Trials@uspto.gov
571-272-7822

Entered: December 11, 2017

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.,
SAMSUNG ELECTRONICS AMERICA, INC., and APPLE INC.,
Petitioner,

v.

PAPST LICENSING GMBH & CO. KG,
Patent Owner.

Case IPR2016-01216[1]
Patent 8,966,144 B2

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

CHANG, *Administrative Patent Judge.*

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

---

[1] Case IPR2017-00670, filed by Apple Inc., has been joined with this proceeding.

I. INTRODUCTION

Petitioner, listed above, filed a corrected Petition requesting an *inter partes* review of claims 7, 9, 11, 12, 17–21, 23–26, 41, 50, 51, 56–58, 66–76, 78, and 79 ("the challenged claims") of U.S. Patent No. 8,966,144 B2 (Ex. 1201, "the '144 patent") and a Declaration of Paul Reynolds, Ph.D. (Ex. 1204). Paper 4 ("Pet."). Patent Owner, Papst Licensing GmbH & Co., KG ("Patent Owner"), filed a Preliminary Response. Paper 11 ("Prelim. Resp."). We instituted the instant *inter partes* review as to the challenged claims. Paper 12 ("Dec.").

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 16, "PO Resp.") and a Declaration of Mr. Thomas Gafford (Ex. 2008). Petitioner filed a Reply. Paper 23 ("Reply"). A transcript of the oral hearing held on September 14, 2017, has been entered into the record as Paper 31 ("Tr.").[2]

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, Petitioner has demonstrated by a preponderance of the evidence that claims 7, 9, 11, 12, 17–21, 23–26, 41, 50, 51, 56–58, 66–76, 78, and 79 of the '144 patent are unpatentable.

---

[2] This was a consolidated hearing with related cases IPR2016-01211 and IPR2016-01212. *See* Tr. We held hearings for several other related cases IPR2016-01199, IPR2016-01200, IPR2016-01213, IPR2016-001214, and IPR2016-01225. Because of the overlap in issues in all the related cases, the transcripts for those hearings are also entered into the record in this case. Papers 30, 32.

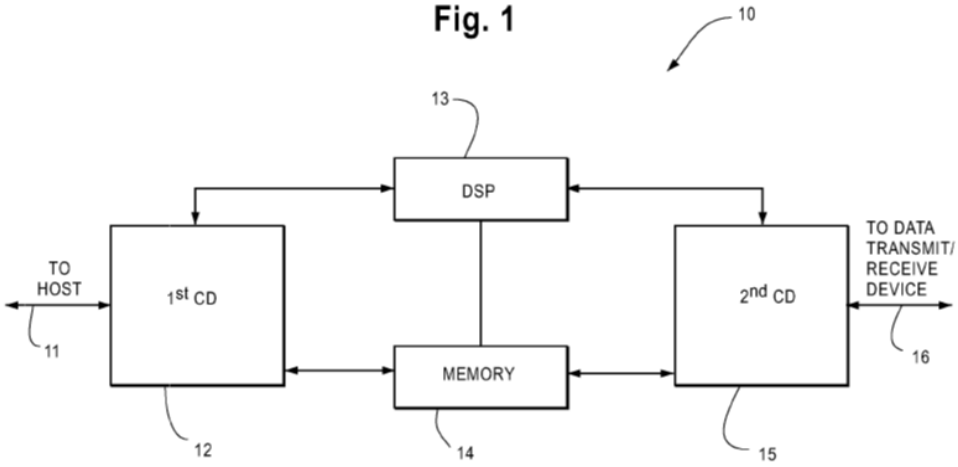
A. Related Matters

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 proceedings. Pet. 58–64; Paper 8, 1–3. A final written decision in each of the following proceedings is entered concurrently with this decision: IPR2016-01199, IPR2016-01212, IPR2016-01214, and IPR2016-01225.

B. The ’144 Patent

The ’144 patent describes interface devices 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. 1201, 1:18–22, 1:54–57. According to the ’144 patent, using a specific driver to match very closely to an individual host system would achieve high data transfer rates across the interface, but the specific driver cannot be used with other host systems. *Id*. at 2:4–19. Several solutions to this problem were known in the art. *Id*. at 2:20–3:25. For example, IOtech 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 a 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 its “invention is based on the finding that both a high data transfer rate and host device-independent use can be achieved if a driver for an input/output device customary in a host device” is utilized. *Id*. at 3:33–37. Figure 1 of the ’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 the driver 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.

C. Illustrative Claims

None of the challenged claims in the instant proceeding is independent. Claims 7, 9, 11, 12, 17–21, 23–24, 41, 50, 51, 56, 57, 66–76, 78, and 79 depend ultimately from claim 1. Claims 1 and 17 are illustrative:

> 1. An analog data generating and processing device (ADGPD), comprising:
>
> an input/output (i/o) port;
>
> a program memory;
>
> a data storage memory;
>
> a 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. 1201, 11:56–12:36 (emphases added).

> 17. The ADGPD of claim 1, wherein the sensor comprises a data transmit/receive device.

Id. at 13:7–8.

D. Prior Art Relied Upon

Petitioner relies upon the prior art references listed below.

Matsumoto	US 5,684,607	Nov. 4, 1997	(Ex. 1208)
Muramatsu	US 5,592,256	Jan. 7, 1997	(Ex. 1212)
Saito	US 5,724,155	Mar. 3, 1998	(Ex. 1213)

Kawaguchi	JP H4-15853	Jan. 21, 1992	(Ex. 1206)[3]
Takahashi	JP H05-344283	Dec. 24, 1993	(Ex. 1210) (Ex. 1211, English translation, "Takahashi").[4]

Analogic, DASM-AD14, 14-Bit, 2 MHz A-to-D SCSI Substation for the Most Demanding Data Acquisition Applications (1992) (Ex. 1209, "DASM-AD14").

AMERICAN NATIONAL STANDARDS INSTITUTE, INC., *American National Standard for Information Systems – Small Computer System Interface-2*, ANSI X3.131-1994 (1994) (Ex. 1204D, App. A-4, "the SCSI Specification").[5]

Admitted Prior Art (*see, e.g.*, Ex. 1201, 3:37–46, 4:20–22, 5:11–14, 5;21–23, 5:37–47, 8:45–50, 10:26–29).

---

[3] Petitioner filed a certified translation (Ex. 1207) of Kawaguchi with its Petition. Nevertheless, Patent Owner submitted another translation (Ex. 2009). The parties did not indicate any meaningful differences between the two translations, except the term "arbitrary data" appears only in Patent Owner's translation (Ex. 2009, 3), which allegedly supports its argument that data is merely "passing through" the data reading unit, not stored. PO Resp. 24. Our patentability analysis is supported by either translation. The alleged errors in Petitioner's translation—"microcomputer . . . should actually be processor or CPU"—also does not affect our patentability determination. PO Resp. 1−2, n. 1 (citing Ex. 2011, 104:17−105:4, 118:20−119:12); Ex. 2011, 109:19−110:6. In fact, Patent Owner's translation uses the same term "microcomputer." Ex. 2009, 4.

[4] Citations to Takahashi are to the English translation (Ex. 1211).

[5] Citations to the SCSI Specification refer to the original page numbers.

E. Instituted Grounds of Unpatentability

We instituted this trial based on the following grounds of unpatentability (Dec. 7, 44)[6]:

Challenged Claim(s)	Basis	Reference(s)
7, 9, 11, 12, 17–21, 23–25, 41, 50, 51, 56–58, 66–76, 78, and 79	§ 103(a)[7]	Kawaguchi, Matsumoto, the SCSI Specification, and Admitted Prior Art
26	§ 103(a)	Kawaguchi, Matsumoto, the SCSI Specification, and Admitted Prior Art, with or without Takahashi
57, 68–70, 75, and 76	§ 103(a)	Kawaguchi, Matsumoto, DASM-AD14, the SCSI Specification, and Admitted Prior Art
41, 50, 51, 56, 78, and 79	§ 103(a)	Kawaguchi, Matsumoto, Saito, the SCSI Specification, and Admitted Prior Art

[6] As noted in the Institution Decision (Dec. 8 n.5), although discussed in the Petitioner's analysis, the SCSI Specification and the Admitted Prior Art are omitted inadvertently from the statements of the asserted grounds. Therefore, we treated the statements of the asserted grounds 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. *Id.*

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

Challenged Claim(s)	Basis	Reference(s)
66	§ 103(a)	Kawaguchi, Matsumoto, Muramatsu, the SCSI Specification, and Admitted Prior Art

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent 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). Claims of an *expired* patent are given their ordinary and customary meaning similar to the construction standard applied by the U.S. district courts. *See Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc); *In re Rambus Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012); *see also Black & Decker, Inc. v. Positec USA, Inc.*, 646 F. App'x. 1019, 1024 (non-precedential) (applying the U.S. district court standard to construe the claims of an expired patent in an *inter partes* review). "In many cases, the claim construction will be the same under [both] standards." *In re CSB-System Int'l, Inc.*, 832 F.3d 1335, 1341 (Fed. Cir. 2016).

Here, in the Decision on Institution, we applied the broadest reasonable interpretation standard, as is proper for unexpired patents, to construe several claim terms. Dec. 9−17. We note, however, that 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. 1201, [60]. After institution of the instant proceeding, Patent Owner, in related cases, indicates 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 of those related cases involving the '399 patent, we did not apply the broadest reasonable interpretation standard, instead adopting the claim constructions set forth 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 the instant proceeding, neither party provides, nor can we discern, any reason on which the broadest reasonable interpretation standard would lead to a different result than the district court claim construction standard. Indeed, in the Institution Decision, we adopted with modifications, as the broadest reasonable interpretation of several claim terms, the claim

[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.

construction proposed by Patent Owner in the related district court litigation. Pet. 9−11; Ex. 1205; Dec. 9−17.

With a few exceptions, addressed below, both Petitioner and Patent Owner mostly agree with our claim constructions set forth in the Institution Decision. PO Resp. 13−18; Reply 2, n.1. Patent Owner advances several modifications. PO Resp. 13−18. 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)).

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. 1201, 11:57–58, 16:11–12, 17:25–26. In the Institution Decision (Dec. 9−10), 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. 1201. 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 Abs., 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." Dec. 9−10. After institution, Patent Owner objects to this construction "[i]f intended to be a full construction." PO Resp. 13−15. This construction is intended to provide an example of what the phrase *encompasses* as necessary for the analysis below. *See Nidec Motor,* 868 F.3d at 1017. We discern no reason to modify the construction. Therefore, for purposes of this Final Written Decision, we maintain our construction for the term "analog data generating and processing device."

2. "sensor"

Each independent claim recites "a sensor designed to transmit data." *See*, *e.g.*, Ex. 1201, 11:62. Claim 17, which depends from claim 1, requires the "sensor" to comprise a "data transmit/receive device." *Id*. at 13:7–8. In the Institution Decision (Dec. 10−11), 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. 1201, 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. Dec. 10−11. After institution, both parties indicate that they agree with this claim construction. PO Resp. 15; Reply 2, n.1. We discern no reason to modify the construction and, therefore, 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. 1201, 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. 1204 ¶ 64.

In light of the Specification and the evidence regarding the knowledge of an ordinarily skilled artisan, we construe a "multi-purpose interface" to *encompass* a "SCSI interface" in the Institution Decision. Dec. 11. Patent Owner appears to object to this construction insofar as a multi-purpose interface is *limited to* a SCSI interface. PO Resp. 14−15. This construction is intended to provide an example of what the term *encompasses* as necessary for the analysis below. *See Nidec Motor*, 868 F.3d at 1017. 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. 1201, 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 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. 1201, 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)." Dec. 12−13. 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. 16. We discern no reason to modify the construction and, therefore, we maintain our claim construction as to 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. 13−14), we declined to adopt Patent Owner's implicit construction (Prelim. Resp. 33−35), 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). Neither party challenges our determinations. PO Resp. 16; Reply 2, n.1. For this Final Decision, we maintain our determination in the Institution

Decision. Dec. 13−14. 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 of the ADGPD 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. 1201, 12:4–36. In the Institution Decision (Dec. 14−15), 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®, Window®, Unix®)." Ex. 1201, 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." Both parties

agree with this claim construction. PO Resp. 17; Reply 2, n.1. For this Final Decision, we maintain our claim construction as to "automatic recognition process."

7. "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. 1201, 12:4–36 (emphases added).

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*." Pet. 9–11 (citing Ex. 1205); Prelim. Resp. 25 (emphasis added). However, in light of the Specification, we noted that 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. 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 Patent Owner's proposed construction." *Id.* (emphases added).

After institution, Petitioner agrees with our claim construction and urges us not to adopt a new construction. Reply 2, n.1. Nevertheless, Patent Owner disagrees, 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. 17−18 (citing Ex. 2008 ¶ 49). However, Patent Owner's argument and Dr. Gafford's testimony (Ex. 2008 ¶ 49) 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. 1201, 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 manufactured 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*."

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 workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). As noted in our Institution Decision (Dec. 18−19), we find that the prior art (e.g., Ex. 1204D, App. A-4) in the instant proceeding

[9] Neither party proffers any objective evidence of nonobviousness 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, 1355 (Fed. Cir. 2001). 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. 1204 ¶ 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 [file allocation table ("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 at least three years of experience, or, alternatively, five or more years of experience without a bachelor's degree. Prelim. Resp. 24−25; PO Resp. 13; Ex. 2008 ¶ 18. 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 argument presented hinges on whether either party's proposed level of ordinary skill in the art is adopted.

We find Dr. Reynolds' testimony persuasive as it is 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. 1204 ¶ 39. We, therefore, determine that Petitioner's level of ordinary skill in the art is appropriate.

D. Obviousness over Kawaguchi and Matsumoto, in view of the SCSI Specification and Admitted Prior Art

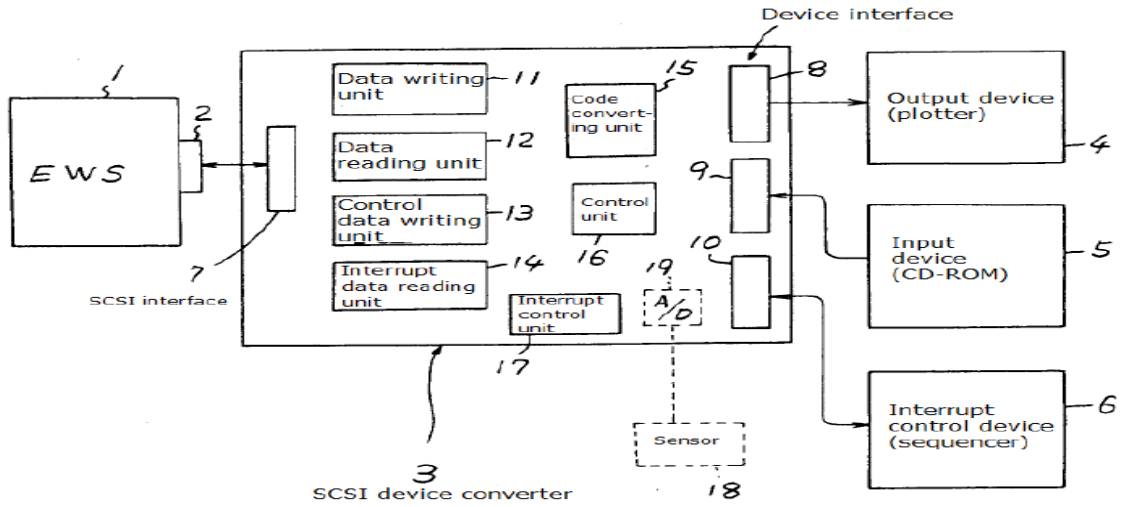
As we noted in the Institution Decision, Petitioner asserts that claims 7, 9, 11, 12, 17–21, 23–25, 41, 50, 51, 56–58, 66–76, 78, and 79 are unpatentable under 35 U.S.C. § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, the SCSI Specification, and Admitted Prior Art, relying on Dr. Reynolds' Declaration for support (Ex. 1204). Pet. 18–39. Patent Owner counters that the prior art combination does not disclose several claim limitations, citing to Mr. Gafford's Declaration (Ex. 2008) for support. PO Resp. 18–35.

Upon consideration of the parties' contentions and supporting evidence, we determine that Petitioner has established by a preponderance of the evidence that the prior art combination renders the challenged claims obvious. In our discussion below, we begin with a brief overview of the prior art, and then we address the parties' contentions in turn, focusing on those asserted by Petitioner that are disputed by Patent Owner.

Overview of Kawaguchi

Kawaguchi discloses a SCSI device converter for connecting a plurality of peripheral devices to an engineering workstation. Ex. 1207, 2. Figure 1 of Kawaguchi is reproduced below.

FIG. 1

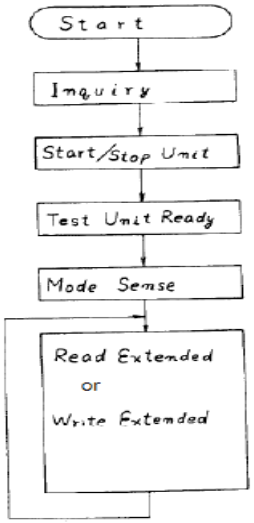


As shown in Figure 1 of Kawaguchi, SCSI device converter 3 includes: SCSI interface 7 for connecting to engineering workstation (EWS) 1; personal computer input/output bus interfaces 8, 9 for connecting to output device (plotter) 4 and input device (CD-ROM) 5, respectively; and bi-directional parallel bus interface 10 for connecting to interrupt control device (sequencer) 6. SCSI device converter 3 can be adapted to accommodate any other type of device interface, including analog-to-digital (A/D) converter 19 to receive analog data from an analog sensor 18. *Id*. at 5. SCSI device converter 3 also implements data writing unit 11, data reading unit 12, control data writing 13, interrupt data reading unit 14, code converting unit 15, control unit 16, and interrupt control unit 17, by using a microcomputer, ROM, and RAM. *Id*.

The EWS is said to have a SCSI interface "as standard equipment for connecting with the hard disk." *Id*. at 5. According to Kawaguchi, "[t]he above-described SCSI device converter is able to input and output data to a SCSI interface of an EWS using the same standards as SCSI interface for a hard disk." *Id*. at 4. The SCSI driver of the EWS is used as a driver for connecting a hard disk, performing operations in accordance with the SCSI standards. *Id*. at 7.

Figure 2 of Kawaguchi is reproduced below.

FIG. 2



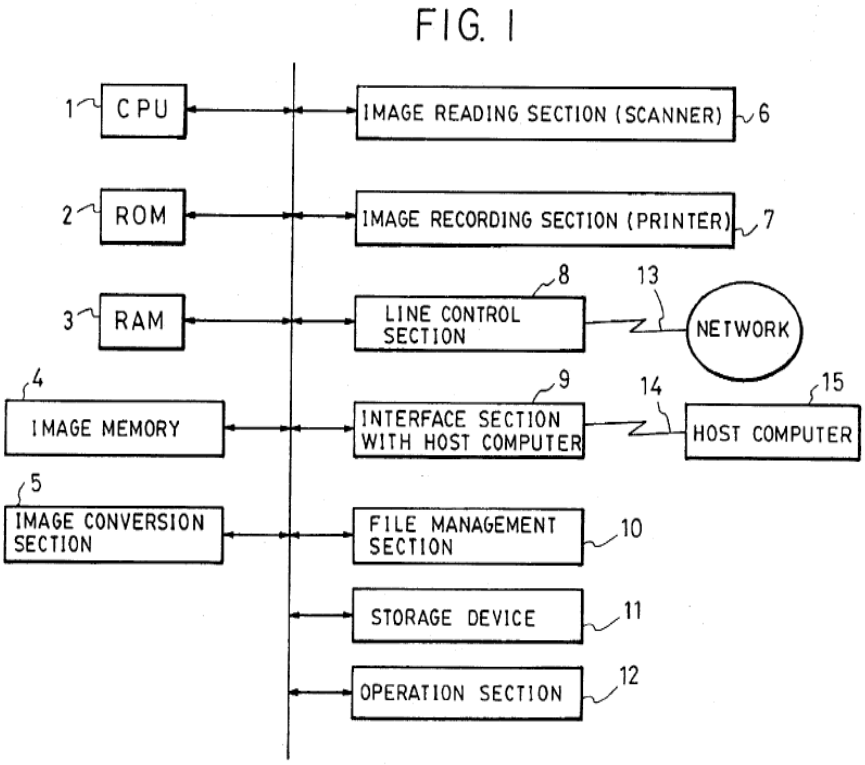
As shown in Figure 2 of Kawaguchi, the processing procedure includes an initialization process which includes: "Inquiry" that represents reporting of attribute information of a target and logical units (identification code of a device type); "Start/Stop Unit" that represents start/stop of the logical unit; "Test Unit Ready" that represents testing whether or not the logical unit is available; and "Mode Sense" that represents reporting of various parameter values (data format and storage medium configuration).

Id. at 7. The initialization process allows the writing and reading units of the SCSI device converter to be activated for the EWS. After the initialization process, the EWS "performs writing to or reading from the writing units and reading units." *Id*. Specifically, "Read Extended" represents "reading data from a designated block, i.e., the data reading unit (12) or the interrupt data reading unit (14)." *Id*. And "Write Extended" presents "writing data to a designated block, i.e., the data writing unit (11) or the control data writing unit (13)." *Id*.

Overview of Matsumoto

Matsumoto discloses a "facsimile apparatus having a scanner for reading original images, a memory for storing images, a printer for recording images, and a communication control section for controlling the transmission/reception of data with a receiving communication apparatus." Ex. 1208, Abstract. An object of Matsumoto's invention is to increase the speed at which data is transferred between a host computer and a facsimile apparatus by using a SCSI interface. *Id*. at 1:37–45.

Figure 1 of Matsumoto is reproduced below.



As shown in Figure 1 of Matsumoto, the facsimile apparatus includes CPU 1, ROM 2, RAM 3, image memory 4, image conversion section 5, scanner 6, printer 7, line control section 8, interface section 9, file management section 10, storage device 11, and operation section 12. *Id*. at 3:1–34. CPU 1 controls the entire apparatus in accordance with control programs stored in ROM 2. *Id*. Communication protocols between the facsimile apparatus and host computer 15 are controlled by interface section 9, using a SCSI interface. *Id*.

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. 1204, Appendix A-4, 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.

Overview of the Admitted Prior Art

As we noted in the Institution Decision (Dec. 24−25), the '144 patent describes that drivers for hard disks were known to be customary drivers "in practically all host devices." Ex. 1201, 3:37–46, 4:20–22. The '144 patent 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, certain standard access commands, including the SCSI INQUIRY command, were

"supported by all known operating systems (e.g., DOS®, Windows®, Unix®)." *Id*. at 5:11–14, 5:21–23, 5:37–47. The '144 patent further discloses that it 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.

Analysis

An analog data generating and processing device

Claims 1 and 2 require 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. 1201, 11:57–62. Claims 25 and 58 depend from claim 1, and further recite "wherein the sensor comprises a multimeter," and "wherein the ADGPD comprises at least a portion of a medical device," respectively. *Id*. at 13:27–28, 15:4–5.

Petitioner asserts that Kawaguchi, in combination with the other prior art references, teaches or suggests these claim limitations. Pet. 12–23, 39–40, 49. In particular, Petitioner contends that Kawaguchi's SCSI device converter "in cooperation with the connected peripheral devices (and/or a sensor) forms an ADGPD because the peripheral devices (and/or a sensor) generate analog data and the SCSI device converter processes the generated analog data." *Id*. at 18−19 (citing Ex. 1204 ¶¶ 93−95). Petitioner explains that "[t]his is evidenced by data from sensor 18 traversing an analog-to-digital converter 19." *Id.* Petitioner further explains that Kawaguchi's SCSI interface 7 discloses an input/output port, Kawaguchi's ROM and RAM

disclose a program memory, and Kawaguchi's RAM discloses data storage memory. *Id.* at 19−20. Petitioner also explains that Kawaguchi's sensor 18 and input device 5 (e.g., a CD-ROM) disclose the claimed sensor in that sensor 18 transmits analog data to analog-to-digital converter A/D 19 and the SCSI device converter processes the generated analog data, and that input device 5 generates analog data that is converted to digital data and transmitted to device interface 9. *Id*. at 20–21 (citing Ex. 1207, 5; Ex. 1204 ¶¶ 93–95, 99−102).

According to Petitioner, Matsumoto also discloses a sensor (i.e., facsimile apparatus) that includes "an image reading section such as a scanner 6," which includes an optical detector (a sensor) that produces and transmits an analog signal. *Id.* at 21 (citing Ex. 1208, 3:10−11). Petitioner argues that it would have been obvious to an ordinarily skilled artisan to add an image scanner, in light of Matsumoto, as a peripheral device to Kawaguchi's SCSI device converter so that Kawaguchi's EWS would have access to an image scanner. *Id*. at 21, 15−16. Likewise, Petitioner asserts that, in light of the Admitted Prior Art that discloses a multi-meter and a diagnostic radiology system as examples of existing data acquisition system (Ex. 1201, 1:26–60), it would have been obvious to an ordinarily skilled artisan to include a multi-meter or a medical device as an additional peripheral device to Kawaguchi's workstation. Pet. 39–40, 49.

Patent Owner does not challenge Petitioner's contentions regarding the aforementioned limitation. PO Resp. 24−35. Upon review of Petitioner's explanations and supporting evidence, we are persuaded by Petitioner's showing that Kawaguchi's SCSI device converter (the interface

device), along with sensor 18, input device (e.g., CD-ROM) 5, and Matsumoto's image scanner, discloses an "analog data generating and processing device," as required by claims 1 and 2. We also are persuaded by Petitioner's articulated reason to combine the prior art teachings—adding an image scanner, in view of Matsumoto, and adding a medical device and a multi-meter, in view of the Admitted Prior Art, to Kawaguchi's SCSI device converter so that Kawaguchi's EWS can receive and process documents with images, diagnostic radiology data, or measured data from a multi-meter. Notably, Kawaguchi teaches connecting a variety of peripheral devices (e.g., an analog sensor) to a host workstation using a SCSI interface device. Ex. 1207, 5, Fig. 1. Matsumoto teaches connecting a specific peripheral device—namely, a facsimile apparatus having an image scanner, a memory for storing images, a printer for recording images—to a host computer using a SCSI interface. Ex. 1208, Abs., 1:36–2:14.

In view of the foregoing, we determine that Petitioner has established by a preponderance of the evidence that Kawaguchi, in combination with Matsumoto, the SCSI Specification, and Admitted Prior Art, teaches or suggests an analog data generating and processing device having a sensor designed to transmit data (e.g., a multi-meter or a medical device), as required by claims 1, 25, and 58.

Data generation process

Claim 1 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." Ex. 1201, 11:66–12:3 (emphasis added).

For this limitation, Petitioner provides two examples of how Kawaguchi generates analog data: (1) sensor 18 generates analog data that are received and processed by A/D converter 19; and (2) peripheral device 5 generates analog data that are received and processed interface device 9. Pet. 23−26. Petitioner also explains how Kawaguchi processes the analog data—code converting unit 15 "converts the data format between SCSI standards and device-interface bus standards," and control unit 16 "controls the data transmission/reception between the EWS and the peripheral devices." *Id.* Petitioner further explains that control unit 16 stores the digitized analog data in the data storage memory (RAM) from the peripheral devices as at least one file. *Id.*

The parties' dispute centers on whether Kawaguchi discloses storing the data "as at least one file." Petitioner advances two contentions: (1) a person of ordinary skill in the art would have understood that the data stored in a RAM drive of the data reading unit would be stored as at least one file; and (2) to the extent Kawaguchi does not disclose storing the digitized analog data as at least one file, it would have been obvious to implement the data reading unit as a RAM-drive and store data as files to attain the organization of the stored data as at least one file. Pet. 24−25.

Citing to Mr. Gafford's testimony for support, Patent Owner contends that "Kawaguchi says nothing about file transfer, storing data, file systems, or even files at all." PO Resp. 24−30 (citing Ex. 2008 ¶¶ 36, 54, 57, 60, 64, 67, 69, 72, 73, 80, 84, 153). Patent Owner also argues that the data from the

peripheral devices are merely "passing through" the SCSI device, not stored as a file, because Kawaguchi's "RAM would act as a buffer that does not care about the form of the 'arbitrary data'[10] passing through." *Id.* According to Patent Owner, it is impossible to implement a single file system across all four data reading and writing units that have separate IDs. *Id.*

Upon consideration of the parties' contentions and supporting evidence, we are not persuaded by Patent Owner's arguments and Mr. Gafford's testimony (PO Resp. 24−30, 37−38; Ex. 2008 ¶¶ 36, 54, 57, 60, 64, 67, 69, 72, 73, 80, 84, 94, 153). To the extent that Patent Owner requires the prior art to use the exact terminology as the claim language, an obviousness analysis is not an *ipsissimis verbis* test. *Cf. In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009). Indeed, in an obviousness analysis, as here, we must consider the combination of references, as a whole, in light of the general knowledge of an ordinarily skilled artisan. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1361 n.3 (Fed. Cir. 2008) ("What a prior art reference discloses or teaches is determined from the perspective of one of ordinary skill in the art."); *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986) (noting that when evaluating claims for obviousness, "the prior art as a whole must be considered"); *see also Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015) (explaining that the

[10] The term "arbitrary data" only appears in Patent Owner's English-language translation of Kawaguchi. Ex. 2009, 2.

Board must consider the prior art reference and evidence that "serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness").

Based on the evidence before us, we determine that a person of ordinarily skill in the art, reading Kawaguchi, as a whole, would have understood that the digitized analog data is stored as at least one file. As Petitioner and Dr. Reynolds explain, the relevant artisan would have understood that Kawaguchi's data reading unit is implemented as a RAM drive that includes a file system, because the data reading unit is implemented using RAM and identified to the EWS as a hard disk. Pet. 24−25 (citing Ex. 1207, 5−6; Ex. 1204 ¶ 111). Such an artisan also would have recognized that the data stored in a RAM drive would be stored as at least one file, as it was well known at the time of the invention that a RAM drive was implemented by mapping a disk's structure (directory, file allocation table, and files area) onto a portion of RAM. *Id.* (citing Ex. 1204 ¶ 111−112).

Dr. Reynolds also testifies that a "RAM drive would have provided all of the storage management necessary to support the reading and writing data units," in Kawaguchi, as a "RAM drive is always implemented with a file system installed on it and stores data as files." Ex. 1204 ¶ 51 (citing Ex. 1204C, App. A-3, 907−09). Dr. Reynolds further notes that "a RAM drive would have supported supplying the EWS with 'data format and storage medium configuration' information necessary to respond to a SCSI Mode Sense request," in Kawaguchi. *Id.* (citing Ex. 1207, Fig. 2). We credit Dr. Reynolds' testimony as it is consistent with Kawaguchi's

disclosure and other prior art of record. Ex. 1207, 7, Fig. 2; Ex. 1204C. App. A-3, 907−09.

Further, we are not persuaded that the cross-examination of Dr. Reynolds undermines his testimony in this regard. *See, e.g.*, Ex. 2011, 115:6–17 (discussing vaguely and speculatively whether there are "other options" for implementing data storage areas in the reading and writing units). Indeed, RAM drives were well-known in the art at the time of the invention, as indicated in the MS-DOS Encyclopedia, which describes installing a RAM drive by simply inserting a line into the system's config.sys file and restarting the system.[11] Ex. 1204C, App-3, 907. We also credit Dr. Reynolds' testimony that "RAM drives were in common use in general purpose operating systems, such as UNIX and Microsoft operating systems." Ex. 1204 ¶ 127. In sum, Kawaguchi's disclosure of hard disk emulation and the disclosure of reading and writing data using the procedure as that of hard disks, together with the testimony of Dr. Reynolds, lead us to conclude that Kawaguchi suggests that the disclosed RAM would have been implemented as RAM drives that include a file system, storing data as files.

We also are persuaded by Petitioner's contention that, even if Kawaguchi does not suggest storing the data as a file, it would have been obvious, and an ordinarily skilled artisan would have had a reason, to store the data in the data reading unit as a file, using a RAM drive that includes a

[11] We reiterate here that we have determined knowledge of operating systems, such as MS-DOS was part of the knowledge and level of skill in the art. *See* Section II.C, *supra*.

file system. Pet. 24−25. Notably, Dr. Reynolds testifies that RAM drives were known in the art, having the advantage of speed, data structuring (in the form of files and a file system), and data naming, and that RAM drives were generally created automatically by an operating system when a system boots or restarts, without any end user involvement. Ex. 1204, 52 n.3, ¶ 111 ("Microsoft offered RAM drives in the MSDOS operating system in the early 1980's.") (citing Ex. 1204C, App. A-3, 907). As Petitioner and Dr. Reynolds explain, in view of the knowledge of an ordinarily skilled artisan, ease of implementation, and wide-spread use of RAM drives, it would have been obvious to implement the data reading unit as a RAM drive and store data as files to attain the organization and naming benefits that can be achieved using a file system. Pet. at 24−25 (citing Ex. 1204 ¶ 113). Moreover, Dr. Reynolds testifies that an ordinarily skilled artisan would have been motived to read the files at a later time, and recognized that a RAM drive, implementing the emulated disk drive in the SCSI device converter, "would easily support EWS file access and reading." Ex. 1204 ¶¶ 113, 127−131. We credit Dr. Reynolds' testimony as it is consistent with the prior art of record. *See, e.g.*, Ex. 1204C, App. A-3, 30−31 (The hierarchical file system was standard on all hard disks accessible by MS-DOS), 51 ("A traditional microcomputer operating system . . . provides additional features such as a file system."), 907−09.

We are not persuaded by Patent Owner's argument that the data are not stored in the data reading unit (RAM), but merely "passing through," using the RAM as a buffer or data relay. That argument is not supported by the disclosure of Kawaguchi. Notably, Kawaguchi does not disclose using

the reading data unit or RAM merely as a buffer. Nor does Kawaguchi disclose "the EWS could simply access files directly from the CD-ROM," as Mr. Gafford indicates. Ex. 2008 ¶ 61.

Rather, Kawaguchi expressly teaches "data read from an input device (5) such as a CD-ROM *is inputted to the data reading unit* (12)," the SCSI device converter "operates in a manner *emulating the hard disk*," and the *EWS reads data from each reading unit* using the same method as that for *hard disks*. Ex. 1207, 6−7 (emphases added). Moreover, Dr. Reynolds testifies that data arriving from input device (e.g., a CD-ROM) to the data reading unit, often in the form of files, "needed to be preserved in its file form, and documented and stored by the data reading unit . . . so that it can be accessed at a later time." Ex. 1204 ¶¶ 45, 97−98, 106−110. Mr. Gafford confirms that the data from the CD-ROM already are in data files. Ex. 2008 ¶ 61. The term "data relays," as appeared in Patent Owner's translation (Ex. 2010, 4), also does not support Patent Owner's argument that the data are not stored, but are merely "passing through." As Dr. Reynolds explains (Ex. 1215 ¶ 15), *file-based store and forward data relays* were known in the art at the time of the invention, as having the advantage of recording data files for later access and other advantages associated with a file system. *See* Ex. 1217[12].

Kawaguchi also does not support Dr. Gafford's testimony that, to permit "high speed processing" in Kawaguchi, a "possible implementation

[12] J. Ward, "Store and Forward Message Relay Using Microsatellites: The UOSAT-3 PACSAT Communications Payload" (1990).

of the reading and writing units as data relays would be data buffers, such as FIFOs, which would facilitate rapid *asynchronous* transfer of data between the peripheral (such as the CD-ROM) to the EWS." Ex. 2008 ¶¶ 52−54 (emphasis added). Notably, Kawaguchi describes its "high-speed processing" to be a function of providing reading and writing units as *distinct logical units* that enable reading and writing data from the EWS, writing of a command, and reading of interrupt data. Ex. 1207, p. 8 (discussing the "Effect of the Invention"). The "high-speed processing" appears to be attributed to the functionalities of the four reading and writing units of Kawaguchi that facilitate *simultaneous* requests from the EWS. *Id.* Kawaguchi does not attribute the high-speed processing to any particular embodiment of the memory, and no other discussion of "data relay" is provided that links the RAM implementation to a FIFO buffer or any other similar arrangement. Therefore, we find that Kawaguchi's disclosure of the benefit of high-speed processing is not an indication that the reading and writing units would be buffers or other type of data relay because the reason for such benefit is the disclosed simultaneous operations. Because we are not persuaded by the argument that Kawaguchi is implemented with buffers we need not address the argument that a buffer cannot implement a file system. *See* Ex. 2008 ¶ 55.

Dr. Reynolds further testifies, the term "arbitrary data," which appears only in Patent Owner's translation (Ex. 2009, 3) and is relied upon by Patent Owner and Mr. Gafford, does not mean "raw data that is not part of a file system," as Patent Owner implies, but instead, an ordinarily skilled artisan would have understood "arbitrary data" in the context of Kawaguchi, to

mean "*any* data of *any* type from *any* of the connected peripherals, or an EWS." Ex. 1215 ¶ 16 (emphases added). We credit Dr. Reynolds' testimony, as it is consistent with Kawaguchi, even in light of Patent Owner's own translation (Ex. 2010, 3). For instance, Patent Owner's translation describes the limitation of the EWS's specialized bus being able to connect with "specific devices" but unable to "connect freely to *arbitrary* devices." *Id.* (emphasis added). This statement, thus, refers to the ability to connect *any* device to the EWS, regardless of the EWS's specialized bus configuration. Therefore, the term "*arbitrary* data" refers to the SCSI device converter's capability of handling *any* type of data, regardless of the peripheral device with which it is connected.

In light of the foregoing, Patent Owner's argument that the data are not stored, but merely "passing through" the SCSI device converter, using the RAM as a buffer or data relay, is unavailing.

We also are not persuaded by Patent Owner's argument that it is impossible to implement a file system across separate data reading and writing units that have separate IDs. Patent Owner's argument and Mr. Gafford's supporting testimony (Ex. 2008 ¶¶ 57−59) are based on the premise that a *single* file system must be implemented across *all four* data reading and writing units. However, Kawaguchi explicitly teaches that *each* of the data reading and writing units appears to the EWS as an *individual hard disk*. Ex. 1207, 6 (the data writing reading units appear to the EWS "as four hard disk devices"). Dr. Reynolds testifies that each of the emulated hard disks would have *its own file system*, explaining that the SCSI device converter, "with its RAM drive implementation of the SDC data reading and

writing units, would be accessing the *respective file systems* on the data reading and writing units automatically created on the RAM drives by the SDC's operating system." Ex. 1204 ¶ 147 (emphasis added).

Based on the evidence before us, we determine that Petitioner has shown by a preponderance of the evidence that Kawaguchi suggests using RAM drives that include a file system, storing the digitized analog data as at least one file, as required by claim 1. We further determine that Petitioner has shown by a preponderance of the evidence that it would have been obvious, and one of ordinary skill in the art would have had a reason, to implement a RAM drive that includes a file system, storing the data as files, in view of the general knowledge of an ordinarily skilled artisan regarding operating systems and file systems including RAM drives, rendering claim 1 obvious. In light of these determinations, it is not necessary for us to determine whether it would have been obvious to combine Kawaguchi with Matsumoto's file system and to address the parties' arguments as to this issue (Pet. 25−26; PO Resp. 30−34).

Automatic recognition and file transfer processes

Claim 1 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*, transferring a digitized analog data file from the ADGPD's data storage memory to the computer. Ex. 1201, 12:4–36. Claim 1 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 a manufacturer of the computer." *Id.*

Petitioner argues the prior art combination discloses the claimed "automatic recognition process" in that the SCSI driver of Kawaguchi's EWS uses the INQUIRY command to obtain *identification information* regarding the SCSI device converter (ADGPD). Pet. 12–16, 26–34 (citing Ex. 1207, 6–7). Petitioner explains that the SCSI device converter is interfaced operatively with a SCSI interface (a multi-purpose interface) of the EWS (a computer), operating in a manner that emulates a SCSI hard disk device, so that the workstation using a SCSI hard disk driver (a customary driver) recognizes the writing/reading data units (data storage memories) in the SCSI device converter as separate hard disk devices. *Id.* at 26–28 (citing Ex. 1207, 6–7, Fig. 1; Ex. 1204 ¶ 118). Petitioner contends that, because the SCSI device converter emulates a hard disk when responding to the SCSI INQUIRY command, it would send a hard disk identification code as its device type to the workstation. *Id.* (citing Ex. 1207, 7; Ex. 1204 ¶¶ 64–83, 118). Petitioner also asserts that the prior art combination discloses the claimed "automatic file transfer process," in that Kawaguchi's EWS retrieves the digitized analog data files from the data reading unit in the SCSI device converter, using the SCSI "Read Extended" command to transfer automatically the data files to the EWS. *Id.* at 31–34 (citing Ex. 1207, 6–7).

Petitioner further contends that Kawaguchi does not require any end user to load software or to set up a file system because the SCSI device converter communicates with the workstation using *customary software*

found on a computer. *Id*. at 28–29 (citing Ex. 1207, 6–7). Petitioner also points out that the SCSI device converter works with a driver that follows the SCSI standards so that it is not restricted for use with any specific manufacturer's computer. *Id*. at 30 (citing Ex. 1204 ¶¶ 123–124).

Upon consideration of Petitioner's explanations and supporting evidence, we determine Petitioner has established by a preponderance of the evidence that Kawaguchi teaches or suggests the aforementioned limitations. Notably, as Petitioner points out, Kawaguchi describes the operations performed by its SCSI driver and the INQUIRY command/response procedure. Pet. 26–31 (citing Ex. 1207, 6–7, Figs. 1–2). Significantly, Kawaguchi indicates that its "described procedure uses a procedure as provided in the SCSI standards," and the SCSI INQUIRY command "represents reporting of attribute information of a target and logical units (identification code of a device type)." Ex. 1207, 7. Kawaguchi makes clear that the SCSI disk driver operates in accordance with the SCSI standard procedure. *Id.* ("Since the above-described procedure uses a procedure as provided in the SCSI standards, the apparatus of the present invention can be easily connected to the SCSI interface of the EWS (1) without almost any modification."). According to Kawaguchi, the SCSI device converter transfers information and data to the workstation "using the same standards as SCSI interface for a hard disk." *Id*. at 4. Importantly, the SCSI driver performs the initialization process and the writing/reading operations, in accordance with the SCSI standard. *Id*. at 7.

As we noted in the Institution Decision (Dec. 35), the '144 patent confirms that SCSI interfaces and SCSI drivers were known in the art at the

time of the invention. Ex. 1201, 8:45–50, 10:26–29. More significantly, the '144 patent also acknowledges that, at the time of the invention, 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 3:53–62, 8:45–46, 10:27–33. The '144 patent further indicates that communication between a host system and an interface device is based on known standard access commands, including the INQUIRY instructions, "as supported by all known operating systems (e.g., DOS®, Windows®, Unix®)." *Id*. at 5:11–14, 5:21–23. Therefore, we are persuaded that an ordinarily skilled artisan would have recognized that the SCSI driver, in Kawaguchi, is a customary driver.

Both parties agree that an ordinarily skilled artisan would be familiar with the SCSI standards and SCSI interfaces. Ex. 1204 ¶ 39; Pet. 18; PO Resp. 13. The testimony of Dr. Reynolds provides explanations concerning the SCSI standards and the INQUIRY command/response procedure, which are described in the SCSI Specification (Ex. 1204, App. A-4). *See, e.g., id*. ¶¶ 64–83. Dr. Reynolds testifies that the "INQUIRY and INQUIRY response part of SCSI communications between an initiator and a target is automatic and hidden from a user," and "[n]o user intervention or participation is required." *Id*. ¶ 70. Moreover, as discussed above, the SCSI device converter utilizes a RAM drive that includes a file system for storing the digitized analog data as files on the data reading unit.

Thus, we determine that Petitioner has shown sufficiently that the prior art combination suggests an automatic recognition process, and an automatic file transfer process, that do not require an end user to load any

software or set up a file system. We also are persuaded that Petitioner has provided sufficient showing that those automatic processes, as described in the prior art combination, would occur "regardless of the identity of a manufacturer of the computer." Dr. Reynolds testifies that the "SCSI standard is computer and computer manufacturer independent," and that, at the time of the invention, "Sun Microsystems, Silicon Graphics, Apollo Computer, DEC, HP and IBM all manufactured computers with SCSI interfaces, [and] SCSI adapters were available for IBM PC class computers as well." Ex. 1204 ¶¶ 64, 123. As noted in the Institution Decision (Dec. 36), 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. 1204, App. A-4, 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. 1201, 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.

Patent Owner counters that Kawaguchi does not disclose a file system for transferring a file and it would not have been obvious to implement a file system, relying on its arguments in connection with the claim limitation

for storing data as a file. PO Resp. 24−30. We have addressed those arguments in our analysis above, and determine those arguments are likewise unavailing here. For the reasons discussed above, we determine that Petitioner has established by a preponderance of evidence that Kawaguchi suggests a RAM drive that has a file system for storing and transferring at least one file of digitized analog data, and that it would have been obvious to use a RAM drive for storing and transferring such a file. Moreover, as Petitioner points out, Kawaguchi discloses that the EWS's SCSI driver uses the industry-standard "Read Extended" command to transfer automatically the digitized analog data to the EWS, and the control unit of the SCSI device converter "controls the data transmission/reception between the EWS and the peripheral devices." Pet. 32 (citing Ex. 1207, 5−7, Fig. 2). Dr. Reynolds explains that Kawaguchi's EWS can access files on the emulated hard disk drives using standard read and write operations, and the SCSI device converter, with its RAM drives, would be accessing the respective file systems on the data reading and writing units. Ex. 1204 ¶¶ 147−148. Dr. Reynolds further testifies that in responding to an EWS request for a file, the SCSI device converter causes "the at least one file of digitized analog data to be transferred to the computer." *Id.*

Based on the evidence in the record, we determine that Petitioner has demonstrated by a preponderance of the evidence that Kawaguchi, in combination with Matsumoto, the SCSI Specification, and Admitted Prior Art, suggests the aforementioned "automatic process" limitations, as required by claim 1.

Conclusion on Obviousness

For the foregoing reasons, Petitioner has demonstrated by a preponderance of the evidence that claims 1, 25, and 58 are unpatentable under § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, the SCSI Specification, and Admitted Prior Art.

We also have considered Petitioner's detailed explanations and supporting evidence regarding claims 7, 9, 11, 12, 17–21, 23, 24, 41, 50, 51, 56, 57, 66–76, 78, and 79, and find them persuasive. Patent Owner does not provide separate, specific arguments with respect to these claims, but rather relies upon its arguments in connection with independent claim 1. PO Resp. 34−35. We have addressed those arguments in our analysis above, and determine those arguments are likewise unavailing here.

Based on the evidence before us, we are persuaded that Petitioner has established by a preponderance of the evidence that the prior art combination also renders these claims obvious. *See* Pet. 18–39; Ex. 1204 ¶¶ 161−254. For example, claims 9, 11, 12, 21, 23, and 24 require the interface device to be designed so that the sensor can be attached to, and readily detached from, the interface device. Petitioner explains that Kawaguchi's SCSI device converter inputs data to and outputs data from a peripheral device via a device interface by using a device bus standard, and that the SCSI device converter includes "personal computer I/O bus interfaces (8) (9) and an interface for a bi-directional parallel bus interface (10) with interrupt function as interface for connecting peripheral devices." Pet. 36−37 (citing Ex. 1210, 2−5; Ex. 1204 ¶¶ 167−168). Petitioner also notes that the SCSI

device is designed to enable peripheral devices "to be easily connected to the SCSI interface on a EWS," including detachable sensor 18. *Id*.

We agree with Petitioner's explanations and Dr. Reynolds' testimony as to claims 7, 9, 11, 12, 17–21, 23, 24, 41, 50, 51, 56, 57, 66–76, 78, and 79. Pet. 18–39; Ex. 1204 ¶¶ 161−254. We credit Dr. Reynolds' testimony (Ex. 1204 ¶¶ 161−254), 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 are persuaded that Petitioner has established by a preponderance of the evidence that the prior art combination also renders claims 7, 9, 11, 12, 17–21, 23, 24, 41, 50, 51, 56, 57, 66–76, 78, and 79 obvious.

In view of the foregoing, we conclude that Petitioner has established by a preponderance of the evidence that claims 7, 9, 11, 12, 17–21, 23–25, 41, 50, 51, 56–58, 66–76, 78, and 79 are unpatentable under § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, the SCSI Specification, and Admitted Prior Art.

E. Obviousness over Kawaguchi, Matsumoto, Takahashi, the SCSI Specification, and Admitted Prior Art

Petitioner asserts that claim 26 is unpatentable under § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, Takahashi, the SCSI Specification, and Admitted Prior Art.[13] Pet. 40–41. Claim 26

[13] Although not specifically laid out in its list of specific grounds, Petitioner argues in its analysis that the same combination of references, without the addition of Takahashi, renders claim 26 obvious. Pet. 40 ("To the extent that Kawaguchi is deemed not to disclose this feature, Takahashi in combination with Kawaguchi discloses this feature.").

depends from claim 1, and further recites "wherein the sensor includes at least *first and second transducers* both of which are designed to transmit data." Ex. 1201, 13:29–31 (emphasis added).

Patent Owner does not proffer any separate, specific argument with regard to claim 26 other than those already addressed above in connection with claim 1. PO Resp. 34−35. For those arguments, we determine the arguments are likewise unavailing here.

Petitioner provides detailed explanations and sufficient evidence to show that the combination of references discloses the additional limitation recited in claim 26. Pet. 40−41. In particular, Petitioner explains that Takahashi discloses "an image reading device for reading an original image according to a command from a host computer and transferring image data to a host computer," and that Takahashi also discloses that "two sides of a document can be read simultaneously: 'the first and second faces of one original 2 can be read simultaneously by first and second faces reading units 100 and 18.'" Pet. 40 (citing Ex. 1211 ¶¶ 1, 16). Based on the evidence before us, we determine that Petitioner has shown sufficiently that Takahashi discloses a sensor "with first and second transducers both of which are designed to transmit data." *Id*. at 41 (citing Ex. 1204 ¶ 180).

As to how Takahashi's teachings would be combined with Kawaguchi, Petitioner points out that Kawaguchi discloses an interface device for coupling peripheral devices to the SCSI interface of a computer, and that Takahashi discloses a peripheral device (image reading device) for transferring image data to a computer. *Id.* (citing Ex. 1204 ¶ 181). Dr. Reynolds testifies that "it would have been obvious to a [person of

ordinary skill in the art] to use the Takahashi scanner as one of the peripheral devices because a scanner is another type of analog data acquisition device." Ex. 1204 ¶ 181.

For the rationale to combine the prior art references, Petitioner states that each of the references, including Takahashi, itself, provides the "teachings, suggestions, and motivations to combine their respective disclosures with Kawaguchi and Matsumoto." Pet. 16. Indeed, as discussed above, Petitioner specifically points out that "Takahashi discloses that *two sides of a document can be read simultaneously*: 'the first and second faces of one original 2 can be read simultaneously by first and second faces reading units 100 and 18.'" *Id*. at 40 (citing Ex. 1211 ¶ 16) (emphasis added).

Petitioner further explains (*id*. at 16–17):

> Combining their teachings is proper because (a) it involves combining prior art elements according to known methods to yield predictable results, (b) the combination results in a simple substitution of one known element for another to obtain predictable results, (c) the combination involves the use of a known technique to improve similar devices, methods, or products in the same way, (d) the combination involves applying a known technique to a known device, method, or product ready for improvement to yield predictable results, (e) the combination is obvious to try – it involves choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success, and (f) the combination is proper because known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces because the variations are predictable to one of ordinary skill in the art.

Although Petitioner did not provide a case law citation to support this explanation, it appears that Petitioner is relying upon the principles articulated by the Supreme Court in *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398 (2007).

Given the specific explanation and citations to the prior art disclosures submitted in the Petition, we determine that Petitioner has established sufficiently that it would have been obvious to an ordinarily skilled artisan, in light of Takahashi, to add an image scanner that can read both sides of a document simultaneously in Kawaguchi to achieve the benefit of having another peripheral device to Kawaguchi's engineering workstation. *See KSR*, 550 U.S. at 417 (noting that, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill"). We also conclude that Petitioner has articulated a sufficient rationale to combine the teachings of Takahashi with Kawaguchi, as modified by Matsumoto, the SCSI Specification, and the Admitted Prior Art.

In view of the foregoing, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 26 is unpatentable as obvious under § 103(a) over Kawaguchi, in combination with Matsumoto, Takahashi, the SCSI Specification, and the Admitted Prior Art.

F. Obviousness over Kawaguchi, Matsumoto, DASM-AD14, the SCSI Specification, and Admitted Prior Art

Petitioner asserts that claims 57, 68–70, 75, and 76 are unpatentable under § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, DASM-AD14, the SCSI Specification, and Admitted Prior Art. Pet. 45–48, 53–56; Ex. 1204 ¶¶ 220−227, 240−245. Petitioner contends that DASM-AD14, which is a product brochure for the DASM-AD14 product, is a printed publication under § 102(b) because it was published in March 1992. Pet. 7. As support, Petitioner avers that the DASM-AD14 product was available for purchase in 1992, as evidenced by the Digital Equipment Corporation Shippable Products Catalog (Ex. 1214, 23). *Id*.

In its Response, Patent Owner does not dispute that DASM-AD14 (Ex. 1209) is a printed publication. Nor does Patent Owner advance separate, specific arguments with regard to claims 57, 68–70, 75, and 76, other than those already addressed above in connection with claim 1. PO Resp. 34−35. For the same reasons stated above, we determine those arguments are likewise unavailing here.

We also have considered Petitioner's detailed explanations and supporting evidence regarding these claims and we are persuaded that Petitioner has established by a preponderance of the evidence that the prior art combination renders these claims obvious. *See* Pet. 45–48, 53–56; Ex. 1204 ¶¶ 220−227, 240−245.

At the outset, based on the evidence in this full record, we are persuaded that Petitioner has established sufficiently that the DASM-AD14 product brochure (Ex. 1209) is a printed publication within the meaning of

§ 102(b). The determination of whether a given reference qualifies as a prior art "printed publication" involves a case-by-case inquiry into the facts and circumstances surrounding the reference's disclosure to members of the public. *In re Klopfenstein*, 380 F.3d 1345, 1350 (Fed. Cir. 2004). "Because there are many ways in which a reference may be disseminated to the interested public, 'public accessibility' has been called the touchstone in determining whether a reference constitutes a 'printed publication' bar under 35 U.S.C. § 102(b)." *In re Hall*, 781 F.2d 897, 898–99 (Fed. Cir. 1986). To qualify as a prior art printed publication, the reference must have been disseminated or otherwise made accessible to persons interested and ordinarily skilled in the subject matter to which the document relates prior to the critical date. *Kyocera Wireless Corp. v. Int'l Trade Comm'n*, 545 F.3d 1340, 1350 (Fed. Cir. 2008).

Here, the Digital Equipment Corporation Shippable Products Catalog itself includes indicia that the DASM-AD14 product brochure was available to the public *at least five years* prior to the effective filing date of the challenged claims—a copyright date of 1992. Ex. 1214, 23. More importantly, the DAMS-AD14 product brochure includes other indicia of reliability—publication number "Bulletin No. 16-100452 REV 0" and publication date "3/92," which is *at least five years* prior to the effective filing date of the challenged claims. Ex. 1209, 4. Based on the totality of the circumstances, we are persuaded that Petitioner has provided a sufficient showing that the DASM-AD14 product brochure (Ex. 1209) is a "printed publication" within the meaning of § 102(b).

We additionally determine that Petitioner has established by a preponderance of the evidence that Kawaguchi, in combination with Matsumoto, DASM-AD14, the SCSI Specification, and Admitted Prior Art, renders obvious claims 57, 68–70, 75, and 76. Pet. 45–48, 53–56. For example, claim 69 depends from claim 1, and further recites "wherein the analog data generation and automatic file transfer processes, when they occur, at least partially overlap in time." Ex. 1201, 15:37–39. Petitioner points out that DASM-AD14 discloses this additional limitation, and articulates a reason to combine the teachings of DASM-AD14 with Kawaguchi and Matsumoto. Pet. 55–56. Notably, DASM-AD14 discloses that the DASM-AD14 data acquisition subsystem emulates a SCSI disk drive and attaches to workstations, PCs and host computers via a SCSI bus, allowing "high performance data acquisition to be readily available on a wide variety of hosts." Ex. 1209, 1. DASM-AD14 also describes that the system "emulates a SCSI disk drive by implementing the SCSI common command set," and the host performs SCSI reads and writes to access the DASM-AD14 system's memory. *Id*. at 2. During data acquisition, the digital output from an analog-to-digital converter is stored in the data memory as a sequence of user-defined "*frames*." *Id*. The DASM-AD14 system can accommodate both finite and continuous acquisition modes. *Id*. at 3. "In continuous acquisition mode, 'frames' are stored in data memory, treating data memory as a circular buffer, while the host SCSI driver performs continuous SCSI read operations on a first acquired, first read basis." *Id*. The DASM-AD14 system "transparently handles all of the required SCSI handshaking to allow an uninterrupted flow of data to the

host." *Id.* In light of those prior art teachings, we are persuaded that Petitioner proffers sufficient evidence that DASM-AD14 discloses overlapping an analog data generation process with an automatic file transfer process, as required by claim 69. We also are persuaded by Petitioner's reasoning that an ordinarily skilled artisan would have had a reason to implement a continuous data acquisition mode, in Kawaguchi, while the host performs continuous read operations, as taught by DASM-AD14, "to allow an uninterrupted flow of data to the host." Pet. 55–56. In light of Petitioner's argument and evidence, we find that it would have been obvious to implement the acquisition modes of DASM-AD14 with the system of Kawaguchi as such combination is a predictable application of the known techniques of transparent SCSI handshaking while acquiring data. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR, 550 U.S. at 416.*

Based on the evidence before us, we agree with Petitioner's explanations and Dr. Reynolds' testimony as to claims 57, 68–70, 75, and 76. Pet. 45–48, 53–56; Ex. 1204 ¶¶ 220−227, 240−245. We credit Dr. Reynolds' testimony (Ex. 1204 ¶¶ 220−227, 240−245) as it is consistent with the prior art in this record, and we adopt his analysis, as our own. In view of the foregoing, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 57, 68–70, 75, and 76 are unpatentable as obvious under § 103(a) over Kawaguchi, in combination with Matsumoto, DASM-AD14, the SCSI Specification, and Admitted Prior Art.

G. Obviousness over Kawaguchi, Matsumoto, Saito, the SCSI Specification, and Admitted Prior Art

Petitioner asserts that claims 41, 50, 51, 56, 78, and 79 are unpatentable under § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, Saito, the SCSI Specification, and Admitted Prior Art. Pet. 41–45, 56–57; Ex. 1204 ¶¶ 191−193, 211−212, 215−219, 251−252. Patent Owner relies upon the same arguments presented in connection with claim 1. PO Resp. 34−35. We have addressed those arguments in our analysis above, and conclude that those arguments are likewise unavailing here.

Upon consideration of the evidence in this full record, we determine that Petitioner has established by a preponderance of the evidence that Kawaguchi, in combination with Matsumoto, Saito, the SCSI Specification, and Admitted Prior Art, renders obvious claims 41, 50, 51, 56, 78, and 79. Pet. 41–45, 56–57; Ex. 1204 ¶¶ 191−193, 211−212, 215−219, 251−252. For instance, claim 41 depends from claim 1, and further recites "wherein the program memory comprises electronically programmable read only memory." Ex. 1201, 14:1–2. Petitioner points out that Saito discloses this limitation, and articulates a reason to combine the teachings of Saito with Kawaguchi. Pet. 42. Kawaguchi discloses a SCSI device converter having a microcomputer, ROM, and RAM, but does not disclose expressly an electronically programmable read-only memory. Ex. 1207, 5. Nevertheless, Saito describes an electronic imaging system for acquiring and storing image data, having capability to transmit the image data to a personal computer; and, for the data communication in Saito, the system controller reads a

communication protocol, which has been written in an electrically erasable programmable read-only memory (EEPROM). Ex. 1213, 1:4–13, 5:19–27. Based on the prior art teachings, we are persuaded that Petitioner has shown sufficiently that Saito discloses an EEPROM, as required by claim 41. We also are persuaded that an ordinarily skilled artisan would have had a reason to use an EEPROM, as taught by Saito, in Kawaguchi's SCSI device converter to have the capability to electronically program the read only memory. Pet. 42; Ex. 1204 ¶¶ 192−193.

Based on the evidence before us, we agree with Petitioner's explanations and Dr. Reynolds' testimony as to claims 41, 50, 51, 56, 78, and 79. Pet. 41–45, 56–57; Ex. 1204 ¶¶ 191−193, 211−212, 215−219, 251−252. We credit Dr. Reynolds' testimony (Ex. 1204 ¶¶ 191−193, 211−212, 215−219, 251−252) as it is consistent with the prior art in this record, and we adopt his analysis, as our own. In view of the foregoing, we determine that Petitioner has demonstrated a preponderance of the evidence that claims 41, 50, 51, 56, 78, and 79 are unpatentable as obvious under § 103(a) over Kawaguchi, in combination with Matsumoto, Saito, the SCSI Specification, and Admitted Prior Art.

H. Obviousness over Kawaguchi, Matsumoto, Muramatsu, the SCSI Specification, and Admitted Prior Art

Petitioner asserts that claim 66 is unpatentable under § 103(a) as obvious over Kawaguchi, in combination with Matsumoto, Muramatsu, the SCSI Specification, and Admitted Prior Art. Pet. 50–51; Ex. 1204 ¶¶ 235−237. Claim 66 depends from claim 1, and further recites "wherein

the analog data is, when the analog data generation process takes place, processed by being subject to a *fast Fourier transform*." Ex. 1201, 15:27–29 (emphasis added).

Patent Owner does not advance any separate, specific argument with regard to claim 66 other than those already addressed above in connection with claim 1. PO Resp. 34−35. Upon review the evidence in this full record, we determine that Petitioner has provided sufficient evidence to show that Muramatsu discloses the additional limitation recited in claim 66. Notably, Petitioner explains that Muramatsu discloses a camera photometric device that implements *a fast Fourier transform* during the analog data generation process. Pet. 50–51 (citing Ex. 1212, 3:50–63 ("The photometric computation device 8 is configured to include a spectral analysis unit 81 which implements a discrete two-dimensional Fourier transform operation."), 4:21–25 ("If the number of segments in the horizontal and vertical directions is a power of 2, the photometric sensor 7 can use a so-called fast Fourier transform (FFT) algorithm, so it can execute the computations in equations [1] and [2] at a high speed using conventional techniques.")). Dr. Reynolds testifies that using fast Fourier transform was widespread at the time of the invention. Ex. 1204 ¶ 236. Indeed, Muramatsu indicates that the discrete two-dimensional Fourier transform operation was "a common and well-known technique," which can be applied "to determining brightness distribution of a photographic subject from a photometric sensor." Ex. 1212, 3:52–57. Dr. Reynolds also testifies that it would have been obvious for an ordinarily skilled artisan to add fast Fourier transform capability, as taught by Muramatsu, to the image processing

circuit, in Kawaguchi, because fast Fourier transform can be performed very fast in hardware-based digital signal processors. Ex. 1204 ¶¶ 236–237. Based on the evidence before us, we are persuaded that Petitioner has articulated a sufficient rationale to combine the prior art teachings. *See KSR*, 550 U.S. at 417.

In view of the foregoing, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 66 is unpatentable as obvious under § 103(a) over Kawaguchi, in combination with Matsumoto, Muramatsu, the SCSI Specification, and Admitted Prior Art.

III. PROCEDURAL ISSUES

Patent Owner raises two procedural issues. First, Patent Owner raised concerns that the Petitioner's Reply exceeds the proper scope in accordance with 37 C.F.R. § 42.23(b), which states "[a] reply may only respond to arguments raised in the corresponding opposition or patent owner response." Paper 25. Pursuant to our authorization (*id.*), Patent Owner filed an Itemized Listing of the Petitioner's Reply arguments and evidence that Patent Owner alleges to be improper. Paper 27. Petitioner filed a Responsive Itemized Listing, identifying the specific portions of Patent Owner's Response and/or expert declaration, to which each allegedly improper argument/evidence is provided as a response. Paper 28.

We have considered the parties' listings. In rendering this Final Written Decision, we do not rely on any allegedly improper arguments presented in Petitioner's Reply, nor evidence that supports those arguments.

We, however, disagree with Patent Owner's characterization that Dr. Reynolds' testimony regarding the state of the art as to *data relays* and *arbitrary data* (Ex.1215 ¶¶ 15, 16) and Exhibit 1217, an article on file-based store and forward data relays, supporting that testimony, are improper rebuttal evidence. Paper 27, 2. The issues of data relays and arbitrary data were raised for the first time, after institution, by Patent Owner and its declarant, contending that the data reading unit in Kawaguchi's SCSI device converter merely acts as a data relay and data are "passing through," not stored. *See, e.g.*, PO Resp. 24−28; Ex. 2008 ¶ 36. As Dr. Reynolds' testimony expressly notes, that portion of his Reply Declaration (Ex. 1215 ¶¶ 15, 16), including citation to Exhibit 1217, respond directly to that contention. Such responsive evidence is not improper. *See* 37 C.F.R. § 42.23(b). Furthermore, in our obviousness analysis above, we cite to Dr. Reynolds' testimony (Ex. 1215 ¶¶ 15, 16) and Exhibit 1217 in explaining why we find Patent Owner's argument and Mr. Gafford's testimony regarding data relays and arbitrary data unpersuasive, in light of the knowledge of an ordinarily skilled artisan. *See supra*, Section II.D. As such, Dr. Reynolds' testimony (Ex. 1215 ¶¶ 15, 16) and Exhibit 1217, which supports his testimony regarding the state of the art as to data relays and arbitrary data, are proper rebuttal evidence, not needed for a prima facie case of obviousness. *See Ariosa Diagnostics*, 805 F.3d at 1365; *Belden Inc., v. Berk-Tek LLC*, 805 F.3d 1064, 1078−80 (Fed. Cir. 2015) (holding that the Board may rely on new evidence submitted with a reply because the evidence was legitimately responsive to patent owner's arguments and not needed for a prima facie case of obviousness).

Second, Patent Owner argues that, when we included the SCSI Specification and the Admitted Prior Art in the statements of the instituted grounds (Dec. 8, 47−48), "it unfairly prejudices Papst." PO Resp. 2−3, n.2. As we noted in the Institution Decision (Dec. 8 n.5), Petitioner's analysis discusses these prior art disclosures. *See*, *e.g.*, Pet. 38, 49 ("Applicant Admitted Prior Art . . . discloses . . . 'a computer system to transfer the data measured by the multimeter to the computer.'"); Ex. 1204 ¶ 92 ("Accordingly, claims 1, 84, and 86 are obvious over Kawaguchi in view of the SCSI Specification."). The SCSI Specification and the Admitted Prior Art merely supply additional details about the SCSI standard and conventional peripheral devices, which are evidence that "serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness." *See Ariosa Diagnostics*, 805 F.3d at 1365; *Randall Mfg.*, 733 F.3d at 1362. We included the SCSI Specification and the Admitted Prior Art in the statements of the instituted grounds to provide clarity. Patent Owner was given sufficient opportunity to respond to Petitioner's analysis during this proceeding. *See*, *e.g.*, Prelim. Resp. 27−47; PO Resp. 18−35. Patent Owner does not identify, nor do we discern, a reason why merely including these items explicitly in the statements of ground would prejudice Patent Owner. Accordingly, we are not persuaded by Patent Owner's argument.

IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 7, 9, 11, 12,

17–21, 23–26, 41, 50, 51, 56–58, 66–76, 78, and 79 are unpatentable under 35 U.S.C. § 103(a).

V. ORDER

In light of the foregoing, it is

ORDERED that claims 7, 9, 11, 12, 17–21, 23–26, 41, 50, 51, 56–58, 66–76, 78, and 79 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.

For PETITIONER:

David Maiorana
Matthew Johnson
David Witcoff
Marc Blackman
dmaiorana@JonesDay.com
mwjohnson@jonesday.com
dlwitcoff@jonesday.com
msblackman@jonesday.com
JONES DAY

Ahren Hsu-Hoffman
Dion Bregman
Chris Mizumoto
Ahren.hsu-hoffman@morganlewis.com
dion.bregman@morganlewis.com
chris.mizumoto@morganlewis.com
MORGAN, LEWIS & BOCKIUS LLP

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

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

Brian Rupp
Carrie Beyer
Nikola Colic
Brian.Rupp@dbr.com
Carrie.Beyer@dbr.com
Nick.Colic@dbr.com
DRINKR BIDDLE & REATH LLP

For PATENT OWNER:

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

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