

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANON INC., CANON U.S.A., INC.,
CANON FINANCIAL SERVICES, INC., FUJIFILM CORPORATION,
FUJIFILM HOLDINGS AMERICA CORPORATION,
FUJIFILM NORTH AMERICA CORPORATION, JVC KENWOOD
CORPORATION, JVCKENWOOD USA CORPORATION,
NIKON CORPORATION, NIKON INC., OLYMPUS CORPORATION,
OLYMPUS AMERICA INC., PANASONIC CORPORATION,
PANASONIC CORPORATION OF NORTH AMERICA,
SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

PAPST LICENSING GMBH & CO. KG,
Patent Owner.

Case IPR2016-01225¹
Patent 8,966,144 B2

Before JONI Y. CHANG, JENNIFER S. BISK, and
MIRIAM L. QUINN, *Administrative Patent Judges*.

BISK, *Administrative Patent Judge*.

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

¹ Case IPR2017-00672, filed by LG Electronics, Inc. (“LG”), was joined with this proceeding. Paper 20. LG, however, was subsequently terminated from this proceeding. Paper 34.

INTRODUCTION

A. Background

Petitioner, listed above, filed a Petition requesting *inter partes* review of claims 1–36, 38–56, 58–65, 67–74, and 77–87 (the “challenged claims”) of U.S. Patent No. 8,966,144 B2 (Ex. 1301, “the ’144 patent”). Paper 1 (“Pet.”). Patent Owner, Papst Licensing GmbH & Co., KG, filed a Preliminary Response. Paper 9 (“Prelim. Resp.”). On December 15, 2016, we instituted trial on whether under § 103(a)² claims 1–36, 38–56, 58–65, 67–74, and 77–87 would have been obvious over McNeill,³ the SCSI Specification,⁴ and Admitted Prior Art.⁵ Paper 10 (“Institution Decision” or “Inst. Dec.”).

Following institution, Patent Owner filed a Response (Paper 14, “PO Resp.”)⁶, and Petitioner filed a Reply (Paper 21, “Reply”). Upon

² 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. §§ 102 and 103 in this Decision.

³ U.S. Patent No. 5,499,378, issued March 12, 1996 (Ex. 1303) (“McNeill”).

⁴ AMERICAN NATIONAL STANDARDS INSTITUTE, INC., AMERICAN NATIONAL STANDARD FOR INFORMATION SYSTEMS – SMALL COMPUTER SYSTEM INTERFACE-2, ANSI X3.131-1994 (1994) (Ex. 1305) (“SCSI Specification”).

⁵ See e.g. Ex. 1301, 3:37–46, 4:20–22, 5:11–14, 5:21–23, 5:37–47, 8:45–50, 10:26–29. Although discussed in the Petitioner’s analysis, the SCSI Specification and the Admitted Prior Art were omitted inadvertently from the statement of the asserted ground. Therefore, we treated the statement as mere harmless error and presumed that Petitioner intended to assert that the challenged claims are unpatentable based, in part on the SCSI Specification and the Admitted Prior Art. Inst. Dec. 7, n.3.

⁶ Patent Owner proffers testimony, supporting its position, by Thomas A. Gafford. Ex. 2010.

authorization, Patent Owner filed objections to arguments and evidence filed with Petitioner's Reply (Paper 25) and Petitioner file a response to those objections (Paper 27). We held an oral hearing on September 13, 2017. Papers 30, 31 ("Tr.").⁷

This is a Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons set forth the below, we conclude that Petitioner has shown by a preponderance of evidence that claims 1–36, 38–56, 58–65, 67–74, and 77–87 are unpatentable.

B. Related Matters

The parties indicate that the '144 patent is involved in *Papst Licensing GmbH & Co. KG v. Canon Inc.*, Case No. 1:15-cv-01692 (D.D.C.) and other district court proceedings. Pet. 3–6; Paper 5, 1–3. This patent has also been challenged in several other petitions for *inter partes* review. Pet. 6; Paper 5, 4–5. A final written decision in each of the following proceedings is entered concurrently with this decision: IPR2016-01199, IPR2016-01212, IPR2016-01214, and IPR2016-01216.

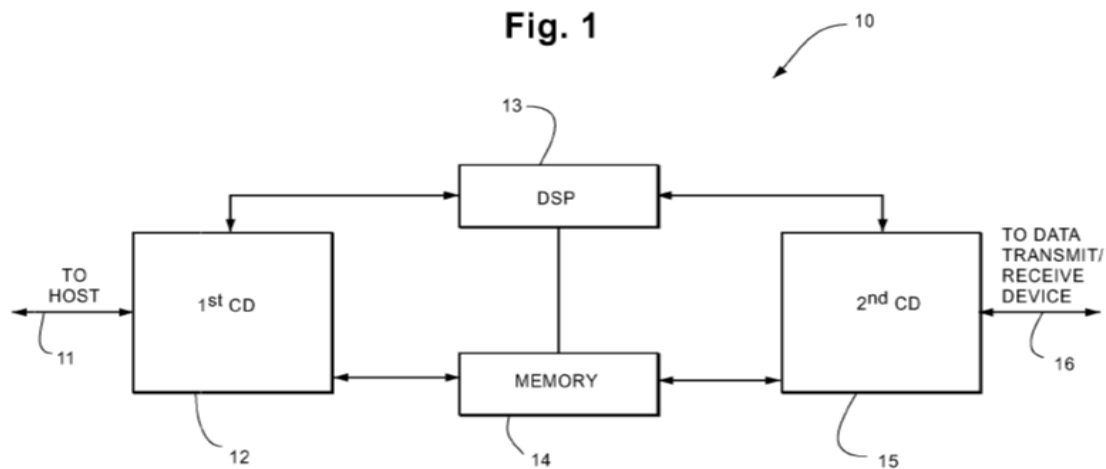
C. The '144 Patent

The '144 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. 1301, 1:18–22,

⁷ This was a consolidated hearing with related cases IPR2016-01211, IPR2016-01212, and IPR2016-01216. See Tr. In addition, on September 14, 2017, we held an oral hearing for several other related cases, IPR2016-01199, IPR2016-01200, IPR2016-01213, and IPR2016-01214. Because of the overlap in issues in all the related cases, the transcripts for the September 14, 2017 hearings are also entered into the record in this case. Papers 29, 30, and 31.

1:54–57. According to the '144 patent, using a specific driver for the data transmit/receive device that is customized to match very closely to an individual host system would achieve high data transfer rates across the interface, but such a 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 introduced an interface device for laptops, using a plug-in card for converting the personal computer memory card association (PCMCIA) interface into a known standard interface (IEEE 1284). *Id.* at 2:23–29. 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 '144 patent indicates that the “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 used. *Id.* at 3:33–367. Figure 1 of the '144 patent, reproduced below, illustrates a block diagram of an interface device.



As shown in Figure 1 above, 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.* 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 specific driver software for the interface card. *Id.* at 3:51–57, 8:42–46. According to the '144 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 a 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.

D. Challenged Claims

Of the challenged claims, claims 1, 84, and 86 are independent. Claims 2–36, 38–56, 58–65, 67–74, and 78–83 depend directly or indirectly from claim 1, claim 85 depends directly from independent claim 84, and

claim 87 depends directly from independent claim 86. Claim 1 is 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 sensor designed to transmit data;

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

wherein the processor is adapted to be involved in a data generation process by which the sensor generates analog data, the analog data is processed, and the processed 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 in which, when the i/o port is operatively interfaced with a multi-purpose interface of a computer, the processor executes at least one instruction set stored in the program memory and thereby causes at least one parameter which provides identification information regarding the ADGPD 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,

(b) without requiring any end user to interact with the computer to set up a file system in the ADGPD at any time,

(c) before a time when the computer is able to receive the at least one file of digitized analog data from the data storage memory, and

(d) regardless of the identity of a manufacturer of the computer, wherein the at least one parameter is consistent with the ADGPD being responsive to commands issued from a customary driver;

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 received by the multi-purpose interface of the computer, the processor executes at least one other instruction set stored in the program memory and thereby causes the at least one file of digitized analog data to be transferred to the computer regardless of the identity of the manufacturer of the computer and without requiring any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time.

Ex. 1301, 11:56–12:36

ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Under the broadest reasonable interpretation standard, claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

In the Institution Decision, we applied the broadest reasonable interpretation standard, as is proper for unexpired patents, to construe several terms. Inst. Dec. 7–17. We note, however, that the ’144 patent may expire shortly after the date of this Decision. In fact, the ’144 patent claims under 35 U.S.C. § 120 the benefit of the filing date of U.S. Patent No. 6,470,399 (“the ’399 patent”), through a chain of continuing applications. Ex. 1301, [60]. After institution of trial in the present case, Patent Owner, in related cases involving the ’399 patent, indicated that the ’399 patent will expire on March 3, 2018 (20 years from the ’399 patent’s March 3, 1998

filing date). *See, e.g.*, Case IPR2016-01839, Ex. 1001, [22], Paper 14; Case IPR2017-00443, Paper 6, 7 n.1. In the Institution Decisions in the cases involving the '399 patent, we did not apply the broadest reasonable interpretation standard, instead adopting the claim constructions set forth by the district court and affirmed by the Federal Circuit in *In re Papst Licensing GmbH & Co. KG Litig. v. Fujifilm Corp.*, 778 F.3d 1255 (Fed. Cir. 2015) (Ex. 1011).⁸ *See, e.g.*, Case IPR2017-00443, Papers 7–8. In this proceeding, neither party provides, nor can we discern, any term for which the broadest reasonable interpretation standard would lead to a different result than the district court claim construction standard.

With few exceptions, addressed below, both Petitioner and Patent Owner agree with our claim constructions set forth in the Institution Decision. PO Resp. 11–15; Reply 25. While Petitioner urges us not to adopt any new construction in the Final Decision, Patent Owner advances several modifications. PO Resp. 11–15. We address below each of Patent Owner's proposed claim construction modifications in turn to the extent necessary to resolve the controversy regarding the patentability of the challenged claims. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’”) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

⁸ The '144 patent and the '399 patent share the same Specification and some of the same claim terms are used in both patents (e.g., interface device). Our interpretations herein are consistent with the Federal Circuit's decision.

1. “*analog data generating and processing device*”

The claim term “analog data generating and processing device” or “ADGPD” appears in each independent claim of the ’144 patent. Ex. 1301, 11:57–58, 16:11–12, 17:25–26. In the Institution Decision (Inst. Dec. 8–9), we noted that, apart from the title and claims, the Specification does not use the term “analog data generating and processing device.” *See generally* Ex. 1301. Rather, the Specification focuses on an interface device for communication between a host device and a data transmit/receive device. *See, e.g., id.* at Abstract., 1:18–22, 3:29–32, Figs. 1, 2. We further noted that claims 1 and 2 define an “analog data generating and processing device” as an interface device having, at least, a sensor. In that light, we construed the claim term “analog data generating and processing device” or “ADGPD” to encompass “an interface device having a sensor.” Inst. Dec. 8–9.

After Institution, Patent Owner objects to this construction “[i]f intended to be a full construction.” PO Resp. 12. This construction is not intended to be complete, but simply to provide an example of what the phrase encompasses as necessary for the analysis below. We discern no reason to modify the construction. Therefore, for purposes of this Final Written Decision, we maintain our construction as to the term “analog data generating and processing device.”

2. “*sensor*”

Each independent claim recites “a sensor designed to transmit data.” *See, e.g.,* Ex. 1301, 11:62. Claim 17, which depends directly from claim 1, requires the “sensor” to comprise a “data transmit/receive device.” *Id.* at 13:7–8. In the Institution Decision (Inst. Dec. 9), we noted that, apart from the claims, the term “sensor” does not appear in the Specification of the ’144

patent. Rather, as noted above, the Specification focuses on an interface device for communication between a host device and a *data transmit/receive device*. Ex. 1301, 1:18–22, 3:29–32, 6:11–13, Figs. 1, 2. In that light, we construed a “sensor” to encompass a “data transmit/receive device”—a device that is capable of transmitting and/or receiving data. Inst. Dec. 9.

After Institution, Patent Owner “agrees that ‘sensor’ *may* encompass a data transmit/receive device,” but asserts that it “is not restricted to such a device.” PO Resp. 13. We do not consider this construction to be complete, but simply an example of what the term “sensor” encompasses as necessary for the analysis below. We discern no reason to modify the construction. Therefore, for purposes of this Final Written Decision, we maintain our construction as to the term “sensor.”

3. “*multi-purpose interface*”

Each independent claim recites “the i/o port is operatively interfaced with a multi-purpose interface of a computer.” *See, e.g.*, Ex. 1301, 12:5–7. The Specification of the ’144 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.” *Id.* at 3:51–56 (emphases added). The Specification also indicates that SCSI interfaces are present on most host devices or laptops. *Id.* at 8:45–46. Petitioner’s Declarant, Paul F. Reynolds, Ph.D., testifies that SCSI is “a standard for attaching a range of peripheral device types to computers,” and “SCSI is designed to be multi-purpose: to both support a variety of devices and to operate with a variety of operating systems.” Ex. 1306 ¶ 58.

In light of the Specification and the evidence before us regarding the general knowledge of an ordinarily skilled artisan, we construed a “multi-purpose interface” to encompass a “SCSI interface” in the Institution Decision. Inst. Dec. 10. Patent Owner objects to this construction in the event that a multi-purpose interface is limited to a SCSI interface. PO Resp. 14. We do not consider our construction to limit a multi-purpose interface to a SCSI interface. Therefore, we discern no reason to modify the construction and, hence, we maintain our construction for the term “multi-purpose interface.”

4. “customary driver”

The claim term “customary driver” appears in each independent claim. Ex. 1301, 12:22–23, 17:10, 18:24. For instance, claim 1 recites “the at least one parameter is consistent with the ADGPD being responsive to commands issued from *a customary driver*.” *Id.* at 12:20–23 (emphasis added). Claim 29, which depends directly from claim 1, further recites “wherein the at least one parameter is consistent with the ADGPD being responsive to *a SCSI inquiry command*.” *Id.* at 13:38–40 (emphasis added).

The Specification of the ’144 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. 1301, 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 8:45–46, 10:23–33.

In light of the Specification, we construed, in the Institution Decision, a “customary driver” to encompass “a driver normally present in a commercially available computer system (e.g., a hard disk driver or a SCSI driver).” Inst. Dec. 10–12. After Institution, Patent Owner maintains that “customary driver” means “a set of software routines normally part of commercially available computer systems,” but does not point to any additional evidence to support this position. PO Resp. 14–15. We discern no reason to modify the construction and, therefore, we maintain our claim construction as of the term “customary driver.”

5. *“the processor adapted to be involved in a data generation process”*

Each independent claim recites “the processor is adapted to be involved in a data generation process by which the sensor generates analog data, the analog data is processed, and the processed analog data is stored in the data storage memory as at least one file of digitized analog data.” *See, e.g.,* Ex. 1201, 11:66–12:3. In the Institution Decision (Dec. 12–13), we declined to adopt Patent Owner’s implicit construction (Prelim. Resp. 35), interpreting “the processor is adapted to be involved in a data generation process” to require the processor to be involved directly in every aspect of the process, because it would improperly import an extraneous limitation into the claims. It is well-settled that if a feature is not necessary to give meaning to what the inventor means by a claim term, it would be “extraneous” and should not be read into the claim. *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950 (Fed. Cir. 1993); *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988).

In its response, Patent Owner argues that “[t]he processor is ‘involved in a data generation process’ by virtue of processing the analog data generated by the sensor; the processor is not required to generate the analog data.” PO Resp. 15–16. Therefore, for this Final Decision, we maintain our determination in the Institution Decision. Dec. 12–13. We need not further construe this phrase to resolve the issues before us. *See Nidec Motor*, 868 F.3d at 1017.

6. “*automatic recognition process*”

Each independent claim requires the processor to be adapted to be involved in an “automatic recognition process,” sending “identification information regarding the ADGPD” to the multi-purpose interface of the computer. *See, e.g.*, Ex. 1301, 12:4–36. In the Institution Decision (Inst. Dec. 12–13), we noted that the word “automatic” normally does not exclude all possible human intervention. *See WhitServe, LLC v. Computer Packages, Inc.*, 694 F.3d 10, 19 (Fed. Cir. 2012); *CollegeNet, Inc. v. ApplyYourself, Inc.*, 418 F.3d 1225, 1235 (Fed. Cir. 2005). According to the Specification of the ’144 patent, the communication between the host system and the interface device “is based on known standard access commands as supported by all known operating systems (e.g., DOS®, Windows®, Unix®).” Ex. 1301, 5:11–14. When the host system is connected to the interface device and is booted, “usual BIOS routines or multi-purpose interface programs issue an instruction, known by those skilled in the art as the INQUIRY instruction.” *Id.* at 5:17–23. In response to the INQUIRY instruction, the interface device sends a signal to the host system, *identifying a connected hard disk drive*. *Id.* at 5:24–30. In light of the Specification, we adopted the parties’ proposed construction, construing an “automatic

recognition process” as “a process by which the computer recognizes the ADGPD upon connection with the computer without requiring any user intervention other than to start the process.” Neither party disputes this claim construction. PO Resp. 14; Reply 25. For this Final Decision, we maintain our claim construction as to “automatic recognition process.”

7. “*automatic file transfer process*”

Each independent claim requires the processor to be adapted to be involved in an “automatic file transfer process,” sending a digitized analog data file to the computer. *See, e.g.*, Ex. 1301, 12:24–36. The Specification describes that a user interacts with the host computer to request transfer of the digitized analog data, and the transfer occurs automatically after the request is made. Ex. 1301, 6:2–5 (“If the user now wishes to read data from the data transmit/receive device via the line 16, the host device sends a command, for example ‘read file xy,’ to the interface device.”).

In the Institution Decision (Inst. Dec. 13–14), we construed an “automatic file transfer process” to encompass a file transfer process that allows user intervention to initiate the process or make a transfer request. *See WhitServe*, 694 F.3d at 19; *CollegeNet*, 418 F.3d at 1235. Neither party challenges this claim construction. PO Resp. 17; Reply 2. For this Final Decision, we maintain our claim construction for “automatic file transfer process.”

8. “*without requiring*”

Each independent claim recites an apparatus with several negative limitations. For instance, claim 1 requires the automatic recognition process to occur “*without requiring* any end user to load any software onto the computer at any time,” and requires the automatic file transfer process to

occur “*without requiring* any user-loaded file transfer enabling software to be loaded on or installed in the computer at any time.” Ex. 1301, 12:4–36.

In this regard, the parties initially agreed to adopt the construction proposed by Patent Owner in the related district court proceeding—“without requiring the *end user* to install or load specific drivers or software for the ADGPD *beyond that included in the operating system or BIOS.*” Prelim. Resp. 22; Pet. 15–16 (emphasis added). Patent Owner’s proposed claim construction was intended to clarify the aforementioned “without requiring” limitations so that they would not be read out of context with the rest of the claim language. Ex. 1307, 36.

However, in light of the Specification, we noted that the Patent Owner’s construction improperly excludes *SCSI drivers and drivers for multi-purpose interfaces*, which do not necessarily reside in the operating system or BIOS. Inst. Dec. 15–17. In our Institution Decision, we construed 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,*” adding “drivers for a multi-purpose interface or SCSI interface” to the Patent Owner’s proposed construction. *Id.* (emphases added).

After institution, Petitioner does not disagree with our claim construction. Reply 2. Patent Owner, however, disagrees with our claim construction, arguing that “a driver for a multi-purpose interface or SCSI interface that must be installed by a user would be inconsistent with these limitations.” PO Resp. 18 (citing Ex. 2010 ¶ 58). Patent Owner’s argument and Mr. Gafford’s testimony (Ex. 2010 ¶ 58) are not consistent with the

Specification. As our reviewing court has explained, the correct inquiry “is an interpretation that corresponds with what and how the inventor describes his invention in the specification.” *In re Smith Int’l, Inc.*, 871 F.3d 1375, 1382–83 (Fed. Cir. 2017).

Notably, the Specification indicates that, at the time of the invention, multi-purpose interfaces can be, *but are not necessarily*, integrated into the BIOS system. Ex. 1301, 3:59–4:1. The Specification also makes clear that

communication between the host device and the multi-purpose interface can take place *not only* via drivers for input/output device customary in a host device which reside in the BIOS system of the host device *but also via specific interface drivers* which, in the case of SCSI interfaces, are known as *multi-purpose interface ASPI (advanced SCSI programming interface) drivers*.

Id. at 10:23–29 (emphases added). Interpreting the “without requiring” limitations to exclude the drivers for a multi-purpose interface would be unreasonable when the very same claim, claim 1, also requires a multi-purpose interface. *Id.* at 12:6–7. Claim 29, which depends from claim 1, also requires a SCSI driver to issue a SCSI INQUIRY command. *Id.* at 13:38–40. *Id.* at 13:38–40. As described in the Specification, the SCSI driver or the driver for the multi-purpose interface enables the automatic recognition process and automatic file transfer process, regardless of whether the SCSI driver is installed by the manufacturer or user. *Id.* at 3:51–56, 5:17–33, 11:14–23. Therefore, Patent Owner’s proposed construction would be inconsistent with the Specification and those claims.

More importantly, the issue in dispute centers on whether the “without requiring” limitations *prohibit* an end user from installing or loading other drivers. In that regard, we are guided by the Federal Circuit’s analysis in

Celsis In Vitro v. CellzDirect, Inc., 664 F.3d 922, 926–27 (Fed. Cir. 2012), concerning a claim reciting “without requiring,” which is similar to the language we have here. In that decision, our reviewing court stated: “‘without requiring’ means simply that the claim does not require the [recited] step,” and “performance of that step does not preclude a finding of infringement.” *Id.* Here too, the claim language is not as restrictive as Patent Owner argues. The claim language, under a plain reading, means that the end user is “not required” to load or install the recited software for transferring a file or recognizing a device. The claim language, however, *does not prohibit* the end user from ever installing or loading the recited software. The key word in the claim language is “requiring”—if the software is not required, then it does not matter whether the end user loaded or installed the software.

In view of the foregoing reasons, we maintain our claim construction, 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.*”

9. “*a first computer*” and “*a second computer that is manufactured by a company other than the company that manufactured the first computer*”

Claim 86 requires an automatic recognition process and an automatic transfer process to occur for a “first computer” and a “second computer that is manufactured by a company other than the company that manufactured the first computer.” Ex. 1301, 17:41–18:18. In the Institution Decision, we adopted the parties’ proposed claim construction, interpreting these limitations of claim 86 to refer to, respectively, a first computer and a second

computer “regardless of the identity of a manufacturer of the computer.” Inst. Dec. 17; Pet. 51; Prelim. Resp. 40. Neither party challenges this claim construction. PO Resp. 18; Reply 2. Therefore, for this Final Written Decision, we maintain our claim construction for these limitations of claim 86.

B. Principles of Law

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 ordinary skill in the art; and (4) objective evidence of nonobviousness.⁹ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active

⁹ Neither party introduced objective evidence of non-obviousness or argued that the existence of secondary considerations impacts this Decision’s obviousness analysis. Accordingly, our analysis is based upon the first three of the four *Graham* factors.

workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). As noted in our Institution Decision (Inst. Dec. 18–19), Dr. Reynolds testifies that a person having ordinary skill in the art at the time of the invention “would have had at least a four-year degree from a reputable university in electrical engineering, computer science, or related field of study, or equivalent experience, and at least two [years of] experience in studying or developing computer interfaces or peripherals.” Ex. 1306 ¶ 39. Dr. Reynolds further testifies that such an artisan also would “be familiar with 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).” *Id.*

Patent Owner confirms that Petitioner’s statements regarding the level of ordinary skill in the art are mostly 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. 21; PO Resp. 11; Ex. 2010 ¶ 17. Patent Owner presents no argument as to why Petitioner’s proposal is erroneous or why Patent Owner’s proposal is more appropriate for this proceeding. More importantly, no issue to be decided in this Decision hinges on whether either party’s proposed level of ordinary skill in the art is adopted.

We find Dr. Reynolds’ testimony persuasive as it presents more than just the educational level of a person of ordinary skill in the art. Similarly, Petitioner’s more detailed proposal is 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. 1306 ¶ 39. We, therefore, adopt Petitioner’s proposed level of ordinary skill in the art. We further note that the prior art at issue in this proceeding reflects the level of ordinary skill in the art at the time of the invention. See *Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001).

D. Obviousness over McNeill in Combination with the SCSI Specification and the Admitted Prior Art

Petitioner asserts that claims 1–36, 38–56, 58–65, 67–74, and 77–87 (all the challenged claims) are unpatentable under 35 U.S.C. § 103(a) as obvious over McNeill combined with the SCSI Specification and the Admitted Prior Art. Pet. 26–74. Petitioner explains how the combination of the prior art references teaches the claimed subject matter and proffers articulated reasoning as to why a person of ordinary skill in the art would have combined the prior art teachings in the manner asserted, citing to Dr. Reynolds’s Declaration for support. *Id.* (citing Ex. 1306).

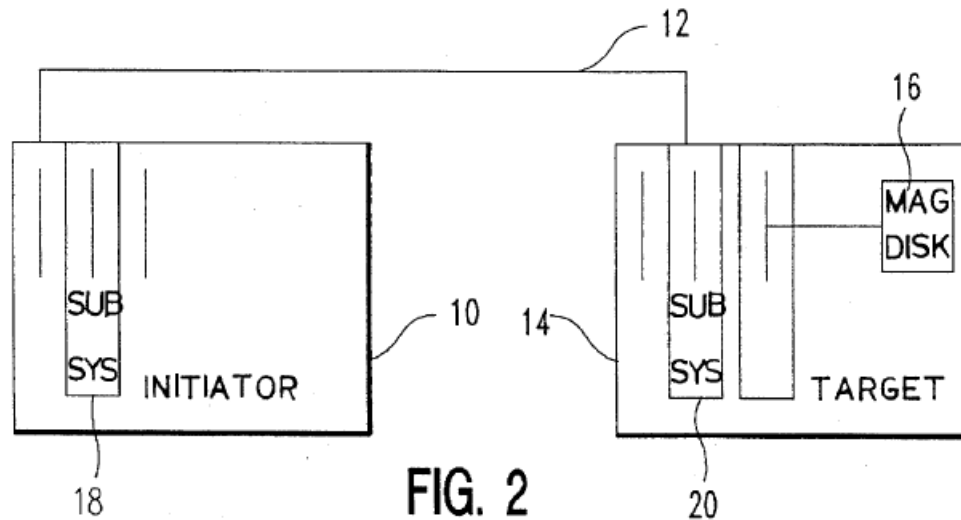
Patent Owner argues that Petitioner fails to show unpatentability because McNeill “is silent as to several core limitations of the ’144 invention,” and the expert testimony proffered to “bridge these gaps” is not sufficient. PO Resp. 23–24. In addition, Patent Owner argues that Petitioner’s analysis requires modification of McNeill that could have only been accomplished through hindsight and is not made with respect to the claims as a whole. *Id.* at 24.

Upon consideration of the parties' contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that one of ordinary skill in the art would have found the teachings of McNeill in combination with the SCSI Specification and the Admitted Prior Art, renders obvious the challenged claims. In our discussion below, we begin with a brief overview of the prior art, and then we address Patent Owner's characterization of Petitioner's assertions. Finally, we address the obviousness of the challenged claims, focusing on those assertions by Petitioner that are further disputed, beyond the characterization arguments, by Patent Owner.

1. Overview of McNeill

McNeill discloses a target computer for providing an initiator computer access to multiple peripheral devices—e.g., memory disks, printers, scanners, and communication devices. Ex. 1303, Abs. 1:9–2:51, 3:17–46. According to McNeill, the purported invention is to provide “a practical and economic system for achieving access to a multiplicity of peripherals in a SCSI environment.” *Id.* at 3:17–22.

Figure 2 of McNeill is reproduced below.



As shown in Figure 2 of McNeill, initiator computer 10 is connected by SCSI I/O bus 12 to target computer 14. *Id.* at 4:44–53. Each computer includes SCSI subsystems 18, 20, which are SCSI adapter cards connected to SCSI I/O bus 12. *Id.* Initiator computer 10 can access and read the files on magnetic hard disk 16 of target computer 14. *Id.* at 4:44–53, 5:32–58.

The initiator computer sends standard SCSI I/O device driver commands, and the target computer responds to standard SCSI commands. *Id.* at 3:22–24, Figs 3–4. The user has the benefit of not needing to learn and remember additional commands to access devices on the other computers, in that standard device drivers are used as if the peripheral devices were integral with the basic system. *Id.* at 3:35–38.

2. Overview of the SCSI Specification

The SCSI Specification is a technical Specification published by the American National Standard for Information Systems to set forth the SCSI standards. According to the SCSI Specification, the SCSI protocol “is designed to provide an efficient peer-to-peer I/O bus with up to 16 devices,

including one or more hosts.” Ex. 1305, Abs. The primary objective of the SCSI interface is “to provide host computers with device independence within a class of devices.” *Id.* at 6. The SCSI-2 “standard defines an input/output bus for interconnecting computers and peripheral devices.” *Id.* at 1. “It includes the necessary specification of the mechanical, electrical, and functional characteristics of the interface to allow interoperability of conforming devices.” *Id.* “SCSI-2 includes command sets for magnetic and optical disks, tapes, printers, processors, CD-ROMs, scanners, medium changers, and communications devices.” *Id.* at Abs. “The command set definitions allow a sophisticated operating system to obtain all required initialization information from the attached SCSI-2 devices.” *Id.* at 6.

3. Overview of the Admitted Prior Art

According to the ’144 patent, drivers for hard disks were known to be customary drivers “in practically all host devices,” and hard disks were known to be “implemented as standard in all commercially available host system.” Ex. 1301, 3:37–46, 4:20–22. The ’144 patent also indicates that SCSI interfaces and SCSI drivers were known in the art at the time of the invention. *Id.* at 8:45–50, 10:26–29. According to the ’144 patent, SCSI interfaces were present on most host devices or laptops, and SCSI drivers were “normally included by the manufacturer of the multi-purpose interface.” *Id.* at 8:45–46, 10:27–33. Moreover, standard SCSI access commands, including the INQUIRY instructions, were “supported by all known operating systems (e.g., DOS®, Windows®, Unix®).” *Id.* at 5:11–14, 5:21–23, 5:37–47. It also was known to those skilled in the art that a virtual boot sequence includes “the drive type, the starting position and the

length of the file allocation table (FAT), the number of sectors.” *Id.* at 5:43–47.

Patent Owner argues in its Response that some of the statements Petitioner relies on are not admissions of prior art. PO Resp. 9. Patent Owner’s argument is conclusory. That portion of the Specification describes “sending to the host device a virtual boot sequence which, in the case of actual hard drives, includes the drive type, the starting position and the length of the file allocation table (FAT), the number of sectors, etc., *known to those skilled in the art.*” Ex. 1301, 5:37–47 (emphasis added). This statement unequivocally conveys that applicant deemed it known that the virtual boot sequence of a hard drive, when sent, includes various pieces of information such as the drive type, the starting position and the length of the FAT, and the number of sectors. At a minimum, we infer that the applicant admits a person of skill in the art would have known this information at the time of the invention. Such statement is therefore an admission by applicant that the knowledge was in the prior art.

Moreover, the Specification also indicates that “[c]ommunication between the host system or host device and the interface device is based on *known standard access commands as supported by all known operating systems (e.g., DOS®, Windows®, [and] Unix®).*” Ex. 1301, 5:11–14 (emphasis added). The ’144 patent further indicates that “[t]hose skilled in the art know that communication between a processor and a hard disk consists of the processor transferring to the hard disk the numbers of the blocks or clusters or sectors whose contents it wishes to read,” and “[b]y reference to the FAT, the processor knows which information is contained in which block.” *Id.* at 6:20–25.

In view of the '144 patent, we are not persuaded by Patent Owner's argument that the statement regarding sending of a virtual boot sequence is not an admission of prior art. In any event, we do not rely on this admission in our obviousness analysis below.

4. Independent Claims 1, 84, and 86

Petitioner contends that claims 1, 84, and 86—all the challenged independent claims—would have been obvious over a combination of McNeill, the SCSI Specification, and the Admitted Prior Art. Pet. 26–51. Patent Owner disagrees. PO Resp. 18–44. For the reasons discussed below, we determine that Petitioner has demonstrated by a preponderance of the evidence that one of ordinary skill in the art would have found that the teachings of McNeill, the SCSI Specification, and Admitted Prior Art, renders obvious claims 1, 84, and 86.

Modification of McNeill

Patent Owner bases much of its response on the theory that Petitioner's arguments for unpatentability in this proceeding require significant modifications to the system disclosed by McNeill. *See, e.g.*, PO Resp. 24 (stating that “the only way that Petitioners can modify McNeill in the way proposed to reach the claimed limitations is by looking at the teachings of the '144 patent itself and concluding that a POSITA would have found it obvious.”); *id.* 23–31. For clarity and efficiency, we address these arguments before describing our findings on each individual limitation along with Patent Owner's arguments directed to those limitations. We emphasize, however, that we appreciate that the burden of unpatentability is on Petitioner, and does not shift to Patent Owner at any point in this proceeding. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1376 (Fed.

Cir. 2016) (“Where, as here, the only question presented is whether due consideration of the four Graham factors renders a claim or claims obvious, no burden shifts from the patent challenger to the patentee.”).

Patent Owner argues that Petitioner creates a “hypothetical system” to overcome certain silences in McNeill. *Id.* at 25–36. According to Patent Owner, that hypothetical system requires: (1) a mag disk with a file system; (2) a peripheral scanner connected to the target at the same time as the mag disk; and (3) target emulation code modified such that “the peripheral scanner’s image buffer is copied onto the peripheral mag disk to enable saving image data on that disk.” *Id.* at 27 (citing Pet. 27–29, 32, 38; Ex. 1306 ¶¶ 87–90, 97). Based on this assumption, Patent Owner makes several arguments that, at the relevant time, a person of ordinary skill would not have created such a hypothetical system. *Id.* at 25–36. Specifically, Patent Owner argues that McNeill is silent on how it would function with two peripherals [the magnetic disk 16 and a scanner] connected because “McNeill’s only explanation of how its system functions is with one peripheral (mag disk 16) connected and accessed.” *Id.* at 28.

We agree that Petitioner’s unpatentability arguments assume the three features described by Patent Owner. In fact, Petitioner gives alternative examples of how a person of ordinary skill in the art would implement the use of a scanner with McNeill’s system. First, the Petition describes a scanner “attached to a parallel port of a computer” (“the stand-alone scanner example”). Pet. 27–28. The scanner, in this setup, “could be controlled manually, by a user pressing a button on the scanner” or controlled “by software on the target machine.” *Id.* at 28. Petitioner explains that a person of ordinary skill in the art would understand that this setup allows for access

to the scanner from the parallel port of the target “through the target’s SCSI emulator for the scanner.” *Id.* (citing Ex. 1306 ¶ 87). Petitioner adds that a person of ordinary skill would have found it obvious to “make the simple modification to the emulator—namely copying the scanner’s image buffer into a file on the mag disk—that would enable saving the scanner’s image data on the mag,” which files could then be accessed by the initiator as described by McNeill. *Id.* 32.

We are persuaded that a preponderance of the evidence shows that a person of ordinary skill in the art would understand to use McNeill’s system in this manner—with a stand-alone scanner that saves its scanned image data to a hard disk—specifically to the magnetic hard disk. Dr. Reynolds’ testimony confirms, and cites to additional supporting evidence, that a person of ordinary skill would understand this setup from McNeill’s disclosure. Ex. 1306 ¶¶ 87, 89 (citing Ex. 1308, Epson ActionScanner II “Getting Started” Guide (1995)). And on cross-examination, Patent Owner’s expert, Mr. Gafford, agrees that a person of ordinary skill in the art would have understood this setup to be “the normal use of a scanner.” Ex. 1315, 97:3–99:16.

Second, Petitioner presents an implementation in which the scanner appears to the initiator as a SCSI scanner. Pet. 28. In this example, Petitioner explains that “[b]y using the appropriate emulation code, the target can emulate a SCSI scanner.” *Id.* According to Petitioner “[t]he target would identify itself as two logical devices, i.e. as a scanner and a hard disk” and the initiator could “control the scanner using commands from the SCANNER SCSI command.” *Id.*

According to Petitioner, McNeill explicitly describes such a system— “[t]arget emulation routines (device drivers) could be written to support various type of devices and functions using similar structures under DOS or other operating system environments.” Reply 13–16 (citing Ex. 1303, 7:37–8:3); *see also, id.* at 2:48–57 (“As an example an initiator, which might be a SCSI adapter card in a computer, sends a Read command to a SCSI disk, i.e, the target, or sends a Print command to a printer, i.e., yet another target.”); *id.* at 3:17–22 (“This invention comprises a SCSI emulation device and system for providing access to non-SCSI devices or SCSI devices on a non-local SCSI bus via a common SCSI bus thereby providing a practical and economic system for achieving access to a multiplicity of peripherals in a SCSI environment.”).

Patent Owner argues that this hypothetical system, with the two peripherals, requires the target to “identify itself as two logical devices, i.e. as a scanner and a hard disk,” but nothing in McNeill addresses this requirement and “the SCSI Specification only allows a target to identify itself as a single SCSI ID” so “logical units cannot be associated with different peripheral device types” and instead would require two SCSI IDs, which are not allowed by standard SCSI adapters. *Id.* at 29–30 (citing Ex. 2010 ¶¶ 69–73).

In its Reply, Petitioner clarifies that this second setup is unnecessary to its assertion of unpatentability. Reply 11 (“PO’s argument presumes that Petitioners’ unpatentability argument depends on McNeill’s system being able to emulate two devices at the same time. It does not.”). Petitioner explains that “PO’s argument that McNeill’s target system cannot emulate a scanner and mag disk at the same time . . . is irrelevant.” *Id.* at 12. Based on

this representation, in this Decision, our analysis focuses on the stand-alone scanner example as described above.

Regardless of which scanner setup is being used, Petitioner also assumes that McNeill’s magnetic hard drive 16 includes an installed file system. *See, e.g.*, Pet. 38 (“McNeill implicitly discloses that the hard drive in the target can come from the manufacturer with a file system installed.”). As discussed below, we are persuaded that a preponderance of the evidence shows that a person of ordinary skill in the art would have understood that the magnetic hard drive of McNeill includes an installed file system.

We conclude that while we agree with Patent Owner’s assertion that McNeill is silent on some of the features present in Petitioner’s explanation of obviousness, we do not agree that such silence indicates that the system disclosed by McNeill must be significantly modified to use a stand-alone scanner at the target. Moreover, even if that use would be classified as a modification, as discussed in more detail below, we do not agree that such modification is improper or outside the level of ordinary skill. Instead, we are persuaded that Petitioner has shown, by a preponderance of the evidence, that a person of ordinary skill would have found the use of a stand-alone scanner and a hard disk drive in McNeill’s system obvious based on the teachings of the prior art.

An Analog Data Generating and Processing Device (ADGPD)

Claim 1 requires an “analog data generating and processing device” having an *interface device*—which includes a processor, input/output port, program memory, and data storage memory—and a *sensor*. Ex. 1301, 11:57–65. Claim 1 also requires the input/output port to be operatively interfaced with a *multi-purpose interface* of a *host computer* that has a

customary driver. *Id.* at 12:20–23. Claims 84 and 86 each require similar limitations. *Id.* at 16:11–19, 17:8–10, 17:25–33, 18:22–24. As discussed above, we construe the claim term “multi-purpose interface” to encompass a SCSI interface, and the claim term “customary driver” to encompass “a driver normally present in a commercially available computer system (e.g., a hard disk driver or a SCSI driver).”

Petitioner asserts that McNeill, in combination with the SCSI Specification and the Admitted Prior Art, teaches or suggests these claim limitations. Pet. 26–31, 39. In particular, Petitioner contends that McNeill’s target computer (an interface device) along with a magnetic hard disk device and scanner (a sensor), jointly form an “analog data generating and processing device.” *Id.*

Petitioner explains that the target computer communicates with an initiator computer (a host computer) using a SCSI interface (a multi-purpose interface). *Id.* at 29. Petitioner also contends that the Admitted Prior Art confirms that a person with ordinary skill in the art would have understood that a driver for a hard disk is a customary driver. *Id.* at 39 (citing Ex. 1301, 3:37–46, 4:20–22). According to Petitioner, such an artisan would have recognized that McNeill’s SCSI I/O device driver used for accessing a hard disk is a *customary driver*. *Id.* (citing Ex. 1303, 5:36–46).

Based on the evidence before us, we are persuaded by Petitioner’s showing that McNeill’s target computer along with a magnetic hard disk device and scanner, jointly disclose an ADGPD. Other than the arguments regarding modification of McNeill’s system discussed above, Patent Owner does not dispute Petitioner’s contentions regarding this limitation. See PO Resp. 23–44. Accordingly, we determine that Petitioner has established by a

preponderance of the evidence that a person McNeill teaches or suggests an ADGPD as required by claims 1, 84, and 86.

A Processor Operatively Interfaced with a Multipurpose Interface, a Memory, and an Analog Source

Each of claims 1, 84, and 86 requires the claimed processor to be “operatively interfaced” with the i/o port, the program memory, the data storage memory, and the sensor. *See, e.g.*, Ex. 1301, 11:63–65, 16:17–19, 17:31–33.

Petitioner asserts that McNeill’s target device—a “second computer”—contains “a BIOS, a processor, random access memory, a disk drive, and provisions for connecting peripheral devices.” Pet. 29–30. In addition, Petitioner maps magnetic disk 16 to data storage memory and maps the disclosed other peripherals, in particular a scanner, as an analog peripheral that would include a sensor. *Id.* at 30. According to Petitioner, the “processor in McNeill’s target computer would access its SCSI I/O port and use the device drivers in its program memory (BIOS) when it responds to the initiator” and “it is interfaced with a sensor when it accepts inputs from an attached analog peripheral device.” *Id.* at 30–31 (citing Ex. 1306 ¶ 99). Petitioner, therefore, concludes that the processor of McNeill’s target is operatively interfaced with the recited components. *Id.*

Based on the evidence before us, we are persuaded by Petitioner’s showing that McNeill teaches these limitations. Patent Owner does not dispute Petitioner’s contentions regarding this limitation. *See*, PO Resp. 23–44. Accordingly, we determine that Petitioner has established by a preponderance of the evidence that McNeill teaches or suggests to a person of ordinary skill in the art the processor of the target operatively interfaced

with an i/o port, program memory, data storage memory, and sensor as recited by claims 1, 84, and 86.

The Data Generation Process

Claim 1 recites “wherein the processor is adapted to be involved in a *data generation process* by which the sensor generates analog data, the analog data is processed, and the processed analog data is stored in the data storage memory as at least *one file of digitized analog data*.” Ex. 1301, 11:66–12:3 (emphases added). Claims 84 and 86 also recite a similar limitation. *Id.* at 16:20–24, 17:34–38.

Petitioner takes the position that McNeill in view of the knowledge of an ordinary artisan renders this limitation obvious. Pet. 31–32. As support, Petitioner argues that a person of ordinary skill “would have found it obvious to add a scanner to the exemplary system of McNeill and make the simple modification to the emulator . . . that would enable saving the scanner’s image data on the mag” drive. *Id.* (citing Ex. 1303, Fig. 2, 3:17–22, 4:47–50, 8:23–29; Ex. 1306 ¶¶ 100–102). Dr. Reynolds also opines, and we agree, that a scanner was a common peripheral that would be attached to the parallel port of a computer and controlled by software on the target machine. Ex. 1306 ¶ 87 (citing Ex. 1308, which supports the stated opinion by disclosing how to install and use an Epson scanner using scanning software). Petitioner adds that the initiator computer can subsequently access and read the digitized scanner image files saved on magnetic hard disk 16. *Id.* (citing Ex. 1303, 5:36–58, Fig. 4; Ex. 1306 ¶ 103).

As discussed above, McNeill’s target computer (an interface device) along with its magnetic hard disk and scanner (a sensor), jointly form an “analog data generating and processing device.” Ex. 1303, 1:9–20, 2:48–51,

3:17–46, 4:11–53, 5:33–58, Figs. 1–4. We find by a preponderance of the evidence that McNeill’s target computer provides the initiator computer access to the magnetic hard disk, which may be storing image data from a scanner. Pet. 31; Ex. 1303, 2:36–50, 3:17–46, 4:47–50, 8:23–29. The initiator computer can access and read the data files on the magnetic hard disk, as if the magnetic hard disk were a SCSI hard disk. Pet. 31–32; Ex. 1303, 3:27–30, 5:33–58, Fig. 4.

Patent Owner argues that the prior art does not support the modification of “copying the scanner’s image buffer into a file on the mag disk.” *Id.* at 32 (citing Ex. 2010 ¶¶ 76–88). Patent Owner, in fact, argues that such a modification would worsen the system’s performance while adding no benefit. *Id.* at 32–36. And, according to Patent Owner, McNeill teaches the contrary by providing “seamless access for [the] initiator to a peripheral.” *Id.* at 34–36 (citing Ex. 2010 ¶¶ 82–83).

We are not persuaded by Patent Owner’s argument because a preponderance of the evidence shows that it would have been obvious to a person of ordinary skill to store data from the scanner to the mag disk. For example, both experts agree that a person of ordinary skill would have understood that McNeill’s scanned data would have been stored on a hard disk. Ex. 1313 ¶14¹⁰; Ex. 1315, 100:1–16 (Mr. Gafford explaining (“scanners are always storing on a drive. They are not depending on their

¹⁰ Patent Owner argues that much of the content of Petitioner Reply and Exhibit 1313 are outside the scope of a proper reply. Paper 25. We have gone through Patent Owner’s list of objections and are not persuaded that any of them have merit. Instead, we find that these arguments and corresponding evidence are properly responsive to argument raised in Patent Owner’s Response. See 37 C.F.R. § 42.23(b).

own buffer storing anything. That’s just not how scanners are used.”). This is consistent with McNeill’s disclosure. Ex. 1303, 8:3–6 (“Consideration must be given to device sharing support based on the number of possible initiators and particular emulated device characteristics.”). Moreover, a person of ordinary skill would have understood that there are additional advantages that would motivate the storing of the image data on magnetic disk 16 such as “facilitat[ing] sharing by making the scanned data available to multiple processes,” “support[ing] standalone operation of the device,” and added efficiency in initiator resources and target disk space. Ex. 1313 ¶¶ 3–11. We credit Dr. Reynolds’ testimony on this issue, which describes these advantages along with detailed explanations. *Id.*

We are not persuaded otherwise by Patent Owner’s arguments to the contrary because these arguments are based on the assumption that the scanner is being used as a SCSI device that is emulated to the initiator computer, and not in stand-alone mode. PO Resp. 32–36 (citing Ex. 2010 ¶¶ 77–90). For example, Mr. Gafford explains that “[t]here is no SCSI command for copying data in the form of a file” and “standard software on the initiator would issue nothing more than a Read command to obtain scanner data, and it would defy the purpose of McNeill for a Read command to operate in any way other than to be applied directly to one peripheral in the target.” Ex. 2010 ¶ 78; *see also id.* ¶ 79 (“Assuming that it is even possible for the initiator to address two peripherals in the target. . .”), ¶ 88 (“In addition, nothing in McNeill discloses or suggests any SCSI command that the initiator could issue to the mag disk that would cause the target to transfer data from a scanner to a file on the mag disk . . .”). As discussed above, however, Mr. Gafford agrees that normal use of a scanner would

include copying the image data to a hard drive of some sort. Ex. 1315, 97:3–99:16. And, in his declaration, Mr. Gafford explains that the choice of storing data from another peripheral—the scanner—on magnetic hard disk 16 is not discussed in McNeill. Ex. 2010 ¶ 85. Dr. Gafford goes on to opine that “if a peripheral scanner and a peripheral mag disk were both connected to McNeill’s target, as in Petitioners’ hypothetical system, the initiator would in fact receive the image data from the peripheral scanner as though the scanner were local.” *Id.* However, even assuming this is a preferred method of using the scanner, this does not preclude the use of magnetic disk 16 for storage. In the stand-alone scanner example, there is no need for the initiator to directly access the scanner. Instead, the scanner stores its image data to magnetic disk 16, after the image is scanned using the software that controls the scanner at the target, and then the image is retrieved by the initiator. As Mr. Gafford concedes, the target computer is running a typical operating system such as OS/2, which “provides additional features such as a file system and logical access to peripherals.” Ex. 1315, 101:5–104:7 (discussing Ex. 1309, MS-DOS Encyclopedia (1988)). Therefore, we are persuaded by a preponderance of the evidence that a person of ordinary skill in the art would understand the stand-alone scanner (which is not emulated as a SCSI device to the initiator) acquires the image at the target without the initiator involvement, and that the images are stored in the local magnetic disk of the target.

Patent Owner also argues that Petitioner “completely ignore[s]” the requirement that the “ADGPD be adapted to be involved in a data generation process.” PO Resp. 43–44. We do not agree with this argument. The Petition asserts that a person of ordinary skill would have understood that

McNeill’s target computer can control analog devices, including a scanner. Pet. 31 (citing Ex. 3006 ¶ 100). Because the target processor would be involved in processing and storing image data from the scanner on the magnetic hard disk (*see e.g.*, Ex. 1306 ¶ 100; Ex. 1309¹¹, MS-DOS Encyclopedia (1988), 54–63; Ex. 1313 ¶ 11; Ex. 1315, 101:5–104:7), we are persuaded that a preponderance of the evidence shows that McNeill’s target processor is “involved” in a data generation process as claimed.

Based on the evidence and explanation proffered by Petitioner, we determine a person of ordinary skill would have understood that the processor of McNeill’s target computer would have been involved in processing and saving, or copying, the scanner’s image buffer into magnetic hard disk 16, as digitized data, so that the scanner’s image data can be retrieved later when requested by the initiator computer, achieving one of McNeill’s stated objectives—“providing a practical and economic system for achieving access to a multiplicity of peripherals in a SCSI environment.” Ex. 1303, 3:17–46, 5:33–58, Fig. 4; Pet. 31–32; Ex. 1306 ¶ 103; Ex. 1313 ¶¶ 3–11; Ex. 1315, 101:5–104:7.

In light of the foregoing, we determine that Petitioner has established by a preponderance of the evidence that a person of ordinary skill in the art would have found the teachings of McNeill in combination with the SCSI Specification and Admitted Prior Art, renders obvious the “data generation process” limitation, as required by claims 1, 84, and 86.

¹¹ When referring to specific pages in Ex. 1309, we refer to Petitioner’s stamped page numbers in the bottom right corner of each page of the Exhibit.

The File System and File Allocation Table

Claims 1, 84, and 86 additionally recite that the digitized analog data “is stored as at least one file of digitized analog data.” *Id.* at 1301, 12:2–3, 16:23–24, 17:38–39. Claims 42 and 84 additionally require “ADGPD *file system information* to be automatically sent to the i/o port.” *See, e.g., id.* at 14:3–17 (emphasis added). Claims 46 and 84 further require “*file allocation table* information to be sent to the i/o port.” *See, e.g., id.* at 14:28–39 (emphasis added).

Petitioner takes the position that McNeill, in combination with the SCSI Specification and Admitted Prior Art, renders obvious these “file system information” limitations. Pet. 45–51. As support, Petitioner notes that McNeill’s initiator, using a SCSI interface and SCSI driver, can access and read the files, including the scanner’s digitized image data files, from the magnetic hard disk of the target computer, as if it were a SCSI hard disk. *Id.* at 46 (citing Ex. 1303, 5:39–58). Petitioner alleges that it would have been obvious to an ordinarily skilled artisan that McNeill’s initiator computer would acquire basic information regarding the hard disk’s file system, including a boot sequence that was known to include information regarding the drive type, the starting position of the file allocation table, and the number of sectors of the hard disk, so that the initiator computer can use the file system to read the files on the hard disk. *Id.* at 46–51.

Patent Owner counters that McNeill does not contemplate the use of a file system by the ADGPD. PO Resp. 36–43. According to Patent Owner, “a file system provides no benefit to the hypothetical system” and it addition “is pure hindsight to meet a limitation.” *Id.* at 36–37. Patent Owner adds that “modifying McNeill to include a file system cannot work as proposed

by Petitioners and cuts against a principle of operation for McNeill,” “requires additional software,” and would negatively affect processing efficiency and transfer rates. *Id.* at 37–42. Finally, Patent Owner asserts that the “very fact that file systems were known and yet not incorporated into McNeill (or into any other prior art reference that discloses all of the claim limitations) is telling.” *Id.* at 42 (citing *Leo Pharm. Prods., Ltd. v. Rea*, 726 F.3d 1346, 1356–59 (Fed. Cir. 2013)).

We do not agree with Patent Owner’s arguments. First, although McNeill may not explicitly discuss a file system—it does not follow that its system must be *modified* to include such a feature. McNeill discloses that the target computer may include an OS2 or MS-DOS operating system—both of which include file systems. Ex. 1303, 4:11–17; Ex. 1313 ¶ 8; Ex. 1314, 78:3–23; Ex. 1309, 51; Ex. 1315, 100:17–101:14, 102:22–103:1, 104:10–105:2; Ex. 3001, 3–4. Thus, we do not agree with Patent Owner’s assertion that Petitioner was obligated to show that a person of ordinary skill “would have modified McNeill to include a file system.” See PO Resp. 36–42. Instead, a preponderance of the evidence shows that a person of ordinary skill would have recognized that McNeill’s disclosed system already included a file system, even if it was not explicitly stated.

Moreover, Dr. Reynolds testifies, and we agree, that for most computers at the time of the invention, file system information is acquired by performing a SCSI READ command, reading sector zero information on the hard disk to obtain basic information about the file system, which corresponds to the information in a boot sequence. Ex. 1306 ¶¶ 117–18. Dr. Reynolds explains that an ordinarily skilled artisan would have recognized that the initiator computer, in McNeill, would acquire the file system

information in order for it to use the file system to read the data files on the hard disk. *Id.* ¶¶ 117–24.

Further, an ordinarily skilled artisan would have appreciated the following general knowledge regarding a FAT file system:

A [FAT is a] table or list maintained by some operating systems to manage disk space used for file storage. Files on a disk are stored, as space allows, in fixed-size groups of bytes (characters) rather than from beginning to end as contiguous strings of text or numbers. *A single file can thus be scattered in pieces over many separate storage areas. A file allocation table maps available disk storage space so that it can mark flawed segments that should not be used and can find and link the pieces of a file.*

MICROSOFT COMPUTER DICTIONARY at 194 (3rd ed. 1997) (Ex. 3001) (emphases added).

Whether McNeill’s system was *required* to have a file system (*see* PO Resp. 40) is irrelevant. The issue here is obviousness and what a person of ordinary skill in the art would understand McNeill to disclose.

Based on the evidence in this record, we determine that Petitioner has established by a preponderance of the evidence that it would have been obvious to an ordinarily skilled artisan that McNeill’s target computer, emulating a SCSI hard disk, would send file system information—the type of a file system (e.g., a FAT file system) and a boot sequence that was known to include the drive type, the starting position of a file allocation table, and the number of sectors of the hard disk—to the initiator computer so that it can use the file system to access and read the data files on the hard disk. We, therefore, determine that Petitioner has shown by a preponderance of the evidence that a person of ordinary skill in the art would understand McNeill, in combination with the SCSI Specification and the Admitted Prior

Art, teaches or suggests the aforementioned “file system information” limitations, as required by claims 42, 43, 46, and 84.

The Automatic Recognition and File Transfer Process

Each independent claim requires the processor to be involved in (1) an *automatic recognition process*, sending identification information regarding the ADGPD to the multipurpose interface of the computer, and (2) an *automatic file transfer process*, sending a digitized analog data file to the computer. *See, e.g.*, Ex. 1301, 12:4–23. The claims additionally require each automatic process to occur without requiring any end user to load any software or set up a file system, and to occur “regardless of the identity of the manufacturer of the computer.” *Id.*

Petitioner contends that McNeill, in combination with the SCSI Specification and the Admitted Prior Art, discloses the claimed “automatic recognition process” in that McNeill’s initiator computer using a SCSI I/O device driver sends an INQUIRY command to the target computer, and the target computer sends a response to the INQUIRY command, indicating the device type. Pet. 32–39; Ex. 1303, 2:36–47. Petitioner also asserts that the prior art combination discloses the claimed “automatic file transfer process,” because McNeill’s initiator computer can access and read the digitized image data files on the magnetic hard disk of the target computer, including previously stored scanner images. Pet. 42–44 (citing Ex. 1303, 3:27–30, 5:33–46).

Additionally, Petitioner alleges that McNeill does not require any end user to load software or to set up a file system. Pet. 37–38. As support, Petitioner cites to McNeill where it discloses that the initiator computer “uses standard I/O device drivers for the given device,” and the target

computer “uses emulation code with redirection and/or translation routines to look like a standard SCSI device,” noting that application programs “running in the initiator system work without revision as long as they use standard device drivers.” *Id.*; Ex. 1303, 3:27–33. Petitioner also contends that McNeill’s automatic processes would occur “regardless of the identity of a manufacturer of the computer,” noting that McNeill’s target “emulation routines (device drivers) could be written to support various types of devices and functions using similar structures under DOS or other operating system environments.” Pet. 39; Ex. 1303, 7:38–8:3.

As discussed above, an ordinarily skilled artisan would have been “familiar with operating systems (e.g., MS-DOS, Windows, Unix) and their associated file systems (e.g., a FAT file system).” Ex. 1306 ¶ 39; Pet. 15; Prelim. Resp. 24. As Petition points out, McNeill suggests using the MS-DOS operating system in the target computer. Ex. 1303, 7:37–8:3. Dr. Reynolds explains that, “[i]n the 1980’s Microsoft developed the file allocation table (“FAT”) – based file system for MS-DOS.” Ex. 1306 ¶ 73. An ordinarily skilled artisan would have appreciated the following general knowledge regarding a FAT file system:

The [FAT] file system [is] used by MS-DOS to organize and manage files. The FAT (file allocation table) is a data structure that MS-DOS creates on the disk when the disk is formatted. When MS-DOS stores a file on a formatted disk, the operating system places information about the stored file in the FAT so that MS-DOS can retrieve the file later when requested.

MICROSOFT COMPUTER DICTIONARY at 189–90 (3rd ed. 1997) (Ex. 3001) (emphases added).

Moreover, McNeill discloses that the “[t]arget emulation routines (device drivers) could be written to support various types of devices and

functions using similar structures under *DOS or other operating system environments.*” Ex. 1303, 7:37–8:3 (emphasis added).

Dr. Reynolds testifies that SCSI was “a standard for attaching a range of peripheral device types to computers,” and “designed to be multi-purpose: to both support a variety of devices and to operate with a variety of operating system.” Ex. 1306 ¶ 58. Further, according to Dr. Reynolds, by design, “SCSI standards were independent of any computing platform,” and, at the time of the invention, “SCSI was operational in PC’s based on the IBM PC architecture, Apple computers, Sun Microsystems computers and those of other manufacturers who also chose to adopt or support the SCSI standard.” Ex. 1306 ¶ 114. The SCSI Specification also discloses that “[t]he primary objective of the [SCSI] interface is to provide the host computers with device independence within a class of devices [and thus], different disk drives, tape drives, printers, optical media drives, and other devices can be *added to the host computers without requiring modifications to generic system hardware or software.*” Ex. 1305, 6 (emphasis added). The ’144 patent indicates that “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. 1301, 3:33–37. According to the ’144 patent, by using a standard interface of a host device and 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.

Based on the evidence in the present record, Petitioner has shown by a preponderance of the evidence that it would have been obvious to one with ordinary skill in the art to use a FAT file system in McNeill’s target

computer for storing data files, including the scanner's digitized image data files, on the magnetic hard disk so that the data files can be organized, managed, and retrieved later when requested by the initiator computer. Patent Owner does not dispute Petitioner's contentions regarding this limitation. *See* PO Resp. 23–44. We, therefore, determine that Petitioner has shown by a preponderance of the evidence that one of ordinary skill in the art would have found the prior art combination suggests the claimed automatic recognition and file transfer processes, that occur without requiring any end user to set up a file system and regardless of the identity of a manufacturer of the computer.

First and Second Computer (claim 86)

As discussed above, claim 86 recites automatic recognition and data transfer limitations. Additionally, claim 86 requires that those limitations take place on both “a first computer” and “a second computer that is manufactured by a company other than the company that manufactured the first computer.” Ex. 1301, 17:39–18:19, 18:2–34. As noted above, after institution, the parties agree to construe “a second computer that is manufactured by a company other than the company that manufactured the first computer” as “regardless of the identity of a manufacturer of the computer.” PO Resp. 18; Reply 25. We are persuaded that Petitioner has shown, by a preponderance of the evidence, that one of ordinary skill in the art would have found this limitation obvious from the teachings of the asserted prior art.

5. Claims 64 and 65

Claim 64 depends from claim 1 and requires that “the processor is adapted to be employed in the data generation process.” Ex. 1301, 15:22–

23. Claim 65 depends from claim 1 and requires that “the processor is adapted to be directly involved in all aspects of the data generation process.” Ex. 1301, 15:24–26.

Patent Owner argues that Petitioner does not sufficiently show these limitations. We are persuaded that Petitioner has shown by a preponderance of the evidence that McNeill’s target computer process both “is adapted to be employed in the data generation process,” and “is adapted to be directly involved in all aspects of the data generation process.”

For both claims, Petitioner explains that the “target’s processor, by executing the emulator and the device drivers from the SCSI interface and for the interface with attached peripheral devices, is directly involved in the data generation process.” Pet. 70 (emphasis added). We agree that the evidence shows a person of ordinary skill would have understood that the target’s processor can control analog devices such as a scanner (see Pet. 31; Ex. 1306 ¶ 100), and, as such, is employed in the data generation process (e.g. the scanner generating an image). Petitioner asserts that the target’s processor (1) performs the reading of a stored image from a mag drive, (2) sends data to the SCSI interface, and (3) executes the code that implements the SCSI emulator. Pet. 31. Moreover, as explained above, we agree with Dr. Reynolds testimony that a scanner would be controlled by software on the target machine. Ex. 1306 ¶ 87 (citing Ex. 1308). We are persuaded that a person of ordinary skill in the art would have understood that the processor of McNeill’s target is adapted to be directly involved in all aspects of the data generation process.

Based on the evidence before us, we conclude that Petitioner has established by a preponderance of the evidence that claims 64 and 65 are

unpatentable under § 103(a) as obvious over that McNeill in combination with the SCSI Specification and the Admitted Prior Art.

6. Claims 2–36, 38–56, 58–63, 67–74, 77–83, 85, and 87

Patent Owner does not address the limitations expressly recited in dependent claims 2–36, 38–56, 58–63, 67–74, 77–83, 85, and 87 with separate, specific arguments, but rather relies upon its arguments in connection with independent claims 1, 84, and 86. PO Resp. 45. We have addressed those arguments in our analysis above, and determine those arguments are likewise unavailing here.

Based on the evidence before us, we determine that the explanations and supporting evidence presented by Petitioner sufficiently shows how McNeill, the SCSI Specification, and the Admitted Prior Art, renders these claims obvious. Pet. 51–74; Ex. 1306 ¶¶ 141–199. For example, claim 7 recites “wherein the interface device includes a parallel logic circuit.” Ex. 1301, 12:49–50. Petitioner asserts that the “target computer contains many parallel logic circuits, beginning with its central processing unit which can inherently perform parallel binary logic operations (e.g. AND, OR, XOR).” Pet. 54. Petitioner adds that the “target’s i/o bus is also bit parallel, transferring data in parallel across the bus.” *Id.* We credit Dr. Reynolds’ testimony on this issue. Ex. 1306 ¶ 146. Given Patent Owner does not dispute this testimony or point to any contrary evidence in the record, we determine that Petitioner has established, by a preponderance of the evidence, that McNeill in combination with the SCSI Specification and the Admitted Prior Art, discloses the limitations recited in claim 7.

Similarly, we agree with Petitioner’s explanations and Dr. Reynolds’ testimony as to claims 2–6, 8–36, 38–56, 58–63, 67–74, 77–83, 85, and 87.

Pet. 51–74; Ex. 1403 ¶¶ 141–195. We credit Dr. Reynolds’ testimony (Ex. 1306 ¶¶ 148–199) as it is consistent with the prior art in this record and we adopt his analysis as our own. Based on the evidence before us, we conclude that Petitioner has established by a preponderance of the evidence that claims 2–36, 38–56, 58–63, 67–74, 77–83, 85, and 87 are unpatentable under § 103(a) as obvious over that McNeill in combination with the SCSI Specification and the Admitted Prior Art.

7. Conclusion

We determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–36, 38–56, 58–65, 67–74, and 77–87 are unpatentable as obvious under § 103(a) over McNeill in combination with the SCSI Specification and the Admitted Prior Art.

CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–36, 38–56, 58–65, 67–74, and 77–87 of the ’144 patent are unpatentable under § 103(a) as obvious over McNeill in combination with the SCSI Specification and the Admitted Prior Art.

ORDER

Accordingly, it is

ORDERED that claims 1–36, 38–56, 58–65, 67–74, and 77–87 of the ’144 patent are held unpatentable; 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.

IPR2016-01225
Patent 8,966,144 B2

PETITIONER:

Gregory S. Cordrey
JEFFER MANGELS BUTLER & MITCHELL, LLP
gcordrey@jmbm.com

T. Vann Pearce, Jr.
Christopher J. Higgins
ORRICK, HERRINGTON & SUTCLIFFE LLP
TVPPTABDocket@orrick.com
0CHPTABDocket@orrick.com

David M. Maiorana
Matthew W. Johnson
David L. Witcoff
Marc S. Blackman
JONES DAY
dmaiorana@jonesday.com
mwjohnson@jonesday.com
dlwitcoff@jonesday.com
msblackman@jonesday.com

Dion M. Bregman
MORGAN, LEWIS & BOCKIUS LLP
dion.bregman@morganlewis.com

PATENT OWNER:

Nicholas T. Peters
Paul Henkelmann
FITCH, EVEN, TABIN & FLANNERY LLP
ntpete@fitcheven.com
phenkelmann@fitcheven.com

Anthony L. Meola, Jr.
THE MEOLA FIRM, PLLC
info@themeolafirm.com