

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 IPR2016-01863
Patent 8,504,746 B2

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

QUINN, *Administrative Patent Judge.*

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

I. INTRODUCTION

In this *inter partes* review, instituted pursuant to 35 U.S.C. § 134, Apple Inc. (“Petitioner”) challenges the patentability of certain claims of U.S. Patent No. 8,504,746 B2 (Ex. 1001, “the ’746 patent”), owned by Papst Licensing GMBH & Co. KG (“Patent Owner”). We have jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has not shown by a preponderance of the evidence that claims 1, 4, 6–8, 10, 11, 14, 20, 21, 23, 30, 34, and 35 of the ’746 patent are unpatentable.

A. PROCEDURAL HISTORY

Petitioner filed a Petition to institute *inter partes* review of claims 1, 4, 6–8, 10, 11, 14, 20, 21, 23, 30, 34, and 35 of the ’746 patent (“challenged claims”). Paper 2 (“Pet.”). Patent Owner filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). On April 17, 2017, we instituted *inter partes* review as to all the challenged claims. Paper 10 (“Institution Decision” or “Dec.”).

After institution, Patent Owner filed a Patent Owner Response. Paper 16 (“PO Resp.”). In addition, Petitioner filed a Reply. Paper 18 (“Reply”). We heard oral arguments on January 16, 2018. A transcript of the hearing has been entered into the record. Paper 30 (“Tr.”).

B. RELATED MATTERS

The parties indicate that the '746 patent is involved in *Papst Licensing GmbH & Co. KG v. Apple, Inc.*, Case No. 6-15-cv-01095 (E.D. Tex.) and other proceedings. Pet. 2–3; Paper 8, 2–5. The '746 patent has also been the subject of three concluded *inter partes* reviews, Cases IPR2016-01200, IPR2016-01211, and IPR2016-01213, all of which have issued to Final Written Decision.

C. REAL PARTIES-IN-INTEREST

Petitioner asserts that Apple Inc. is the only real party-in-interest. Pet. 2.

D. THE '746 PATENT (EX. 1001)

The '746 patent is titled, “Analog Data Generating and Processing Device for use With a Personal Computer.” Ex. 1001, (54). It relates generally 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 communications is to take place. *Id.* at 1:20–24. Figure 1, reproduced below, illustrates a general block diagram of interface device 10. *Id.* at 4:59–60.

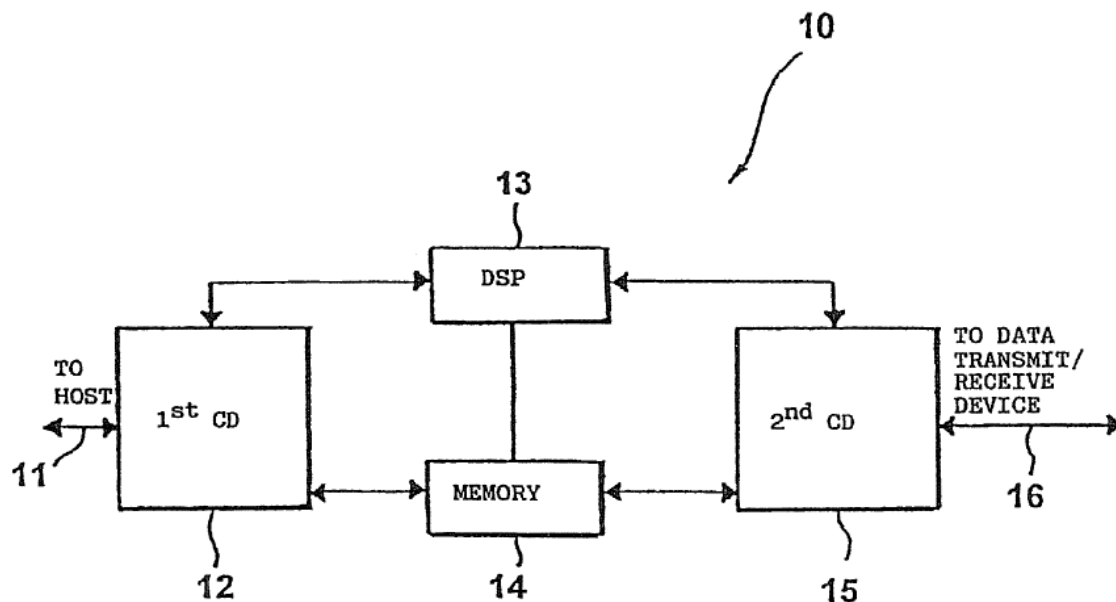


FIG. 1

According to Figure 1, first connecting device 12 is attached to a host device (not shown), to digital signal processor (DSP) 13 and memory means 14. *Id.* at 4:60–65. DSP 13 and memory means 14 are also connected to second connecting device 15. *Id.* at 4:64–67. The interface device “simulates a hard disk with a root directory whose entries are ‘virtual’ files which can be created for the most varied functions.” *Id.* at 5:11–14. “Regardless of which data transmit/receive device at the output line 16 is attached to the second connecting device, the digital signal processor 13 informs the host device that it is communicating with a hard disk drive.” *Id.* at 5:31–34. In one embodiment, the interface device is automatically detected when the host system is “booted,” resulting in the user “no longer

[being] responsible for installing the interface device 10 on the host device by means of specific drivers which must also be loaded.” *Id.* at 7:13–20.

E. REPRESENTATIVE CLAIM

There are two independent claims in the set of challenged claims (1 and 34). Claim 1 is reproduced below, and is representative of the subject matter claimed.

1. An analog data acquisition device operatively connectable to a computer through a multipurpose interface of the computer, the computer having an operating system programmed so that, when the computer receives a signal from the device through said multipurpose interface of the computer indicative of a class of devices, the computer automatically activates a device driver corresponding to the class of devices for allowing the transfer of data between the device and the operating system of the computer, the analog data acquisition device comprising:

- a) a program memory;
- b) an analog signal acquisition channel for receiving a signal from an analog source;
- c) a processor operatively interfaced with the multipurpose interface of the computer, the program memory, and a data storage memory when the analog data acquisition device is operational;
- d) wherein the processor is configured and programmed to implement a data generation process by which analog data is acquired from the analog signal acquisition channel, the analog data is processed and digitized, and the processed and digitized analog data is stored in a file system of the data storage memory as at least one file of digitized analog data;
- e) wherein when the analog acquisition device is operatively interfaced with the multipurpose interface of the computer, the processor executes at least one instruction set stored in the program memory and thereby automatically causes at least one parameter indicative of the class of devices to be sent to the computer through the multipurpose interface of the

computer, independent of the analog source, wherein the analog data acquisition device is not within the class of devices; and

f) wherein the processor is further configured and programmed to execute at least one other instruction set stored in the program memory to thereby allow the at least one file of digitized analog data acquired from the analog signal acquisition channel to be transferred to the computer using the device driver corresponding to said class of devices so that the analog data acquisition device appears to the computer as if it were a device of the class of devices;

whereby there is no requirement for any user-loaded file transfer enabling software to be loaded on or installed in the computer in addition to the operating system.

F. INSTITUTED GROUNDS OF UNPATENTABILITY

We instituted *inter partes* review of all challenged claims as follows (Dec. 19–20):

Challenged Claims	Basis	References
1, 4, 6–8, 10, 11, 20, 21, 30, 34, 35	§ 103(a)	Pucci, ¹ Kepley, ² and Schmidt ³
14	§ 103(a)	Pucci, Shinosky, ⁴ Kepley, and Schmidt

¹ Marc F. Pucci, *Configurable Data Manipulation in an Attached Multiprocessor*, Vol. 4 COMPUTING SYSTEMS, p. 217 (1991) (“Pucci”) (Ex. 1041).

² US Patent No. 4,790,003 (“Kepley”) (Ex. 1042).

³ Friedhelm Schmidt, *THE SCSI BUS AND IDE INTERFACE* (Addison-Wesley 1995) (“Schmidt”) (Ex. 1007).

⁴ US Patent No. 4,065,644 (“Shinosky”) (Ex. 1045).

Challenged Claims	Basis	References
23	§ 103(a)	Pucci, Kepley, Schmidt, and Wilson ⁵

In addition to the supporting argument for these grounds in the Petition, Petitioner also presents expert testimony. Ex. 1003, First Declaration of Erez Zadok, Ph.D. (“Zadok Declaration I”); Ex. 1054, Second Declaration of Erez Zadok, Ph.D. (“Zadok Declaration II”). Patent Owner supports its arguments of patentability with expert testimony. Ex. 2006, Declaration of Thomas A. Gafford (“Gafford Declaration”).

II. ANALYSIS

A. CLAIM INTERPRETATION

The Board interprets claims in an unexpired patent using the “broadest reasonable construction in light of the specification of the patent in which [they] appear[.]” 37 C.F.R. § 42.100(b). We presume that claim terms have their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (“The ordinary and customary meaning ‘is the meaning that the term would have to a person of ordinary skill in the art in question.’”) (Citation omitted).

In our Decision on Institution we noted Patent Owner’s disagreement with Petitioner’s contentions regarding the phrase “whereby there is no requirement for any user-loaded file transfer enabling software to be loaded or installed” (the “whereby” clause). Dec. 7–8. We invited the parties to

⁵ US Patent No. 5,353,374 (“Wilson”) (Ex. 1044).

address the construction of the phrase during the trial phase of this proceeding. *Id.* Patent Owner proffers the following two contentions:

- (1) The '746 patent expires on March 3, 2018, and, thus, the Board should construe the terms according to *Phillips v. AWH Corporation*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc); and
- (2) The district court issued a claim construction for the “whereby” clause, in addition to other terms of the '746 patent. PO Resp. 8–9 (pointing to Ex. 2007).

Petitioner does not dispute the first contention. Reply 2. Petitioner, however, explains that because the prosecution history does not contain any disclaimers, there is no meaningful difference between the claim construction under *Phillips* and the broadest reasonable interpretation standard. *Id.* As to the second contention, Petitioner does not address the construction of the “whereby” clause, but proffers that for the recited “*data transmit/receive device*” the Board should rely on the district court’s construction under *Phillips*. *Id.* at 3.

Turning to the district court’s construction of the “whereby” clause, we note that the dispute before that court was whether the claim language precludes “‘pre-loaded software,’ such as software loaded at a factory prior to a computer device being sold.” Ex. 2007, 42. The court noted that the “whereby” clause precludes requiring “user-loaded” software, further noting the nature of the dispute: whether the user is precluded from loading *any* software. *Id.* The court went on to construe “user-loaded” to mean “loaded by a user other than as necessary to load or maintain an operating system.” *Id.* (noting that defendants to the litigation, of which Petitioner is a part,

“endorsed” construing the court’s construction of the “user-loaded” phrase) (emphasis omitted).

Neither party briefed the claim construction issue for us to ascertain with sufficient confidence that it is proper for us to adopt the district court’s claim construction. At best, we have the parties’ tacit agreement that the district court construction should be adopted here. However, we do not need to construe any term expressly in order to determine whether the claims are unpatentable under the asserted grounds. Accordingly, and notwithstanding the parties’ invitation for us to adopt the district court construction, we conclude that no terms of the ’746 patent need to be construed expressly. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”)

B. SUMMARY OF APPLICABLE LEGAL PRINCIPLES

A patent claim is unpatentable as obvious 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 ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

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 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 the 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) (emphasis added).

C. LEVEL OF ORDINARY SKILL IN THE ART

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

Petitioner’s declarant, Erez Zadok, Ph.D., testifies that a person having 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 ¶¶ 28–29; Pet. 8. Dr. Zadok further testifies that such an artisan 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 contends that an ordinarily skilled artisan would have one more year of experience, or, alternatively, five or more years of experience without a bachelor’s degree. Prelim. Resp. 5–7. We do not observe 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). 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, we adopt Petitioner’s assessment.

Dec. 9–10. Patent Owner in its Response reiterates the same level of ordinary skill that it proffered in the Preliminary Response. PO Resp. 6–7. Patent Owner agrees that “there are no[] meaningful differences between the parties’ definitions of a POSITA for purposes of this proceeding.” *Id.* at 7. More importantly, no argument presented hinges on whether either party’s proposed level of ordinary skill in the art is adopted.

We find the Zadok testimony in this regard persuasive as it presents more than just the educational level of a person of ordinary skill in the art. Petitioner’s proposal is more helpful as it identifies the familiar objects of the technology used by a person of ordinary skill at the time of the invention: operating systems (*e.g.*, MS-DOS, Windows, Unix) and their associated file systems (*e.g.*, a FAT file system), device drivers for computer

components and peripherals (e.g., mass storage device drivers), and communication interfaces (e.g., SCSI and PCMCIA interfaces). Ex. 1003 ¶ 28. We, therefore, determine that Petitioner’s level of ordinary skill in the art is appropriate.

D. FACTUAL ANALYSIS OF ASSERTED GROUNDS

The three asserted grounds rely primarily on Pucci as disclosing all the claim limitations of the challenged claims, except for transducers, a file system, a “device recognition” process, and a fast Fourier transform. Pet. 12–63. Petitioner relies on the other asserted references as disclosing the missing limitations. For example, Shinosky is alleged to disclose transducers designed to transmit data. *Id.* at 57–61. Schmidt is alleged to disclose the details of a SCSI adapter and its functionality, in particular with regard to the INQUIRY command. *Id.* at 18–22. Further, Kepley is relied upon for its teachings of a voice mail system that stores a “digitally encoded and compressed voice mail message” as a file. *Id.* at 13 (citing Ex. 1042, Abstract). And Wilson is relied upon for its disclosure of a transform coder, such as a Fourier transform. *Id.* at 61–63.

Given our discussion that follows, a short overview of Pucci and Kepley are in order.

1. Overview of Pucci (Ex. 1041)

Pucci is entitled “Configurable Data Manipulation in an Attached Multiprocessor.” Ex. 1041, 217. According to Pucci,

[t]he 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.

Id. Pucci 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 Small Computer Systems Interface (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 219–220. The basic structure of an ION system is shown in Figure 1, reproduced below.

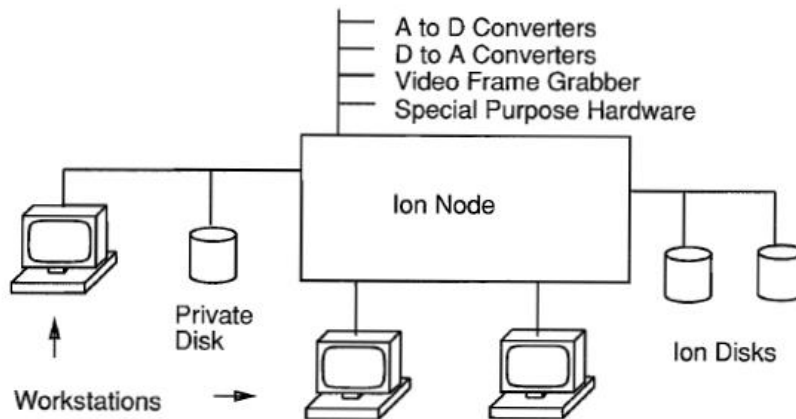


Figure 1. An ION system. Multiple workstations connect to an ION node, which contains single board computers and other peripheral interfaces and devices. Each workstation views its ION connection as though it were a large conventional disk drive.

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 to 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 five 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.* (emphasis omitted).

2. Kepley (Exhibit 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.

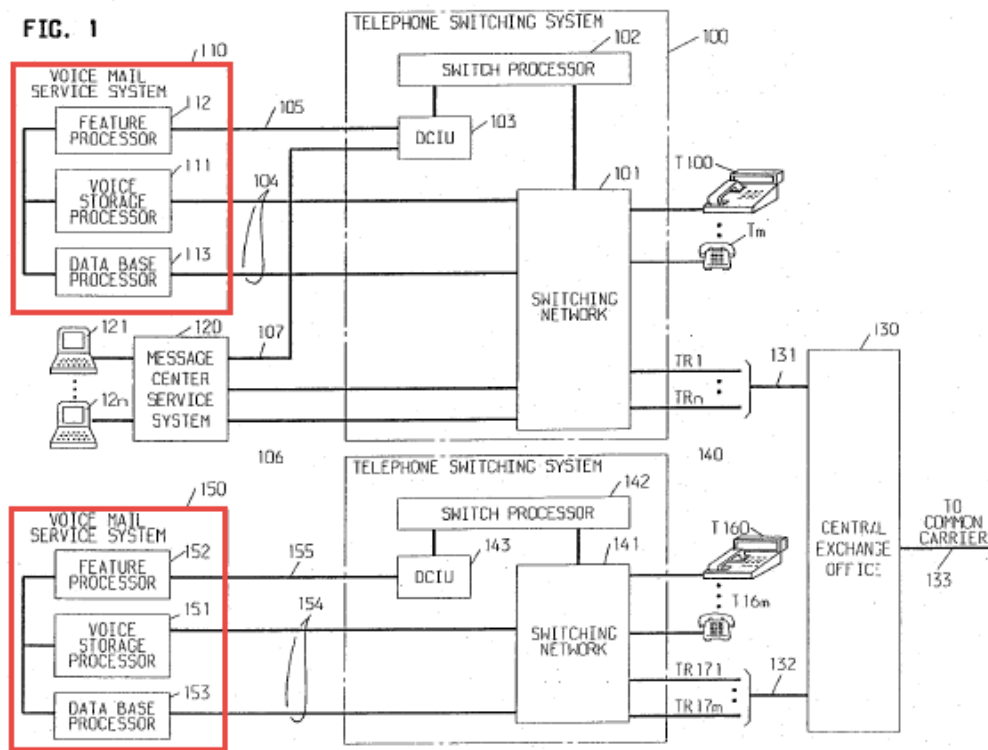


Figure 1 depicts two telephone switching systems 100, 140, each with a voice mail service system 110, 150, (annotated with a red outline) respectively. Kepley describes that, when telephone station set T100 creates a voice mail message for delivery to a message recipient at telephone station set T160, 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.

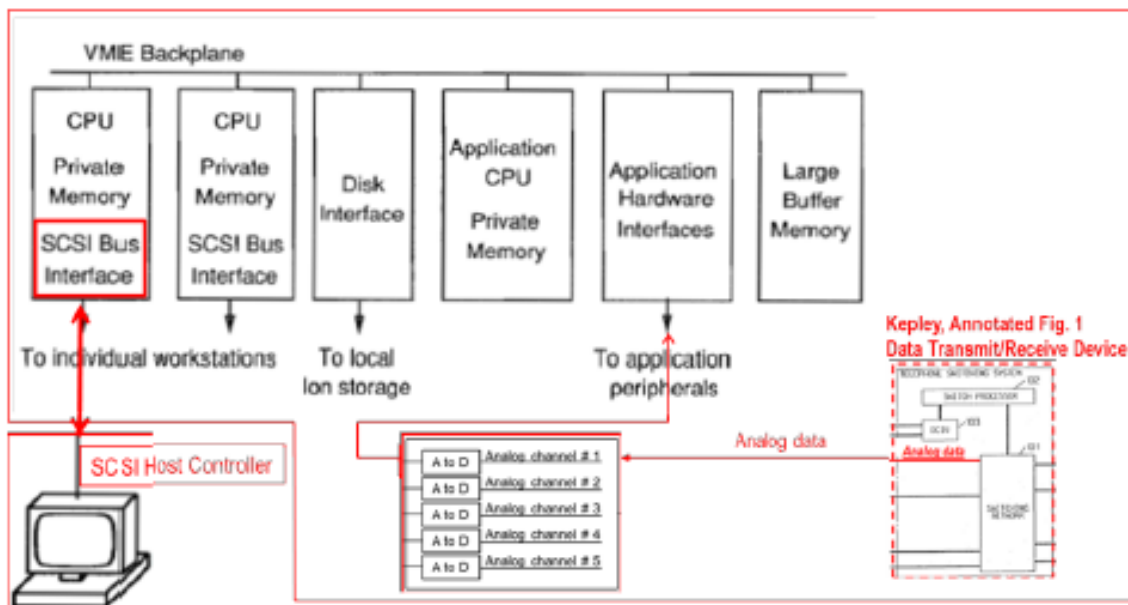
*3. Differences Between the Prior Art and Claimed Subject Matter:
Claim 1 and Claim 34*

Petitioner proffers arguments and evidence supporting the contention that Pucci discloses:

- a) A program memory (Pucci’s resident memory within ION) (Pet. 22);
- b) An analog signal acquisition channel for receiving a signal from an analog source (input to each of Pucci’s A-to-D converters receiving signals from a telephone switch) (*id.* at 23–24);
- c) A processor (Pucci’s application CPU and interface SBC CPUs, in combination) (*id.* at 24); and
- d) Data storage memory (local ION storage and large buffer memory) (*id.*).

In addition to the above-listed limitations, claim 1 requires a file system of the data storage memory, because it recites that the “digitized analog data is stored in a file system of the data storage memory as at least

one file of digitized analog data.” Ex. 1001, 12:2–4. Petitioner acknowledges that Pucci “does not explicitly disclose that the converted data is stored as a file on the ION node.” Pet. 13. Petitioner relies instead on Kepley as disclosing a “voice mail system that stores a ‘digitally encoded and compressed voice mail message’ as a file.” *Id.* (citing Ex. 1042, Abstract, claim 1). According to Petitioner, the combined Pucci and Kepley teachings may be illustrated in its annotated Figure 2 of Pucci, reproduced below and presented in page 23 of the Petition.



Petitioner describes the above-annotated Figure 2 of Pucci as illustrating the combination of “Pucci’s ION node with an exemplary switch described by Kepley that implements the voice messaging service A-to-D conversion application.” Pet. 23 (citing Ex. 1003 ¶¶ 89–96, 97). We note that Petitioner’s annotations depict telephone switching system 100 as providing the analog data (voice) over communication line 104 for input to the A-to-D channels of Pucci.

i. File System Limitation

At the heart of the parties' dispute concerning this "file system" limitation is whether Petitioner has presented a reasonable rationale for combining the teachings of Pucci and Kepley, as asserted. Petitioner asserts that digital storage of voice message data, in the form of a file or otherwise, was well known in the art as taught by Pucci and Kepley. *Id.* at 14 (asserting that Pucci discloses a file system at page 222), 28 (citing Ex. 1003 ¶ 108). The Petition states three general rationales for combining the teachings of Pucci and Kepley:

- a) a person of ordinary skill in the art would have been motivated to look to Kepley's "voice messaging application" because Pucci discloses that its analog-to-digital services are for "a voice messaging application of a prototype programmable telephone switch system called GARDEN;"
- b) a person of ordinary skill in the art would have found it obvious to store the digitized A-to-D converted data as a file in Pucci's voice messaging service application to enable "computer-to-computer data file transfer" between the ION-enabled voice messaging service system and other messaging service systems as taught by Kepley; and
- c) the modification of Pucci with Kepley's teachings 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.

Pet. 13–14 (citing Ex. 1003 ¶¶ 66–69; Ex. 1041, 222, 231); *see also id.* at 28–30.

Petitioner further argues that Pucci temporarily stores the converted voice data in large buffer memory of the ION node, but that Pucci, nevertheless, *suggests* storing as a file, because Pucci states that data can be stored as “traditional file system data” in the ION node Pet. 28 (citing Ex. 1041, 221). Petitioner repeats the substitution rationale, stated above in (c), referring to substitution of Pucci’s “voice message processing” (which includes storage of the digitized voice message as a file) with Kepley’s “voice message processing” (“which includes storage of digitized voice message as a file). *Id.* at 30 (citing Ex. 1003 ¶ 113). Petitioner further asserts that the “results of such 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.*

Patent Owner challenges Petitioner’s proffered rationales for the asserted combination on five bases:

- a) it would not have been obvious for a person of ordinary skill in the art to replace the first in/first (FIFO) out data writing and reading approach of Pucci with a file format approach because of the differences between buffering and storing data as a file (PO Resp. 14–16);
- b) the combination would change the principle of operation of Pucci because the alleged substitution prevents Pucci from performing the data flow into the host as the data is acquired (*id.* at 17, 33–34);
- c) implementing Kepley’s file system storage in systems taught by Pucci would require a major redesign of the ION Node embedded software and the ION Node host software, so that files, and not dynamically allocated buffers, would be used (*id.* at 17, 34);

- d) it is pure hindsight to propose changing a design paradigm, such as substituting memory buffers with named files (*id.* at 34–35); and
- e) Pucci teaches away from storing digitized analog data as a file (*id.* at 30–33).

Petitioner reiterates in response to these arguments that Pucci discloses storing “*traditional* file system data,” and, therefore, Pucci provides an *express motivation* to use file storage as disclosed in Kepley and does not teach away from using a file system. Reply 4–6, 8–9. Petitioner further responds that Pucci’s system “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.” *Id.* at 6. Finally, as modified by the teachings of Kepley, Pucci would continue to offer portability—the objective of Pucci, according to Petitioner—because the combined teachings would provide file transfer between voice messaging service systems, as taught in Kepley. *Id.* at 7.

In view of Patent Owner’s arguments and evidence, we are not persuaded that a person of ordinary skill in the art would have had reason to combine the teachings of Pucci and Kepley, as asserted by Petitioner, to achieve the challenged claims. Our determination is based on two findings:

- a) First, we determine that Pucci does not teach or suggest a reason for the use of a file system for storing digitized voice messages at the ION node; and
- b) Second, we determine that achieving computer-to-computer file transfer, as taught by Kepley, and the “*traditional*” nature of the substitution proffered by Petitioner, are not sufficient motivations to modify Pucci, in light of the changes to Pucci that would impermissibly alter Pucci’s principle of operation.

A discussion of each of these findings follows. In determining obviousness, we are mindful that the references must be considered as a whole. Thus, picking and choosing from a reference only the favorable parts and ignoring the rest is prohibited. *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986). The court in *Hedges* elaborates:

It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.

Id. (internal quotes and citation omitted). In this proceeding, Petitioner's contentions regarding the obviousness rationale do not reflect the entire scope of the teachings of the applied references. For instance, Petitioner's rationales do not take into account the importance of Pucci's workstation application and the manner in which it obtains data from A-to-D converters.

(a)

As noted above, we determine that Pucci does not teach or suggest a reason for 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 Pet. 28; Reply 8. 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. And 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. 28 (citing Ex. 1041, 231); Ex. 1003 ¶ 107 (citing Ex. 1041, 222). Petitioner also proffers 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. 28 (citing Ex. 1003 ¶ 107). 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 ¶ 107 (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 is 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 108 of the Declaration (Exhibit 1003). Although we agree that storing data as a file, in general, was well known,⁶ and that Pucci identified file data as a type of data

⁶ See, e.g., Reply 5 (Petitioner arguing that using a well-known, well-understood, and traditional file system to store the digitized analog data as a

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: 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 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 FIFO approach to data writing and reading with respect to the A-to-D conversion. Ex. 2006 ¶ 49. We credit this testimony. We also credit Mr. Gafford’s testimony that, at the time of the invention, it was not necessary to store data in files. *Id.* ¶ 50. Indeed, Pucci provides three alternatives for storing data. 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.

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.

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 9 (emphasis added). We do not agree with Petitioner's characterization of Pucci as being "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 cross-examination as supporting Petitioner's contention. Petitioner points out that Mr. Gafford understands Pucci as having both hard drive and solid-state volatile buffer memory, and that traditional file system data could be stored in either place. Reply 8; 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.⁷

Petitioner also argues that the '746 patent works 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, 8; Tr.

⁷ Claim 1 of the '746 patent, for instance, requires that the "digitized analog data is stored in a file system of 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. 27–28 (emphasis omitted).

24:12–21. This argument risks analyzing Pucci in hindsight, with the knowledge of what is disclosed in the ’746 patent. It would be improper, absent any other evidence, for us to rely on the ’746 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 ’746 patent disclosure. *W.L. Gore & Associates, 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 ’746 patent discloses that a command “read file xy” may be interpreted to refer to a “real-time input” file. Ex. 1001, 6:1–10. The ’746 patent can accept such real-time input file because it implements the file system and interprets all access commands as involving a file system. We analyze Pucci with a different assumption—it is handling the input from the A-to-D converters as raw data. There is no “read file” command and no other disclosure in Pucci that would suggest real-time input data is understood by Pucci’s system as a file. That concept may be present in the ’746 patent, but Petitioner has not shown the same concept is present in Pucci.

Consequently, we find that Pucci neither suggests nor encourages the use of a traditional file storage system for storing, as a file, the digitized analog data from the A-to-D converters.

(b)

The Petition proffers that it would have been obvious to combine the teachings of Pucci's ION system and Kepley's voice mail system. Pet. 28 (citing Ex. 1003 ¶¶ 109–111). To support this assertion, the Petition states 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 28–29. Petitioner then proffers that a person of ordinary skill in the art would have looked to Kepley for the details regarding the voice mail application because “Kepley describes a voice mail messaging system and application similar to Pucci.” *Id.* at 29 (citing Ex. 1003 ¶ 110). Dr. Zadok's declaration, cited in support, repeats verbatim what the petition proffers with the additional citation to the Abstract of Kepley. Ex. 1003 ¶ 110. Neither this argument nor Dr. Zadok's conclusion shows 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. This premise is flawed because it conflates analogous art analysis with what constitutes a sufficient reason to combine the references. The fact that both references disclose voice mail 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, e.g., TRWAuto. 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 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, Abstract. 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.2). Other than an A-to-D conversion that occurs in both Pucci and Kepley, there is little overlap in these disclosures, and no disclosed similarities in voice mail services. Petitioner’s broad characterization of Kepley describing “a voice mail messaging system and application similar to Pucci” is an overstatement of the evidence with insufficient factual support in the record.

Finally, even if Pucci and Kepley were part of the corpus 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 there are alleged similarities is not 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 to combine the teachings, as asserted.

As further support for the contention that it would have been obvious to combine the teachings of Pucci and Kepley, Petitioner proffers 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. 29; Ex. 1003 ¶ 111. 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 ¶ 112 (citing Silberschatz, 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. Petitioner states, without explanation, that it would have been obvious to store the digitized A-to-D converted data as a file. *Id.* Neither the Petition nor Dr. Zadok’s testimony explains the modification of Pucci in this regard. Pet. 29; Ex. 1003 ¶ 111. 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 ¶ 112. This testimony of Dr. Zadok

disregards the context of Pucci and offers, still, no 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.⁸

With regard to the “computer-to-computer” file transfer disclosed 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 at 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

⁸ *DSS Tech. Mgmt. v. Apple Inc.*, Case Nos. 2016-2523, 2016-2524 (Fed. Cir. Mar. 23, 2018) (precedential) (holding that when a reference failed to disclose a server transmitting in low duty cycle RF burst, the expert's opinion was insufficient to show obviousness of such transmission because the expert failed to consider different transmission requirements between the disclosed server and the mobile units that did perform the recited transmission). The similarities in transmission hardware cannot close these gaps without additional, reasoned analysis. *DSS*, slip op. 15-16.

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 voice storage processor 111 of Kepley: acquiring the voice, converting it to digital form, and transmitting the data for permanent storage elsewhere. 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. That is where the similarities appear to end.

It is important to note 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*. Petitioner states that it would have been obvious “to store the digitized A-to-D converted data as a file in Pucci’s voice messaging service application to enable ‘computer-to-computer data file transfer’ *between the ION-enabled voice messaging service system and other messaging service systems* as taught by Kepley.” Pet. 29 (emphasis added). Thus, confronted with the Petitioner’s reason to implement the computer-to-computer file transfer, we are left wondering how or why Pucci would accomplish a “computer-to-computer” transfer, when it teaches no other voice mail systems and no further processing of voice mail messages after A-to-D conversion. Kepley has not been proffered as motivation to improve the communication *within* the components of a voice mail system (or between Pucci’s workstation and the ION node), but rather to improve the communication *between* voice mail systems. Pet. 14 (arguing file transfer “between the ION-enabled voice

messaging service system and other messaging service systems”), 29 (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.* at 29. 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 workstation receiving the data, and that Pucci is silent as to any further operations on the voice message by either the ION node or the workstation. Thus, following the teaching of Kepley’s “computer-to-computer” file transfer and Petitioner’s reliance on communications between voice mail service systems, we conclude that Kepley’s contribution, at best, results in the transfer of the voice message as a file between a *workstation* of Pucci and some other voice mail system, but not between an ION node and another voice mail system. Such a combination of teachings, however, does not accomplish the claim requirement 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 hold otherwise, would change the manner in which the ION node *and the workstation* acquire and transmit the A-to-D converted data, which changes the principle of operation of Pucci.

(c)

Substituting Pucci's "voice message processing" with Kepley's, as Petitioner proffers, would change the principle of operation of Pucci. Therefore, a person of ordinary skill in the art would not have had reason to combine the teachings of these references to achieve the challenged claims.

Petitioner asserts 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. 30, 14 ("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.* at 14. 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 ¶ 69); Pet. 30 (citing Ex. 1003 ¶ 113).

Patent Owner challenges the proffered rationales for the combination of the teachings of Pucci and Kepley as altering the principle of operation of Pucci. For instance, Patent Owner argues 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. 34. According to Patent Owner, the 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. (citing Exhibit 2006 ¶ 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 proffered 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 workstation as it is acquired.

More significantly, Petitioner's proffered 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.* (arguing that a user at a 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: 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 placed as close as possible 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, replacement of both the workstation and the ION node applications with the Kepley voice message process would result in a system that is contrary to the principle of operation of Pucci. 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.

(d)

Petitioner also appears to allege 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 6. Petitioner supports this statement with cross-examination testimony of Mr. Gafford 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 disclose, teach, or suggest: that the 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. *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 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 inexorably linked to the design of the partitioned application, we are left wanting evidence of reasons that a person of ordinary skill in the art *would* modify Pucci to store buffered raw data as a file. Mr. Gafford’s testimony does not provide that evidence (Ex. 1056, 63:3–9). At best, Mr. Gafford adds that a person of ordinary skill in the art *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 violating the principles of operation of Pucci.

Consequently, on this record, 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.”

ii. File Transfer Enabling Software Limitation

Claim 1 recites that “there is no requirement for any user-loaded file transfer enabling software to be loaded on or installed in the computer in addition to the operating system.” Ex. 1001, 12:24–26. Claim 34 recites a

similar limitation and Petitioner relies on the same arguments and evidence proffered for claim 1. Pet. 54–56. Thus, the analysis that follows, although focusing on claim 1, is equally applicable to claim 34.

Petitioner argues that Pucci’s workstation interacts with the ION node like a conventional disk drive. *Id.* at 38. 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.* (citing Ex. 1003 ¶ 133); *see also* Ex. 1054 ¶ 30. The asserted combination would accomplish the file transfer using existing SCSI hard disk drivers and, thus, no “file transfer enabling software needs to be loaded or installed by the user in the workstation of Pucci, Kepley, and Schmidt.” Pet. 38.

Patent Owner challenges the contention and argues that Pucci’s workstation “still requires installed software for the transfer of data to occur.” PO Resp. 24. 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. 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 26–27 (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 27. 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. 2006 ¶¶ 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 ¶ 133. On the other hand, we have testimony of Mr. Gafford that explains Pucci’s workstation program as being involved in the request of 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. 2006 ¶ 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. *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”); *see also, In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”). As we stated above with regard to the file system limitation, 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 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: the hardware dependent A-to-D code remains within ION, while the part of the application that runs on the 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. As described more particularly below, although the SCSI protocol is used for connecting the two applications, any A-to-D conversion data transferred from the ION node to the workstation is requested specifically by the workstation, in a particular manner, and at a particular time.

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, and 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.⁹ The workstation 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

⁹ 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 A), then the workstation retrieves data by reading the data block address for that channel (read D). Ex. 1041, 232.

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 (Patent Owner’s observations regarding testimony that the application on the workstation interfaces with the SCSI driver which accepts the commands; PO Resp. 24–29); *but see* Paper 25, 1–2 (attempting to providing explanation and context for Dr. Zadok’s testimony).

Petitioner argues that the SCSI standard is the only software necessary to know where to read and write data. Reply 21; *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 21. 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 workstation (Ex. 1041, 219–220), but the workstation read commands implement the specifics of the data acquisition through the SCSI bus.

Pucci describes for example that it uses 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). Thus, we conclude, that 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.

4. Conclusion

Petitioner has failed to demonstrate by a preponderance of the evidence that claims 1 and 34 would have been obvious over the

combination of Pucci, Kepley, and Schmidt. As stated above, with respect to claim 1, we determine that Petitioner failed to show adequate motivation to combine Pucci and Kepley with respect to the “file system” limitation. With respect to claims 1 and 34, we determine that Petitioner failed to show that the asserted combination of Pucci, Kepley, and Schmidt teaches or suggests the “file transfer enabling software” limitation.

Petitioner’s unpatentability grounds concerning the challenged dependent claims neither address nor cure these deficiencies. Accordingly, we determine that Petitioner has also failed to show, by a preponderance of the evidence, unpatentability of claims 4, 6–8, 10, 11, 14, 20, 21, 23, 30, and 35, which depend directly or indirectly from claim 1 or claim 34. We acknowledge that the Board has rendered Final Written Decisions concerning claims of the ’746 patent in previous *inter partes* reviews: IPR2016-01200 (Paper 20),¹⁰ IPR2016-01211 (Paper 39),¹¹ and IPR2016-01213 (Paper 33).¹² Except for claim 14, the ’746 claims challenged in this proceeding have been found to be unpatentable in one or more of the previous *inter partes* reviews. Notices of appeal have been filed in those *inter partes* reviews. Accordingly, we do not yet apply collateral estoppel per *MaxLinear, Inc. v. CF CRESPE LLC*, 880 F.3d 1373 (Fed. Cir. 2018).

¹⁰ Finding unpatentable claims 1, 6, 15, 17, 18, 31, and 34 of the ’746 patent.

¹¹ Finding unpatentable claims 1–9, 11, 12, 15, 17–21, 23–31, and 34 of the ’746 patent. Finding not unpatentable claims 10 and 35 of the ’746 patent.

¹² Finding unpatentable claims 1–3, 6–10, 15, 17–19, 21, 23–25, 31, 34, and 35 of the ’746 patent.

III. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 4, 6–8, 10, 11, 14, 20, 21, 23, 30, 34, and 35 of the '746 patent have not been shown to be unpatentable under the asserted grounds; 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.

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