

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

PAPST LICENSING GMBH & CO. KG,
Patent Owner.

Case IPR2016-01842
Patent 9,189,437 B2

Before JONI Y. CHANG, JAMES B. ARPIN, and MIRIAM L. QUINN,
Administrative Patent Judges.

ARPIN, *Administrative Patent Judge.*

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

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1, 4–6, 9–16, 18, 30, 32, 34, 43, and 45 (“the challenged claims”) of U.S. Patent No. 9,189,437 B2 (Ex. 1001, “the ’437 patent”).¹ Paper 2 (“Pet.”), 1. Papst Licensing GmbH & Co., KG (“Patent Owner”), filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). We instituted the instant *inter partes* review as to the challenged claims. Paper 10 (“Inst. Dec.”). Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 16, “PO Resp.”), and Petitioner filed a Reply (Paper 18 (“Reply”)). A transcript of the oral hearing held on January 16, 2018, has been entered into the record as Paper 30 (“Tr.”).²

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 1, 4–6, 9–16, 18, 30, 32, and 34 of the ’437 patent are unpatentable, but that Petitioner has demonstrated by a preponderance of the evidence that claims 43 and 45 of the ’437 patent are unpatentable.

A. Related Matters

Petitioner indicates that the ’437 patent is involved in *Papst Licensing GmbH & Co., KG v. Apple Inc.*, Case No. 6-15-cv-01095 (E.D. Tex.); *Papst*

¹ We instituted *inter partes* review with respect to each of the claims challenged and on all of the grounds asserted in the Petition, and our Final Decision addresses the patentability of each of the challenged claims. See *SAS Institute, Inc. v. Iancu*, 2018 WL 1914661, at *2 (U.S. Apr. 24, 2018).

² This was a consolidated hearing with the following related cases: IPR2016-01839, IPR2016-01863, and IPR2016-01864. See Tr. 4:18–20.

Licensing GmbH & Co., KG v. LG Electronics, Inc., Case No. 6-15-cv-01099 (E.D. Tex.); *Papst Licensing GmbH & Co., KG v. ZTE Corp.*, Case No. 6-15-cv-01100 (E.D. Tex.); *Papst Licensing GmbH & Co., KG v. Samsung Electronics Co. Ltd.*, Case No. 6:15-cv-01102 (E.D. Tex.); and *Papst Licensing GmbH & Co., KG v. Lenovo (United States) Inc.*, Case No. 6-15-cv-01111 (E.D. Tex.). Pet. 2; see Paper 8, 4–5. In addition to the instant Petition, other petitioners have filed at least two other petitions upon which the Board has instituted *inter partes* review of claims of the ’437 patent:

Proceeding	Petitioner	Status
IPR2016-01733	Samsung Electronics Co. Ltd.	Final Written Decision issued.
IPR2017-01038	LG Electronics, Inc.	Review Joined with IPR2016-01733

See Pet. 2; Paper 8, 2–4. In IPR2016-01733, the Board issued a Final Written Decision on February 2, 2018, determining that claims 1–38 and 43–45 of the ’437 patent are unpatentable, but that claims 39–42 were not unpatentable. *Samsung Elecs. Co., Ltd. v. Papst Licensing GmbH & Co., KG*, Case IPR2016-01733, slip op. at 2 (PTAB February 8, 2017) (Paper 24). Accordingly, the Board has determined previously that *all* of the challenged claims in the instant case are unpatentable based constructions of claim terms of the *unexpired* ’437 patent and on combinations of references, not applied in this case.

Neither party requested rehearing of the Final Written Decision in IPR2016-01733, but Patent Owner filed a Notice of Appeal of the Final Written Decision in IPR2016-01733. *Samsung Elecs. Co., Ltd. v. Papst*

Licensing GmbH & Co., KG, Case IPR2016-01733, (PTAB February 8, 2017) (Paper 27). Accordingly, we do not yet apply collateral estoppel per *MaxLinear, Inc. v. CF CRESPE LLC*, 880 F.3d 1373 (Fed. Cir. 2018).

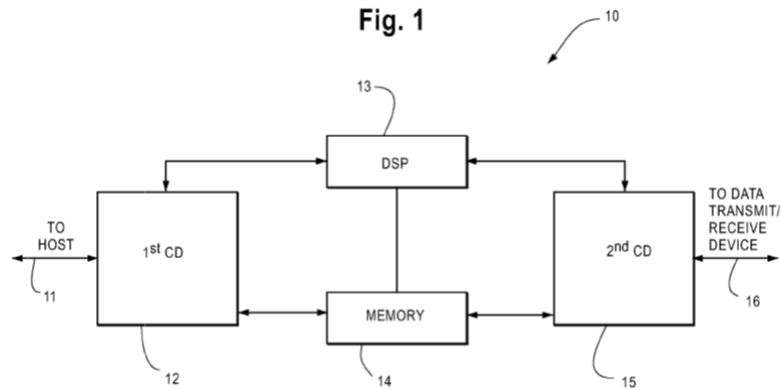
Petitioner asserts that Apple Inc. is the only real party-in-interest. Pet. 2. Patent Owner asserts that Papst Licensing GmbH & Co., KG is the only real party-in-interest. Paper 3, 1.

B. The '437 Patent

The '437 patent describes an interface device for communication between a computer host device and a data transmit/receive device (e.g., a multi-meter, transmitting measured data to a computer). Ex. 1001, 1:18–22, 1:54–57. According to the '437 patent, using a specific driver to match very closely to an individual host system would achieve high data transfer rates across the interface, but the specific driver cannot be used with other host systems. *Id.* at 2:4–19. Several solutions to this problem were known in the art. *Id.* at 2:20–3:25. For example, IOtech offered an interface device for laptops, using a plug-in card for converting the personal computer memory card association (“PCMCIA”) interface into another known standard interface (i.e., IEEE 1284). *Id.* at 2:20–29. The plug-in card provided a printer interface for enhancing data transfer rates. *Id.* at 2:29–33. In another example, a floppy disk drive interface was used for connecting a host device to a peripheral device. *Id.* at 3:10–14. The interface appeared as floppy disk drive to the host, allowing a floppy disk drive and another peripheral device to be connected to the host device. *Id.* at 3:17–19.

The '437 patent indicates that the purported “invention is based on the finding that both a high data transfer rate and host device-independent use can be achieved if a driver for an input/output device customary in a host

device” is utilized. *Id.* at 3:33–37. Figure 1 of the ’437 patent, reproduced below, illustrates a block diagram of an interface device.



As shown in Figure 1, interface device 10 connects to a host device via host line 11, and to a data transmit/receive device via output line 16. *Id.* at 4:62–5:10. Interface device 10 includes first connecting device 12, second connecting device 15, digital signal processor 13, and memory means 14. *Id.* Output line 16 connects interface 10 to a data transmit/receive device and implements an analog input, for example, with a sampling rate of 1.25 MHz and quantization of 12 bits, such as by means of the blocks 1505-1535, as depicted in Figure 2. *Id.* at 9:41–44. By means of programmable amplifier 1525, depicted in Figure 2 of the ’437 patent, multiple channels can be programmed independently of each other, for example, in voltage ranges up to a maximum of ± 10 V. *Id.* at 9:45–48. In a preferred embodiment, the interface device is attached to a host device via a multi-purpose interface—e.g., a small computer systems interface (“SCSI”) interface—which includes both an interface card and the driver for the interface card. *Id.* at 3:51–57, 8:42–46. According to the ’437 patent, SCSI interfaces were known to be present on most host devices or laptops. *Id.* at 8:42–46. By using a standard interface of the host device and by simulating an input/output device to the host device, the interface device “is

automatically supported by all known host systems without any additional sophisticated driver software.” *Id.* at 11:38–44.

C. Illustrative Claim

Of the challenged claims, claims 1 and 43 are independent. Claims 4–6, 9–16, 18, 30, 32, and 34 depend directly from claim 1; and claim 45 depends directly from claim 43. Claims 1 and 43 are illustrative:

1. An analog data generating and processing device (ADGPD), comprising:

an input/output (i/o) port;

a program memory;

a data storage memory;

a processor operatively interfaced with the i/o port, the program memory and the data storage memory;

wherein the processor is adapted to implement a data generation process by which analog data is acquired from each respective analog acquisition channel of a plurality of independent analog acquisition channels, the analog data from each respective channel is digitized, coupled into the processor, and is processed by the processor, *and the processed and digitized analog data is stored in the data storage memory as at least one file of digitized analog data;*

wherein the processor also is adapted to be involved in an automatic recognition process of a host computer in which, when the i/o port is operatively interfaced with a multi-purpose interface of the host computer, *the processor executes at least one instruction set stored in the program memory and thereby causes at least one parameter identifying the analog data generating and processing device, independent of analog data source, as a digital storage device instead of as an analog data generating and processing device to be automatically sent through the i/o port and to the multi-purpose interface of the computer (a) without requiring any end user to load any software onto the computer at any*

time and (b) without requiring any end user to interact with the computer to set up a file system in the ADGPD at any time, wherein the at least one parameter is consistent with the ADGPD being responsive to commands issued from a customary device driver;

wherein the at least one parameter provides information to the computer about file transfer characteristics of the ADGPD;
and

wherein the processor is further adapted to be involved in an automatic file transfer process in which, when the i/o port is operatively interfaced with the multi-purpose interface of the computer, and after the at least one parameter has been sent from the i/o port to the multi-purpose interface of the computer, the processor executes at least one other instruction set stored in the program memory to thereby cause the at least one file of digitized analog data acquired from at least one of the plurality of analog acquisition channels to be transferred to the computer using the customary device driver for the digital storage device while causing the analog data generating and processing device to appear to the computer as if it were the digital storage device *without requiring any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time.*

Ex. 1001, 11:57–12:42 (disputed limitations emphasized)

43. An analog data generating and processing method for acquiring analog data and for communicating with a host computer comprising:

operatively interfacing an analog data device including a digital processor, a program memory and a data storage memory, to a multi-purpose interface of the host computer;

acquiring analog data on each respective analog acquisition channel of a plurality of independent analog acquisition channels, converting the acquired analog data to digitized acquired analog data, and coupling the digitized acquired analog data into the digital processor for processing by the digital processor;

automatically generating and transmitting to the host computer via the multipurpose interface an identification parameter which identifies the analog data generating and processing device to the host computer as a digital storage device but which is different than an analog data device, and independent of analog data source, and the analog data generating and processing device communicating with the host computer through the multi-purpose interface as if the analog data generating and processing device were the digital storage device including transferring the digitized acquired analog data acquired from at least one of the analog acquisition channels, wherein the identification parameter is consistent with the ADGPD being responsive to commands issued from a customary device driver, using the customary device driver present for the customary digital storage device in the host computer without requiring the user to load the device driver.

Id. at 16:47–17:10 (disputed limitations emphasized).

D. Applied References

Petitioner relies upon the references and Declarations listed below.

Exhibit	References and Declarations
1003	First Declaration of Erez Zadok, Ph.D. (in support of Petition)
1007	Friedhelm Schmidt, <i>The SCSI Bus and IDE Interface Protocols, Applications and Programming</i> (J. Michael Schultz trans., Addison-Wesley Publishing Co. 1995) (“Schmidt”) ³
1030	Misc. Action No. 07-493 (RMC), MDL No. 1880, Order Regarding Claims Construction
1041	Marc F. Pucci, <i>Configurable Data Manipulation in an Attached Multiprocessor</i> , 4 COMPUTING SYSTEMS 217 (Summer 1991) (“Pucci”)
1042	U.S. Patent No. 4,790,003 to Kepley <i>et al.</i> , issued on December 6, 1988 (“Kepley”)

³ See Ex. 1024 ¶¶ 23–28.

Exhibit	References and Declarations
1043	U.S. Patent No. 5,081,454 to Campbell, Jr. <i>et al.</i> , issued on January 14, 1992 (“Campbell”)
1044	U.S. Patent No. 5,353,374 to Wilson <i>et al.</i> , issued on October 4, 1994 (“Wilson”)
1045	U.S. Patent No. 4,065,644 to Shinosky, Jr. <i>et al.</i> , issued on December 27, 1977 (“Shinosky”)
1054	Second Declaration of Erez Zadok, Ph.D. (in support of Reply)

See Pet. v–vi, 4–5; Reply iv.

E. Instituted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Inst. Dec. 37–38):⁴

Challenged Claim(s)	Basis	References
1, 4–6, 9–12, 14, 15, 30, and 34	35 U.S.C. § 103(a)	Pucci, Kepley, and Schmidt
16	35 U.S.C. § 103(a)	Pucci, Kepley, Schmidt, and Shinosky
13 and 18	35 U.S.C. § 103(a)	Pucci, Kepley, Schmidt, and Campbell
32	35 U.S.C. § 103(a)	Pucci, Kepley, Schmidt, and Wilson
43	35 U.S.C. § 103(a)	Pucci and Schmidt

⁴ Because the claims at issue have a filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), we apply the pre-AIA version of 35 U.S.C. § 103 in this Decision.

Challenged Claim(s)	Basis	References
45	35 U.S.C. § 103(a)	Pucci, Schmidt, and Campbell

In addition to the supporting arguments and evidence for these grounds in the Petition, Petitioner also presents expert testimony. Ex. 1003, First Declaration of Erez Zadok, Ph.D. (“Zadok Decl. I”). Petitioner also presents expert testimony in support of its Reply. Ex. 1054, Second Declaration of Dr. Zadok (“Zadok Decl. II”). Patent Owner supports its arguments of patentability with expert testimony. Ex. 2003, Declaration of Thomas A. Gafford (“Gafford Declaration”).

II. ANALYSIS

A. Overview

Petitioner argues that claims 1, 4–6, 9–16, 18, 30, 32, and 34 of the ’437 patent are unpatentable under 35 U.S.C. § 103(a) as rendered obvious over Pucci, Kepley, and Schmidt, alone or in combination with another reference, and that claims 43 and 45 of the ’437 patent are unpatentable under 35 U.S.C. § 103(a) as rendered obvious over Pucci and Schmidt, alone or in combination with another reference. Pet. 10–67. Petitioner argues, however, that challenged independent claim 1 is unpatentable based solely on the combined teachings of Pucci, Kepley, and Schmidt and challenged independent claim 43 is unpatentable based solely on the combined teachings of Pucci and Schmidt. *Id.* at 12–42 (claim 1), 60–66 (claim 43). Petitioner does not rely on the other applied references to teach or suggest any of the limitations of these independent claims. *Id.* at 10–12, 42–60, 66–67.

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when in evidence, objective evidence of non-obviousness, i.e., secondary considerations.⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Nevertheless, the Court cautions us against “the temptation to read into the prior art the teachings of the invention in issue.” *Graham*, 383 U.S. at 36.

In *inter partes* review, it is petitioner’s “burden to demonstrate both that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (quotations omitted). Accordingly, the petitioner must “articulate[] reasoning with some rational underpinning to support the legal conclusion of

⁵ Patent Owner does not produce objective evidence of non-obviousness in its Patent Owner Response. See Paper 11, 3 (“The patent owner is cautioned that any arguments for patentability not raised in the response will be deemed waived.”); see also *Medtronic Inc. v. NuVasive Inc.*, Case IPR2014-00087, slip op. at 20–21 (PTAB Apr. 3, 2015) (Paper 44) (It is the patent owner’s burden to introduce objective evidence of non-obviousness.), *aff’d sub nom.*, *In re Nuvasive*, 689 Fed.Appx. 954 (Mem.) (Fed. Cir. 2017).

obviousness.” *KSR*, 550 U.S. at 418 (citation omitted). The “factual inquiry” into the reasons for “combin[ing] references must be thorough and searching, and [t]he need for specificity pervades.” *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381–82 (Fed. Cir. 2016) (quotations omitted). An obviousness determination cannot be reached where the record lacks “explanation as to how or why the references would be combined to produce the claimed invention.” *TriVascular, Inc. v. Samuels*, 812 F.3d 1056, 1066 (Fed. Cir. 2016).

Although Petitioner bears the burden of showing the unpatentability of the claims by a preponderance of the evidence, Patent Owner does not challenge Petitioner’s arguments and evidence regarding the grounds asserted against the challenged dependent claims. PO Resp. 30–31; *see* Reply 24. Instead, Patent Owner contends that Petitioner’s arguments and evidence regarding the grounds asserted against independent claims 1 and 43 are deficient and, consequently, that the challenges to both the independent and dependent claims must fail. Therefore, Patent Owner is deemed to have waived any arguments for patentability with respect to the challenged dependent claims apart from its arguments with respect to their base claims. Paper 11, 3.

B. Level of Ordinary Skill in the Art

Consistent with the *Graham* factors, we first determine the assessment of ordinary skill in the art applicable to this proceeding. In our Institution Decision we stated,

Petitioner’s declarant, [Dr. Zadok], testifies that a person of ordinary skill in the art at the time of the invention “would have had at least a four-year undergraduate degree in electrical engineering, computer science, computer engineering, or related

field of study, or equivalent experience, and *at least two years' experience* in studying or developing computer interfaces or peripherals and storage related software.” Ex. 1003 ¶ 28 (emphasis added). Dr. Zadok further testifies that such a person also would have been “familiar with operating systems (e.g., MS-DOS, Windows, Unix), their associated file systems (e.g., a FAT, UFS, FFS), device drivers for computer components and peripherals (e.g., mass storage device drivers), and communication interfaces (e.g., SCSI, USB, PCMCIA).” *Id.*

Patent Owner confirms that Petitioner’s statements regarding the level of ordinary skill in the art are partially consistent with Patent Owner’s view, but, nonetheless, Patent Owner contends that “the field of the invention relates to ‘the transfer of data and in particular to interface devices for communication between a computer or host device and a data transmit/receive device from which data is to be acquired or with which two-way communication is to take place’” (Prelim. Resp. 6) and that a person ordinarily skilled in the art would have *at least three years of experience*, or, alternatively, five or more years of experience without a bachelor’s degree (*id.* at 6–7). Patent Owner currently does not provide declarant testimony in support of its assessment of the level of ordinary skill in the art.

On this record, we do not discern a meaningful difference between the parties’ assessments of a person of ordinary skill in the art. We further note that either assessment appears consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art in the instant proceeding. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).⁶

⁶ *See, e.g.*, Ex. 1041, 217 (Abstract) (“The ION Data Engine is a multiprocessor tasking system that provides data manipulation services for collections of workstations or other conventional computers. It is a back-end system, connecting to a workstation via the Small Computer Systems Interface (SCSI) disk interface.”); Ex. 1042, 3:29–36 (“The voice mail message exchange between the voice mail service systems is accomplished by a computer-to-computer data file transfer via a data call connection. A computer data file transfer operation uses well-known data integrity and data correction arrangements to preserve the quality of the transmitted encoded

Moreover, Dr. Zadok appears to satisfy either assessment. *See* Ex. 1004. Our analysis in this Decision is supported by either assessment, but, for purposes of this Decision and to the extent necessary, we adopt Petitioner’s assessment.

Inst. Dec. 11–13. Patent Owner in its Patent Owner Response reiterates the assessment of ordinary skill that it provided in the Preliminary Response.

PO Resp. 5–7. Patent Owner agrees, however, that “there are not meaningful differences between the parties’ definitions of a [person of ordinary skill in the art (“POSITA”)] for purposes of this proceeding.” *Id.* at 7. More importantly, no argument presented hinges on whether either party’s proposed assessment of ordinary skill in the art is adopted.

C. Claim Construction

Claims of an expired patent are given their ordinary and customary meaning in accordance with *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) (“*Phillips*”). *See Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1279 (Fed. Cir. 2017) (applying the *Phillips* standard to construe the claims of an expired patent in an *inter partes* review). In a related proceeding, Patent Owner indicated that it believes the term of U.S. Patent No. 6,470,399 B1 (“the ’399 patent”) ended on March 3, 2018. *Apple Inc. v. Papst Licensing GmbH & Co., KG*, Case IPR2016-01839, slip op. at 7 (PTAB March 27, 2017) (Paper 15) (citing IPR2016-01839, Paper 14, 2). We note that the ’437 patent is subject to a Terminal

and compressed voice mail message.”); Ex. 1007, v (“The SCSI bus, on the other hand, is designed not only for hard drives but also for tape drives, CDROM, scanners, and printers. Almost all modern computers, from PCs to workstations to mainframes, are equipped with a SCSI interface.”).

Disclaimer, filed October 30, 2007, disclaiming the terminal part of the statutory term of the '437 patent which would extend beyond the expiration date of the '399 patent. *See* Inst. Dec. 13 n.5 (citing Ex. 3001); *see also* PO Resp. 8 (Patent Owner states that the '437 patent “will probably expire prior to the Final Written Decision.”). Thus, we treat the '437 patent as expired.

Petitioner proposes the construction of two terms recited in the independent claims: “multi-purpose interface of the host computer” and “customary device driver.” Pet. 8–11. Although Petitioner proposed constructions of these terms under the broadest reasonable interpretation standard in its Petition, Petitioner argues that the broadest reasonable interpretation and *Phillips* constructions of these terms are the same (*id.* at 9) and that we should adopt the constructions of these terms approved by the U.S. Court of Appeals for the Federal Circuit (*see, e.g., In re Papst Licensing Digital Camera Patent Litigation*, 778 F.3d 1255, 1270 (Fed. Cir. 2015)). *See* Reply 2.

1. “multi-purpose interface” (*Independent Claims 1 and 43*)

In our Institution Decision, applying the broadest reasonable interpretation standard, we found it sufficient to construe a “multi-purpose interface” to encompass a “SCSI interface.” Inst. Dec. 14–15; *see Samsung Elecs. Co., Ltd. v. Papst Licensing GmbH & Co., KG*, Case IPR2016-01733, slip op. at 8–9 (PTAB February 8, 2017) (Paper 7). Patent Owner does not expressly oppose our construction of “multi-purpose interface of the host computer,” but proffers the district court’s claim construction order “for the Board’s consideration.” PO Resp. 8–9 (citing Ex. 2006). Petitioner argues that we should maintain the construction applied in our Institution Decision

and that there is no meaningful difference between the *Phillips* and broadest reasonable interpretation standards. Reply 2–3.

The Specification of the ’437 patent describes “the interface device according to the present invention is to be attached to a host device by means of a *multi-purpose interface* of the host device which can be implemented, for example, as a *small computer systems interface (SCSI) interface* or as an enhanced printer interface.” Ex. 1001, 3:51–56 (emphases added); see Ex. 2006, 17 (quoting the Specification of the ’437 patent). The Specification also indicates that SCSI interfaces are present on most host devices or laptops. *Id.* at 8:45–46. Petitioner’s declarant, Dr. Zadok, testifies that:

It was well known at the time prior to the earliest priority date of the ’437 patent that when a host computer detects that a device has been connected to it, the host inquires as to what type of device it is and the connected device responds. The host then determines whether it already possesses drivers for the identified type of device, and if not, the host must obtain device-specific drivers before it can fully operate with the new device. *This concept is perhaps best illustrated by two well-known hard disk interface technologies that existed prior to the earliest priority date of the ’437 patent, in particular, Advanced Technology Attachment (“ATA”) and Small Computer Systems Interface (“SCSI”) bus.*

Ex. 1003 ¶ 43 (emphasis added).

The U.S. District Court for the Eastern District of Texas, Tyler Division, rejected the construction proposed there by Petitioner and held that the term “multi-purpose interface” has its “plain meaning.” Ex. 2006, 19, 47; *cf.* Ex. 1030, 2. We determine that the limited construction set forth in our Institution Decision is consistent with the plain meaning of this term as explained in the Specification of the ’437 patent (Ex. 1001, 3:51–56) and as

would have been understood by a person of ordinary skill in the art, as evidenced by Dr. Zadok’s testimony (Ex. 1003 ¶ 43; see Ex. 1054, 17:6–9). Thus, we maintain here the limited construction of the term “multi-purpose interface” as encompassing a “SCSI interface.”⁷

2. “customary device driver” (*Independent Claims 1 and 43*)

In our Institution Decision, we found it sufficient to construe a “customary device driver” to encompass “a driver for a device normally present in most commercially available host devices (e.g., a hard disk driver or a SCSI driver).” Inst. Dec. 17. Again, Patent Owner does not expressly oppose our construction of “customary device driver,” but proffers the district court’s claim construction order “for the Board’s consideration.” PO Resp. 8–9 (citing Ex. 2006). Petitioner argues that:

Consistent with the *Phillips* claim construction standard and the Federal Circuit’s finding in *In re Papst Licensing Digital Camera Patent Litig.*, the District Court construed “customary” as including a limitation of “normally part of commercially available computer systems **at the time of the invention.**” (Ex. 2006, Claim Construction Order, pp. 27-28 (emphasis added)); see also *In re Papst Licensing Digital Camera Patent Litig.*, 778 F.3d 1255, 1269–70 (Fed. Cir. 2015). For consistency with the District Court Construction Order under the *Phillips* standard, the Board should construe “customary device driver” as a “driver for a device normally part of commercially available computer systems at the time of the invention.” (See Ex. 2006, p. 28.)

Reply 3–4 (emphasis in original, citation omitted).

⁷ In IPR2016-01733, the panel applied the same construction under the broadest reasonable interpretation standard. *Samsung Elecs. Co., Ltd. v. Papst Licensing GmbH & Co., KG*, Case IPR2016-01733, slip op. at 10 (PTAB Feb. 2, 2018) (Paper 24).

Petitioner further argues that “[t]his construction should not change the Board’s finding that the customary device driver encompasses a hard disk driver or a SCSI driver. As Dr. Zadok explains, hard disk and SCSI drivers were both customary as of the earliest possible priority date for the ’437 patent. ([Ex. 1003], ¶129.)” Reply 4 n.1.

The Specification of the ’437 patent indicates that “both a high data transfer rate and host device-independent use can be achieved if a driver for an input/output device *customary* in a host device, *normally present in most commercially available host devices, is utilized.*” Ex. 1001, 3:33–37 (emphases added). The Specification further explains that “[d]rivers for input/output devices *customary* in a host device which are *found in practically all host devices are, for example, drivers for hard disks, for graphics devices or for printer devices.*” *Id.* at 3:37–40 (emphases added). The Specification also indicates that SCSI interfaces are present on most host devices or laptops, and SCSI drivers are “normally included by the manufacturer of the multi-purpose interface.” *Id.* at 10:23–33; *see id.* at 8:45–46.

In our Institution Decision, we found that it was not necessary to recite expressly “at the time of the invention” in our claim construction. Inst. Dec. 16–17; *see Canon Inc. v. Papst Licensing GmbH & Co., KG*, Case IPR2016-01199, slip op. at 11 (PTAB December 15, 2016) (Paper 8). The Federal Circuit and the U.S. District Court for the Eastern District of Texas, Tyler Division, however, construed “customary” to include “a limitation of ‘normally part of commercially available computer systems *at the time of the invention.*’” *See* Ex. 2006, 27, 49 (emphasis added). Thus, we now determine the ordinary and customary meaning of the term “customary

device driver” to be “a driver for a device normally part of commercially available host devices (*e.g.*, a hard disk driver or a SCSI driver) at the time of the invention.”

3. *Other Claim Terms*

Only terms which are in controversy in this proceeding need to be construed, and then only to the extent necessary to resolve the controversy. *See, e.g., Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). Consequently, no other claim terms now require express construction.

D. Obviousness of Claims 1, 4–6, 9–12, 14, 15, 30, and 34 Over Pucci, Kepley, and Schmidt

1. *Claim 1*

We begin our analysis of Petitioner’s asserted grounds for unpatentability with an overview of the references applied against independent claim 1, from which each of claims 4–6, 9–12, 14, 15, 30, and 34 depends.

a. Pucci (Ex. 1041)

Pucci is entitled “Configurable Data Manipulation in an Attached Multiprocessor.” Ex. 1041, 217. Pucci describes that:

The ION Data Engine is a multiprocessor tasking system that provides data manipulation services for collections of workstations or other conventional computers. It is a back-end system, connecting to a workstation via the Small Computer

Systems Interface (SCSI) disk interface. ION appears to the workstation as a large, high speed disk device, but with user extensible characteristics. By mapping an application's functionality into simple disk read and write accesses, ION achieves a high degree of application portability, while providing enhanced performance via dedicated processors closely positioned to I/O devices and a streamlined tasking system for device control.

Ex. 1041, 217. Pucci further describes the interaction between ION and the workstation as the workstation transmitting “a small list of data manipulation directives” to the ION node. *Id.* The ION node returns results only, although, in the extreme case, the ION system generates all output data requiring no processing in the workstation. *Id.* Pucci further describes “ION [] being used as an experimental platform for voice mail services in a user[-]programmable telephone switch prototype.” *Id.* at 218.

In particular, Pucci partitions an application into “hardware dependent and independent components.” *Id.* at 219. The “hardware independent components” reside in the workstation to “easily port[]” the application to new architectures. *Id.* The “hardware dependent components” are in a separate backplane-based environment. *Id.* These components are connected using the SCSI disk interface. *Id.* Accordingly, each workstation accesses ION using its local disk system, and sees ION as “though it were physically a local disk drive.” *Id.* at 219-20. The basic structure of an ION system is shown in Figure 1, reproduced below.

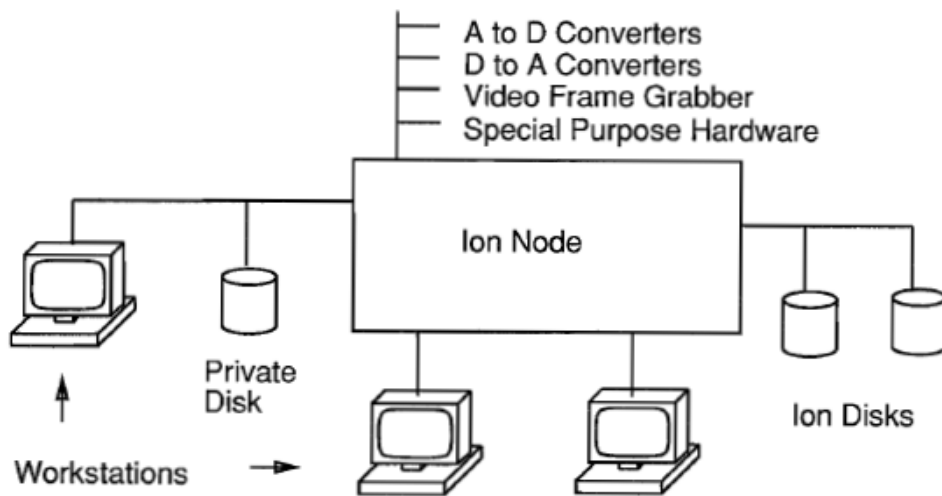


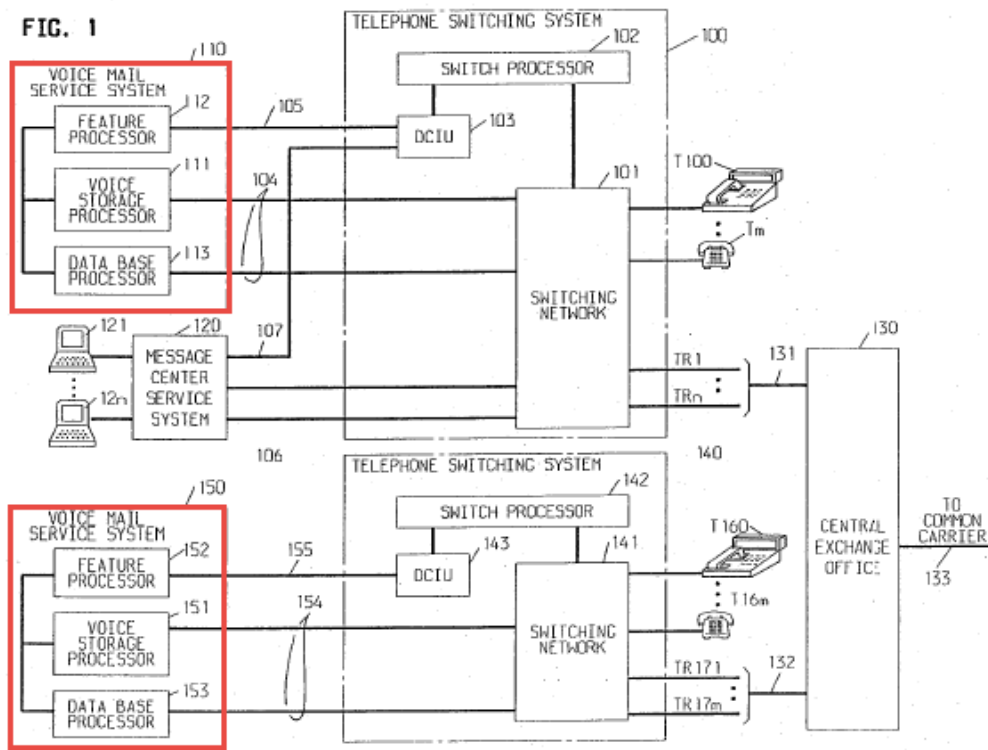
Figure 1. An ION system. Multiple workstations connect to an ION node, which contains single board computers and other peripheral interfaces and devices. Each workstation views its ION connection as though it were a large conventional disk drive.

Pucci's Figure 1 depicts an ION node interconnected with workstations, private disk, ION disks, and other hardware, including analog-to-digital (A-to-D) converters. In connection with the voice messaging service for the prototype telephone switch, the "bulk of the application resides in a conventional workstation." *Id.* at 221. The peripheral devices, such as the A-to-D converters "are located within ION." *Id.* The application at the workstation interfaces with the A-to-D converters by implementing "actions," which are application specific functions. *Id.* To obtain converted data, the controlling program within the workstation reads from a designated disk block address corresponding to one of the 5 analog channels available. *Id.* Pucci describes the interaction as a "standard disk read and write" access, such as by using the "lseek()" command followed by the "read()" command in the Unix domain. *Id.*

b. Kepley (Ex. 1042)

Kepley is entitled “Message Service System Network,” and is directed to a message service system network that provides a voice mail message transfer capability between voice mail message service systems. Ex. 1042, [54], [57]. According to Kepley, existing voice mail systems had multiple telephone switching systems, each associated with a voice mail system, and it was difficult to network the voice mail service system together without incurring a significant transmission cost and degradation of the quality of the voice transmissions. *Id.* at 1:54–60. In practice, when a voice mail message received at one voice mail system is transmitted to a distant voice mail system; the message, which is stored in digital form, is reconverted to analog form for transmission over standard voice-grade trunks. *Id.* at 1:65–68. The transmitted voice mail message then is reconverted to digitally encoded form and stored in the distant voice mail system. *Id.* at 2:1–2.

Kepley solves these problems by improving the message transfer capability between the voice mail message service systems such as by performing the message transfer as a “computer-to-computer data file transfer over high speed data lines which provides error correction capability.” *Id.* at 2:51–63. Kepley describes the voice mail message systems in connection with Figure 1, reproduced below and including our annotations.



Kepley's Figure 1 depicts two telephone switching systems 100, 140, each associated with a voice mail service system 110, 150 (annotated with a red outline), respectively. Kepley describes that, when telephone station set T100 creates a voice mail message for delivery to a message recipient at telephone station set T160, the feature processor of voice mail service system 110 places the message in a queue. Ex. 1042, 5:50–56. At the scheduled delivery time, feature processor 112 retrieves the stored voice mail message and originates a data call to the destination voice mail service system 150 to transfer the voice message. *Id.* at 5:56–65. “The transfer of a voice mail message is accomplished as a computer-to-computer data file transfer.” *Id.* at 5:66–67. This data call is originated from voice mail service system 110 to telephone switching system 100, over communication line 104, and then further through central exchange office 130, telephone

switching system 140, and over communication line 154 to destination voice mail service system 150. *Id.* at 6:1–5.

Kepley further describes that the voice mail messages are stored as digitally encoded voice signals, which feature processor 112 formats for transmission over the data call. Ex. 1042, 5:41–42, 6:8–10. This formatting includes reading the telephone number of the message sender from the voice mail message, appending the message sender to the retrieved voice mail message and adding data file transfer header information to form the data file that is transmitted over the data call to destination voice mail service system 150. *Id.* at 6:10–20.

c. Schmidt (Ex. 1007)

Schmidt describes the SCSI bus and Integrated Drive Electronics (“IDE”) interface, which both are American National Standards Institute standards. Ex. 1007, Preface. According to Schmidt, these interfaces are two of the most important interfaces for computer peripherals in use at that time of Schmidt’s publication, and almost all computers at that time, from personal computers to workstations to mainframes, were equipped with a SCSI interface. *Id.* The SCSI bus is designed for hard drives, as well as tape drives, CD-ROM, scanners, and printers.
Id.

d. Petitioner’s Arguments Regarding Claim 1

Petitioner argues that Pucci teaches an analog data generating and processing device (“ADGPD”). Pet. 12–14. In particular, Pucci’s A-to-D conversion application includes an ION node dedicated to generating and processing analog data. See Ex. 1041, Fig. 1 (reproduced above).

Moreover, Petitioner argues persuasively that Pucci teaches the ADGPD architecture limitations:

- a) “an input/output (i/o) port” (Pet. 14–15 (citing Ex. 1041, 222, Fig 2 (where each single board computer (“SBC”) is an input/output port)); see Ex. 1003 ¶¶ 67–68);
- b) “a program memory” (Pet. 15 (citing Ex. 1041, 223 (“All ION tasks are memory resident and execute with their own flow of control.”); see Ex. 1003 ¶ 69);
- c) “a data storage memory” (Pet. 15–16 (citing Ex. 1041, 222 (Pucci’s ION node also includes “local ION storage” and “large buffer memory”); see Ex. 1003 ¶ 70); and
- d) “a processor operatively interfaced with the i/o port, the program memory and the data storage memory” (Pet. 16–17 (citing Ex. 1041, 231–232 (an application task that resides within the ION node “interfaces to the SCSI bus and returns data to the workstation when requested”)); see Ex. 1003 ¶¶ 72–75).

Petitioner further argues that Pucci teaches that the processor generates analog data “by which analog data is acquired from each respective analog acquisition channel of a plurality of independent analog acquisition channels.” Pet. 18; see Ex. 1003 ¶¶ 77–85.

Referring to Pucci’s Figures 1 and 2, the ION node is connected through its application hardware interfaces to multiple A-to-D converters, and each A-to-D converter provides a respective analog channel for receiving analog voice messages. See Ex. 1041, 220, 222. Petitioner acknowledges that “Pucci does not explicitly disclose that analog data is acquired from ‘*each respective*’ analog acquisition channel of the plurality

of analog acquisition channels.” Pet. 20. Nevertheless, Petitioner argues that “it would have been obvious to a [person of ordinary skill in the art] that analog data would be acquired from each A-to-D converter channel in Pucci.” *Id.* (citing Ex. 1003 ¶ 90).

Petitioner further argues that the combination of Pucci and Kepley teaches that the analog data from each respective channel is digitized, coupled into the processor, and processed by the processor, and the processed and digitized analog data is stored in the data storage memory as at least one file of digitized analog data. *Id.* at 21–25. As noted above, Pucci teaches that analog data is acquired from each analog acquisition channel of a plurality of A-to-D converters, and the A-to-D converters convert the analog data to digitized data. *Id.* at 21 (citing Ex. 1041, 232 (“The part of the application that runs on the workstation requests converted data in response to a start/stop signal . . .”)); see Ex. 1003 ¶ 92. Further, Petitioner points out that Pucci’s ION node also “perform[s] data compression on the input stream” by “translat[ing] 16-bit linear data into 8-bit mu law data.” *Id.* at 22 (quoting Ex. 1041, 231). In addition, Petitioner points out that Pucci teaches processed and digitized analog data stored in the data storage memory. *Id.* In particular, Pucci teaches that an application task “extracts the raw data from the converter, placing it into a queue for temporary storage” (Ex. 1041, 231) and that the “[l]arge buffer memory . . . is used as a cache for physical device data” (*id.* at 222).

With regard to the recited storage in a file, Petitioner again acknowledges that “Pucci does not explicitly disclose the storage format for its digital voice data.” Pet. 22. Nevertheless, Petitioner argues that “storage

of data as a file was well-known prior to Pucci.” *Id.* Consequently, Petitioner argues that Kepley’s teaching of a voice mail system, which stores voice messages as files, supplies this missing limitation. *Id.* at 22–24. In particular, Petitioner notes that Pucci teaches that its ION node is a “platform for analog to digital (A-to-D) services for a voice messaging application of a prototype programmable telephone switch system called GARDEN” (Ex. 1041, 231)⁸ and that “Kepley explicitly describes a voice mail system having a telephone switch and a voicemail that stores a ‘digitally encoded and compressed voice mail message’ as a file” (Pet. 23 (quoting Ex. 1042, Abstract)). Further Pucci teaches that data can be stored as “traditional file system data.” *Id.* at 22 (citing Ex. 1041, 221).

Petitioner argues that a person of ordinary skill in the art would have had reason to combine the teachings of Pucci and Kepley to achieve the recited limitations. As noted above, Petitioner argues that both Pucci and Kepley are directed to voice mail applications. *See id.* at 22–23. In particular, Petitioner argues that “[t]he file storage of Kepley allows the voice mail message service system to perform ‘voice mail message transfer . . . as a computer-to-computer data file transfer operation over high speed data lines’ to other message service systems.” *Id.* at 23 (quoting Ex. 1042, Abstract). Further, as Kepley explains, because the voice mail message is a

⁸ *See also* Ex. 1041, 218 (“ION is being used as an experimental platform for voice mail services in a user programmable telephone switch prototype.”), 221 (“ION supports an analog to digital (A-to-D) conversion application that provides voice messaging service for a prototype telephone switch.”), 230–231 (“[A]n analog data capture device [18] is available which returns data to a user in a manner similar to that of the voice messaging system.”).

data file, the integrity of the transferred data is ensured, the data transmission is “timewise efficient,” and additional data may be included in the transmission. *Id.* at 23–24 (citing Ex. 1042, 15:59–16:4). In addition, Petitioner argues that the combination of the teachings of Pucci and Kepley is merely the substitution of one known message processing method for another. *Id.* at 24; see *KSR*, 550 U.S. at 415–16.

Claim 1 further recites that

an automatic recognition process of a host computer in which, when *the i/o port is operatively interfaced with a multi-purpose interface of the host computer*, the processor executes at least one instruction set stored in the program memory and thereby causes at least one parameter identifying the analog data generating and processing device, independent of analog data source, as a digital storage device instead of as an analog data generating and processing device to be automatically sent through the i/o port and to the multi-purpose interface of the computer

Ex. 1001, 12:6–17 (emphasis added).

Petitioner notes that Pucci teaches that “a SCSI interface chip of the ION node (*‘the i/o port’*) interfaces with an individual workstation (*‘host computer’*) via a SCSI bus.” Pet. 26 (citing Ex. 1041, 222, Fig. 2).

Petitioner acknowledges, however, that, “[a]lthough Pucci teaches that a SCSI ‘host controller’ resides within the host system (Pucci, pp. 238–239), Pucci does not explicitly disclose how the SCSI bus connects to a workstation.” *Id.* at 26. Nevertheless, Petitioner notes that Schmidt discloses that “[a] computer system is connected to the SCSI bus through a host adapter.” *Id.* (quoting Ex. 1007, 79). Petitioner argues that host adapters, such as those taught by Schmidt, “often reside directly on the mother board of workstations and modern personal computers, in which case they are referred to as embedded host adapters.” *Id.* (quoting Ex. 1007, 79).

Petitioner further argues that a person of ordinary skill in the art would have had reason to combine the teachings of Pucci and Schmidt, such that Pucci's workstations would include the SCSI adapters, such as those taught by Schmidt. *Id.* at 26–27; *see* Ex. 1003 ¶¶ 100, 101.

Petitioner acknowledges that “Pucci [] does not explicitly disclose the details of the recognition process leading to the ION node being recognized as a disk drive by the workstation.” Pet. 27. Dr. Zadok testifies, however, that it was well known as of the filing date of the '437 patent that “SCSI bus initialization between a host computer and a peripheral device included the peripheral device identifying its device class and type to the host computer.” *Id.* (citing Ex. 1003 ¶ 103). Specifically, in a SCSI interface, as described by Schmidt, “[t]here are a number of commands that are common to all device types” and the implementation of these commands “is mandatory.” *Id.* at 28 (quoting Ex. 1007, 138), 32. Among these mandatory commands is the “INQUIRY” command. *Id.* (citing Ex. 1007, 138 (Table 12.10 (showing the INQUIRY command as Type “M”)), 137 (Table 12.8 (showing Type M commands as “Mandatory” commands that “must be implemented”))). Schmidt teaches that the SCSI “INQUIRY” command “can be used to learn . . . the device type,” which is also called the “device class” or “peripheral device type.” *Id.* (quoting Ex. 1007, 138); *see also* Ex. 1007, 139–40 (Table 12.12).

Additionally, Petitioner argues that the “at least one parameter identifying the analog data generating and processing device, independent of analog data source” also is taught by Schmidt. Pet. 27–31; *see* Ex. 1001, 12:11–13. Schmidt teaches that the SCSI interface is a “device *independent* I/O bus” that independence “makes it possible to write device drivers for a

device *without knowing device specific details.*” Pet 30 (quoting Ex. 1007, 79 (emphases added)). Moreover, Petitioner argues that Pucci’s ION node identifies itself as a disk drive to the workstation. *Id.* Consequently, the identification of the ION node is “independent” of the ION node’s “analog data source.” *Id.* (citing Ex. 1003 ¶ 108).

Because Pucci teaches using an SCSI bus to connect the ION node to a workstation, Petitioner argues that a person of ordinary skill in the art would understand that such a SCSI device would employ the SCSI initialization process, including the SCSI commands, taught by Schmidt. *Id.* at 28–31 (Petitioner arguing that all SCSI devices, which Pucci discloses, must support the INQUIRY command, making the use of Schmidt’s detailed explanations of the INQUIRY command obvious to an ordinarily skill person); *see* Ex. 1003 ¶¶ 105, 106.

With regard to the limitation reciting that

at least one parameter identifying the analog data generating and processing device, independent of analog data source, as a digital storage device instead of as an analog data generating and processing device [is caused] to be automatically sent through the i/o port and to the multi-purpose interface of the computer (*a*) *without requiring any end user to load any software onto the computer at any time and (b) without requiring any end user to interact with the computer to set up a file system in the ADGPD at any time . . .*

Ex. 1001, 12:11–20. Petitioner relies on Pucci’s teaching that its ION system uses existing device drivers. Pet. 33. In particular, Petitioner notes that “[a] workstation sees ION as though it were physically a local disk drive Software running within the ION system mimics the behavior of a conventional device, providing the workstation with a peripheral that it knows how to deal with.” Pet. 41 (citing Ex. 1041, 220); *see* Ex. 1003

¶¶ 116–120. Further, Pucci teaches that “since the hardware dependent A-to-D code remains within ION, *no driver changes to the host’s operating system are necessary upon workstation upgrade.*” Ex. 1041, 231 (emphasis added); see Ex. 1003 ¶¶ 128, 129. According to Petitioner, Pucci utilizes the existing SCSI hard disk drivers, which, according to Petitioner, does not require a user to load file transfer enabling software. Pet. 33–34; see Ex. 1003 ¶ 117. Further, Petitioner notes that the ION node tells the workstation that it is capable of file transfer (i.e., “provides information” regarding file transfer characteristics) when it identifies as a hard disk drive. *Id.* at 36 (citing Ex. 1003 ¶ 130).

Finally, Petitioner argues that the combined teachings of Pucci and Kepley teach or suggest the limitations of claim 1 relating to the transfer of files. Pet. 36–41. Claim 1 recites that

wherein the processor is further adapted to be involved in an automatic file transfer process in which, when the i/o port is operatively interfaced with the multi-purpose interface of the computer, and after the at least one parameter has been sent from the i/o port to the multi-purpose interface of the computer, *the processor executes at least one other instruction set stored in the program memory to thereby cause the at least one file of digitized analog data acquired from at least one of the plurality of analog acquisition channels to be transferred to the computer* using the customary device driver for the digital storage device while causing the analog data generating and processing device to appear to the computer as if it were the digital storage device without requiring any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time.

Ex. 1001, 12:27–42 (emphasis added). In Pucci, the workstation may request the digitized analog data from the ION node. Pet. 38. Thus, “[t]he part of the application that runs on the workstation requests converted data in response to a start/stop signal from other system hardware, which

indicates the beginning and end of a recording session.” Ex. 1041, 232. A task of the A-to-D application (i.e., voicemail application), which resides on the ION node, is to “interface[] to the SCSI bus and returns [the] data to the workstation when requested.” *Id.* (quoting Ex. 1041, 232).

As noted above, Pucci teaches acquiring analog data from a plurality of analog acquisition channels and further teaches that

the workstation interacts with the ION node like a conventional disk drive. As such, a file can be read from the ION node in the same way as it would be read from the conventional disk drive. ([Ex. 1003] ¶141.) That is, the combined system accomplishes file transfer using existing hard disk drivers. (*Id.* ¶141.) Pucci stresses that its ION system uses existing device drivers.

Pet. 41. Thus, Petitioner argues that the combined teachings of Pucci, Kepley, and Schmidt teach or suggest the file transfer limitations of claim 1.

e. Patent Owner’s Arguments Regarding Claim 1

Patent Owner presents four arguments that the teachings of Pucci, Kepley, and Schmidt fail to render claim 1 obvious. PO. Resp. 9–12. First, Patent Owner contends that Pucci, alone or in combination with the other references, does not teach or suggest that “the analog data from each respective channel is digitized, coupled into the processor, and is processed by the processor, and the processed and digitized analog data is stored in the data storage memory as at least one file of digitized analog data,” as recited in claim 1. *Id.* at 14–18; *see supra* Section I.C. Second, Patent Owner contends that Pucci, alone or in combination with the other references, does not teach or suggest that “the processor executes at least one instruction set stored in the program memory and thereby causes at least one parameter identifying the analog data generating and processing device, independent of

analog data source, as a digital storage device,” as recited in claim 1.⁹ PO Resp. 18–24. Third, Patent Owner contends that Pucci, alone or in combination with the other references, does not teach or suggest the negative limitations – “without requiring any end user to load any software onto the computer at any time” and “without requiring any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time,” as recited in claim 1. *Id.* at 24–30. Fourth, Patent Owner contends that Petitioner fails to provide adequate reasons for a person of ordinary skill in the art to combine the teachings of Pucci and Schmidt or of Pucci and Kepley to achieve the device recited in claim 1. *Id.* at 31–35. Because, in view of at least Patent Owner’s first, third, and fourth arguments, we are persuaded that Petitioner fails to demonstrate that the combined teachings of Pucci, Kepley, and Schmidt teach or suggest all of the limitations of claim 1, we are not persuaded that Petitioner demonstrates by a preponderance of the evidence that claim 1 of the ’437 patent is unpatentable over the teachings of Pucci in combination with those of Kepley and Schmidt.

(i) *Failure to Teach or Suggest Storage “as at least one file of digitized analog data”*

As noted above, we are not persuaded that Pucci teaches or suggests the use of a file system for storing digitized voice messages at the ION node. Petitioner relies on the disclosure of “traditional file system data” to argue that Pucci *suggests* and *encourages* the use of a traditional file system. *See*

⁹ As we discuss below with respect to a similar limitation in claim 43 (*see infra* Section II.E.2.), we are persuaded that Schmidt teaches or suggests this limitation. Nevertheless, because Petitioner’s arguments and evidence with respect to claim 1 are otherwise deficient, it is not necessary discuss this limitation further here.

Pet. 24; Reply 9. The deficiency in Petitioner’s argument is that it ascribes to Pucci’s teaching of storing “traditional file storage data” a use for that data that Pucci does not support. That is, Pucci’s A-to-D converters do not store data as a file anywhere in the ION node. *See* MICROSOFT PRESS COMPUTER DICTIONARY, 194–195 (3rd ed. 1997)) (definitions of “file” and “file system”) (Ex. 1014). Petitioner’s argument that Pucci suggests such file storage is not supported by Pucci’s disclosure, when considered in its entirety, especially with regard to A-to-D conversion data.

Pucci discloses that the ION node handles three forms of data: random read/write data, traditional file system data, and more complex objects for a variety of applications managed by tasks running within the ION system. Ex. 1041, 221. The A-to-D conversion application, which is used in the voice mail system application, relied on by Petitioner, does not produce traditional file system data. As Petitioner explains, “Pucci discloses that an application task ‘extracts the raw data from the [A-to-D] converter, placing it into a queue for temporary storage.’” Pet. 22; Ex. 1003 ¶ 93 (citing Ex. 1041, 231). Petitioner also argues that a person of ordinary skill in the art would understand that placing the data in temporary storage is storing the data in the large buffer memory. Pet. 22; Ex. 1003 ¶ 93 (citing Ex. 1041, 222). Further Dr. Zadok explains that the large buffer memory of the ION node, which is part of the recited “storage memory,” is used as a cache for physical device data. Ex. 1003 ¶ 93 (citing Ex. 1041, 222). Thus, the data produced in the ION node from the A-to-D converters is *raw data* and is stored in the large memory buffer that used as the cache for physical device data.

The fact that Pucci identifies traditional file storage data as a type of data stored in the ION node is not sufficient to support the argument that Pucci “suggests” or “encourages” the use of a traditional file system. In this regard, we do not credit Dr. Zadok’s testimony at paragraph 94 of the Declaration (Exhibit 1003). Although we agree that storing data as a file, in general, was well-known,¹⁰ and that Pucci identified file data as a type of data that may be stored in the ION node, we find that Pucci does not suggest, much less encourage, storing the A-to-D *data* as a *file*. Pucci describes a specific manner of accessing data converted by the A-to-D converters, i.e., reading from a designated disk block as the conversion takes place. Ex. 1041, 221, 232; *see* Ex. 1056, 78:3–12. For example, Pucci describes the ION Workstation as including the application that requests the converted data by first activating the device on a specific A-to-D channel, and then “retrieves data by reading the data block address for that channel.” Ex. 1041, 232. “It continues to read the data address until all buffered data have been obtained.” *Id.* This description of Pucci’s buffering, Mr. Gafford opines, shows that the ION node uses a first in/first out (“FIFO”) approach to data writing and reading with respect to the A-to-D conversion. Ex. 2005 ¶ 49. We credit this testimony. We also credit Mr. Gafford’s testimony that,

¹⁰ *See, e.g.*, Reply 7 (Petitioner arguing that using a well-known, well understood, and traditional file system to store the digitized analog data as a file is consistent with Pucci’s teachings). This argument is unpersuasive as it ascribes to Pucci’s mention of *traditional* file system data more than the record supports. The notion that a traditional file system is well-known does not translate to an understanding by a person of ordinary skill in the art of using such file system in a system that chooses raw data, not a file, to access, store, and transmit that data, as is the case with Pucci.

at the time of the invention, it was not necessary to store data in files. *Id.*

¶ 50. Indeed, as noted above, Pucci provides three alternatives for storing data. Yet, although *capable* of storing files in the ION node, Pucci reserves that option for embodiments unrelated to the voice mail A-to-D conversion, while expressly providing A-to-D conversion data *as raw data* that is buffered as the conversion occurs.

We also find that the record does not support Petitioner’s argument that “[t]he fact that Pucci’s analog-to-digital conversion application is *silent* on whether the data can be stored in a file system . . . [is] indicative of Pucci’s compatibility with alternative storage systems.” Reply 10 (emphasis added). We do not agree with Petitioner’s characterization of Pucci as “silent” in this respect. As stated above, Pucci is deliberate in its description of handling the A-to-D conversion as raw data. Thus, Pucci would have been understood by a person of ordinary skill in the art to indicate only that the ION node handled different types of data, with the A-to-D converter data being raw data, not other types of data.

We also are not persuaded by Petitioner’s characterization of Mr. Gafford’s deposition testimony as supporting Petitioner’s contention. Petitioner points out that Mr. Gafford testifies that Pucci has both hard drive and solid-state volatile buffer memory, and traditional file system data could be stored in either place. Reply 10; *see* Ex. 1056, 80:12–20. This testimony, however, does not address whether that traditional file system data was data obtained from the A-to-D converters, which is the only “digitized analog data” that Petitioner has identified in this case.¹¹

¹¹ Claim 1 of the ’437 patent, for instance, requires that the “digitized analog

Petitioner also argues that the devices and methods of the '437 patent work the same way as Pucci in this regard, and, therefore, buffering in real time could be handled as a file even though there is no file at the acquisition time. Reply 10; Tr. 24:12–21. This argument risks analyzing Pucci in hindsight, with the knowledge of what is disclosed in the '437 patent. It would be improper, absent any other evidence, for us to rely on the '437 patent disclosure regarding real-time input to ascertain whether Pucci suggests handling its raw data in the same way. *See Nike, Inc. v. adidas AG*, 812 F.3d 1326, 1344 n.5 (Fed. Cir. 2016) (“We are troubled by the Board’s citation to the '011 patent’s written description and the corresponding appearance of using the '011 patent to find claim 49 unpatentable.”). Instead, as stated above, we rely on what Pucci teaches to a person of ordinary skill in the art at the time of the invention, without the benefit of the '437 patent disclosure. *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (“It is difficult but necessary that the decisionmaker forget what he or she has been taught . . . about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art.”). Nevertheless, we reject the argument for a further reason. The '437 patent discloses that a command “read file xy” may be interpreted to refer to a “real-time input” file. Ex. 1001, 6:2–13. The device disclosed in the '437 patent can accept such real-time input files because it implements the file system and interprets all access commands as involving

data is stored in the data storage memory as at least one file of digitized analog data” and Petitioner has identified the “digitized analog data” as the data from the A-to-D converters. Pet. 21–22.

a file system. We analyze Pucci with a different assumption — it is handling the input from the A-to-D converters as *raw data*. Pucci does not disclose a “read file” command, and no other disclosure in Pucci would suggest real-time input data is understood by Pucci’s system as a *file*. That concept may be present in the ’437 patent, but Petitioner fails to show that it is present in Pucci.

Petitioner also appears to argue that the buffering in Pucci could be a data file storage and transfer. In its Reply, for instance, Petitioner states that a person of ordinary skill in the art “would have understood that any system, including Pucci’s ION Node, *could* store the file as data blocks in its buffer and transfer the data blocks to the host in a manner similar to a FIFO transfer.” Reply 7–8 (emphasis added). Petitioner seeks to support this argument with Mr. Gafford’s deposition testimony where he stated that no disclosure in ION would prevent a user from writing software such that data from the large buffer memory could be stored in a file on ION’s local storage. Ex. 1056, 63:3–9. Petitioner’s argument is not persuasive, and Mr. Gafford’s testimony does not support the conclusion Petitioner asks us to draw from that testimony.

As to Petitioner’s argument, it presumes an alternative operation that Pucci does not teach or suggest, namely, that the buffered, raw data from the converters could be treated as files. This argument is not presented in the Petition, and Petitioner attempts to supply the missing limitation without sufficient factual support or reasoned analysis. *See Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362–66 (Fed. Cir. 2016) (recognizing that “reasoned analysis and evidentiary support” are required to supply a “limitation missing from the prior art” as well as a motivation to combine).

As noted above, we are not persuaded that Pucci provides sufficient reason for using a file system for the A-to-D conversion, much less for storing raw data as a file. Thus, the record does not support Petitioner's assertion that Pucci could handle the raw data as if it were a file in a file system. Further, what a person of ordinary skill in the art "could" do is not necessarily indicative of what a person of ordinary skill in the art "would" do. Reply 7–8; Ex. 1056, 63:3–9, 80:12–20, 83:5–11; *see Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only could have made but would have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention.”).

Although we recognize that a person of ordinary skill in the art is creative, not an automaton, the record must contain a reason *why* a person of ordinary skill in the art *would* modify Pucci to store as a file the data that created as raw data and buffered to the workstation. *Nuvasive*, 842 F.3d at 1384–85 (holding an obviousness determination to lack support where “obtain[ing] additional information” was the only motivation to combine alleged, yet the record lacked any articulation as to “why the additional information would benefit [a skilled artisan]” and “*why* [such an artisan] would have been motivated” “to obtain this additional information”). Considering our determination that Pucci's principle of operation relies on the partitioned application and that the buffering of the A-to-D converted data is linked inexorably to the design of the partitioned application, we are left wanting evidence of reasons that a person of ordinary skill in the art *would* do so. Mr. Gafford's testimony does not provide that evidence (Ex. 1056, 63:3–9, 80:12–20, 83:5–11). At best, Mr. Gafford adds that a

person of ordinary skill in the art *could or would not be prevented* from writing software that stores the buffered data in a file at another data storage: the ION local storage. This testimony, however, does not supply *why* a person of ordinary skill in the art would do so, without altering the principles of operation of Pucci.

Consequently, we are not persuaded that Pucci teaches or suggests the use of a traditional file storage system for storing, as a file, the digitized analog data from the A-to-D converters.

(ii) *Failure to Teach or Suggest File Transfer Enabling Software Limitation*

As noted above, claim 1 recites “caus[ing] at least one parameter identifying the analog data generating and processing device, independent of analog data source, as a digital storage device instead of as an analog data generating and processing device to be automatically sent through the i/o port and to the multi-purpose interface of the computer (a) *without requiring any end user to load any software onto the computer at any time*” and “caus[ing] the at least one file of digitized analog data acquired from at least one of the plurality of analog acquisition channels to be transferred to the computer using the customary device driver for the digital storage device while causing the analog data generating and processing device to appear to the computer as if it were the digital storage device *without requiring any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time.*”¹² See *supra* Section I.C.

¹² Although neither party proposed a construction for this limitation, we note that these limitations were construed under the broadest reasonable interpretation standard in the earlier case, IPR2016-01733. *Samsung Elecs.*

Petitioner argues that Pucci’s ION Workstation interacts with the ION node like a conventional disk drive. *Id.* at 33. Thus, Petitioner argues, “a file can be read from the ION node in the same way as it would be read from the conventional disk drive.” *Id.* at 33–34 (citing Ex. 1042, 220; Ex. 1003 ¶ 117); *see also* Ex. 1054 ¶¶ 14, 30. Consequently, “[i]n the combination of Pucci, Kepley, and Schmidt, no end user is required ‘to load any software onto the computer at any time’ for the processor to execute the automatic recognition process because the recognition process of Pucci, Kepley, and Schmidt utilizes existing device drivers.” Pet. 33 (quoting Ex. 1001, 12:17–18).

Patent Owner challenges this argument and contends that “Pucci fails to disclose this limitation because the ION System requires the installation of software on the ION Workstation to transfer data to the ION Workstation” and “Schmidt merely recites and discusses the SCSI standards and provides no disclosure of file transfer or how it is accomplished.” PO Resp. 25. Specifically, Patent Owner points out that Pucci’s workstation implements a controlling program or application that must be loaded on the host computer for communication of data with the ION node. *Id.* at 26–27 (citing Ex. 2005 ¶¶ 64, 65). For instance, Patent Owner explains that the workstation application implements specific functions by enabling the reading and writing of specific block addresses within the ION node. *Id.* at

Co., Ltd. v. Papst Licensing GmbH & Co., KG, Case IPR2016-01733, slip op. at 13–15 (PTAB Feb. 2, 2018) (Paper 24) (“interpreting the ‘without requiring’ limitations as ‘without requiring *the end user* to install or load specific drivers or software for the ADGPD beyond that included in the operating system, BIOS, or *drivers for a multi-purpose interface or SCSI interface.*”).

27 (citing Ex. 1041, 217, 221, 232). The workstation application, according to Patent Owner, is required for the workstation to know where (which block address) to read from the ION node and, thus, access the information from the peripheral device attached to the ION node. *Id.* at 28. Relying on the Gafford Declaration, Patent Owner concludes that without installation of the workstation application, “the workstation would not know that there is a defined action on a given disk block address in the ION node.” *Id.* (citing Ex. 2005 ¶¶ 65, 66).

We agree with Patent Owner that the workstation application is *required* to enable the transfer of files from the ION node to the workstation. In this case, we have testimony from Petitioner’s expert opining that the emulation of the ION node as a disk would lead a person of ordinary skill in the art to understand Pucci as accomplishing the file transfer using “existing SCSI hard disk drivers.” Ex. 1003 ¶¶ 117, 119. On the other hand, we have testimony of Mr. Gafford that explains Pucci’s workstation program as being involved in the request for the A-to-D converted data by “implement[ing] specific functions by enabling the reading or writing of specific block addresses within the ION drive.” Ex. 2005 ¶ 65. That is, Dr. Zadok’s view of Pucci is that, once the ION system is set up to emulate a hard disk, no other software is required to transfer data. In contrast, Mr. Gafford’s testimony does not negate Pucci’s use of the SCSI protocol, but ascribes to the workstation application control over the data read, such that the software is required to enable the transfer data.

In this regard, we credit the testimony of Mr. Gafford over the testimony of Dr. Zadok, as it is more consistent with the disclosure of Pucci. *Trs. of Columbia Univ. v. Illumina, Inc.*, 620 F. App’x 916, 922 (Fed. Cir.

2015) (“The PTAB [i]s entitled to weigh the credibility of the witnesses.”); *Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (stating that it is “within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate”). As we discuss in detail below with regard to the file system limitation (*see infra* Section II.D.1.(e)(iii)(1)), Pucci’s principle of operation involves interfacing to the A-to-D converters using a partitioned application, namely, the hardware dependent application in the ION node and the hardware independent application in the ION Workstation. Ex. 1041, 219 (describing “partitioning an application into hardware dependent and independent components, and providing a vendor independent interface between the two”), 221 (“application’s interface to the A-to-D converters is implemented as an action defined on a set of 5 disk block addresses, each corresponding to 1 of the 5 analog channels”), 231–232 (describing the A-to-D conversion application, whereby the hardware dependent A-to-D code remains within ION node, while the part of the application that runs on the ION Workstation requests the data in response to start/stop signal from other system hardware). The SCSI interface between the two applications is the “low level connection” between them. *Id.* at 219. Although the SCSI protocol is used for connecting the two applications, any A-to-D conversion data transferred from the ION node to the ION Workstation is requested specifically by the workstation, in a particular manner, and at a particular time.

Indeed, Pucci describes how the ION node is configured to output digitized and compressed stereo data to the workstation explaining that the workstation does this by “reading from an indicated SCSI I/O address.” *Id.* at 229. The ION system is configured using data manipulation lists. *Id.* at

228. These lists, prepared by the workstation, configure the data acquisition via a sequence of instructions identifying, for example, the A-to-D devices that receive the stereo source (devices *atod 0* and *atod 1*) and the buffering details for each device ((a:f(50)), for example). *Id.* at 228–229 (describing the data manipulation specified by the workstation for using two A-to-D converters for converting and mixing a stereo stream, and compressing it before sending to the workstation via a specific SCSI I/O address (“SCSI 32”); Figs. 4, 5). Pucci describes that a similar data manipulation is found in the example application section on A-to-D conversion. *Id.* at 229.

With regard to the A-to-D conversion, the workstation application receives a start signal from some other hardware, not disclosed, indicating to the workstation that a voice message recording session has started. *Id.* at 232. The workstation application sends a read command, reads the A-to-D start address for an appropriate channel, activating the device. *Id.* That is, the workstation application uses one of four read commands to control the A-to-D process and the transfer of the converted data. *Id.* Specifically, there are four action functions available to the workstation application in the A-to-D conversion process: start conversion, stop conversion, return status, and retrieve A-to-D data. *Id.* Each of these action functions is implemented by the workstation application issuing a read command with a block address that has been mapped to the corresponding function.¹³ The workstation

¹³ By way of illustration, if four block addresses are labeled A, B, C, and D, Pucci invokes each of four SCSI action functions for A-to-D conversion with a read command as follows: read A=start conversion action function, read B=stop conversion action function, read C=return status action function, and read D=retrieve A-to-D data action function. According to Pucci, the workstation application first reads the A-to-D start address (read

application, Pucci explains, performs two read commands to start the transfer of the data: *read the start address* (start conversion action function) and *read the data block address for the particular channel* (retrieve A-to-D data). *Id.* If the workstation application detects a stop signal, indicating the end of the recording session, the workstation “reads the stop address, halting the data conversion” (i.e., a read command to stop conversion). *Id.* The workstation, nevertheless, continues to receive the data until all the buffered data has been obtained. *Id.*

The involvement of the workstation application is significant in the process of data acquisition and transfer. The workstation application does more than request data — it activates and deactivates the A-to-D converters, or at a minimum, issues read commands that cause the A-to-D converters to start conversion and stop conversion. Without these read commands, there is no data to obtain and no data to transfer. Also, without the command to retrieve the A-to-D data on a particular buffer, there is no transfer, even if the SCSI standard is involved in delivering that read command to the ION node and preparing the SCSI bus for the transmission. From the in-depth involvement of the workstation application in the enablement of the A-to-D converter and the control of the data transfer process, we conclude that the workstation application is required to enable file transfer between the ION node and the workstation. *See* Paper 21, 2–3 (citing Ex. 2007, 88:3–10, 90:5–9); *but see* Paper 25, 1–4 (providing explanation and context for Dr. Zadok’s testimony).

A), then the workstation retrieves data by reading the data block address for that channel (read D). Ex. 1041, 232.

Petitioner argues that the SCSI standard is the only software necessary to know where to read and write data. Reply 22; *see also* Ex. 1054 ¶ 31 (“driver changes to the host computer would be unnecessary for the SCSI implementation to know where to read and write data”). The SCSI standard would specify the parameters of the hard disk and would gather the hard disk parameters. Reply 22. These arguments, however, miss the point. The SCSI standard may be used to obtain respectable data access rates for the transfer of data between the ION node and the ION Workstation (Ex. 1041, 219–220), but the workstation read commands implement the specifics of the data acquisition through the SCSI bus (*id.* at 225).

Pucci describes for example that it is using a SCSI interface to connect the workstations with the ION node (which appears to the workstation as a high speed disk drive), but with “*user extensible characteristics.*” Ex. 1041, 217 (emphasis added). Pucci further explains that it maps the application’s functionality to “simple disk read and write accesses” achieving a high degree of application portability. *Id.* That is, the SCSI bus and the protocol are a platform for executing certain functions in the ION applications: mapping a read command to a specific action function. *Id.* at 232. ION supports this by providing a specific task that defines these functions. *Id.* at 225 (The *SCSI application interface* is one of the ION system primitives that defines the set of disk block addresses to which an ION application will respond, and the action function to invoke when a workstation reads or writes a block from the set). The SCSI protocol is not being used in its standard form, but rather as a tool for the workstation application to control the A-to-D conversion that occurs at the ION node and

the transfer of the data to the workstation. Therefore, Petitioner's contention that the SCSI protocol is the only software needed is not persuasive.

Consequently, we are not persuaded that Petitioner has shown by a preponderance of the evidence that Pucci, alone or in combination with Schmidt and Kepley, teaches or suggests the negative limitation of claim 1.

(iii) *Lack of Reasons to Combine Pucci, Schmidt, and Kepley*

(1) *Lack of "explicit motivation"*

Petitioner argues that it would have been obvious to combine the teachings of Pucci's ION system and Kepley's voice mail system. Pet. 23–24 (citing Ex. 1003 ¶¶ 95–97). To support this assertion, Petitioner argues that Pucci provides "an explicit motivation" because Pucci uses the ION node as a platform for A-to-D service for a voice mail application. *Id.* at 23. Petitioner then argues that a person of ordinary skill in the art would have looked to Kepley for the details regarding the voice mail application because "substitution of Kepley's analog voice message processing (which includes storage of the digitized voice message as a file) for Pucci's analog voice message processing (which includes digital conversion but lacks file storage) could have been readily implemented by a POSITA using Pucci's file system." *Id.* at 24 (citing Ex. 1003 ¶ 97). Dr. Zadok's declaration, cited in support, repeats verbatim what Petitioner argues with the additional citation to the Abstract of Kepley. Ex. 1003 ¶¶ 96, 97. Neither this argument nor Dr. Zadok's conclusion demonstrates a sufficient reason to combine the references.

First, we find that the disclosure of Pucci's A-to-D services for a voice mail application is not "an *explicit* motivation," as Petitioner argues. Pet. 23 (emphasis added). This premise is flawed because it conflates

analogous art analysis with analysis of what constitutes a sufficient reason to combine the references. The fact that both references disclose voice mail services may be applicable to a determination that Pucci and Kepley may be directed to same field of endeavor. However, any overlapping disclosure of voice mail service, without more, is insufficient to show a reason to implement certain teachings of Kepley with Pucci. *See TRW Auto. US LLC v. Magna Elecs., Inc.*, Case IPR2014-00257, slip op. at 4 (PTAB Aug. 28, 2014) (Paper 18) (“That each reference may be in the field of ‘vehicular vision’ is insufficient, in and of itself, to provide a reason with rational[] underpinning . . . to combine specific teachings of such references.”).

Second, we find that Pucci is directed generally to a multiprocessor tasking system that can be programmed for different applications, A-to-D service for a voice messaging application being only one of them. *See* Ex. 1041, 218 (“ION is being used as an experimental platform for voice mail services in a user[-]programmable telephone switch prototype, and as a tool for measuring the I/O performance of computer-disk interfaces. Applications under development include an automated camera positioning system and an object repository”), 231, 233 (“Another application of ION is a measurement tool for studying the SCSI interface performance of a computer system”), 236 (“Another ION application is to function as a pseudo-disk for analyzing computer system behavior as disk technology changes.”), 238 (“ION is available for experimental research use”). Thus, although Pucci mentions a “voice messaging application,” Pucci only discloses the operation of the A-to-D conversion. *Id.* at 221, 231–232. Indeed, Pucci does not state that it provides any other voice mail function, and it is unclear the extent to which ION actually implements the “voice

messaging application.” Specifically, Pucci states that “ION provides the platform for analog to digital (A-to-D) services for a voice messaging application of a prototype programmable telephone switch system called GARDEN.” *Id.* at 231; *see also id.* at 218 (“ION is being used as an experimental platform for voice mail services in a user[-]programmable telephone switch prototype”); *but see id.* at 221 (A-to-D conversion application “that provides voice messaging service for a prototype telephone switch”). That is, Pucci does not state that the “voice messaging application” is an ION application, rather only the A-to-D conversion application is described as an ION application. The only “application” Pucci specifically describes is the A-to-D application. *Id.* at 231 (“The part of the A-to-D application that resides within ION”); 221 (“ION supports an analog to digital (A-to-D) conversion application that provides voice messaging service for a prototype telephone switch”).

Kepley, on the other hand, specifically describes voice mail service systems and their intercommunications. Ex. 1042, [57]. Kepley describes encoding a voice mail message and transmitting it as a computer-to-computer data file transfer, as described above (*see supra* Section II.D.1.b.). Other than an A-to-D conversion that occurs in both Pucci and Kepley, there is little overlap in the voice mail service disclosures of these references, and no disclosed similarities in the voice mail services. Petitioner’s broad characterization of the combination of the teachings of Pucci and Kepley as “a simple substitution of one known element (*Kepley’s analog voice message processing*) for another (*Pucci’s analog voice message processing*) to obtain predictable results” is an overstatement of the evidence with insufficient factual support in the record. Pet. 24 (emphases added).

Third, even if Pucci and Kepley were part of the body of knowledge that a person of ordinary skill in the art may access concerning voice mail message applications, there is still a need for a reason to pick out certain teachings of Kepley and apply them to Pucci, as Petitioner asserts. *See, e.g., In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380–81 (Fed. Cir. 2016) (rejecting an argument that the Board properly “ma[de] an obviousness argument on behalf of [petitioner]” that “could have been included in a properly-drafted petition,” because “petitioner . . . bears the burden of proof” and, thus, the Board “must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond,” and is not “free to adopt arguments on behalf of petitioners”) (citations omitted). The assertion that it is a “simple substitution” is not itself a reason to combine. Therefore, for the reasons stated above, Petitioner has not shown by a preponderance of the evidence that Pucci provides a sufficient reason, e.g., “an explicit motivation,” to combine the teachings, as asserted. Pet. 23.

(2) *“Files” Not Essential to Pucci*

As further support for the contention that it would have been obvious to combine the teachings of Pucci and Kepley, Petitioner argues that it would have been obvious “to enable ‘computer-to-computer data file transfer’ between the ION-enabled voice messaging service system and other messaging service systems.” Pet. 23; Ex. 1003 ¶ 96. Dr. Zadok explains that files are *essential* to a computer system and that data cannot be written to secondary storage unless they are within a file. Ex. 1003 ¶ 94 (citing Ex. 1013, 349–350). Assuming that the ION node would include a voice messaging application, to enable Kepley’s file transfer, Pucci would

have to be modified, at a minimum, to replace the manner in which Pucci's A-to-D conversion takes place, to use a file system, rather than handling it as raw data on a FIFO basis. Petitioner simply states that it would have been obvious to store the digitized A-to-D converted data as a file. Pet. 23. Neither Petitioner nor Dr. Zadok explains the modification of Pucci in this regard. Pet. 23; Ex. 1003 ¶ 96. Further, Dr. Zadok's explanation of files as "essential" does not take into account that Pucci, despite being capable of storing traditional files system, expressly handles the digitized analog data as *raw data*, not as a *file*. The same flaw affects the argument that writing data to a file is a precursor to storing data into secondary storage. See Ex. 1003 ¶ 94. This testimony of Dr. Zadok disregards the context of Pucci and offers no adequate explanation of how to account for the express disclosure of acquiring and *buffering* the data as raw data, without any need for a file at the ION node.

With regard to the "computer-to-computer" file transfer taught in Kepley, Petitioner has not persuaded us that including such a feature in Pucci would result in the modification needed to meet the claims. Specifically, Petitioner has not persuaded us that to perform Kepley's computer-to-computer file transfer, Pucci would store the digitized voice message as a *file* at the ION node.

Kepley uses two processors in the voice mail service system to implement the file creation and uses two voice mail service systems to implement the computer-to-computer file transfer. Voice storage processor 111 performs digitizing and buffering of the voice before storing it in a database. Ex. 1042, 5:37–39. Another processor, feature processor 112 formats the digitized voice message as a file to be transmitted to another

voice mail service system, by appending to the voice message header information. *Id.* at 6:8–20. Pucci, in contrast, uses the ION node for extracting the raw data from the converter, placing it in a queue for temporary storage, compressing the stream of raw data, and returning the converted/compressed data to the workstation during a recording session. Ex. 1041, 231–232. Thus, Pucci’s ION node performs similar tasks to those of Kepley’s voice storage processor 111: acquiring the voice, converting it to digital form, and transmitting the data for permanent storage elsewhere. That is where the similarities appear to end. In Kepley, the voice storage processor sends the file to a database within the voice mail service system. In Pucci, however, the ION node buffers the converted data in blocks to the workstation, i.e., Pucci does not describe any further processing of the converted voice message at the ION node.

It is important to emphasize here that Kepley’s computer-to-computer file transfer aims at communication between *voice mail service systems*, not between *components of a voice mail service system*. See Ex. 1042, 1:5–9 (“in particular, to a message service system network that interconnects a plurality of message service *systems* and provides a voice mail message transfer capability between message service *systems*” (emphases added)). Thus, with respect to the reason to implement the computer-to-computer file transfer, we are left wondering how or why Pucci would accomplish such a transfer, when it discloses no other voice mail systems and no further processing of voice mail messages after A-to-D conversion. Kepley has not been proffered as reason to improve the communication *within* the components of a voice mail system (or between Pucci’s workstations and the ION node), but rather to improve the communication *between* voice mail

systems. Pet. 11–12 (arguing file transfer “between the ION-enabled voice messaging service system and other messaging service systems”), 23 (same argument).

In support of its contention, Petitioner generally refers to an “ION-enabled voice messaging service system” without describing whether this is the ION node alone, or the ION node and the workstation, together. *Id.* Even assuming that Petitioner sets forth that the ION node and workstation enable a voice messaging service system as alleged, Pucci does not support Petitioner’s contention that communication with other voice messaging service systems would be a motivation supplied by Kepley. As stated above, we have found that Pucci only discloses the A-to-D conversion at the ION node as raw data, with the workstations receiving that data, and that Pucci is silent as to any further operations on the voice message by either the ION node or the workstations. *See* Ex. 1041, 218, 221, 231. Thus, following the teaching of Kepley “computer-to-computer” file transfer and Petitioner’s reliance on communications between voice mail service systems, we conclude that Kepley’s teachings, at best, contribute the transfer of the voice message as a file between a *workstation* of Pucci and another voice mail system, but not between an ION node and another voice mail system. Such a combination of teachings, however, does not achieve the claim recitation that the digitized analog data is stored in a file system of the data storage memory (which is located at the ION node, according to Petitioner’s mapping). To determine otherwise, would change the manner in which the ION node and the workstations acquire and transmit the A-to-D converted data, which changes the principle of operation of Pucci.

(3) *Changing Pucci's Principle of Operation*

Substituting Kepley's "voice message processing" for Pucci's, as Petitioner proffer, would change the principle of operation of Pucci. Therefore, we are not persuaded that a person of ordinary skill in the art would have had reason to combine the teachings of these references to achieve the device of the challenged claim.

Petitioner argues that the combination of Pucci's and Kepley's teachings involves a simple substitution of one known element (Kepley's voice message processing) for another (Pucci's voice message processing) to obtain predictable results. Pet. 24 ("modification would have involved a simple substitution of one known element (Kepley's analog voice message processing) for another (Pucci's analog voice message processing) to obtain predictable results"). According to Petitioner, the "voice message processing" of Kepley includes "storage of the digitized voice message as a file," while the "voice message processing" of Pucci includes "digital conversion but lacks file storage." *Id.* Petitioner also argues that the substitution would have been predictable "because the digitized voice message data would have been stored like any other file in Pucci's file system." *Id.* (citing Ex. 1003 ¶ 96); *see* Ex. 1003 ¶ 97.

Patent Owner challenges the argued rationales for the combination of the teachings of Pucci and Kepley as altering the principle of operation of Pucci. For instance, Patent Owner contends that "Pucci [discloses] that memory buffered data transfer, not files, is the developer's requirement for moving analog data in the Pucci system." PO Resp. 17. According to Patent Owner,

[t]he ION node in Pucci is specifically designed to permit data to flow into the host as it is acquired, and not to be stored in its entirety in a file and then transferred. Therefore, it would significantly impact Pucci's principle of operation and prevent Pucci from achieving its purpose of permitting data flow into the host as it is acquired to combine Pucci's ION Node with Kepley's file storage system.

Id. at 35 (citing Ex. 2005 ¶ 52).

“[C]ombinations that change the ‘basic principles under which the [prior art] was designed to operate,’ or that render the prior art ‘inoperable for its intended purpose,’ may fail to support a conclusion of obviousness.” *Plas-Pak Indus., Inc. v. Sulzer Mixpac AG*, 600 Fed. App’x 755, 758 (Fed. Cir. 2015) (internal citations omitted). Petitioner’s proposed substitution of Kepley’s “voice message processing” as a file replaces Pucci’s ION node application that performs the acquisition of the A-to-D converted data and buffering of that data to the ION Workstation as it is acquired.

Significantly, Petitioner’s proposed substitution affects the workstation application, so that the real-time acquisition that Pucci describes no longer takes place. At oral argument, Petitioner clarified that the asserted combination of the teachings of Pucci and Kepley “tak[es] that buffering and compression, realtime compression piece of Pucci[,] and replac[es] it with Kepley’s file system.” Tr. 18:9–18. The combined teachings do not require any application running on Pucci’s workstation to access the voice mail files: “[Pucci] can do it in the way that any other computer or host would do it.” *Id.* at 15:10–18. More specifically, this contention does away with the Pucci workstation application, because, according to Petitioner, the workstation transfers files using only SCSI commands. *Id.* at 16:3–13 (arguing that a user at workstation can go into the DOS commands and “say

read file X,” and the operating system would access the file from the ION node without requiring an application at the workstation because the file can be transferred using SCSI commands).

We find that Petitioner’s proposed substitution of the buffered transfer eliminates an essential feature of Pucci, namely, the partitioned application. Pucci’s buffered transfer is the result of how Pucci implements a partitioned application, which solves stated problems of interfacing workstations to existing special-purpose hardware, such as A-to-D converters. *See* Ex. 1041, 218–219. As noted above, Pucci partitions an application into hardware-dependent components, residing within “a separate backplane-based environment” (or ION node), and hardware-independent components, residing in the workstation. *Id.* at 219. In the case of the A-to-D converter application, the hardware-dependent application is the A-to-D code that resides with the ION node, where the A-to-D converters are located. *Id.* at 221, 231, Fig. 1. The hardware-independent application, “the bulk of the application” resides in a conventional workstation. *Id.* at 219, 221 (describing function of the “controlling program within the workstation” to obtain the converted data using disk block addresses). It is this partitioned application design that Pucci touts as providing flexibility and portability. *See id.* at 219 (“The hardware dependent components are situated within a separate backplane-based environment, which is portable in its entirety across workstation changes”), 223 (“ION is implemented as a fast tasking system, specifically designed to support peripheral devices by adding flexible processing power to their functioning, and then interfacing the enhanced device to other conventional computers in an easy and portable manner.”). The partitioned application allows the compute power to be

placed proximate to the source of the data, i.e., the ION node, which passes only results or pre-processed information to higher levels in the system, i.e., the workstation application. *Id.* This is even more evident in the A-to-D converter application, where the workstation application responds to input from other hardware in the system in order to request converted data from the A-to-D converters at the ION node. *Id.* at 232. The workstation application is part and parcel of the A-to-D conversion process, with the computing power placed closed to the converters and the digitized and compressed stream buffered to the workstation on demand. *Id.* (describing that the workstation reads the A-to-D start address for an appropriate channel, activating the converter when it receives a start signal indicating the beginning of a recording session). The workstation application is integral to the A-to-D conversion as it starts and stops the data conversion when it receives beginning and end-of-session indications from other hardware. *Id.*

Accordingly, seeking to replace both Pucci's ION Workstation and the ION node applications with the Kepley voice message process implemented at the ION node (without the workstation) would be contrary to the principle of operation of Pucci. *See* Tr. 16:14–19:8. No application at the workstation would be used, contrary to Pucci's essential design of the workstation as controlling the A-to-D conversion start and stop operation.

Consequently, we determine that Petitioner has not proven by a preponderance of the evidence that claim 1 would have been obvious over the combination of the teachings of Pucci, Kepley, and Schmidt because of a failure to show a sufficient reason to combine the teachings of Pucci and Kepley to achieve “a data generation process by which . . . digitized analog

data is stored in a file system of the data storage memory as at least one file of digitized analog data.”

Therefore, in light of Patent Owner’s contentions, we are not persuaded that Petitioner demonstrates by a preponderance of the evidence that claim 1 of the ’437 patent is unpatentable over the teachings of Pucci in combination with those of Kepley and Schmidt.

2. Dependent Claims 4–6, 9–16, 18, 30, 32, and 34

Petitioner provides a detailed mapping of the limitations of each of claims 4–6, 9–12, 14, 15, 30, and 34 onto the combined teachings of Pucci, Kepley, and Schmidt (Pet. 42–50); claim 16 onto the combined teachings of Pucci, Kepley, Schmidt, and Shinosky (*id.* at 50–54); and claims 13, 18, and 32 onto the combined teachings of Pucci, Kepley, and Schmidt in combination with Campbell or Wilson (*id.* at 54–58 (claims 13 and 18), 58–60 (claim 32)). Nevertheless, because we are not persuaded that the combined teachings of Pucci, Kepley, and Schmidt teach or suggest all of the limitations of the base claim, claim 1, for these dependent claims; we are not persuaded that Petitioner demonstrates by a preponderance of the evidence that the combined teachings of Pucci, Kepley, and Schmidt, alone or in combination with other references, render claims 4–6, 9–16, 18, 30, 32, and 34 unpatentable.

E. Obviousness of Claims 43 and 45 Over Pucci and Schmidt, alone or in combination with Campbell

1. Petitioner’s Arguments Regarding Claims 43 and 45

Petitioner provides a detailed mapping of the limitations of each of claims 43 and 45 onto the combined teachings of Pucci and Schmidt, alone or in combination with Campbell. *Id.* at 60–66 (claim 43), 66–67 (claim 45).

The mapping of claim 43 onto the combined teachings of Pucci and Schmidt relies heavily on the arguments and evidence presented with respect to the mapping of claim 1 onto the combined teachings of Pucci, Kepley, and Schmidt. *E.g., id.* at 62 (“The acquisition limitation of claim 43 [43B.1] is substantially the same as the acquisition limitation of claim 1 [1E.1]”). Similarly, Petitioner argues that the same asserted reasons to combine the teachings of Pucci and Schmidt for claim 1 apply equally to assertions of unpatentability with respect to claim 43. *Id.* at 61 (discussing reasons to combine the teachings of Pucci and Schmidt). Further, Petitioner relies on the same reasons for combining the teachings of Pucci and Campbell with respect to claim 45 that it relied upon with respect to the same combination of teachings for claims 13 and 18. *See supra* Section II.F.

With respect to independent claim 43, we note that this claim does not recite that the method includes a step of storing digitized analog data as a “file” of digitized analog data. *Cf.* Ex.1001, 12:3–5 (claim 1); *see supra* Section II.D.1.d. However, similar to the recitations of claim 1, claim 43 recites that the method includes the steps of “automatically generating and transmitting to the host computer via the multipurpose interface an identification parameter which identifies the analog data generating and processing device to the host computer as a digital storage device but which is different than an analog data device” (Ex. 1001, 16:60–65) and “using the customary device driver present for the customary digital storage device in the host computer without requiring the user to load the device driver” (*id.* at 17:7–10).

With respect to the first of these limitations, Petitioner argues that the automatic recognition limitation of independent claim 43 is substantially the

same as the automatic recognition operation limitation of independent claim 1. Pet. 6. Claim 43 recites “automatically generating and transmitting to the host computer via the multipurpose interface an identification parameter *which identifies the analog data generating and processing device* to the host computer as a digital storage device but which is different than an analog data device, and independent of analog data source.” *See supra* Section I.C. (emphasis added). As discussed in the Petition with respect to claim 1, Petitioner argues that the combined teachings of Pucci and Schmidt teach or suggest these similar limitations of each independent claim. Pet. 61 (citing *id.* at 26–32); see Ex. 1041, 220, 222, 238–239, Fig. 2; Ex. 1007, 132, 133, 137–41, Tables 12.1, 12.8, 12.10, 12.12; Ex. 1003 ¶¶ 100–115. As discussed below, we agree.

With respect to the second of these limitations, Petitioner argues that the workstation handles the ION node like a conventional disk drive. ([Ex. 1003] ¶209.) Thus, a standard hard disk driver can be used to read the file from the ION node. ([*id.*] ¶210.) Thus, the transfer of the digitized acquired analog data “*us[es] [a] customary device driver present for the customary digital storage device in the host computer.*” ([*id.*] ¶211.) Pucci stresses that its ION system uses existing device drivers: “A workstation sees ION as though it were physically a local disk drive.... Software running within the ION system mimics the behavior of a conventional device, providing the workstation with a peripheral that it knows how to deal with.” ([Ex. 1041], p. 220.) Thus, the transfer in Pucci and Schmidt does not require “*the user to load the device driver.*” ([Ex. 1003] ¶211.)

Pet. 65–66. As discussed below, we agree.

Petitioner argues that the reasons for combining the teachings of Pucci and Schmidt with respect to claim 43 are the same as those argued with respect to claim 1. *See id.* at 31, 34. For the reasons discussed below, we

find Petitioner's mapping of the challenged claim 43 and its arguments regarding the reasons to combine the teachings of the applied references persuasive.

2. Patent Owner's Arguments Regarding Claim 43

Patent Owner presents three arguments that the teachings of Pucci and Schmidt fail to render claim 43 obvious. PO Resp. 9–12. First, Patent Owner contends that Pucci, alone or in combination with Schmidt, does not teach or suggest that “automatically generating and transmitting to the host computer via the multipurpose interface an identification parameter which identifies the analog data generating and processing device to the host computer as a digital storage device but which is different than an analog data device,” as recited in claim 43. *Id.* at 18–24. We disagree.

Petitioner argues that, “[w]hen a host computer having a SCSI bus is turned on, SCSI bus initialization occurs automatically . . . [s]pecifically, the host computer's SCSI controller automatically issues the INQUIRY command to discover any SCSI peripheral devices attached to the SCSI bus.” Pet. 30. Patent Owner contends, however, that

the ION Node discussed in Pucci would not be designed to automatically respond to an inquiry in SCSI indicating that the ION Node is a digital storage device/hard drive because the ION Node is not a hard drive and does not have the capabilities and capacity of a hard drive, *meaning the ION Workstation would potentially reconfigure the ION Node in a destructive manner when it was powered on* if the ION Node sent a signal indicating it was a digital storage device/hard drive and the proper ION host software had not already been installed on the ION Workstation.

PO Resp. 23 (emphasis added).

Petitioner responds (1) that Petitioner relies on the combined teachings of Pucci and Schmidt, not those of Pucci alone, to teach or suggest this limitation (Reply 11–12; *see* Pet. 26–27); (2) that, despite Patent Owner’s contentions that, when the host computer’s SCSI controller issues the INQUIRY command as part of an automatic identification process, such an automatic identification process “would cause the ION Workstation to attempt to access and/or reconfigure the ION Node in an unpredictable and potentially destructive manner” (PO Resp. 17–19), Patent Owner provides no persuasive evidence of such a destructive reconfiguration (Reply 12–14; *see Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1360 (Fed. Cir. 2007) (“once a challenger introduces evidence that might lead to a conclusion of invalidity—what we call a *prima facie* case—the patentee ‘would be well advised to introduce evidence sufficient to rebut that of the challenger’” (internal citations omitted))); (3) that, “[e]ven if the ION Workstation was unable to initially identify the ION Node as a hard disk, Pucci’s ION system would still operate properly by using the SCSI protocol [because t]he SCSI protocol provides functionality for an initiator and target to handle unexpected and/or error conditions” (*id.* at 15 (citing Ex. 1056 ¶¶ 22–25)). In particular, Petitioner argues that:

Responding to the INQUIRY command by emulating a disk drive would not reconfigure the ION Node in a destructive manner but instead achieve Pucci’s goal of having “[s]oftware running within the ION system [that] mimics the behavior of a conventional device, providing the workstation with a peripheral that it knows how to deal with.” ([Ex. 1041] p. 220; [Ex. 1056] ¶20.)

Reply 16. We agree.

Second, Patent Owner contends that Pucci, alone or in combination with Schmidt, does not teach or suggest that the negative limitation – “using the customary device driver present for the customary digital storage device in the host computer without requiring the user to load the device driver,” as recited in claim 43. *Id.* at 24–30. With respect to claim 1, we were not persuaded by Petitioner that no “user-loaded file transfer enabling software” was required in Pucci’s ION Workstations. *See supra* Section II.D.1.(e)(ii). Nevertheless, the negative limitation of claim 43 is different from that of claim 1, and only recites that the user is not required to load the “customary device driver.” *See supra* Section II.C.2. Petitioner argues that “the SCSI protocol, operating as intended (and without modification), provides the required information for later file transfer operations.” Pet. 65–66 (citing Ex. 1003 ¶¶ 209–211; Ex. 1041, 220); Reply 21 (citing Ex. 1056 ¶ 17; Ex. 1007, 138–41). Thus, we are persuaded that the SCSI software is a “customary device driver,” as taught by Pucci and Schmidt, and is not user loaded.

Third, Patent Owner contends that Petitioner fails to provide adequate reason for a person of ordinary skill in the art to combine the teachings of Pucci and Schmidt to achieve the device recited in claim 43. PO Resp. 31–35. While we explained that, with respect to claim 1, we were not persuaded that Petitioner had shown a reason to combine the teachings of Pucci and Kepley (*see supra* Section II.D.1.(e)(iii)), this is not true of the teachings of Pucci and Schmidt. As Petitioner argues with respect to claim 1,

Pucci stresses throughout that the ION node identifies itself as a hard disk device to attached workstations. ([Ex. 1041], pp. 217, 220, Figure 1; [Ex. 1003] ¶102.) However, Pucci does not explicitly disclose the details of the recognition process.

Schmidt, titled “The SCSI Bus and IDE Interface Protocols, Applications and Programming,” provides a detailed discussion of the device recognition process. A POSITA would have combined Pucci and Kepley with Schmidt for a number of reasons. First, Pucci discloses that the ION node connects to the workstation via a SCSI bus. ([Ex. 1041], p. 217, [Ex. 1001,] 2:62–64.) A POSITA would have looked to a reference, like Schmidt, to provide details of the SCSI interface. Additionally, it was well known at the earliest possible priority date of the ’437 patent that SCSI bus initialization between a host computer and a peripheral device involved the peripheral device identifying its device class and type to the host computer. ([Ex. 1003] ¶103.) Schmidt provides the details of this well-known process. (*Id.*)

Pet. 12; *see* Reply 22–23.

We find this rationale equally persuasive with respect to the combination and application of the teachings of Pucci and Schmidt to claim 43. We are not swayed by Patent Owner’s contentions to the contrary. PO Resp. 34; *see* Paper 21, 3–4 (citing Ex. 2007, 116: 12–22, 117: 1–6, 118:4–12); *but see* Paper 25, 4–9 (providing explanation and context for Dr. Zadok’s testimony). Because, we are persuaded that Petitioner demonstrates that the combined teachings of Pucci and Schmidt teach or suggest all of the limitations of claim 43 and that a person of ordinary skill in the art would have had reason to combine the teachings of Pucci and Schmidt to achieve the method recited in claim 43, we are persuaded that Petitioner demonstrates by a preponderance of the evidence that claim 43 of the ’437 patent is unpatentable over the teachings of Pucci in combination with those of Schmidt.

3. Dependent Claim 45

Claim 45 narrows the scope of independent claim 43 by further defining the plurality of analog acquisition channels as being “independently

programmable and further comprising a plurality of corresponding sample and hold amplifiers configured to simultaneously sample a plurality of the plurality of analog acquisition channels.” Ex, 1001, 17:19–24. Petitioner acknowledges that that neither Pucci nor Schmidt teaches or suggests that the plurality of analog acquisition channels are “independently programmable,” as recited in claim 45. Petitioner notes, however, that this limitation also appears in claim 13 and that this limitation is taught by Campbell. Pet. 54–56 (discussing claim 13), 67 (discussing claim 45). In particular, with respect to claim 13, Petitioner argues that:

Campbell teaches that “[s]imultaneous sampling may be used for receiving and converting differential or other special signal pairs.” ([Ex. 1043], 13:65–66.) Thus, Campbell teaches providing a respective sample-and-hold circuit for each A-to-D channel when simultaneous sampling of signals may be needed. . . . Further, Campbell discloses that “[p]rogrammable sample time allows operation without a loss of accuracy and a higher overall conversion throughput.” ([Ex. 1043], 2:44–46.)”

Pet. 55. Thus, Petitioner argues that a person of ordinary skill in the art would have had reason to use the technique taught by Campbell to improve the programmability of the interfaces and devices taught by Pucci. *Id.* at 55–56 (citing Ex. 1003 ¶¶ 178–79). We agree.

Similarly, Petitioner notes that neither Pucci nor Schmidt teaches or suggests that the plurality of analog acquisition channels “comprise a plurality of corresponding sample and hold amplifiers for simultaneously sampl[ing] a plurality of analog acquisition channels to permit simultaneous analog data acquisition from a plurality of respective analog data sources,” as recited in claim 45. Petitioner again notes, however, that this limitation also appears in claim 13 and that this limitation is taught by Campbell. *Id.* at

56–57 (discussing claim 13), 67 (discussing claim 45). In particular, with respect to claim 13, Petitioner argues that:

Campbell’s system receives 16 analog channels via a Channel MUX 28. ([Ex. 1043], 5:49–51, Figure 2; [Ex. 1003], ¶180.) Channel MUX 28 passes two channels to Sample-and-Hold circuits 40 and 42. ([Ex. 1043], 5:7, Figure 2; Zadok Decl. [I], ¶180.) Thus, Campbell teaches two independent analog acquisition channels “compris[ing] a plurality of corresponding sample and hold amplifiers.” (Zadok, Decl. [I], ¶180.)

Campbell further teaches that “[t]wo adjacent analog channels are always sampled simultaneously.” ([Ex. 1043], 14:2–3.) Thus, Campbell also teaches that the Sample-and-Hold circuits 40 and 42 are “*for simultaneous sampling on the plurality of analog acquisition channels to permit simultaneous analog data acquisition from a plurality of respective analog data sources.*” ([Ex. 1003], ¶181.)

Pet. 56. Thus, Petitioner argues that, because Campbell teaches “[s]imultaneous sampling may be used for receiving and converting differential or other special signal pairs” (Ex. 1043, 13:65–66), a person of ordinary skill in the art would have had reason to use the technique taught by Campbell “to implement a separate sample and hold circuit for each analog channel in Pucci so that hardware interrupts from the A-to-D converters can be processed in a timely manner.” Pet. 57–58 (citing Ex. 1003 ¶ 182). We again agree.

Patent Owner does not contest Petitioner’s arguments or evidence regarding the teachings of Campbell, as applied to claim 13 or 45, or the reasons for combining the teachings of Campbell and Pucci. PO Resp. 30–31. Instead, with respect to claim 45, Patent Owner relies solely on its arguments and evidence with respect to independent claim 43 in order to distinguish claim 45 over the applied references. *Id.* Because we are

persuaded that the combined teachings of Pucci and Schmidt teach or suggest all of the limitations of the base claim, claim 43, for this dependent claim, and that a person of ordinary skill in the art would have reason to combine the teachings of Pucci and Schmidt, as argued by Petitioner, and because we are persuaded that Campbell teaches the additional limitations of claim 45 and that a person of ordinary skill in the art would have reason to combine the teachings of Pucci and Campbell, as argued by Petitioner; we are persuaded that Petitioner demonstrates by a preponderance of the evidence that the combined teachings of Pucci, Schmidt, and Campbell render claim 45 unpatentable.

F. Unconstitutionality of Inter Partes Reviews

Patent Owner objects to the use of *inter partes* reviews as unconstitutional based, at least, upon the reasons presented in the petition for certiorari that was granted in *Oil States Energy Services, LLC v. Greene's Energy Group, LLC*. PO Resp. 35–36; see Reply 24. On April 24, 2018, the U.S. Supreme Court upheld the constitutionality of *inter partes* review; thus, Patent Owner's arguments are moot. *Oil States Energy Servcs. LLC v. Greene's Energy Grp., LLC*, 2018 WL 1914662, at *3 (U.S. April 24, 2018).

G. Conclusion

For the foregoing reasons, we are not persuaded that Petitioner demonstrates by a preponderance of the evidence that that claims 1, 4–6, 9–16, 18, 30, 32, and 34 of the '437 patent are rendered obvious over the combined teachings of Pucci, Kepley, Schmidt, alone or in combination with Shinosky, Campbell, or Wilson; and that claims 43 and 45 of the '437 patent

are rendered obvious over the combined teachings of Pucci and Schmidt, alone or in combination with Campbell.

III. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 4–6, 9–16, 18, 30, 32, and 34 of the '437 patent have not been shown to be unpatentable under the asserted grounds;

FURTHER ORDERED that:

claim 43 of the '437 patent is unpatentable as rendered obvious under 35 U.S.C. § 103(a) over Pucci and Schmidt; and

claim 45 of the '437 patent is unpatentable as rendered obvious under 35 U.S.C. § 103(a) over Pucci, Schmidt, and Campbell; and

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

IPR2016-01842
Patent 9,189,437 B2

For PETITIONER:

Michael Specht
Steven W. Peters
Tyler Dutton
STERNE, KESSLER, GOLDSTEIN & FOX PLLC
mspecht-ptab@sternekessler.com
speters-ptab@skgf.com
tdutton-ptab@sternekessler.com

For PATENT OWNER:

Gregory S. Donahue
Minghui Yang
DINOVO PRICE ELLWANGER & HARDY LLP
gdonahue@deplaw.com
myang@deplaw.com
docketing@deplaw.com

Michael R. Fleming
IRELL & MANELLA LLP
mfleming@irell.com

Anthony L. Meola
Jason A. Murphy
Victor J. Baranowski
Arlen L. Olsen
SCHMEISER, OLSEN & WATTS, LLP
ameola@iplawusa.com
jmurphy@iplawusa.com
vbaranowski@iplawusa.com
aolsen@iplawusa.com