts.

G. Ground 2 - Obviousness Over Gross, Robarts, and Thomas

Petitioner contends that dependent claims 8 and 26 of the '218 patent would have been obvious over the combined teachings of Gross, Robarts, and Thomas. Pet. 47–48. Dependent claim 8 recites “[t]he method of claim 5, wherein the given relevance function comprises location relevance of the television content items.” Ex. 1001, 10:50–52. Claim 26 is similar. *Id.* at 12:22–24.

Petitioner asserts that Gross teaches search results that can be displayed to a user so that only results likely to be relevant are displayed, and that relevancy can be determined using one or more techniques. *Id.* at 47 (citing Ex. 1003 ¶ 81). Petitioner also asserts Thomas teaches identifying

the location relevance of a television news program, and ranking a list of television shows based on location. *Id.* at 48 (citing Ex. 1005 ¶¶ 42–43). Petitioner argues a person of ordinary skill in the art would have applied the location relevance technique taught by Thomas to the indexing and search system of Gross and Robarts using known relevancy techniques to yield the predictable result of “quick and efficient searching.” *Id.* (citing Ex. 1003, Abstract). Dr. Fox’s testimony supports these assertions. Ex. 1009 ¶¶ 113–115.

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. *See* PO Resp. 28–45.

We find Petitioner’s evidence and arguments persuasive. Petitioner relies on Thomas for its teaching of identifying the location relevance of television news programs and ranking a list of television shows based on location. Pet. 48. We are persuaded by Petitioner’s evidence and arguments that a person of ordinary skill in the art would have understood Thomas for what it teaches about ordering or ranking a list of television shows for presentation based on location relevance. We are also persuaded a person of ordinary skill would have been motivated to combine Thomas’ teaching of using location relevance of television programs with the indexing and search techniques taught by Gross and Robarts. This combination would provide quick and efficient searching of television programs based on location. Pet. 47–48.

We find, therefore, that the combination of Gross, Robarts, and Thomas teaches or suggests “[t]he method of claim 5, wherein the given relevance function comprises location relevance of the television content items,” recited by claim 8 and similarly recited by claim 26.

CONCLUSION ON GROUND 2

Based on the complete record, we determine that Petitioner has established by a preponderance of the evidence that claims 8 and 26 of the '218 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Gross, Robarts, and Thomas.

H. Ground 3 - Obviousness Over Gross, Robarts, and Sanders

Petitioner contends that dependent claims 14 and 32 of the '218 patent would have been obvious over the combined teachings of Gross, Robarts, and Sanders. Pet. 49–50. Claim 14 recites “[t]he method of claim 13, further comprising identifying the location of stop words in the descriptive terms.” Ex. 1001, 11:1–2. Claim 32 is similar. *Id.* at 12:39–41.

Petitioner asserts Gross teaches that symbols can be identified as stop indicators for separation of different words. Pet. 49. For example, Gross explains that the symbol “<” can be used as a stop indicator. *Id.* (citing Ex. 1003 ¶ 165). Petitioner argues that a person of ordinary skill in the art would have known that identifying stop words in descriptive terms was a common practice for search systems. *Id.* (citing Ex. 1009 ¶ 117). Petitioner also asserts Sanders teaches identifying stop words (e.g., “a,” “the”) in “descriptive terms.” *Id.* (citing Ex. 1006 ¶ 37). Petitioner argues a person of ordinary skill in the art would have been motivated to implement the search methods of Gross to search for television programs within an EPG environment, as taught by Robarts, where stop words in the descriptive terms are identified, as taught by Sanders. *Id.* Relying on the Declaration of Dr. Fox, Petitioner argues a person of ordinary skill would have known that identifying stop words, as taught by Sanders, would save time when the search for content items is performed, and further enhance the speed of

incremental filtering and searching, improving the user experience. *Id.* at 50 (citing Ex. 1009 ¶¶ 116–118).

Patent Owner does not contest specifically Petitioner’s evidence with respect to this limitation. *See* PO Resp. 28–45.

We find Petitioner’s evidence and arguments persuasive. Petitioner relies on Gross for its teaching of using stop symbols to separate words. *See* Ex. 1003 ¶ 165. Petitioner also relies on Sanders for its teaching of using identifying stop words (e.g., “a,” “the”) in “descriptive words.” *See* Ex. 1006 ¶ 37. We are persuaded by Petitioner’s un rebutted evidence and arguments that a person of ordinary skill in the art would have been motivated to implement the search methods of Gross to search for television programs within an EPG environment, as taught by Robarts, where stop words in the descriptive terms are identified, as taught by Sanders. *Id.*

We find, therefore, that the combination of Gross, Robarts, and Sanders teaches or suggests “[t]he method of claim 13, further comprising identifying the location of stop words in the descriptive terms,” recited by claim 14 and similarly recited by claim 32.

CONCLUSION ON GROUND 3

Based on the complete record, we determine that Petitioner has established by a preponderance of the evidence that claims 14 and 32 of the ’218 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Gross, Robarts, and Sanders.

I. Ground 4 - Obviousness Over Gross, Robarts, and Brown

Petitioner contends that dependent claims 15, 16, 33, and 34 of the ’218 patent would have been obvious over the combined teachings of Gross, Robarts, and Brown. Pet. 50–53.

Dependent claim 15 recites “[t]he method of claim 12, wherein determining the descriptive terms comprises adding phonetically equivalent words to the descriptive terms.” Ex. 1001, 11:3–5. Dependent claim 33 is similar to claim 15. *Id.* at 12:42–44.

Dependent claim 16 recites “[t]he method of claim 12, wherein determining the descriptive terms comprises adding commonly misspelled words of words in the descriptive terms.” *Id.* at 11:6–8. Claim 34 is similar to claim 16. *Id.* at 12:45–47.

Petitioner asserts Gross teaches indexing multiple forms of a word to facilitate searching. Pet. 50, 52 (citing Ex. 1003 ¶ 165). Citing the Declaration of Dr. Fox, Petitioner argues a person of ordinary skill in the art would have known that adding phonetically equivalent words or misspelled words to the descriptive terms was a common practice for search systems. *Id.* at 50–52 (citing Ex. 1009 ¶¶ 120, 122).

Petitioner asserts Brown teaches approximate string-matching algorithms to account for different pronunciations and misspellings of words to be matched together. *Id.* at 51–52 (citing Ex. 1007, 2:47–53). Petitioner also asserts Brown discloses an index that maps input data to records containing the same or phonetically similar data (*id.* at 51 (citing Ex. 1007, 3:63–65)) and also allows for misspellings while still correctly producing accurate search results (*id.* at 52 (citing Ex. 1007, 3:39–44)).

Petitioner argues a person of ordinary skill in the art would have been motivated to implement the search methods of Gross to search for television programs within an EPG environment, as taught by Robarts, and include phonetically equivalent words and misspelled words in the index of descriptive terms, as taught by Brown. *Id.* (citing Ex. 1009 ¶¶ 119–124).

Petitioner argues a person of ordinary skill in the art would have known that adding phonetically equivalent words and misspelled words to the descriptive terms in an index, as disclosed by Brown, would save time when the search for those content items is performed, and further facilitate searching by automatically correcting for user errors when entering phonetically similar, but misspelled, search terms (e.g., actor's names). *Id.* at 51–53 (citing Ex. 1009 ¶¶ 119–124).

Patent Owner does not contest specifically Petitioner's evidence with respect to this limitation. *See* PO Resp. 28–45.

We find Petitioner's evidence and arguments persuasive. Petitioner relies on Gross for its teaching of indexing multiple forms of a word to facilitate searching. *See* Ex. 1003 ¶ 165. Dr. Fox provides credible testimony that a person of ordinary skill in the art would have known that adding phonetically equivalent words or misspelled words to the descriptive terms was a common practice for search systems. *See* Ex. 1009 ¶¶ 120, 122.

We are persuaded by Petitioner's unrebutted evidence and arguments that a person of ordinary skill in the art would have appreciated that adding phonetically equivalent words and misspelled words to the descriptive terms, as taught by Brown, would save time and further facilitate the indexing and searching of Gross for television programs within an EPG environment, as taught by Roberts. *See* Ex. 1009 ¶¶ 119–124.

We find, therefore, that the combination of Gross, Roberts, and Brown teaches or suggests “[t]he method of claim 12, wherein determining the descriptive terms comprises adding phonetically equivalent words to the descriptive terms,” recited by claim 15 and similarly recited by claim 33, as well as “[t]he method of claim 12, wherein determining the descriptive terms

comprises adding commonly misspelled words of words in the descriptive terms,” recited by claim 16 and similarly recited by claim 34.

CONCLUSION ON GROUND 4

Based on the complete record, we determine that Petitioner has established by a preponderance of the evidence that claims 15, 16, 33, and 34 of the ’218 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Gross, Robarts, and Brown.

J. Grounds 5–9

In addition to Grounds 1–4, discussed *supra*, Petitioner asserts an additional set of grounds, Grounds 5–9, against claims 1–36 of the ’218 patent. In Grounds 5–9, Petitioner uses Robarts and Zigmond as primary references instead of using Gross and Robarts as it did for Grounds 1–4. Petitioner also uses secondary references Thomas, Sanders, and Brown in a similar manner as it did in Grounds 1–4. Petitioner, in large part, also applies the references against the same claim sets as it did in Grounds 1–4.

Ground 5 challenges claims 1, 2, 4–7, 9, 11–13, 17–20, 22–25, 27, 29–31, 35, and 36 as obvious over Robarts and Zigmond. Pet. 53–73. Ground 6 challenges claims 3, 10, 21, and 28 as obvious over Robarts, Zigmond, and Gross. Pet. 73–75. Ground 7 challenges claims 8 and 26 as obvious over Robarts, Zigmond, and Thomas. *Id.* at 76–77. Ground 8 challenges claims 14 and 32 as obvious over Robarts, Zigmond, and Sanders. *Id.* at 77–79. Ground 9 challenges claims 15, 16, 33, and 34 as obvious over Robarts, Zigmond, and Brown. *Id.* at 79–81.

Because we have already found claims 1–36 of the ’218 patent unpatentable under Grounds 1–4, we do not reach Petitioner’s contention that claims 1–36 are also unpatentable under Grounds 5–9.

III. CONCLUSION

Based on the complete record, we determine that Petitioner has established by a preponderance of the evidence that claims 1–7, 9–13, 17–25, 27–31, 35, and 36 are unpatentable under 35 U.S.C. § 103 as obvious over the combined teachings of Gross and Robarts. We also determine that Petitioner has established by a preponderance of the evidence that claims 8 and 26 are unpatentable over the combined teachings of Gross, Robarts, and Thomas; claims 14 and 32 are unpatentable over the combined teachings of Gross, Robarts, and Sanders; and claims 15, 16, 33, and 34 are unpatentable over the combined teachings of Gross, Robarts, and Brown.

IV. ORDER

For the reasons given, it is

ORDERED that claims 1–36 of the '218 patent are unpatentable; and

FURTHER ORDERED that parties to the proceeding seeking judicial review of the Final Written Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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