UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE PATENT TRIAL AND APPEAL BOARD

_____

HULU, LLC
Petitioner

v.

SOUND VIEW INNOVATIONS, LLC
Patent Owner

_____

Case IPR2018-01039
Patent 5,806,062

_____

PATENT OWNER SOUND VIEW INNOVATIONS, LLC'S PRELIMINARY RESPONSE TO HULU LLC'S PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 5,806,062 PURSUANT TO 35 U.S.C. § 313, 37 C.F.R. § 42.107

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

CASES

STATUTES

REGULATIONS

ADMINISTRATIVE DECISIONS

EXHIBIT LIST	
2001	Declaration of Nathan Lowenstein in Support of Motion for *Pro Hac Vice* Admission
2002	Excerpts from *Sound View Innovations, LLC v. Hulu, LLC*, LA CV17-04146 JAK (PLAx) (N.D. Cal.), Feb. 26, 2018 Patent Owner Opening Claim Constr. Br.
2003	Excerpts from J. Sametinger, SOFTWARE ENG'G WITH REUSABLE COMPONENTS (1997)
2004	Gokhale et al., Applying Model-Integrated Computing To Component Middleware And Enterprise Applications, *Communications of the ACM*, Oct. 2002, Vol. 45 No. 10.
2005	Merriam-Webster.com, definition of *organize* (*v.*)

I. INTRODUCTION

The Petition in this case is very simple, and stands or falls on a simple premise. It is based on only a single proposed ground. Its single ground is based only on a single alleged prior art reference. And its argument that the reference renders the claims obvious is based on a single idea: that the patented invention is simple, much simpler than it actually is.

Perhaps taking its cue from the deceptively concise claim language, the Petition cites its reference (Dougherty) for its teaching that text editing programs, sed and awk, could be used to apply scripts to simple text files having fields in each line and then process the output text with a different script. According to the Petition, that processing of simple text files is all the Patent claims—and it was old "for *years*" before the claims were filed. Pet. 1 (emphasis by Petitioner).

Well might the Petitioner say this, for this simplified caricature ***was*** old years before the Patent ever existed. That is why the inventors of the Patent expressly criticized and distinguished the kind of prior art sed and awk flat file data analysis described in Dougherty. While good enough for simple tasks, such processing has its limits because, for example, it has no effective means of speeding up processing beyond simply starting at the top of the file and processing each record in it. The inventors devised a novel system that goes significantly beyond these prior tools, providing a plurality of reusable operators that are configured to receive a virtual

database having a schema organized into sections, which contain records, made up of fields; process data in that virtual database; and output a second virtual database having the same schema—together with means for combining more than one of these reusable operators to create an application. None of these features is to be found in the teachings of Dougherty.

The Office issued the claims recognizing that they are patentable over, and not so broad as to cover, such prior art flat file text processing. The Petition's attempt to redefine the claims to such an unreasonable breadth that they include technology twenty years old at the time they were filed is peculiarly ill-chosen, for several reasons.

First, the Patent expired long ago, so it is impossible to attempt the usual petitioner's gambit of stretching the claims into a "broadest" possible interpretation that applies only in the petition and that no court, accused infringer, or jury will ever see. Instead, the full panoply of narrowing claim construction doctrine that applies in court applies to these claims here. This means they cannot be construed in a manner contrary to the novel invention, which the specification describes at length and distinguishes expressly from the sort of flat file text processing the Petition offers from Dougherty.

Second, inexplicably, Petitioner proposes claim constructions that differ from the claim constructions that it had, prior to filing its Petition, stipulated are correct

in the co-pending district court litigation with Patent Owner—without even mentioning those stipulated constructions, let alone attempting to justify the inconsistency. That inconsistency is particularly baffling because exactly the same claim construction standard applies in both forums. There is no basis on which to argue that the claim constructions in the district court should somehow not apply here. And since the Petitioner has stipulated to those constructions in the district court, it can hardly argue here that those constructions are incorrect.

Third and finally, and most ironically of all, the Petitioner's attempt to show that Dougherty, a book allegedly dated 1991, was publicly available as a printed publication before the Patent's 1995 filing date is legally insufficient for multiple reasons. The Petition attempts to rely on a librarian's affidavit asserting that a single copy of the same book was indexed in a single library before the filing date. But affidavits with the same wording submitted by the same affiant, about the same library, and for the same purpose have been repeatedly rejected by this Board in past cases as inadequate to show that a book was publicly accessible. Worse yet, the Petitioner does not even address the fact that the book that was supposedly in the library is, ***at best***, a different version of Dougherty than the one on which it relies.

In the compressed schedule required by law, "[i]t is of the utmost importance that petitioners in the IPR process" make their case in their Petition, not later. *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed.

Cir. 2016). The Board need not indulge defective petitions that rely on evidence this Board has repeatedly rejected, fail to reveal or reconcile contradictory positions, and can succeed only by redefining the claimed invention out of existence. The Petition should be denied.[1]

II. THE PETITION FAILS TO MAKE A THRESHOLD SHOWING THAT DOUGHERTY WAS PUBLICLY AVAILABLE PRIOR ART.

The Petition's evidence regarding Dougherty's alleged date of public availability is deficient.

"Petitioner has the burden to make a threshold showing that a reference is 'printed publication' prior art under 35 U.S.C. §§ 102 and 311(b)." *Teva Pharms. USA, Inc. v. Indivio UK Ltd.*, IPR2016-00280, Paper 23 at 10 (PTAB Jun. 10, 2016). Public accessibility is the "touchstone in determining whether a reference constitutes a printed publication." *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir 2016). "A reference will be considered publicly accessible if it was 'disseminated or otherwise made available to the extent that ***persons interested and ordinarily skilled in the subject matter or art*** exercising reasonable diligence can

[1] This preliminary response addresses only certain flaws that are sufficient to dispose of the Petition as to all claims. Still other issues will be raised if review is instituted.

locate it.'" *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1380 (Fed. Cir. 2018) (alteration mark omitted, quoting *Kyocera Wireless Corp. v. ITC*, 545 F.3d 1340, 1350 (Fed. Cir. 2008)).[2] "A party seeking to introduce a reference 'should produce sufficient proof of its dissemination or that it has otherwise been available and accessible to persons concerned with the art to which the document relates and thus most likely to avail themselves of its contents.'" *Argentum Pharms. LLC v. Res. Corp. Techs., Inc.*, IPR2016-00204, Paper 19 at 9 (PTAB May 23, 2016) (quoting *In re Wyer*, 655 F.2d 221, 227 (CCPA 1981)).

Dougherty is asserted as printed publication prior art. Pet. 3. Providing simply a photocopy of a document that sets forth a purported copyright date does not demonstrate that the document was publicly available. *See, e.g., Hewlett-Packard Co. v. U.S. Philips Corp.*, IPR2015-01505, Paper 16 at 8 (PTAB Jan. 19, 2016) ("The fact that a date is printed on the face of a reference, without more, is not enough to establish that the reference was publicly accessible on that date."). Recognizing this, the Petition cites to two exhibits that it asserts "confir[m] public availability as of September 16, 1992, and at least before October 17, 1995," the Patent's filing date. *Id.* The Petition's entire argument based on this evidence is as follows:

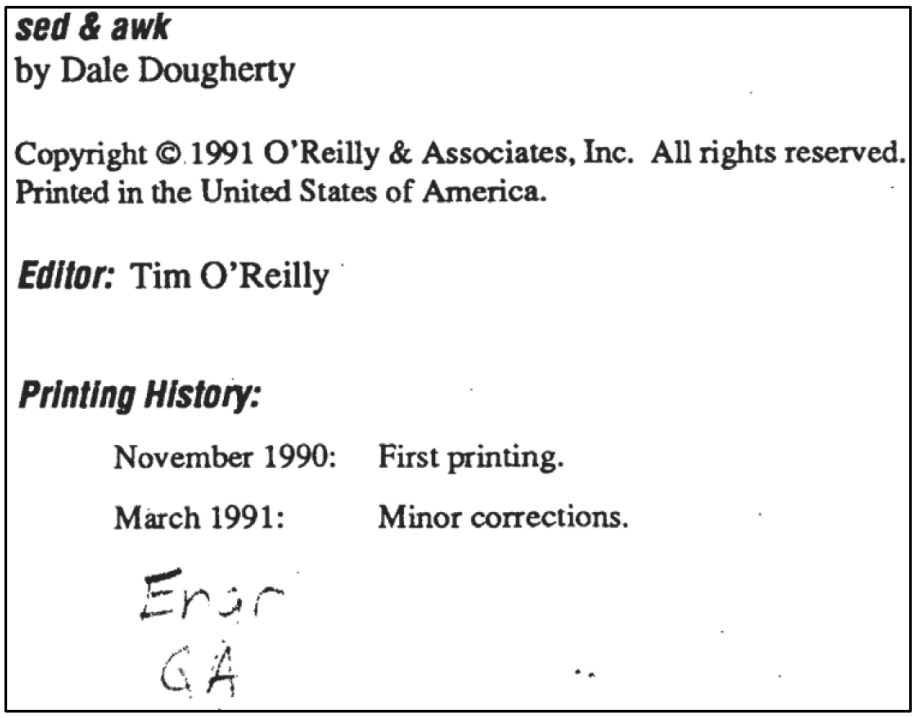
[2] All emphases are added except where otherwise stated.

> Dougherty is a book first published . . . in November of 1990. Ex. 1004, iv. Exhibit 1005 contains the first fifteen pages of a copy of Dougherty belonging to the Cornell University Library, and bearing a date-stamp indicating that Dougherty was indexed at the Cornell University Library on September 16, 1992, and at least before October 17, 1995. *Id*., ii; Ex. 1006. Pamela Stansbury, the Administrative Supervisor in the Original Cataloging Unit at Cornell University Library, also confirms that Dougherty was indexed and publicly available on September 16, 1992. Ex. 1006. Dougherty is therefore prior art under pre-AIA 35 U.S.C. 102(a) and 102(b).

Pet. 20. Examination of the cited documents, however, fails to confirm that the version of Dougherty, and therefore the specific teachings in that version, on which the Petition relies was publicly available, for two fundamental reasons. First, Petitioner fails to show that the version of Dougherty's book that is the subject of its purported evidence of public availability is materially the same as the different version of Dougherty on which the Petition relies. And second, even if the two versions were identical, Petitioner's evidence still fails to make even a threshold showing of public availability, as demonstrated by past Board decisions that have rejected materially identical affidavits, by the very same affiant, as the one cited here.

A. The Allegedly Publicly Available Version Of Dougherty Is Not The Same Version As The One On Which The Petition Relies.

The "copy of Dougherty belonging to the Cornell University Library[] and bearing a date-stamp" (Ex. 1005) bears a purported date-stamp of September 16, 1992. It is the "second printing," with a "printing" date of March 1991. *Id.* at iv:



sed & awk
by Dale Dougherty

Printed in the United States of America.

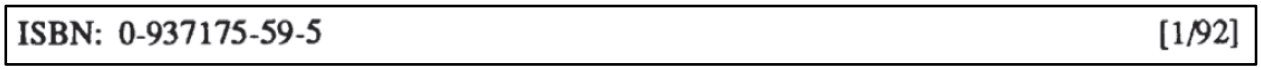
Editor: Tim O'Reilly

Printing History:

November 1990: First printing.
March 1991: Minor corrections.

Error
GA

Below this Printing History, beside the ISBN, is a later date of January 1992. *Id.*:



ISBN: 0-937175-59-5 [1/92]

The "date-stamped" document (Ex. 1005) is said to be the copy of Dougherty at the Cornell University Library. Pet. 20. The Stansbury Affidavit (Ex. 1006)

supposedly "confirms" that this document was indexed and publicly available at that library on September 16, 1992.[3]

The document relied on as the Dougherty reference (Ex. 1004) is not the same version. It is the "fourth printing," with a "printing" date of November 1992. *Id.* at iv. Since the second printing, it had undergone two further rounds of so-called "corrections." *Id.*:

[3] The Stansbury Affidavit's testimony is not further described in the Petition. Accordingly, any other arguments or evidence in it, since they are not incorporated into the Petition, cannot support unpatentability. *See Conopco, Inc. v. Procter & Gamble Co.*, IPR2013-00510, Paper 9 at 8-9 (PTAB Feb. 12, 2014) ("We decline to consider information presented in a supporting declaration, but not discussed in a petition"); 37 C.F.R. § 42.6(a)(3); *see also Cisco Sys., Inc. v. C-Cation Techs.*, LLC, IPR2014-00454, Paper 12 at 10 (PTAB, Aug. 29, 2014) (informative).

sed & awk
by Dale Dougherty

Editor: Tim O'Reilly

Printing History:

November 1990:	First Edition.
March 1991:	Minor corrections.
July 1992:	Minor corrections.
November 1992:	Minor corrections.

The fourth printing bears the same ISBN as the second printing, next to a date of August 1994. *Id.*:

ISBN: 0-937175-59-5 [8/94]

However, the fourth and second printing do not bear the same copyright date: instead, most unusually, the second printing bears a 1991 copyright date, while the fourth printing purports to have a 1990 copyright date. *Compare* Ex. 1005 at iv ("1991" copyright), *with* Ex. 1004 at iv ("1990" copyright). Whether this is due to a change of content or some other reason is unclear.

Petitioner makes no attempt to address or explain any of these inconsistencies, despite the fact that "an opportunity to present arguments and information regarding [them] clearly existed at the time Petitioner filed its Petition." *Coalition For*

Affordable Drugs (ADROCA) LLC v. Acorda Therapeutics, Inc., IPR2015-00817, Paper 17 at 6 (PTAB Apr. 8, 2016) (denying rehearing of determination that reference was not shown to be printed publication).

B. There Is No Showing That The Versions Were Materially Similar.

The facts testified to by Ms. Stansbury and the statements in the copies of the Dougherty book in the record fail to show that the disclosures relied upon by the Petition were publicly available by the Patent's date, for at least three reasons.

First, there is no evidence in the record that any version of Dougherty's book was cataloged or indexed anywhere prior to the Patent's filing date except for the single document that Ms. Stansbury testifies was cataloged and indexed in a single library—and that copy was a different version of the book than the one upon which the Petition relies.

In her declaration, Ms. Stansbury testifies that a copy of Dougherty's book "was indexed and publicly available at the Cornell University Library as of September 16, 1992"; that "[t]he Library maintains a searchable and publicly accessible catalog of its publications"; and that "[t]herefore, as of September 16, 1992, any member of the public could have located Dougherty by searching through our catalog by subject matter, author, or title." Ex. 1006 ¶¶ 4-5. She does not testify that the catalog was searchable by anyone who was not physically at the Library. She does not testify, for example, that it was made available in a MARC record, on

WorldCat, or in any other form of catalog capable of online or remote searching. At most, she testifies that members of the public could have physically traveled to one library and searched its on-site catalog for one copy of the book.

The Dougherty book relied on in the Petition, however, cannot possibly be the same version that was supposedly in the Library. As explained above, the supposedly indexed book in the Library (Ex. 1005) is the "second printing," and bears dates of March 1991 and "1/92"; and the book relied upon by the Petition (Ex. 1004) is the "fourth printing," and bears dates of November 1992 and "8/94." Ms. Stansbury testifies that, "as best as" she can determine, the copy in the Library was "indexed and publicly available at the Cornell University Library as of September 16, 1992." Ex. 1006 ¶ 4. That is earlier than either of the dates above in the relied-upon version of Dougherty, Ex. 1004. Thus, even if we take Petitioner's unusually equivocal testimony (*see infra* § II-C) as showing that at least one version of Dougherty was indexed in the Library as of that date, the version relied upon by the Petition cannot possibly be the same version as the one supposedly indexed at the Library—because the version relied upon by the Petition did not exist as of the supposed indexing date. There is therefore no proof that the fourth printing—the version relied on in the Petition—was indexed in any library anywhere prior to the filing date of the Patent. And the different printings are known to differ in content to an unknown degree, as discussed later in this section.

Second, even assuming, *arguendo*, that the relied-upon fourth printing was eventually also indexed, there is no evidence in the record showing that it would have been indexed by the Patent's filing date. As noted above, the Petition contends that the second printing (Ex. 1005) is the version that was indexed at the Library. Pet. 20.[4] Ms. Stansbury testifies that "as best" as she can determine, that book was indexed at the Library as of September 16, 1992. Ex. 1006 ¶ 4. That is over fourteen months after its nominal March 1991 "printing" date. Ex. 1005 at i, iv. In other words, over fourteen months passed between the "printing" date and the indexing

[4] There is no proof that the document that was indexed and cataloged in the Library was even the date-stamped second printing (Ex. 1005). Ms. Stansbury identifies the document cataloged at the Library as "Dale Dougherty, <u>sed & awk</u>, O'Reilly & Associates, Inc. (1991), ISBN 0-937175-59-5." Ex. 1006 ¶ 3. All of those identifiers, except the copyright date, are the same for all printings: the second and fourth printings, though years apart, show exactly the same author, title, publisher, publication year, and even ISBN. *Compare* Ex. 1005 at iv, *with* Ex. 1004 at iv. Therefore, this same description presumably also describes the ***first*** printing, and we know the content changed between the first and second printing. Ex. 1005 at iv. Thus, there is not even proof that the version Ms. Stansbury says was indexed at the Library is the date-stamped second printing.

date. Therefore, the evidence shows that it took over fourteen months from the printing date for the Dougherty book to be indexed.

The latest printed date in the relied-upon fourth printing is "8/94." Ex. 1004 at iv. If that printing had been indexed in the Library, the evidence indicates it might well have taken fourteen months or more to be indexed. Fourteen months after August 1994 is December 1995. That is well after the October 17, 1995 filing date of the Patent. There is thus no proof that the relied-upon fourth printing was publicly available before the Patent was filed.

Third, it is clear on the face of the documents in the record that the content of Dougherty's book changed at least twice between the indexed printing and the relied-upon fourth printing (Ex. 1004). The Petition, without even acknowledging there were different versions of Dougherty's book, offers no evidence or argument that the teachings of the relied-upon fourth printing were also in the earlier, indexed printing.

The record shows that the content of Dougherty's book changed (in the form of so-called "minor corrections") between each of the four printings. Ex. 1004 at iv. So at least two, if not three, rounds of such changes occurred between the cataloged first or second printing and the relied-upon fourth printing. To show public availability before the filing date, Petitioner had the burden to show that the content relied upon in the fourth printing was also in the earlier version that was cataloged

and indexed in the Library. *See Intel Corp. v. Alacritech, Inc.*, IPR2017-01395, Paper 8 at 7 (PTAB Nov. 22, 2017) (denying institution for failure to show printed publication date where, *inter alia*, "Petitioner provide[d] no evidence that the 24th printing . . . discloses the same material as earlier printings"); *accord id.*, Paper 13 at 5 (PTAB Jan. 18, 2018) (denying rehearing) (noting that Petitioner failed to identify which "particular[] version, edition, or printing of" the alleged reference was allegedly indexed and "accessible" at library). Since Petitioner did not even acknowledge that there were different versions, it made no such showing. For example, Petitioner adduced no evidence of how large a change so-called "minor corrections" could be, or the degree to which cumulative rounds of such "minor corrections" could make the changes more than "minor."

Although Patent Owner does not bear the burden on this question, it respectfully points out that the table of contents—the only portion of the book that is in the record for two versions—reflects numerous changes between the second and fourth printings, including additional headings in chapters starting at the beginning of the book (Ex. 1004 at v). Thus, not only has Petitioner adduced no evidence that the content relied upon in the fourth printing was identically present in the indexed version, the record provides no basis to presume it was true.

C. The Allegedly Indexed Version Has Not Been Shown To Have Been Publicly Accessible Before The Patent's Filing Date.

Finally, even assuming, *arguendo*, that a version of Dougherty's book ***was*** in the Cornell University Library's searchable index by September 16, 1992 ***and*** that that version was materially identical to the relied-upon fourth printing, Petitioner still fails to adduce evidence that Dougherty was publicly available before the Patent's October 17, 1995 filing date.

1. *The Stansbury Affidavit Is Legally Insufficient.*

As already noted above, Ms. Stansbury testifies, at the very most, that one copy of one version of Dougherty's book was indexed at one library. "In instances of references stored in libraries, 'competent evidence of the general library practice may be relied upon to establish an approximate time when a [document] became accessible.'" *Intel Corp. v. Alacritech, Inc.*, IPR2017-01395, Paper 13 at 3 (PTAB Jan. 25, 2018) (quoting *In re Hall*, 781 F.2d 897, 899 (Fed. Cir. 1986)). "'In these cases, we generally inquire whether the reference was sufficiently indexed or cataloged.'" *Id.* (quoting *Blue Calypso*, 815 F.3d at 1348). Although Ms. Stansbury testifies that "as of September 16, 1992, any member of the public could have located" the copy at the Library "by searching through our catalog by subject matter, author, or title," Ex. 1006 ¶ 5, her testimony is insufficient to show public availability.

Ms. Stansbury does not testify to any of these facts from personal knowledge. She testifies that she is currently "the Administrative Supervisor in the Original Cataloging Unit" at Cornell University Library." Ex. 1006 ¶ 2. However, she was not in that position as of the Patent's October 17, 1995 filing date. She did not become the Library's Adminstrative Supervisor until 1996, and she does not testify to working there any earlier. *Id.* ¶ 3. Thus, she does not testify to personal knowledge of anything that happened at the Library prior to 1996. *Id.* She testifies only that a copy of the book was "indexed and available" at the library as of September 16, 1992 "[a]s best as [she] can determine." *Id.* ¶ 4. In the absence of personal knowledge, her testimony that the document was "available" cannot be credited based on her technical knowledge or expertise. She does not claim any familiarity with the legal standard for public accessibility, or any relevant expertise, beyond simply having worked at the Library. *Compare Activision Blizzard, Inc. v. Acceleration Bay, LLC*, IPR2015-01970, Paper 106 at 23 (PTAB Mar. 23, 2017) (giving little weight to librarian's declaration that reference "was publicly accessible" for purposes of patent law). And while she testifies she made her indexing date "determin[ation] from [her] review of the Library's records and [her] knowledge of the Library's standard procedures," *id.*, she gives no description of her review, her knowledge, the records and procedures she reviewed or knew, or how they supported her "best determin[ation]." She does not reveal her degree of

confidence that her "best determination" was accurate. Finally, she does not testify, and Petitioner points to no evidence, that anyone actually found, requested, checked out of the Library, read, or cited the book prior to the Patent's filing date.

Even if she had testified to such dissemination, Ms. Stansbury's affidavit also fails to provide the required "satisfactory showing that [the] document ha[d] been disseminated or otherwise made available to the extent that ***persons interested and ordinarily skilled in the subject matter or art*** exercising reasonable diligence, c[ould] locate it.'" *Argentum*, IPR2016-00204, Paper 19 at 9 (quoting *Kyocera*, 545 F.3d at 1350). The manner of "indexing" is critical to the determination of public accessibility, and indexing is insufficient unless it is indexed such that it could have been found with reasonable diligence by an person of ordinary skill in the Patent's art interested in the problem the Patent addressed. *Id.*. For example, indexing in a single library by author and title, but not subject matter, is insufficient. *Activision Blizzard*, IPR2015-01970, Paper 106 at 17-19. Here, the only evidence on this point is Ms. Stansbury's testimony that "any member of the public could have [the indexed copy] by searching through [the Library's] catalog by subject matter, author, or title." Ex. 1006 ¶ 5. She does not explain, however, under what "subject" it was indexed.

Furthermore, Ms. Stansbury testifies that the copy "was housed in the Engineering Library." *Id.* ¶ 3. But the Patent's "'subject matter or art,'" *Argentum*,

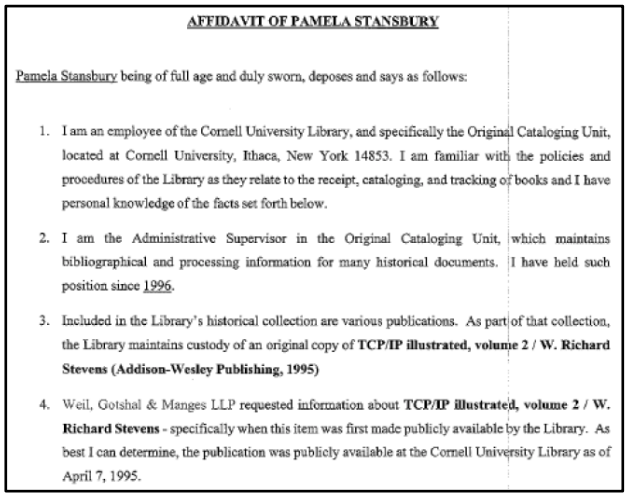
IPR2016-00204, Paper 19 at 9 (quoting *Kyocera*, 545 F.3d at 1350), is data analysis software, not engineering. Ex. 1001, column 1. Neither Petitioner nor Ms. Stansbury explains whether persons of ordinary skill in the data analysis software art would have had to visit the Engineering Library to search for books housed there; whether books on data analysis software (or even, more generally, data analysis or software) would have been in the same index; or whether persons interested in data analysis software would have been able to find the book under whatever undisclosed subject it was indexed in the Engineering Library. That is insufficient to show public availability. *See Intel* IPR2017-01395, Paper 13 at 3.

2. *The Board Has Already Rejected The Same Testimony By The Same Affiant As Insufficient To Show Public Accessibility.*

In other recent IPRs, in denying institution of review and reaffirming that determination with additional analysis on rehearing, the Board rejected materially identical affidavits by Ms. Stansbury herself, submitted for the same purpose, and regarding documents also said to be cataloged in the same Library, and found that Ms. Stansbury's testimony was inadequate to make a threshold showing that the documents in question were publicly accessible.

In *Intel Corp. v. Alacritech, Inc.*, IPR2017-01395, Ms. Stansbury provided a single-page affidavit very similar to the one in this case, giving the same testimony materially *verbatim*. Just as in this case, she was asked by a law firm to testify as to "when [an] item was first made publicly available by the Library." *Id.*, Paper 8 at 6

(PTAB Nov. 22, 2017) (reproducing entire Stansbury affidavit in *Intel*); *compare* Ex. 1006. Using exactly the same unusual "as best as I can determine" phrasing as she used in her affidavit in this case, Ms. Stansbury testified: "As best as I can determine, the publication was publicly available at the Cornell University Library as of" a particular date. *Id.*

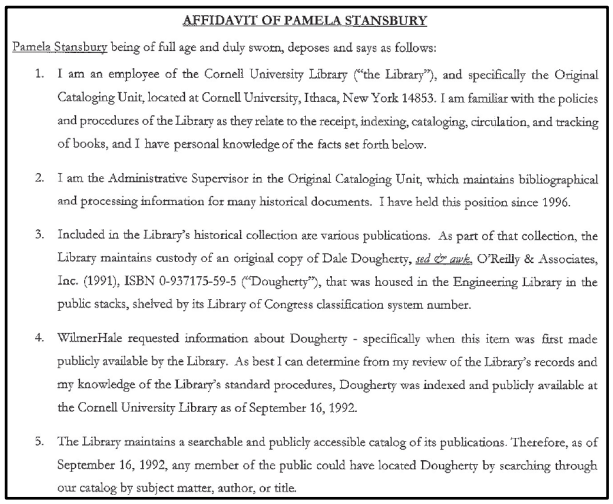


AFFIDAVIT OF PAMELA STANSBURY

Pamela Stansbury being of full age and duly sworn, deposes and says as follows:

1. I am an employee of the Cornell University Library, and specifically the Original Cataloging Unit, located at Cornell University, Ithaca, New York 14853. I am familiar with the policies and procedures of the Library as they relate to the receipt, cataloging, and tracking of books and I have personal knowledge of the facts set forth below.
2. I am the Administrative Supervisor in the Original Cataloging Unit, which maintains bibliographical and processing information for many historical documents. I have held such position since 1996.
3. Included in the Library's historical collection are various publications. As part of that collection, the Library maintains custody of an original copy of **TCP/IP illustrated, volume 2 / W. Richard Stevens (Addison-Wesley Publishing, 1995)**
4. Weil, Gotshal & Manges LLP requested information about **TCP/IP illustrated, volume 2 / W. Richard Stevens** - specifically when this item was first made publicly available by the Library. As best I can determine, the publication was publicly available at the Cornell University Library as of April 7, 1995.

Stansbury Affidavit In IPR2017-01395 (Paper 8 at 6)



AFFIDAVIT OF PAMELA STANSBURY

Pamela Stansbury being of full age and duly sworn, deposes and says as follows:

1. I am an employee of the Cornell University Library ("the Library"), and specifically the Original Cataloging Unit, located at Cornell University, Ithaca, New York 14853. I am familiar with the policies and procedures of the Library as they relate to the receipt, indexing, cataloging, circulation, and tracking of books, and I have personal knowledge of the facts set forth below.
2. I am the Administrative Supervisor in the Original Cataloging Unit, which maintains bibliographical and processing information for many historical documents. I have held this position since 1996.
3. Included in the Library's historical collection are various publications. As part of that collection, the Library maintains custody of an original copy of Dale Dougherty, *sed & awk*, O'Reilly & Associates, Inc. (1991), ISBN 0-937175-59-5 ("Dougherty"), that was housed in the Engineering Library in the public stacks, shelved by its Library of Congress classification system number.
4. WilmerHale requested information about Dougherty - specifically when this item was first made publicly available by the Library. As best I can determine from my review of the Library's records and my knowledge of the Library's standard procedures, Dougherty was indexed and publicly available at the Cornell University Library as of September 16, 1992.
5. The Library maintains a searchable and publicly accessible catalog of its publications. Therefore, as of September 16, 1992, any member of the public could have located Dougherty by searching through our catalog by subject matter, author, or title.

Stansbury Affidavit In This Case (Ex. 1006)

The Board held that this testimony was insufficient to demonstrate public availability because even if it were given weight, "it fail[ed] ***to describe the indexing/cataloging procedures*** that would support an assertion that [the cataloged document] would be locatable by an interested person of ordinary skill." *Intel*, IPR2017-01395, Paper 8 at 7-8 (PTAB Nov. 22, 2017). The Board further noted that the copy of the reference in question on which the petition in *Intel* relied was one particular "printing" among numerous printings of the publication, and that the petitioner had "provide[d] no evidence that" this printing, which was years after the

prior printing that was the allegedly antedating copy in the Cornell University Library, "disclose[d] the same material as [the] earlier printings." *Id.* at 7. Accordingly the Board denied institution.

On rehearing, the Board reaffirmed its rejection of Ms. Stansbury's testimony. *Id.*, Paper 13 at 3-4 (PTAB Jan. 24, 2018). The Board explained that, although Ms. Stansbury testified—just as she does here—that she has been Administrative Supervisor in the Original Cataloging Unit of the Library since 1996 and was "familiar with the policies and procedures of the Library as they relate to . . . cataloging," that testimony was not sufficient, because it was both too conclusory and too uncertain:

> Ms. Stansbury does not disclose details of those procedures nor does she disclose how she determined that "as best she can determine, [the document] was publicly available at the Cornell University Library as of [the date]." ***Furthermore, Ms. Stansbury's testimony indicates "as best she can determine," suggesting some degree of uncertainty, with no explanation of degree of or reasons for such uncertainty.*** We further observe that Ms. Stansbury does not identify any particular, version, edition, ***or printing*** of [the document] that may have been accessible at the Cornell University Library.

Id. at 4-5 (alterations and citation omitted) (quoting *Intel* Stansbury affidavit).

Subsequently, in another related case, in which the petitioner "present[ed] grounds and arguments in support of the public availability of [the same reference]

identical to those [the Board] found insufficient in" *Intel*, the Board denied institution on the merits in that case also "for the reasons discussed in" *Intel*. *See Cavium, Inc. v. Alacritech, Inc.*, IPR2017-01729, Paper 8 at 3 (PTAB Dec. 5, 2017) (citing *Intel*, IPR2017-01395, Paper 8 at 4-5).

Ms. Stansbury's affidavit in this case has each of the same fatal flaws as her affidavit in *Intel* and in *Cavium*.

- As in *Intel* and *Cavium*, "Ms. Stansbury does not disclose details of [the Library] procedures." *Id.* at 4.
- As in *Intel* and *Cavium*, Ms. Stansbury does not disclose ***how*** she determined that "as best I can determine, . . . Dougherty was indexed and publicly available at the Cornell University Library as of September 16, 1992." *Id.* at 4-5.[5]
- Exactly as in *Intel* and *Cavium*, word for word, "Ms. Stansbury's testimony indicates 'as best she can determine,' suggesting some degree of uncertainty, with no explanation of degree of or reasons for such uncertainty." *Id.* at 5.

[5] Ms. Stansbury adds this time that she made her "determin[ation] from [her] review of the Library's records and [her] knowledge of the Library's standard procedures," Ex. 1006 ¶ 4, but this conclusory addition is insufficient because she provides no description of her "review," her "knowledge," the "records" or "procedures," or how they supported her "best determin[ation]."

- Finally, as in *Intel* and *Cavium*, "Ms. Stansbury does not identify any particular version, edition, or printing of [Dougherty's book] that may have been accessible at the Cornell University Library." *Id.* Indeed, the situation here is even more conclusory and uncertain than in *Intel* and *Cavium*, because the evidence unambiguously demonstrates that there ***were*** changes, multiple rounds of them, to the content of the book between the printing in the Library and the printing in the Petition. *See supra* § II-A.1.

The only other noticeable difference between the Stansbury affidavit in this case and the Stansbury affidavit in *Intel* and *Cavium* is that the affidavit in this case adds a new final paragraph asserting, "Therefore, as of September 16, 1992, any member of the public could have located Dougherty by searching through our catalog by subject matter, author, or title." Ex. 1006 ¶ 5. This additional paragraph does not cure any of the defects the Board identified in the Stansbury affidavit in *Intel* and *Cavium*. In *Intel* and *Cavium* the Board did not rely on a lack of description of how the document had been indexed or was searchable. *Intel*, IPR2017-01395, Paper 13 at 3-4. And even if this additional testimony were somehow relevant, it is entitled to no weight. As already explained, a librarian's opinion, referring to no case law, that Dougherty was "publicly accessible" as of a certain date is lay testimony as to a question of patent law and entitled to no weight. As the Board explained in *Activision Blizzard*,

> we accord little weight to the opinions of [petitioner's technical expert declarant] and [library cataloging expert declarant] that, based on the evidence cited by Petitioner, [the document] was publicly accessible. Whether a reference qualifies as a printed publication is a legal conclusion, based on underlying factual determinations, and the opinions rendered by [the declarants] are not based on sufficient facts or the relevant case law regarding public accessibility of references.

IPR2015-01970, Paper 106 at 23.

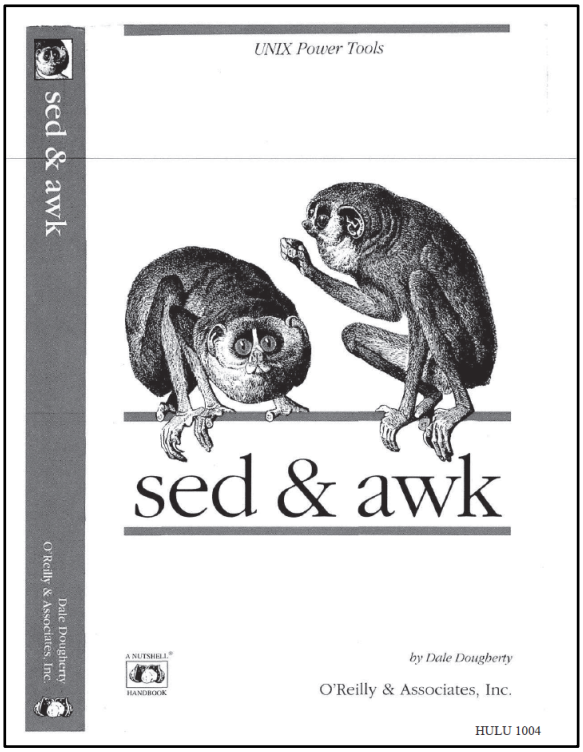
In sum, the Petition fails to sufficiently establish the Dougherty reference's availability as prior art to the challenged claims.

Since Dougherty is the only reference relied upon for the only proposed ground, the Petition should be denied in its entirety. See *Intel*, IPR2017-01395, Paper 8 at 8; *accord, e.g., Hewlett-Packard Co. v. U.S. Philips Corp.*, IPR2015-01505, Paper 16 at 11 (PTAB Jan. 19, 2016); *Coalition For Affordable Drugs*, IPR2015-00817, Paper 12 at 6.

In addition to this failure to establish public availability of the Dougherty disclosures, if the merits were to be reached Petitioner also fails to establish any likelihood that Dougherty renders the claimed invention obvious in any event, as described in the remaining sections of this Preliminary Response.

III. DOUGHERTY'S DISCLOSURE

To orient the Board regarding the claim construction and other issues in the following sections, a brief introduction to the Dougherty reference is given below.



Dougherty (Ex. 1004), Front Cover

Dougherty (Ex. 1004), the sole reference supporting the Petition's only proposed ground, is a 408+-page reference book. It teaches the use of two related UNIX utilities, sed and awk, which execute code a user writes. Ex. 1004 at xv. The code that a user writes for sed is often referred to as a "sed script," and likewise the code that a user writes for awk is often referred to as an "awk script." Ex. 1004 at 3-6, 12, 14. Generally one can, if one wishes, simply type simple programs at the command line instead of putting them in a file. *See id.* According to Dougherty, "[t]he primary motivation for learning sed and awk is that they are useful for devising general solutions to text editing problems." *Id.* at 2 (footnote omitted).

The Petition argues that Dougherty's discussion of these scripts and programs discloses the Patent's invention. However, as discussed below, *infra* § V, Dougherty discloses no more than simple non-reusable scripting like that which the Patent expressly distinguished and improved upon. Only by redefining the invention into something simpler, by applying unsupported broad claim constructions that would be unreasonably broad even under BRI—let alone the narrower district court-type standard that actually applies—can the Petition liken Dougherty to the claims.

The Petition relies on Dougherty as disclosing the query operators recited in claims 1 and the software operators recited in claims 7 and 14 (herein sometimes collectively referred to as "operators"), as well as the virtual databases on which they operate. Pet. 43-48, 49-50. The query and software operators are alleged to be sed and awk scripts disclosed in Dougherty. Pet. 43. The virtual databases are alleged to be "text files" disclosed in Dougherty. Pet. 24-26, 34, 43-45.

Specifically, the Petition relies on the following scripts:

```
s/ MA/, Massachusetts/
s/ PA/, Pennsylvania/
s/ CA/, California/
s/ VA/, Virginia/
s/ OK/, Oklahoma/
```

Pet. 32 (sed) (citing Ex. 1004 at 18).

```
s/MA/Massachusetts/
```

Pet. 39 (sed) (citing Ex. 1004 at 16).

```
/MA/
```

Pet. 40 (awk) (citing Ex. 1004 at 15).

```
# grade.sort.awk -- script for sorting student grades
# input: student name followed by a series of grades

# sort function -- sort numbers in ascending order
function sort(ARRAY,ELEMENTS,      temp,i,j) {
     for ( i = 2; i <= ELEMENTS; ++i )
          for ( j = i; ARRAY[j-1] > ARRAY[j]; --j ) {
               temp = ARRAY[j]
               ARRAY[j] = ARRAY[j-1]
               ARRAY[j-1] = temp
     }
return
}
# main routine
{

# loop through fields 2 through NF and assign values
# array named grades
for (i = 2; i <= NF; ++i)
     grades[i-1] = $i

# call sort function to sort elements

sort(grades,NF-1)

# print student name
printf ("%s: ", $1)

# output loop
for (j = 1; j <= NF-1; ++j)
     printf ("%d ", grades[j])
printf ("\n")
}
```

Ex. 1004 at 229-30 (cited in Pet. 42) (nawk).[6]

[6] This script requires "nawk," a programming language which was a successor to awk, or alternatively another successor called gawk. Ex. 1004 at 210.

The Petition is inconsistent as to whether the sed and awk interpreters themselves, or specific scripts that they run, are the software or query operators allegedly meeting the claim limitations. *Contrast, e.g.*, Pet. 42 ("the three other software operators (i.e., sed, awk, and sort)") and Pet. 31 ("sed itself is not a software operator … [s]imilarly, awk itself is not a software operator … ").[7]

We collect below the alleged "virtual database" and "operator" examples used in the Petition, so the Board can observe how limited they are. The Petition alleges that the following alleged examples in Dougherty are equivalent to the claims' "virtual databases":

```
John Daggett, 341 King Road, Plymouth MA
Alice Ford, 22 East Broadway, Richmond VA
Orville Thomas, 11345 Oak Bridge Road, Tulsa OK
Terry Kalkas, 402 Lans Road, Beaver Falls PA
Eric Adams, 20 Post Road, Sudbury MA
Hubert Sims, 328A Brook Road, Roanoke VA
Amy Wilde, 334 Bayshore Pkwy, Mountain View CA
Sal Carpenter, 73 6th Street, Boston MA
```

and

[7] The Petition also states that the Unix programs "sort" and "uniq" are query and software operators. *See, e.g.*, Pet. 30, 50.

```
XView:programs; initialization:45
XV_INIT_ARGS macro::46
macro:XV_INIT_ARGS:46
Xv_object type::49
type:Xv_object:49
Xv_singlecolor type::80
type:Xv_singlecolor:80
graphics:~zz(see also server image):
graphics:XView model:83
X Window System:events:84
graphics:CANVAS_X_PAINT_WINDOW:86
X Window System:X Window ID for paint window:87
graphics:~zz(see also server image):
Xlib:repainting canvas:88
Xlib.h header file::89
header file:Xlib.h:89
```

Pet. 23.

```
mona 70 77 85 83 70 89
john 85 92 78 94 88 91
andrea 89 90 85 94 90 95
jasper 84 88 80 92 84 82
dunce 64 80 60 60 61 62
ellis 90 98 89 96 96 92
```

Pet. 41. The examples of alleged output "virtual databases" relied on by Petitioner are as follows:

```
John Daggett, 341 King Road, Plymouth Massachusetts
Alice Ford, 22 East Broadway, Richmond VA
Orville Thomas, 11345 Oak Bridge Road, Tulsa OK
Terry Kalkas, 402 Lans Road, Beaver Falls PA
Eric Adams, 20 Post Road, Sudbury Massachusetts
Hubert Sims, 328A Brook Road, Roanoke VA
Amy Wilde, 334 Bayshore Pkwy, Mountain View CA
Sal Carpenter, 73 6th Street, Boston Massachusetts
```

Pet. 39.

```
John Daggett, 341 King Road, Plymouth MA
Eric Adams, 20 Post Road, Sudbury MA
Sal Carpenter, 73 6th Street, Boston MA
```

Pet. 40.

```
mona: 70 70 77 83 85 89
john: 78 85 88 91 92 94
andrea: 85 89 90 90 94 95
jasper: 80 82 84 84 88 92
dunce: 60 60 61 62 64 80
ellis: 89 90 92 96 96 98
```

Pet. 42.

All of these files that the Petition alleges to be the claimed "virtual databases" are text files—files consisting of ASCII printable characters, including whitespace, and end-of-line indicators, without further formatting. Each line in those files is alleged to be a record. *See, e.g.*, Ex. 1004 at 13, 21. The text that makes up each line is alleged to be divided into fields by a convention that a particular character, for example a comma in the first virtual database, is the field separator. *Id.*; *cf*. *id*. at 147-49 (discussing "records and fields" as concepts in the awk programming language).

However, there is no teaching of sections in Dougherty as required for the claimed virtual database. Nothing in any of these files in Dougherty marks a division of the file into ***sections*** each containing ***records***. Rather, the Petition tells us only that each file is a section in itself. It even highlights the files to emphasize this conflation of the meaning of file and the meaning of section. Pet. 24 ("***[T]he contents of the text file make up a section***, highlighted here in green."), 26 ("Now looking at Dougherty's input.idx example file, ***the contents of the text file make up a section***, highlighted here in green."). At no time does the Petition ever identify

any teaching in Dougherty of a "virtual database," or any other file, having more than one such section. Instead, the Petition is forced to take the position that each entire file constitutes a section. As explained below, however, a virtual database as claimed be organized into one or more sections, but a virtual database is not synonymous with a section. *See infra* § V-A.1.

The fact that these simpler Dougherty disclosures do not teach the claimed virtual databases is shown in yet another way. The Patent's virtual databases permit individual records—and more specifically, individual fields in individual records—to refer to ***other*** records in the virtual database. This capability is why the Patent addresses whether or not its virtual databases are "self contained": the fact that records may refer to other records raises the possibility that a record may refer to a record that is outside the virtual database, which cannot happen in simpler data files that do not allow for such cross-references between records. *See* Ex. 1001 at 3:39-41 ("if a record is referred to in a field in the VDB, then the referred to record is contained in the VDB.").

These issues are pertinent to the properly construed claims, as described below.

IV. CLAIM CONSTRUCTION

An example of the challenged claims is set forth below.

14. A method for processing information comprising the steps of:

> ***providing a plurality of software operators*** *each configured to receive a* ***virtual database*** *having a first* ***schema****, for processing information contained in said virtual database, and for outputting a virtual database having said first schema; and*
>
> *combining at least two of said* ***software operator****s to create an application.*

Claim 1, for example, includes "query operators" rather than "software operators."

A. Petitioner Departs From Its Own Claim Construction Positions Agreed Upon In District Court.

The Petition puts the construction of four claim terms at issue. Prior to the filing of the Petition, at an oral hearing in the related district court case on April 16, 2018, the parties stipulated and agreed to the definitions of these terms. Without any explanation or support, and without mentioning the parties' agreement, the Petition proposes constructions that are different from three of those four agreed-upon definitions.

Claim Term	**Parties' Construction Agreed Upon In Litigation**	**Petitioner's Construction Proposed In Petition**
software operator	"software that extracts or converts information from a repository"	(same as parties agreed upon)
providing a plurality of software operators	no construction needed	"providing a library of software operators"

virtual database	"a sequence of characters organized into one or more sections, where each section contains zero or more records made up of one or more fields containing information, and where a record referred to in a field in the virtual database is itself contained in the virtual database"	"a self-contained sequence of characters organized into one or more sections, which contains zero or more records made up of one or more fields containing information"
schema	"format of the entire virtual database, which includes the formats of each section of the virtual database"	"format of the entire virtual database that includes format of the records and fields of each section of the virtual database"

Petitioner provides no explanation of why it is deviating from the constructions, and the district court's analysis that it stipulated to in court. As Petitioner acknowledges, Pet. 15, *Phillips* claim construction rules apply both in the district court and in the present proceeding because the '062 patent has expired.

As regards "plurality of software operators," Petitioner proposes to rewrite the claim to replace one word, "plurality," with another word the Petitioner evidently wishes the applicant had chosen instead, "library." Pet. 16. In court, however, Petitioner has stipulated to this term not needing construction. And it is not clear what the proposed word "library" would do. As Patent Owner noted in district court, Ex. 2002 [Feb. 26, 2018 Patent Owner Opening Claim Constr. Br.] at 2002-5, "'plurality', when used in a claim refers to two or more items, absent some indication to the contrary." *Dayco Prods., Inc. v. Total Containment, Inc.*, 258 F.3d 1317, 1328

(Fed. Cir. 2001) (citation omitted). In arguing that sed and awk scripts in Dougherty form part of a "library," Petitioner argues that "scripts written for sed can be saved as a 'script file' for later re-use." Pet. 32. That is true of all computer programs written in all programming languages, however. By Petitioner's reasoning, it would follow that all of such programs form part of libraries, so replacing "plurality" with "library" would not seem to add anything to the claimed subject matter.

Furthermore, claim 10 recites that "said first and second operators are chosen from a ***library*** of operators." "There is an inference . . . that two different terms used in a patent have different meanings." *Comaper Corp. v. Antec, Inc.*, 596 F.3d 1343 (Fed. Cir. 2010) (finding that "drive bay" and "drive bay slot" had different meanings). This is a further reason, if any were needed, not to edit the claims to replace one word with a new word—or, to put it another way, to give "plurality" the meaning "library."

As regards "virtual database," petitioner wants the word "self-contained" set out as part of the claim construction. Pet. 17. However, the '062 patent contains an express definition of "self-contained," namely:

> A VDB [virtual database] is self-contained, in that if a record is referred to in a field in the VDB, then the referred to record is contained in the VDB.

Ex. 1001 ['062 Pat.] at 3:40-42. The applicant was acting as its own lexicographer in this description of a virtual database as a sequence of characters organized into

one or more sections. The agreed-on construction in district court takes this lexicography and inserts it in the definition of virtual database. In contrast, here Petitioner seems to be seeking a construction in which it can potentially ignore this express definition and give "self-contained" other meanings that are more to its taste, making the term a kind of wildcard. The Board should reject this ill-founded proposal.

Curiously, in the sole argument the Petition makes that Dougherty's files are self-contained, it uses the express definition. Pet. 36 ("These examples are also 'self contained' in that they do not contain a reference to a record that is not contained in the database."). Given these facts, there is no reason to deviate from the agreed-on construction of "virtual database."

Claim construction is necessary "only to the extent necessary to resolve the controversy" raised pertaining to the claim. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). The Petition's arguments based on Dougherty raise two issues with respect to the term "virtual database" that have not been raised in the court proceedings as a controversy requiring resolution. These issues should therefore be clarified by the Board in this case. Similarly, the Petition's arguments also raise an additional issue with respect to "operator." These additional claim construction questions are addressed in the subsections below. *See infra* §§ IV-B & -C.

In contrast to Petitioner's deviations from the agreed-upon constructions, we discuss below claim meaning based on those constructions and the intrinsic evidence.

B. "Virtual Database"

As pertinent to the sole ground of the Petition, the claimed "virtual database" does not encompass mere flat files. It must have a hierarchical structure that includes one or more sections, and permit records to refer to other records.

1. *The Claimed "Virtual Database" Must Be Hierarchical, Not Flat-File.*

As the agreed-upon constructions in district court, *supra*, make clear, a virtual database is organized into ***sections***, each of which contains ***records***, each of these being made up of ***fields***. *See, e.g.,* Ex. 1001 ['062 Pat.] at 3:27-32; *see also id.* at 3:35-36 ("The schema of the virtual database includes the schemas of each of the sections."). This three-level structure may conveniently be described here, for short, as hierarchical.

The three-level structure of a virtual database may be seen, for example, in FIG. 7 of the patent. There are several sections (*e.g.*, 702, 704, 706), and within each of them there are records and fields. Ex. 1001 ['062 Pat.] at 6:24-9:40; *see id.* at 6:30 ("first section"), 7:11 ("second section"), 7:29 ("third section"), 6:34 ("Each line (i.e. record) contains the following fields . . . .").

FIG. 7

’062 Patent (Ex. 1001), FIG. 7

The three-level structure of a virtual database may be contrasted with prior art “flat files.” Indeed, the Patent specification expressly contrasts them from virtual databases. As the Patent specification, in the incorporated-by-reference paper authored by inventor Glenn Stephen Fowler,[8] explains:

> Flat file databases are common in UNIX system environments. They consist of newline terminated records with a single character that delimits fields within each record. Well known examples are /etc/passwd and /etc/group . . . .

[8] Fowler is incorporated by reference at Ex. 1001 [’062 Pat.] at 7:47-52.

Ex. 1008 [Fowler paper] at 11. Such flat files thus have a two-level structure, records and fields, in contrast to the at least three-level section-record-field hierarchy of the claimed virtual databases, as described above.

Flat file database manipulation, as the incorporated-by-reference Fowler paper understood, was old in the mid-1990s, and indeed among UNIX users in the mid-1970s. Because of this, if the '062 patent's virtual databases were to be construed so broadly as to read on mere flat-file manipulation, the claims would read on far more than the inventors intended. By arguing that the meaning of "section" in the claimed virtual database should include simply an entire file, where there is no schema or anything else defining the file as a section that is part of a hierarchy of one or more sections, records, and fields as just described, Petitioner seeks to do precisely that. This is a classic case where an accused infringer seeks a broadening construction to make it easier to argue that the claims are invalid or unpatentable over prior art that, in truth, the patent distinguished and improved upon.

The Patent highlights still other important functional differences between virtual databases like those claimed and prior art flat files. Importantly, the claimed virtual databases, because of their more sophisticated structure including one or more sections, permit speeding up of queries in a manner that a flat file does not permit. Per the Fowler paper by one of the Patent's named inventors that is incorporated by reference in the Patent,

> grep, sh, awk, and perl are well suited for such queries on small databases. These commands scan the database from the top, one record at a time, and apply the match expression to each record. Unfortunately, as the number of records and queries increases, the repeated linear scans required by these tools soon become an intolerable bottleneck. . . .

Ex. 1008 [Fowler] at 11. Fowler is referring to a property of flat files that, absent some mechanism for speeding up queries, flat files can ***only*** be scanned "from the top, one record at a time." *Id.* The patent thus expressly discusses, criticizes, and distinguishes awk and other similar systems in which flat files provide no mechanism for speeding up queries.

In Fowler, the query speed difficulty is addressed by hash indexing, as explained on pages 14-15 of Fowler (Ex. 1008) (discussing use of "cql" utility). In the embodiments of the Patent itself, on the other hand, there is provided an index of the sections of the virtual database, which is placed in a final directory section. An example of this is section 706 in FIG. 7, reproduced above. *See* Ex. 1001 ['062 Pat.] at FIG. 7, 9:25-40. This directory section may provide, for example, an identification of the beginning character of each section relative to the beginning of the virtual database. *See id.* at 7:29-46, 9:9-40.

The express distinction the Patent specification makes between prior art systems and improvements such as the cql utility Fowler describes as well as the inventions claimed in the Patent should be given effect in claim construction. *See,*

e.g., Ekchian v. Home Depot, Inc., 104 F.3d 1299, 1304 (Fed. Cir. 1997) ("[B]y distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover."). The claim construction should address this express distinction in the Patent. Here, the Patent expressly criticizes and distinguishes awk, and the Petition nevertheless, quixotically, bases its unpatentability theory on awk. this distinction in the specification from prior art utilities such as awk is, therefore, directly relevant to Petitioner's unpatentability theory in the present case.

Therefore, the claims should not be construed to cover databases that have no mechanism for speeding up queries compared to, for example, simply scanning the database "from the top, one record at a time," and applying the match expression to each record as in a flat file database. Ex. 1008 at 11. These distinctions, drawn in the specification, require that the claimed "virtual database" not be a mere flat file.

The claims do not require a particular mechanism to identify the sections that make up a virtual database. However, something must be there. In a flat file database like that described in Fowler, there is simply not a level of organization that corresponds to a section: there are fields and records, but no other level of organization above that corresponding to a structure of one or more sections. The lack of section identification cannot be made up (as the Petition attempts to do) by simply assuming that every text file, of whatever format, has one section.

2. *The Claimed "Virtual Database" Must Permit Records To Refer To Other Records In The Virtual Database.*

The virtual database should not be construed to encompass files that do not permit individual records to refer to other individual records. As noted above, the Patent expressly explains this property of its virtual databases, and addresses at some length the potential problems that this property may create, when it discusses whether the virtual databases are or are not "self contained." Ex. 1001 at 3:37-44, 6:66-7:9, 11:56-12:10. The Patent explains that if a database has a field in an individual record that refers to another record, and the other record is not found in that database, such a database is not "self contained." *Id.* at 3:39-41. Notably, the Patent discloses multiple embodiments in which virtual databases are modified to contain material solely "to satisfy the above described constraint that a VDB is self contained." *Id.* at 6:66-7:4.

There is no genuine dispute that the term "virtual database" must be construed in this manner. As noted above, Petitioner stipulated to a construction of "virtual database" in court before filing its Petition, under the same claim construction standard applicable here, that requires that "a record referred to in a field in the virtual database is itself contained in the virtual database." *See supra* § IV-A. Unless a virtual database permits a record to be referred to by a field in another record, this claim construction makes no sense.

Even the different construction that the Petitioner has proposed in its Petition concedes this point. The Petition proposes that "virtual database" be construed as "a ***self-contained*** sequence of characters organized into one or more sections, which contains zero or more records made up of one or more fields containing information." Pet. 17. The Petition even cites to the discussion of the "self contained" constraint in the patent that is cited above, and argues that the fact "[t]hat a virtual database be 'self-contained' is a critical feature of the alleged invention" as it is "described by the '062 patent." *Id.* The portions of the specification cited by the Petition in support of this argument, as seen above, make clear that the virtual database permits records to refer to other records. *Id.* Indeed, the Patent's discussion of "self contained" is addressing precisely that property of the claimed virtual databases. Ex. 1001 at 12:2-8; Pet. 17. Accordingly, there is no genuine dispute that virtual databases must permit records to refer to other records.

These aspects of the scope of "virtual database" are pertinent to the differences between Dougherty and the invention, as described below. *See infra* § V-A.1-.2.

C. The Operators Should Be Construed As Configured To Preserve Pre-Existing Schemas Having Sections, Records, And Fields.

Claim 1 recites "said query operators configured to receive a first virtual data base having a schema, for processing data in said virtual database, and for outputting a second virtual database reflecting said processing and having said schema." Materially similar recitals are found in independent claims 7 and 14.

The plain language of the claims, read in light of the specification, should be interpreted to require that this schema be defined, or exist, before the virtual database is processed. The claims literally require that the virtual database "hav[e]" a schema. The specification agrees: "Each section of the virtual database ***has*** an associated schema which describes the format of the records and fields. The virtual database itself ***has*** a schema which describes the format of the entire virtual database." Ex. 1001 ['062 Pat.] at 3:31-34.

Furthermore, the specification makes clear that the operators must be configured beforehand to preserve such a schema. This pre-existing schema may change to another schema if the virtual database is processed, but the schema is not merely defined after the fact. *See, e.g., id.* at 4:14-16 ("Terminal operator 128 converts VDB 15 118 to a VDB of a schema other than the schema of VDB 118. This may be desirable so that the VDB 130 may be processed by another set of query operators which operate on such other schema.").

A system for writing query operations is cql, described in Fowler (Ex. 1008). In that system the schema is written out in a C-like notation, as shown in the example on page 13 of Fowler.

> cql queries are split into two parts. The declaration section (-d) describes the record schema . . . .

Id. The cql language is designed so that the input (a flat file) is parsed making use of that schema. Its extension from flat files to virtual databases is also described in the Patent in the incorporated-by-reference Fowler. *Id*. at 19. Thus, when cql is used for processing such data, it is configured to use and preserve the data's schema.

Generally, it is difficult to see how an operator can preserve a schema (i.e., have its output have the same schema as the input) unless it is configured taking into account the schema. The only way to characterize an operator written without such awareness as one that preserves a schema is to select the schema after the fact—in effect, to define the schema retroactively, so that the schema may be whatever the operator happens to preserve. This is the path chosen by the Petition.

As an example, consider the Petition's supposed operator

```
s/ MA/, Massachusetts/
s/ PA/, Pennsylvania/
s/ CA/, California/
s/ VA/, Virginia/
s/ OK/, Oklahoma/
```

applied to the Petition's supposed virtual database,

```
John Daggett, 341 King Road, Plymouth MA
Alice Ford, 22 East Broadway, Richmond VA
Orville Thomas, 11345 Oak Bridge Road, Tulsa OK
Terry Kalkas, 402 Lans Road, Beaver Falls PA
Eric Adams, 20 Post Road, Sudbury MA
Hubert Sims, 328A Brook Road, Roanoke VA
Amy Wilde, 334 Bayshore Pkwy, Mountain View CA
Sal Carpenter, 73 6th Street, Boston MA
```

This supposed "virtual database" is, in fact, just a flat file, as described in Fowler. Each line is a record, and each record seems to contain three fields separated by

commas. But if we now apply the script (which operates in a case-sensitive manner, *see* Ex. 1004 [Dougherty] at 29, so that "Carpenter" is not affected by "s/ CA/, California"), we get

```
John Daggett, 341 King Road, Plymouth, Massachusetts
Alice Ford, 22 East Broadway, Richmond, Virginia
Orville Thomas, 11345 Oak Bridge Road, Tulsa, Oklahoma
Terry Kalkas, 402 Lans Road, Beaver Falls, Pennsylvania
Eric Adams, 20 Post Road, Sudbury, Massachusetts
Hubert Sims, 328A Brook Road, Roanoke, Virginia
Amy Wilde, 334 Bayshore Parkway, Mountain View, California
Sal Carpenter, 73 6th Street, Boston, Massachusetts
```

Each record in the output seems to now contain ***four*** comma-separated fields.

Without consideration of the Patent's disclosure, that change might be at least argued to be a change in format, and so in schema. Before the operator processed the data the input had three fields in each record, and now the output has four fields in each record. But that is no matter, if we can, like the Petition wishes to, choose the schema ***after the fact***. Under the Petition's view of schema, we can just proclaim that in this example the format, or the schema, is one that allows any number of comma separated fields—much like the way the petition proclaims that the format or schema of each file it points to in Dougherty has one and only one section. A so-called "schema" can always be preserved in this way when such a file is modified, so long as the so-called schema need not be defined until after the modification is made.

There is nothing unique or special about the example just discussed. Almost any imaginable example of a text file being changed by processing it with an

operator could be treated in similar fashion, by simply defining the schema of the output, after the fact, to be any aspects of its format that were also true for the input file. Under this theory, most processing of text files by any operator would supposedly preserve the same so-called "schema" in the output file as in the input file. With this flexible a definition, it would be a rare processing where some so-called "schema" could not be identified as having ***not*** been changed.

This flexibility is not what was intended by the claims. If one can determine the schema after the fact, and allow it to be non-hierarchical, then many operators will preserve the schema of many files. Indeed, "many" could perhaps be replaced by "any." But that was not the purpose the invention was intended to serve. The Patent focuses on the significance of preserving, or changing, the schema of the virtual database.

The Patent is expressly directed to "[a] data processing apparatus and method for creating data analysis applications using reusable software operators." Ex. 1001 ['062 Pat.] at Abstract, first sentence. The importance of reusability to the invention is emphasized by being mentioned both in the first sentence of the Abstract, and the first sentence of the Summary of the Invention. *Id*. at 2:3-5 (first sentence of summary of invention) (."The present invention provides an apparatus and method

for creating data analysis applications using reusable software operators.").[9] *See, e.g., Eon-Net LP v. Flagstar Bancorp*, 653 F.3d 1314, 1317-18 (Fed. Cir. 2011) (in case where *Phillips* construction standard applied, affirming sanctions for arguing that patent claim terms like "file" and "document" were ***not*** limited to hardcopy, in a patent whose opening sentence was "The invention is directed to a system for efficiently processing information originating from hard copy documents").

The invention is expressly directed towards the preparation of reusable programs for operating with virtual databases. To that end, it requires the ability to process data while maintaining the schema of the data, so that the processing operators may be run on such data without having to be written or rewritten on an ad hoc basis. The Patent emphasizes that "[a]ll VDB's which have the same schema have the same structure, and store information in a particular format." Ex. 1001 at 3:45-46. It describes different "types of operators" based on whether the operators output a virtual database having the "***same*** schema," or a ***different*** schema, than the

[9] Reusability has become recognized as an important characteristic of software. There is a vast literature on it, as may be seen on, *e.g.*, Google Scholar. *See also, e.g.,* Ex. 2003 [J. Sametinger, SOFTWARE ENG'G WITH REUSABLE COMPONENTS (1997)] at 1. Persons of skill in the art refer to non-reusable software programs as "brittle" or "ad hoc." *E.g.*, Ex. 2004 [Gokhale 2002].

input virtual database on which they operate. *Id.* at 3:46-55, 4:6-17. For example, the Patent explains that "[a] query operator takes a VDB of a given schema, performs an operation on the VDB, and outputs another VDB of the same schema." *Id.* at 3:53-55. In contrast, a "terminal" operator

> converts VDB 118 to a VDB of a schema other than VDB 118. This may be desirable so that the VDB 130 may be processed by another set of query operators which operate on such other schema.

Id. at 4:14-18. The Patent emphasizes the significance, in connection with the reusability of the operators, of whether the schema of the virtual database is or is not preserved:

> ***Since the input and output to a query operator is a VDB of a particular schema***, any number of query operators may be connected to process information. ***Thus, such query operators may be used as reusable components that receive and produce VDBs of a particular format.*** Such a plug-compatible architecture allows for the combination of operators in different ways to allow users to customize data processing applications using standard query operators as components. As shown in FIG. 1, query-operator 112 receives VDB 110, processes the information and produces VDB 114. Operator query 116 receives VDB 114, processes the information and produces VDB 118. ***VDBs 106, 110, 114, and 118 all have the same schema.***

Id. at 3:60-4:5. Moreover, according to the Patent each section of the virtual database has its own schema, part of the overall schema of the virtual database:

> Each section of the virtual database has an associated schema which describes the format of the records and fields. The virtual database itself has a schema which describes the format of the entire virtual database. The schema of the virtual database includes the schemas of each of the sections.

Ex. 1001 ['062 Pat.] at 3:31-36. In particular, each virtual database must "***have*** [a] schema," *id.* at 3:45; "[e]ach section of the virtual database ***has*** an associated schema," *Id.* at 3:31-32; and each schema, including the schema of each separate section, must "***describe*** . . . format," *id.* at 3:32. It cannot simply ***be*** a format, as the Petition (Pet. 5) argues.

"In construing claims, the problem the inventor was attempting to solve, as discerned from the specification and the prosecution history, is a relevant consideration." *CVI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1160 (Fed. Cir. 1997). The claims should be construed according to the invention's purpose, whereby the operators preserve schemas chosen in advance, defining sections, records, and fields, where each section has its own schema that is part of the overall schema of the virtual database.

V. THE BOARD SHOULD REJECT THE SIMPLIFIED CARICATURE OF THE PATENT ON WHICH THE ENTIRE PETITION IS BASED.

The Petition's sole proposed ground of unpatentability is based on the premise that the claims, from the day they were proposed, claimed nothing more than a simple operation that was years, even decades, old at the time the patent was filed:

namely, applying one computer program to a file and another computer program to the output of the first such program, as computer users had been doing for years before the Patent. *Cf*. Ex. 1008 [Fowler] at 11 (describing its new system as "[i]n some respects . . . yet another addition to the toolbox of programmable file filters"). That simplistic premise is fundamentally wrong.

As described above, *supra* § IV-B, the claimed invention is limited to programs operating on virtual databases. These are databases expressed as sequences of characters, having at least a three-level defined structure: they are organized into sections, which contain records, made up of fields. The programs are reusable and combine to form applications.

Petitioner's argument, boiled down to its essence, is that the "organized into one or more sections" element of Petitioner's own construction can be ignored by simply assuming all files of characters comprise at least one section, that the claimed software need not be reusable, and that schema can be defined after the fact rather than being an object of preservation and basis for configuration. With such assumptions, the invention can be conjured away. However, the claims, under *Phillips* claim construction, are limited to the invention as described in the Patent, not the older, less powerful technology like sed and awk scripts that the Patent criticized, distinguished, and improved upon.

A. The Petition Fails To Establish That Dougherty Renders Obvious The Independent Claims (Claims 1, 7, and 14).

1. *Dougherty's Supposed Virtual Databases Are All Flat Files.*

In the purported virtual databases of Dougherty identified in the Petition, collected above, *supra* § III, there is nothing that would mark or define "sections" as the claimed virtual databases require. All of these purported virtual databases are, instead, just flat files, as defined and distinguished by the specification and incorporated-by-reference Fowler article (Ex. 1008), consisting of lines that are considered records, subdivided into fields based on a separating character that delimits them (e.g., a comma or colon). This may be seen by inspection of the files themselves, and also from the way the Petition describes them.

The Petition argues that "just as the '062 patent describes its schema of section, record, and field, Dougherty discloses the same schema of section, record, and field." Pet. 28. Tellingly, however, this claim is not supported by any citation to Dougherty, but only to the Petition's accompanying "expert" declaration.

Dougherty almost always uses the word "section" to refer merely to the subdivisions of Dougherty's own text reflected in its Table of Contents and headings. E.g., Ex. 1004 at 38 ("as we'll see in the next section"), 366 ("the section 'System Variables' later in this chapter"). Dougherty also occasionally uses the word to refer to the sections in other printed texts for human consumption. *E.g.*, *id.* at 102-03 (discussing "pages that the writer had typed as a text file without any

formatting information"). Sometimes, too, Dougherty refers to the "replacement section" of a sed command (the portion following the second /), or to the sections into which a computer program is shown as being divided. *E.g.*, *id*. at 121, 271-72. However, no discussion of the supposed "schema of section, record, and field" for a database is identified by Petitioner, or found, anywhere in Dougherty. There simply is nothing there defining this hierarchical structure in any alleged virtual database.

In other words, the Petition has identified the file itself in Dougherty as the virtual database, the lines of that file as records, and portions of the lines as fields. That is all there is in Dougherty's files. There is nothing left to be the section: the Petition has read the file itself on both the section of the virtual database and the virtual database itself. But the virtual database must be "organized into one or more sections," it cannot simply ***be*** a section. The Petition is silent on this element of its construction of "virtual database" – it simply quotes the phrase and equates it with the file as well as the virtual database itself. Yet "organized into" must be given its normal meaning, and that is different from "contains" or "made up of" which apply to other elements of the construction. Merriam Webster provides an appropriate definition for "organize": "to arrange or order things so that they can be found or used easily and quickly: to put things into a particular arrangement or order". Ex. 2005.

Dougherty's flat files do not satisfy the virtual database term under any construction, either the proposed construction of "virtual database" in the Petition ***or*** the agreed-on construction in court. Those constructions are again reproduced below:

Claim Term	**Parties' Construction Agreed Upon In Litigation**	**Petitioner's Construction Proposed In Petition**
virtual database	"a sequence of characters organized into one or more sections, which contains zero or more records made up of one or more fields containing information, and where a record referred to in a field in the virtual database is itself contained in the virtual database"	"a self-contained sequence of characters organized into one or more sections, which contains zero or more records made up of one or more fields containing information"

Both of these constructions require a "*sequence of characters organized into one or more sections, which contains zero or more records made up of one or more fields containing information*." The Petition's arguments do not show that Dougherty's flat files can satisfy this definition. Although Dougherty's files are a "sequence of characters," the sequence of characters is not "***organized into***" one or more sections. Rather, the Petition simply defines the entire "sequences of characters" as one "section." A file may not be "organized into" itself.

Moreover, if every flat file is a section, then every file is a section, and it follows that essentially every database file ever made would itself constitute one section. Some might be organized into more than one section, but the file itself

would still, under the Petition's unreasonably reductive argument, constitute a section, and thus all files would ***automatically*** satisfy the "organized into one or more sections" requirement of the construction. Therefore, the Petition's argument renders the "organized into one or more sections" requirement meaningless, and effectively reads it entirely out of the construction.

It also, for a separate additional reason, reads the "or more" requirement out of the construction. While the "one or more sections" requirement may of course be satisfied by a particular sequence of characters organized into "one" section," if a flat file database may itself be the required "section," than every such flat file will always have one section, and ***never*** "more" than one. And since all files are a section, it would be irrelevant whether any database, or any file, were organized into more than one section. The words "or more" would be rendered meaningless.

This element is therefore missing from Dougherty.

2. *Dougherty's Supposed Virtual Databases Do Not Allow Records To Refer To Other Records.*

As previously explained, *supra* § IV-B.2, the claims should be construed to permit individual records (including individual fields in records) in the virtual database to refer to other individual records. The Petition shows no such teaching in Dougherty. All of the teachings of Dougherty identified by the Petition merely have flat file databases with lines defined by Petitioner as "records," without any capability permitting any line to refer to any other line.

None of these purported virtual databases contains any mechanism to satisfy queries beyond the one at a time scanning of records from the top of the file. The purported virtual databases in Dougherty consist only of the records of the file, with fields separated by a field-separator character, and records separated by end-of-line indicators. None of them shows any reference by any line to any other line; and Dougherty is not shown to have any capability to permit one line to refer to any other line, inside or outside of the database.

Therefore, this limitation, too, is missing from Dougherty.

3. *Dougherty's Supposed Operators Are Not Configured To Preserve, Or Even Recognize, Any Schema As Claimed.*

The alleged "operators" identified in Dougherty by the petition are not configured to deal with schemas having sections. As discussed above, *supra* § III, in the purported "virtual databases" of the petition no sections are marked or defined.

The Petition addresses this lacuna in Dougherty in the only way it can: by urging the Board to simply define the whole file being handled as one section within the meaning of the claims. *See, e.g.*, Pet. 24 ("[T]he contents of the text file make up a section, highlighted here in green.").

The example given above, *supra* § IV-C, showing how the record format changes from one of three fields to one of four fields, illustrates the Petition's failure to show any disclosure or teaching in Dougherty of Dougherty's alleged "operators"

being configured to preserve the virtual database's schema within the meaning of the claims.

The Petition addresses this gap in Dougherty by simply relying on the possibility that an operator might not change the format of the file. If the alleged operators that the Petition identifies in Dougherty ***happen*** not to change what one might after the fact see as the format of the supposed virtual database that is processed by the supposed operator, it is easy enough, from the reductive perspective the Petition urges, to redefine the format, or schema, so the number of fields per record is not part of the schema of the virtual database. However, there is not a single embodiment in the Patent that works the way the Petition suggests. In every embodiment, the number of sections, the number of fields, and even the number of records are part of the schema that the virtual database has in advance of the operation.

The Petition's answer that the file always constitutes a "section" within the meaning of the construction of virtual database and schema is no answer at all. Under the agreed-on construction of "virtual database," and according to the specification, the schema of the claims must include the overall format of the entire virtual database ***and*** the format of each section. Even under the construction proposed in the Petition, the virtual database, and its schema, must have an organizational level of a "section." But as explained in the subsection above, *see*

supra § V-A.1, Dougherty has no such organization level. It is impossible for anything in Dougherty to teach "configur[ing]" anything for a level of organization when Dougherty simply does not teach that organization in the first place.

Setting aside the claim constructions and looking only at the language of the claims themselves, the same remains true. Independent claims 1 and 14 require operators "***configured to*** receive a first virtual data base ***having a schema***, for processing data in said virtual database, and for outputting a . . . virtual database . . . ***having said schema***." (Likewise, Claim 7, although it does not have "configured to" language, still requires a "software operator ***for receiving*** a first virtual database ***having a first schema***, ***for*** processing data in said first virtual database, ***and for*** outputting a second virtual database ***having said first schema***.") But it is impossible for Dougherty to teach an operator "for" or "configured to" receive a virtual database having a level of schema organization that Dougherty does not even possess.

The Petition's attempt to define the entire file as an organization into one section of a virtual database cannot change the fact that Dougherty defines no such level of organization, and discloses no configuration to receive files having a schema with that level of organization.

A way to illustrate the reductive nature of the Petitioner's argument is to show just how reductive it is. The Petition argues, Pet. 40, that the following extremely simple script satisfies all the requirements of the proper construction of "virtual

database," including its requirements to have a schema and have "section", "record," and "field" levels of organization:

/MA/

Such a script, however, is not a reusable operator as the Patent describes. It has no section-record-field organization; and it has no way for a record to refer to another record. If this extremely simple file were held to be a virtual database as claimed, it would read the claimed invention essentially out of existence.

B. The Petition Fails To Establish That Dougherty Renders Obvious The Dependent Claims (Claims 2, 3, 10, 11, and 15).

The Petition fails to establish a reasonable likelihood that Petitioner can show that dependent claims 2, 3, 10, 11 or 15 are rendered obvious by Dougherty, for at least the same reasons given above for independent claims 1, 7 and 14 from which they depend.

VI. CONCLUSION

For the foregoing reasons, the Petition should be denied.

Respectfully submitted,

____/ Kenneth J. Weatherwax /_____

Kenneth J. Weatherwax, Reg. No. 54,528
Lowenstein & Weatherwax LLP

Date: September 5, 2018

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response (the "POPR") consists of 12,418 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/ Parham Hendifar /

Date: September 5, 2018

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following documents were served by electronic service, by consent between the parties (Pet. 2), on the date below:

PATENT OWNER SOUND VIEW INNOVATIONS, LLC'S PRELIMINARY RESPONSE TO HULU LLC'S PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT NO. 5,806,062 PURSUANT TO 35 U.S.C. § 313, 37 C.F.R. § 42.107

EXHIBITS 2002 THRU 2005

The names and address of the parties being served are as follows:

Hulu LLC:
David L. Cavanaugh (David.Cavanaugh@wilmerhale.com)
Evelyn C. Mak (Evelyn.Mak@wilmerhale.com)
Scott Bertulli (Scott.Bertulli@wilmerhale.com)

Respectfully submitted,

/ Keith Moore /

Date: September 5, 2018